Test Excavations and Data Recovery Plan for the La Villa Rivera/Marian Hall Complex (LA 161535) in Downtown Santa Fe, Santa Fe County, New Mexico

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Office of Archaeological Studies

Museum of New Mexico

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TEST EXCAVATIONS AND DATA RECOVERY PLAN FOR THE LA VILLA RIVERA/MARIAN HALL COMPLEX (LA 161535) IN DOWNTOWN SANTA FE, SANTA FE COUNTY, NEW MEXICO

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Administrative Summary

Archaeological testing was conducted between October 27 and November 21, 2008, at the La Villa Rivera Building/Marian Hall complex at the corner of East Palace Avenue and Paseo de Peralta in downtown Santa Fe, Santa Fe County, New Mexico. This project was completed at the request of Drury Southwest, Inc., which currently owns the parcel and was aimed at determining whether potentially significant prehistoric or historic archaeological remains are present on the property. Work was completed in accordance with City of Santa Fe Ordinance 14-75.15, which stipulates that land-altering activities occurring on parcels larger than 2 acres (0.81 ha) require an archaeological assessment prior to the initiation of construction. The area assessed during this study encompassed 2.9 acres (1.17 ha).

Testing revealed the presence of historic archaeological remains dating to the seventeenth and late nineteenth to early twentieth centuries, which were designated LA 161535. Seventeenth-century remains include a mostly intact trash midden (Feature 5) overlying a cobble pavement (Feature 6) thought to represent a stable yard or paddock floor, and a spatially discrete but possibly related stratum containing seventeenth-century artifacts. An earthen vault or pit with unfinished but whitewashed walls (Feature 4) may also date to this period, but this is uncertain. Late nineteenth- to early twentieth-century remains include the foundations of four buildings demolished in the mid-1950s, a trash pit (Feature 1), a kitchen midden (Feature 2), a possible statue base (Feature 3), and a cobble pavement (Feature 7) associated with a possible stable area. Since testing revealed the presence of potentially significant historic structures, features, and deposits as defined in City of Santa Fe Ordinance 14-75.15(F), a data recovery program is recommended, and a plan for recovering data from LA 161535 prior to construction is developed and presented.

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Acknowledgments

Many people contributed to the successful completion of this project, and I would like to express my thanks to all. Our primary contacts at Drury Southwest were Brian Nenninger, William Lewis, and Kevin Whitfield, without whose help and guidance this project could never have been brought to completion. Patricia Quintana and Herman Rodriguez of building management aided in our scheduling and helped coordinate with the various movie crews that were filming at the complex while we were there. Herman's help was especially valuable, since he often arrived at the building early to block off sections of the parking lot so we could excavate our backhoe trenches without impediments.

Cordelia Snow provided us with a detailed overview of the history of the property (included in this report as Appendix 1) and was always ready to drop everything and rush over to the site to confer about a find. She also provided field identification of Chinese porcelain and Mexican majolica sherds from the seventeenth-century deposits and verified that we indeed had Early Spanish Colonial–period features. Chet Walker of Archaeo-Geophysical Associates, LLC, conducted a geophysical survey of the property (included in this report as Appendix 2), often working at night to avoid cell phone interference. Chet's maps were invaluable aids in determining where to place test pits and backhoe trenches in the parking lots. Guadalupe Martinez of the OAS staff assisted Chet in his survey, working long hours and on the weekend to help finish on schedule. Backhoe excavation was conducted by Nick Ruiz and his crew, and we are very thankful for their careful work, as well as for the doughnuts, coffee, and hot chocolate!

In addition to our crew, Patricia Rogers and Barbara Chatterjee generously volunteered their services and helped with our excavations and the recovery and recording of artifacts, and their assistance was greatly appreciated. Crew chiefs for the project were Guadalupe Martinez and Susan Moga, and they graciously filled in for me when I needed to be absent for a time. Crew members were Gavin Bird, Mary Weahkee, and Karen Wening. Stephen Post, deputy director of the OAS, was principal investigator for the project and did most of the preproject planning and budgeting.

JLM

Introduction

At the request of Drury Southwest, Inc. (DSW), the Office of Archaeological Studies (OAS) of the Museum of New Mexico contracted to conduct archaeological testing on a property containing the La Villa Rivera Building (LVR) and Marian Hall, at the corner of East Palace Avenue and Paseo de Peralta in downtown Santa Fe, Santa Fe County, New Mexico. The project area encompassed 2.9 acres (1.17 ha). Test excavations were conducted over 19 days between October 27 and November 21, 2008. The project was directed by James L. Moore, and Stephen S. Post was principal investigator. The field crew consisted of six members of the OAS staff augmented by two volunteers.

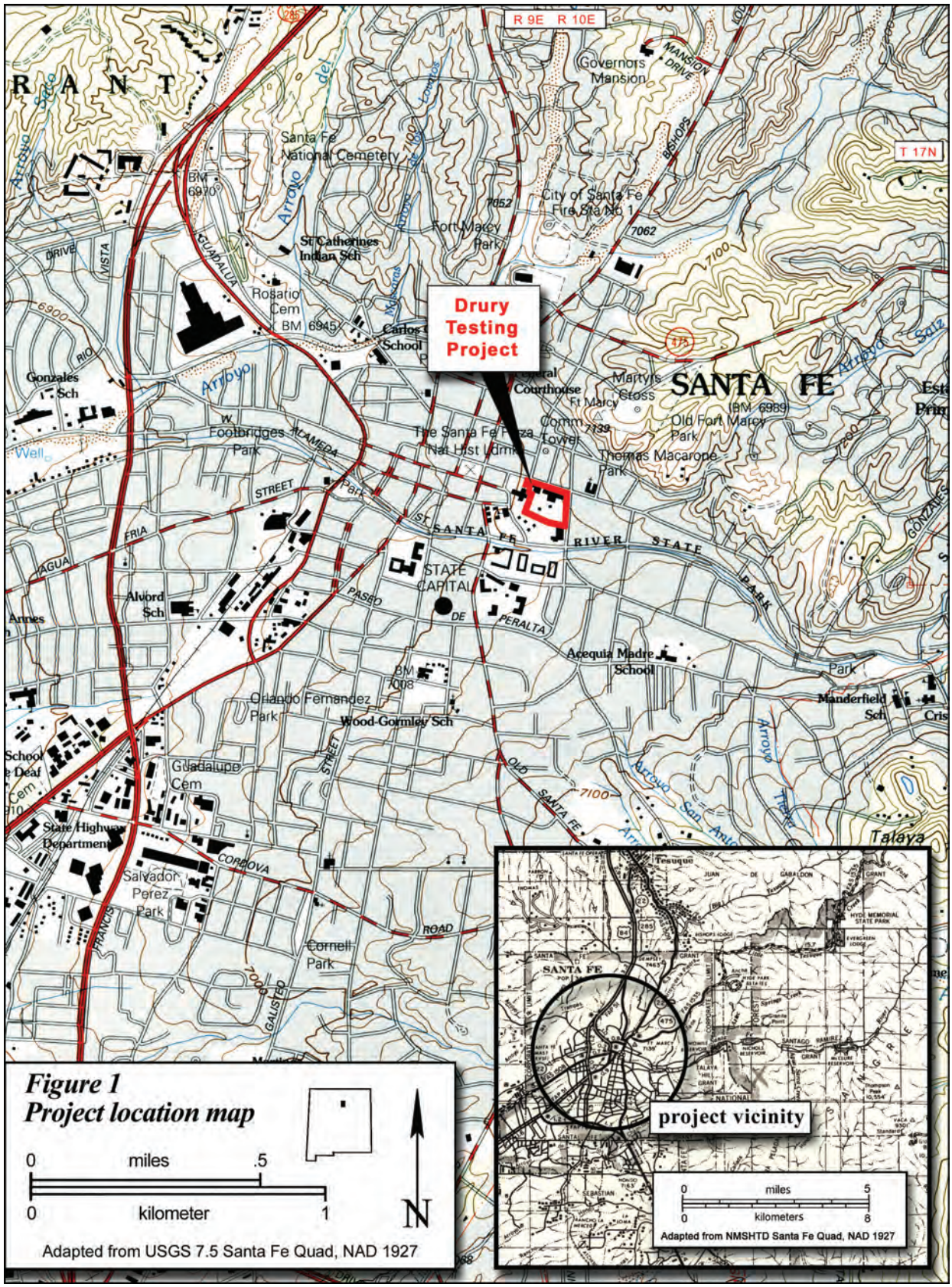
The property examined contains the two aforementioned buildings, a separate power plant building, garages, east and west parking lots, and landscaped areas on the north side of LVR and west of Marian Hall adjacent to Cathedral Park (Fig. 1). Planned construction includes an interior remodeling of LVR and Marian Hall, expansion of LVR to the south, removal of the garages, and construction of an underground parking facility that will encompass the east parking lot and much of the west parking lot. Parks, walkways, and detached structures will be built on top of the parking structure. When further landscaping and the potential rerouting of utilities is factored in, nearly every part of the property could be affected by construction. Thus, testing was aimed at assessing all possible areas of the property, while remaining within the proposed and budgeted limits of this examination.

An overview of the history of the property was separately contracted for by DSW, and that document was prepared by Cordelia T. Snow before testing was initiated. Information provided in the historical overview was used to help guide the testing program, indicating areas of concern to this investigation. Because this overview was separately prepared, it is included in this document as Appendix 1 and will be revised and expanded, if necessary, for integration into a final report for the data recovery phase.

Since no archaeological sites were previously recorded on the property, test excavations were aimed at identifying potentially significant cultural resources and, if they were present, to determine the dates and extent of archaeological features and deposits. This assessment was important because the property is thought to contain the remains of the seventeenth-century *parroquia* (parish) of the Villa de Santa Fe, which was burned and razed during the Pueblo Revolt of 1680 (Appendix 1). Several additional structures built during the late nineteenth century by the Sisters of Charity also existed on the property before construction of the current LVR and Marian Hall (Appendix 1). The possibility that the property contains remains of the seventeenth-century parroquia is especially important because of the potential for associated human remains, both beneath the floor of the church and in the *camposanto* (cemetery) outside the church.

Approximately 2 percent of the property was examined, as required by the City of Santa Fe. Since the property was completely covered by buildings, parking lots, and landscaped areas, no archaeological materials or features were visible on the surface. Prior to the initiation of archaeological testing, a geophysical survey phase was completed (Walker 2008 and Appendix 2). The results of geophysical testing were used to guide the placement of many of the excavation units used to examine the property. Since only preliminary results of the geophysical testing were available at the time testing began (Walker 2008), those results were used as a guide. No additional potential cultural features were identified in the final report (Appendix 2), which mainly provided more details concerning the interpretation of anomalies.

Testing revealed the presence of potentially significant archaeological remains in several areas on the west side of the property, which were registered as LA 161535. The remains encountered include the foundations of four late nineteenth- to early twentieth-century buildings; several associated features including a possible statue base, a kitchen midden, a trash pit, and a cobble pavement associated with a possible stable; and an area containing late nineteenth- to early twentieth-century deposits of uncertain origin. Also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T 17N
Governors Mansion
Santa Fe National Cemetery
City of Santa Fe Fire Sta No. 1
Fort Marcy Park
St Catherines Indian Sch
Rosario Cem
Carlos School
Courthouse
Martyrs Stoss
SANTA FE
Old Fort Marcy Park
Thomas Macarone Park
Footbridges
The Santa Fe Plaza
Nat Hist Admin
Comm Tower
STATE CAPITAL
Alvord Sch
Acequia Madre School
Manderfield Sch
Orlando Fernandez Park
Wood-Gormley Sch
Guadalupe Cem
Salvador Perez Park
Cornell Park
Talaya
project vicinity
Figure 1
Project location map
0 miles .5
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Adapted from USGS 7.5 Santa Fe Quad, NAD 1927
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Adapted from NMSHTD Santa Fe Quad, NAD 1927

encountered were seventeenth-century deposits and features including a midden and cobble pavement. A subterranean vault of uncertain function and date (probably seventeenth century) was also located and recorded. The archaeological site encompasses much of the west parking lot, and associated features and deposits most likely extend further south and especially west onto properties owned by the Archdiocese of Santa Fe. No potentially significant archaeological features or deposits were found in the east parking lot or in the unbuilt grassy areas on the north side of LVR.

Overview of the Prehistoric and Historic Periods

James L. Moore

Paleoindian Period (9,200–5,500 BC)

The Paleoindian period contains three broad temporal divisions for which Holliday (1997:225) provides dates from the southern Plains: Clovis (9200–8900 BC), Folsom (8900–8000 BC), and Late Paleoindian (8000–7000 BC). Dates are probably similar for northern New Mexico, though there the end of the period is usually given as 5500 BC. The Late Paleoindian division groups several complexes distinguished by variations in projectile points and tools that may reflect differences in lifestyle. All Paleoindians were once classified as big-game hunters, but some now feel that the Clovis people were unspecialized hunter-gatherers while Folsom and many later groups specialized in hunting migratory big game, especially bison (Stuart and Gauthier 1981). While some Paleoindians left New Mexico with the migratory big game, those that remained undoubtedly subsisted by hunting and gathering, and the early Archaic inhabitants of the region probably evolved out of this population. Evidence of Paleoindian occupation is rare in the Northern Rio Grande and typically consists of diagnostic projectile points and butchering tools found on the modern ground surface or in deflated settings (Acklen et al. 1990).

Currently, only one Paleoindian site is recorded in the Santa Fe area. This is LA 112527, located in Diablo Canyon northwest of Santa Fe. This site has yielded Folsom points as well as Late Paleoindian materials, especially Golondrina points (pers. comm., Robert Dello-Russo, 2008). Other Paleoindian finds around Santa Fe are isolated artifacts, which have been recovered from the Tesuque area, the hills northwest of town, outside the community of Agua Fria, in the Santa Fe foothills, and in the Sangre de Cristos (Scheick 1999:2). Two Clovis components are reported from the Jemez Mountains (Evaskovich et al. 1997; Turnbow 1997), and their presence in that setting may suggest a changing subsistence adaptation. Two isolated Late Paleoindian artifacts are reported from the Galisteo Basin (Honea 1971; Lang 1977). Isolated Clovis, Folsom, Agate Basin, Milnesand, and Scottsbluff points have been found on the Pajarito Plateau and in the nearby Cochiti Reservoir District (Chapman and Biella 1979; Powers and Van Zandt 1999; Root and Harro 1993; Steen 1982; Traylor et al. 1990). The paucity of Paleoindian remains in this region may be due to low visibility rather than lack of occupation, with components being masked by deposits from later periods or buried deeply by natural geomorphic processes.

Archaic Period (5500 BC–AD 600)

At an early date, archaeologists realized that the Archaic occupation of northern New Mexico was distinct from that of its southern neighbor, the Cochise (Bryan and Toulouse 1943). Irwin-Williams (1973, 1979) defined the northern Archaic as the Oshara Tradition and tentatively formalized its developmental sequence. However, in applying that chronology outside the area in which it originated, one must realize that the specifics of trends might differ, and at least some variation from one region to another should be expected.

The Oshara Tradition is divided into five phases: Jay (5500 to 4800 BC), Bajada (4800–3200 BC), San José (3200–1800 BC), Armijo (1800–800 BC), and En Medio (800 BC–AD 400 or 600). Jay and Bajada sites are usually small camps occupied by microbands for short periods of time (Moore 1980; Vierra 1980), and the population was probably grouped into small, mobile nuclear or extended families. San José sites are larger and more common than those of earlier phases, which may signify population growth. Ground stone tools are common at San José sites, suggesting a significant dietary reliance on grass seeds. Macroband base camps appeared by the late Armijo phase, providing the first evidence for a seasonal pattern of aggregation and dispersal. The En Medio phase represents the transition from a nomadic hunter-gatherer pattern to a seasonally sedentary lifestyle combining hunting and gathering with some reliance on corn

horticulture. During this phase the population gain seems to have increased, and a strongly seasonal pattern of population aggregation and dispersal seems likely. While some corn was grown during this period, the population mostly ate foods obtained by hunting and gathering.

While the Archaic ended around AD 400 in northwest New Mexico, it ended around AD 600 in some parts of the Northern Rio Grande, and even later in others. Thus, the Northern Rio Grande Archaic's relationship to the Oshara Tradition is unclear. Projectile points from the Northern Rio Grande illustrated by Renaud (1942, 1946) resemble those attributed to the Oshara. However, similar point styles occur over a vast region stretching from California to Texas and northern Mexico to the southern Great Plains, so stylistic resemblance is not always evidence for cultural affinity. Subsequent developments in the Northern Rio Grande suggest that people in that area differed from those in northwest New Mexico. Those differences likely had their basis in the makeup of the Archaic peoples who originally settled those regions. Thus, the similarity in projectile point styles does not imply that the Northern Rio Grande and Four Corners areas were occupied by groups of common cultural or even linguistic origin. Indeed, they probably were not.

Archaic sites in the Santa Fe area run the gamut of phases, though Early and Middle Archaic sites are rather rare, and are generally represented by widely dispersed sites and isolated occurrences (Anschuetz and Viklund 1996; Doleman 1996; Lang 1992; Post 1996, 2000). Early and Middle Archaic sites represent brief occupations with an emphasis on hunting, and associated materials are typically mixed with later deposits. Sites of this date have been recorded along the Santa Fe River and its main tributaries (Post 2004). The limited number of associated artifacts indicates brief occupations geared toward hunting by small, highly mobile groups. The Las Campanas project found a late San José site that yielded one projectile point, tool production debris, and ground stone artifacts (Post 1996). Excavations along the Santa Fe Relief Route identified four Middle Archaic sites with radiocarbon dates ranging between 3200 and 1800 BC. Although associated materials were not abundant, these sites may indicate a longer and more formal occupation than is visible at earlier sites (Post 2000).

Late Archaic sites are more common, and this is consistent with regional data (Acklen et al. 1997). This increase may be due to changes in settlement and subsistence patterns associated with the adoption of corn horticulture during the Armijo phase including seasonal aggregation, longer periods of occupation, and use of a broader range of environmental settings. However, evidence for corn horticulture is mainly found in sites south of La Bajada. Armijo sites occur in the piedmont around the Santa Fe River (Post 1996, 2000; Schmader 1994) and range from small foraging camps to larger base camps containing shallow structures. Radiocarbon dates suggest these sites were occupied between 1750 and 900 BC (Post 1996, 2004; Schmader 1994). En Medio sites are the most common type of Archaic site in the Santa Fe area, and are widely distributed across riverine, piedmont, foothill, and montane settings (Acklen et al. 1997; Kennedy 1998; Lang 1993; Miller and Wendorf 1955; Post 1996, 1997, 2000; Scheick 1991; Schmader 1994; Viklund 1988). This phase is represented by isolated occurrences, limited-activity sites, and base camps containing structures and formal features. Increased diversity in settlement pattern and site types suggest population increase, longer site occupations or reduced time between occupations, and truncated foraging range. Radiocarbon dates for En Medio components range from 300 BC to AD 400.

Pueblo Period (AD 600–1600)

Early Developmental Period (AD 600–900)

Early Developmental–period sites dating before AD 800 are rare in the Northern Rio Grande. While sites dating between AD 800 and 900 are more numerous, they are typically represented by limited-activity areas and small settlements (Wendorf and Reed 1955). Most reported early Developmental-period sites are located south of La Bajada Mesa in the Albuquerque area, with a few reported at higher elevations along the Tesuque, Nambe, and Santa Fe drainages (Lang 1995; McNutt 1969; Peckham 1984; Skinner et al. 1980; Wendorf and Reed 1955). Sites of this period tend to be situated on low terraces overlooking tributaries of the Rio Grande, locations that may have been chosen for their access to water,

farmland, and ecozones containing a wide range of resources (Anschuetz et al. 1997; Cordell 1978). Other than an early Developmental-period component at LA 1051, remains from this period are rare in the Santa Fe area (Elliot 1988).

Late Developmental Period

Late Developmental-period sites occur from the Taos Valley south to the Albuquerque area. The late Developmental period is marked by an increase in the number and size of residential sites, occupation of a wider range of settings, and the appearance of Kwahe'e Black-on-white pottery (Cordell 1978; Mera 1935; Peckham 1984; Wendorf and Reed 1955; Wetherington 1968). Residential sites expanded into higher elevations along the Rio Grande, Tesuque, Nambe, and Santa Fe drainage during this period (Allen 1972; Ellis 1975; McNutt 1969; Peckham 1984; Skinner et al. 1980; Wendorf and Reed 1955). These sites commonly occur on low terraces above the tributaries of these rivers, where water, farmland, and a variety of foraging resources were available (Anschuetz et al. 1997; Cordell 1978). The first residential sites were established in the Taos District toward the middle of this period (Boyer 1997).

Late Developmental-period sites are common in the Santa Fe area. Pindi Pueblo (LA 1) south of Santa Fe contains a small late Developmental-period component, though the site itself is mainly Coalition period in date (Stubbs and Stallings 1953). Several late Developmental-period sites have been investigated in downtown Santa Fe and are summarized by Elliot (1988) and Scheick (2007). Most known late Developmental-period components occur on and around Fort Marcy Hill, which itself contains a large late Developmental-period village (LA 111). Nearby and associated sites include LA 618 on East Palace Avenue, the Arroyo Negro Site (LA 114), La Garita Pueblo (LA 608), the KP Site (LA 46300), the Diker Site (LA 21963/21964), and LA 78560 on Otero Street. Other late Developmental-period sites in the downtown area include LA 930 at the Fine Arts Museum, and the Gaugy Site (LA 132712).

Coalition Period

The Coalition period is marked by three major changes: an increase in the number and size of residential sites, use of surface rooms as domiciles rather than for storage, as was common earlier, and a shift from mineral to vegetal paint on pottery (Cordell 1978; Peckham 1984; Stuart and Gauthier 1981; Wendorf and Reed 1955). Areas like the Pajarito Plateau that had previously seen limited use became a focus of occupation during this period, while areas like the Tewa Basin that saw heavy late Developmental-period use may have lost some of their population by AD 1200. Conversely, Coalition-period sites may simply be underrepresented in the current sample of cultural resources from the Tewa Basin. The apparent increase in number and size of residential sites suggests population increase and an extension of a village-level community organization that began during the late Developmental period. However, this apparent increase may be a function of where archaeologists have mainly looked and points to the amount of work that has been done on the Pajarito Plateau as opposed to elsewhere in the Northern Rio Grande.

Coalition-period sites tend to be located on terraces or mesas overlooking the Rio Grande, Tesuque, Nambe, Santa Fe, and Chama drainages (Cordell 1978; Dickson 1979). While residence at higher elevations provided reliable water and arable land, innovative methods were needed to produce crops in these cooler settings, including intensification of water management and farming practices (Anschuetz 1998; Anschuetz et al. 1997; Maxwell and Anschuetz 1992; Moore 1981). In the Santa Fe area, large villages like the Agua Fria School House Ruin (LA 2), LA 109, LA 117, LA 118, and LA 119 were established early in the Coalition period. Pindi Pueblo (LA 1) grew rapidly during the Coalition period (Franklin 1992; Stubbs and Stallings 1953). Arroyo Hondo Pueblo (LA 12), a few miles south of Santa Fe, was also established during this period (Elliot 1988). The Coalition period saw the founding of farming villages on the Pajarito Plateau (Crown et al. 1996; Orcutt 1991), in the Galisteo Basin (Lang 1977), and in the Chama–Ojo Caliente region.

Several Coalition-period sites occur in and near downtown Santa Fe. Excavations at the San Miguel Church encountered deposits dating to the 1300s (Stubbs and Ellis 1955). LA 132712 is a Coalition-period site on Guadalupe Street that contains trash deposits, pits, and human burials (Scheick 2003). Coalition-period pithouses

were excavated at the Federal Court Building (Scheick 2007). Excavations at LA 1051 under the Sweeny Center uncovered extensive Coalition-period remains including pit structures, trash deposits, and human burials. La Garita Pueblo (LA 608) contains extensive Coalition-period remains (Scheick 2007). Other sites containing Coalition-period components in the area include LA 111261 (Hannaford 1997), LA 930 (Peckham 1977; Post and Snow 1982), LA 120709 (Viklund 2001), and LA 111 (Snow and Kammer 1995).

Classic Period

Classic-period villages shifted away from the uplands and began to concentrate along the Rio Grande, Chama, Ojo Caliente, and Santa Cruz rivers, as well as in the Galisteo Basin. Large villages containing multiple plazas and roomblocks were built and regional population peaked. In the Santa Fe area, large villages like the Agua Fria School House Ruin (LA 2), Arroyo Hondo (LA 12), Cieneguilla (LA 16), LA 118, LA 119, and Building Period 3 at Pindi (LA 1) flourished during the early part of this period. Though these villages grew rapidly during the early Classic period, only Cieneguilla remained occupied after AD 1425. The occupation of LA 1051 continued well into the Classic period, and this is the only large Classic-period village known to exist in downtown Santa Fe.

The process of large-village formation and movement to areas along major streams continued through the Classic period. Population levels began to decline on the Pajarito Plateau in the early Classic period and continued through the middle of the period, with most villages being abandoned by 1550, though some continued to be occupied until 1550–1600 (Orcutt 1991). This population moved into the Rio Grande Valley, with Keres villages claiming affinity with sites on the southern Pajarito Plateau, and Tewa villages claiming affinity with sites on the northern Pajarito Plateau.

Historic Period

Exploration Period (1539–1598)

Based on information gathered by Alvar Nuñez Cabeza de Vaca and his companions following the disastrous Narváez expedition to Florida (Covey 1961), the Spanish became interested in lands north of New Spain in the 1530s. Fray Marcos de Niza was dispatched into the Southwest on a scouting mission in 1539, and a major expedition under Francisco Vázquez de Coronado explored the region from 1540 to 1542. No other formal contact between New Spain and New Mexico occurred until 1581, when Father Augustín Rodríguez and Captain Francisco Sánchez Chamuscado led an expedition to the Pueblo country (Hammond and Rey 1966). Antonio de Espejo led the next expedition into New Mexico in 1582, ostensibly to rescue two priests left by Rodríguez-Chamuscado. Gaspar Castaño de Sosa attempted to illegally found a colony in 1590–1591 but was arrested and returned to Mexico (Simmons 1979). A second illegal attempt at colonization was made by Francisco de Legua Bonilla and Antonio Gutiérrez de Humaña in 1593, but their party was nearly destroyed by conflict with Indians (Hammond and Rey 1953).

Early Spanish Colonial Period (1598–1680)

Juan de Oñate established the first legal colony in New Mexico at Okey Owinge (San Juan Pueblo) in 1598. By 1600 the Spanish had moved into San Gabriel del Yunque, sister village to Okey Owinge, which was abandoned for their use by its residents (Ellis 1987). The lack of wealth in the new province caused unrest among the Spaniards (Espinosa 1988:7), many of whom had accepted the challenge of establishing the colony because they thought they would get rich. This unrest coupled with Oñate's neglect of the colony eventually contributed to his loss of the governorship. Orate was replaced as governor by Pedro de Peralta in 1607, who arrived in New Mexico in 1609 and moved the capital to Santa Fe around 1610 (Simmons 1979).

Oñate's colony was a disappointment because it failed to find the wealth that was expected to exist in New Mexico. Many wanted to abandon the colony, and the government was considering doing just that (Espinosa 1988:8–9). However, the baptism of 7,000 Pueblo Indians in 1608 and reports that many others were ready for conversion provided a viable alternative to an economically autonomous colony (Espinosa 1988:9). New Mexico was allowed to continue,

with its maintenance underwritten by the royal treasury (Simmons 1979:181), and the colony was maintained as a mission area in the seventeenth century. This made the church very powerful and influential, and caused considerable conflict with the secular government (Ellis 1971:30–31).

Rather than furnishing a permanent military garrison for New Mexico, a class of citizen-soldiers responsible for defense was created. As a reward for their services, the citizen-soldiers had the right to collect annual tribute from the pueblos. This was the *encomienda* system, and the number of *encomenderos* was set at 35 (Espinosa 1988). Pueblo Indians were also conscripted to serve as laborers on Spanish farms and haciendas. This was the *repartimiento*, a system of forced labor (Simmons 1979:182).

Since New Mexico was viewed as a mission effort, the secular population received little official support. The church was supplied by a notoriously inefficient caravan system (Moorhead 1958). While caravans were scheduled for every three years, as many as five or six years often passed between deliveries (Moorhead 1958; Scholes 1930). Despite these irregularities there was an average of only three years between caravans through most of the seventeenth century (Ivey 1993:41). Irregular supply at fairly long intervals led to shortages of important goods and kept their cost high. Supplies carried by the caravans were meant to support the missions, though at times goods were also carried north for profit (Hackett 1937; Moorhead 1958). Products shipped out of New Mexico by the missions provided income that enabled them to purchase luxury items that would not otherwise have been available (Ivey 1993:46).

On the civilian side, the upper class was mainly comprised of the families of the governor and the encomenderos (Scholes 1935; Snow 1983). Though banned from engaging in trade, governors often broke this regulation by sending goods with the caravans or shipping them independently (Scholes 1935). The prestige of the encomenderos plus the requirement that they maintain a residence in Santa Fe raised them to a dominant position in the government and economy (Anderson 1985:362), and they were critical to the latter. The encomenderos not only received goods from the Pueblos as tribute, they may have also acted as the upper level of a redistribution network based on kin ties or population clusters (Snow 1983:351). The seventeenth-century economy was based on a stable barter system rather than hard cash (Snow 1983:348). Goods like corn, wheat, piñon nuts, hides, and cotton blankets were used in lieu of coinage, but the accumulation and shipment to Mexico of these products by governors and mission personnel seem to have done little to stimulate the local economy (Snow 1983:348).

Trade with the Plains Apaches was also an important source of income. Slaves, an important commodity, were bought from the Apaches for resale to the mines of northern Mexico. The Spaniards often supplemented this source by raiding Apache villages. These raids antagonized both the Apaches and their Pueblo trading partners, and caused the former to unleash a series of devastating raids in the 1660s and 1670s (Forbes 1960). Apache raiding, in turn, exacerbated Pueblo resentment of the Spaniards, sparking several rebellions that finally culminated in the general revolt of 1680.

Pueblo Revolt Period (1680– 1693)

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

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

Late Spanish Colonial Period (1693 to 1821)

Though failing in its attempt to throw off the Spanish yoke, the Pueblo Revolt caused many changes. The hated systems of tribute and forced labor were never reestablished, and the mission system was scaled back (Simmons 1979). The Crown continued to subsidize New Mexico, but it now served as a buffer against the enemies of New Spain, not as a mission field (Bannon 1963). New Mexico continually suffered from a shortage of supplies while shielding the richer inner provinces from Plains Indian raids and the ambitions of the French in Louisiana. These aspects of life are critical to an understanding of Late Spanish Colonial New Mexico.

Relations between Spaniards and Pueblos became more cordial during this period. This was partly due to changes in the structure of both groups, as the Spanish population rapidly grew and surpassed that of the Pueblos by the late 1780s (Frank 1992). The increased number of Spaniards created demand for land in the Rio Grande core, and a drop in the Pueblo population caused a shortage of cheap labor. These trends resulted in a shift from large land holdings to smaller grants (Simmons 1969). Much of the earlier economic system was abandoned after the reconquest. The dominance of the church and its supply caravans ended. The military role of the encomenderos was filled by garrisons at Santa Fe and El Paso, and they were replaced as an economic force by families who prospered as merchants and/or by dealing sheep. However, most of the people who reoccupied New Mexico were poor farmers and herders.

By the middle of the eighteenth century, considerable trade had developed between New Mexico and Chihuahua (Athearn 1974), mostly to the benefit of the Chihuahuan merchants. Not only did the Chihuahuan merchants inflate prices, they also invented a complex monetary system that was manipulated to increase profits (Simmons 1977:16). Thus, New Mexico was poorly supplied with goods sold at inflated prices. This was partly rectified by trading with local Indians for pottery, hides, and food, and some goods were manufactured by cottage industries. Unfortunately, many products had no local substitutes.

Metal, especially iron, was in short supply in New Mexico (Simmons and Turley 1980). Nearly all iron was imported from Spain, and colonial iron production was forbidden by royal policy (Simmons and Turley 1980:18). While imported iron was relatively cheap in Mexico, by the time it arrived in New Mexico it was quite costly. The availability of tools and weapons was limited by the lack of metal, and those that were produced were expensive. These lacks and the unreliable supply system hurt New Mexico in its role as a defensive buffer. Firearms and other weapons were scarce (Kinnaird 1958; Miller 1975; Reeve 1960; Thomas 1940), and only a few soldiers were stationed at the presidios, forcing local authorities to use militias and other auxiliary troops. Continued conflict with nomadic Indians caused many settlements to adopt a defensive posture, and even individual ranches were built like fortresses.

By the 1730s, attempts were being made to reestablish the sheep industry (Baxter 1987:26). One of the most important developments in this period was the origin of the *partido* system, in which the owners of large numbers of sheep apportioned parts of their flocks out to shepherds, receiving the original animals and a percentage of the increase back at the end of the contract period. Economically, the partido system provided a way to spread the responsibility for the growing flocks and was a substitute for wage payments (Baxter 1987:29). It also was advantageous to merchants, who could accept sheep in exchange for goods (Baxter 1987:29). A few traders managed to manipulate this system and had accumulated fortunes by this time. As Baxter (1987:44) notes, this small group tended to control the economy, as well as dominate political and religious affairs.

Between 1750 and 1785 New Mexico was hit by a defensive crisis caused by intense Plains Indian and Apache raids (Frank 1992, 2000). This conflict had a long history, with attacks by Utes and Comanches beginning as early as 1716 (Noyes 1993:11). In particular, the Comanches were bent upon driving the Apaches from the Plains and cutting their ties to French colonies in Louisiana, from whom they were indirectly receiving firearms (Noyes 1993). In conjunction with this they raided the Pueblo villages that were closely tied to the Apaches by trade. However, most of the Comanches' fury was directed against the Apaches until 1740.

By 1740 the Apaches were driven off the Plains or south of the Canadian River, and the

Comanches were at peace with the Spaniards (Noyes 1993:24–25). This peace was short-lived, because by the mid-1740s the Comanches were mounting intensive raids against Pecos and Galisteo Pueblos, culminating in a series of devastating attacks against Spanish settlements east of the Rio Grande that caused the temporary abandonment of many villages from Albuquerque northward in the late 1740s (Carillon 2004; Noyes 1993:25). While Governor Tomás Vélez Cachupín established short-lived periods of peace during his two terms of office (1749 to 1754 and 1762 to 1766), most of the years between 1750 and 1780 were marked by war with the Comanches (Noyes 1993).

Apaches also raided sporadically in the 1750s and 1760s, the latter period sparked by a severe drought in 1758 and 1759 (Frank 1992:39). Another drought in the 1770s led to a deterioration in the defensive abilities of the province and resumption of Navajo raids (Frank 1992:39–40). By the late 1770s, southern New Mexico was under attack by numerous Apache groups (Thomas 1932:1). In alliance with the Navajos, Apaches even raided Zuni, Albuquerque, and nearby settlements (Thomas 1932:1).

The Spanish government began rebuilding its power in New Spain during the early 1770s (Frank 1992, 2000). Solving the problem of Indian raids against the northern provinces was part of this process. The defenses of northern New Spain were reorganized beginning in 1772; by 1776 the Apaches had been driven back by vigorous campaigning, and a line of presidios was established (Frank 1992; Thomas 1932). Despite these successes, Indian raids continued to be a major problem. With the reorganization of northern New Spain into the Provincias Internas in 1776 came the development of a plan that eventually proved successful. According to this plan, continual campaigns were to be undertaken against the Apaches by Nueva Vizcaya, Sonora, Coahuila, and New Mexico, and an alliance would be sought with the Comanches against the Apaches (Thomas 1932:18–19). Governor Juan Bautista de Anza concluded a peace treaty with the Comanches in 1786, which included an alliance against the Apaches (Noyes 1993:80; Thomas 1932:75). Later the same year, Anza broke up an alliance between the Gila Apaches and Navajos that had been plaguing settlements in southern Arizona, and concluded a peace with the Navajos (Thomas 1932:52). These events brought relative peace to New Mexico for the first time since mid-century (Frank 1992:95), and the alliances lasted until the end of Spanish rule, sparing New Mexicans the relentless attacks that had preceded this period of relative peace.

Just as these hostilities ended, a major smallpox epidemic struck in 1780–1781 (Frank 1992:64). While rising birth rates soon countered the immediate effects of the epidemic, it had a lasting effect on demography: the Spanish population surpassed that of the Pueblos for the first time and maintained that position until the American influx in the late nineteenth century (Frank 1992:64–65). The reduction of population may have concentrated capital at the same time that communications with Mexico were freed up, and settlers gained the ability to open new lands without fear of Indian attack (Frank 1992:71). Thus, while in the short run the epidemic was a serious disruption, in the long run it enhanced the province's ability to take advantage of economic opportunities provided by the peace.

Frank (1992:166) suggests that the juxtaposition of these trends created an economic boom between 1785 and 1815, noting that: "The rising value of the tithe rental signifies an active and expanding provincial economy during the last decades of colonial New Mexico" (Frank 1992:191). At the same time the Spanish population was expanding outward and moving into areas that had previously been closed because of the danger of Indian attack (Frank 1992:199). The improving economy undoubtedly fueled this drive, since new lands were required to graze the continually increasing flocks of sheep that were the basis of wealth.

Despite the improving economy, New Mexico still depended on shipments from the south for manufactured goods. Caravans on the Camino Real initially continued to follow an irregular schedule, but by the middle of the eighteenth century they operated almost annually (Connor and Skaggs 1977:21). Since the ox-drawn wagons of the seventeenth century were soon replaced by mule trains, fewer goods were probably carried by these caravans (Connor and Skaggs 1977:21). There were only a few New Mexican merchants, and they were exploited by suppliers in Chihuahua who kept them in almost perpetual debt. Isolation and dependence on Chihuahua caused goods sold in Santa Fe to

cost several times their original value (Connor and Skaggs 1977:21–22; Frank 1992:237–239).

Santa Fe Trail Period (1821–1880)

Mexico gained its independence from Spain in 1821, and New Mexico became part of the Mexican nation. This independence brought two major changes to New Mexico: a more lenient land grant policy and expansion of the trade network (Levine et al. 1985). Mexican land law and custom were applied to New Mexico, resulting in conflict over the ownership of Pueblo lands. Trade between Missouri and Santa Fe began soon after independence and dominated the economy for the next quarter century (Connor and Skaggs 1977). This trade brought ample and comparatively inexpensive goods to New Mexico and broke the Chihuahuan monopoly. William Becknell officially established the Santa Fe Tail in 1821, but the amount of commerce moving over it to New Mexico was limited for the first several years of its existence (Connor and Skaggs 1977:34). Trade began in earnest after 1825, when the United States completed a survey of the trail to mark its route and secure safe passage through Indian Territory. The trade network expanded geographically to Chihuahua and in the volume of consumer goods transported until 1828, when Indian raids, a need for military escorts, and Mexican trade regulations caused notable fluctuations in the flow of commerce (Connor and Skaggs 1977; Pratt and Snow 1988:296).

Trade was again disrupted in the three years preceding the Mexican War of 1846–1847 because of a Mexican embargo against American goods (Connor and Skaggs 1977:203). New Mexico was annexed by the United States in 1846, and the following years were characterized by growing interest in commerce and a market economy that demanded more dependable means of transportation (Pratt and Snow 1988). Trade declined during the Civil War, and a resurgence of trade following the end of the war eventually sealed the Santa Fe Trail's doom (Connor and Skaggs 1977:204). Railroad promoters saw the possibilities of overland routes to the west and began developing their finances and building track. The railroad reached the Santa Fe area by 1880, effectively ending trade over the trail, since it was more cost-effective to ship goods by rail.

This period saw profound changes in the economic and ethnic structure of New Mexico. Many goods that were difficult to obtain during the Spanish periods were now available. Initially, there was not enough currency in New Mexico and Chihuahua to support the Santa Fe trade (Connor and Skaggs 1977). However, large amounts of raw materials were bartered in New Mexico and Chihuahua for American goods, and without the barter system it is doubtful that the Santa Fe trade would have long survived (Connor and Skaggs 1977:200). In addition to material goods, the Santa Fe trade also brought people from the United States to New Mexico. Most remained only a short while, but some settled down for good. This trickle became a flood when New Mexico was annexed by the United States.

Railroad Period (1880–Present)

The arrival of the railroad significantly altered supply patterns in New Mexico. Rail lines reached Raton Pass by 1878, Las Vegas by 1879, and Lamy by early 1880 (Glover and McCall 1988). With this link to the eastern United States, New Mexico entered a period of economic growth and development (Pratt and Snow 1988:441). This link also finally ended New Mexico's position as a frontier territory, firmly tying the territory to the economy of the United States as a whole. In addition to increasing ease of supply, the railroad also made New Mexico more accessible to tourism, which soon became an important facet of the economy. Several industries boomed with the availability of rapid and inexpensive transport. As sheep production expanded, cattle ranching was also stimulated and soon dominated the ranching industry. Mining expanded, and coal became an important export. The transformation of the New Mexican economy into its modern form was well under way by the time it became the 47th state in 1912.

Trade over the Santa Fe Trail represents the first erosion of the traditional New Mexican economy, which was based on the barter of agrarian products and goods produced by individuals. Before that time there is little evidence for the circulation of money in New Mexico, and what was available was controlled by a few families (Connor and Skaggs 1977). Though much of the commerce conducted over the Santa Fe

Trail was based on barter, New Mexico in general was finally introduced to a cash economy. As the territory became integrated into the United States after 1846 and especially after the railroad arrived in 1880, New Mexico finally became fully integrated into the cash economy that dominated the rest of the North American continent.

Historic Archaeology in Downtown Santa Fe

Many studies have been conducted on historic archaeological remains in downtown Santa Fe, and this discussion tends to only include those that encountered substantial remains or are considered potentially important to interpretation of the remains found during this study. The most common archaeological remains documented in this area are from the seventeenth century. A seventeenth-century trash pit was found in nearby Cathedral Park (Snow 2003), and seventeenth-century domestic trash deposits were noted beneath the cathedral-basilica's La Conquistadora chapel (Ellis 1985). Investigations at the Museum of American Indian Art encountered seventeenth-century debris lying on a well-prepared surface (Snow 1991), and a cobble footing (Gossett 1993). Excavations in Sena Plaza found seventeenth-century pottery (Vicklund 2000). North of Sena Plaza and adjacent buildings, Snow (1989a, 1989b) identified abundant seventeenth-century trash deposits that may be evidence of intentional fill used to reclaim marshy land (Snow 2003:4). Wiseman (1988) found abundant seventeenth-century trash deposits during excavations for the La Fonda parking garage (LA 54000). Stubbs and Ellis (1955) noted seventeenth-century remains during excavations at La Castrense on the south side of the plaza. As might be expected, extensive Early Colonial deposits and features have been documented at the Palace of the Governors (Seifert 1979; Post 2003). Seventeenth-century deposits, perhaps reflecting the Pueblo Revolt of 1680, were encountered by Lentz (2004) during excavations in the plaza.

The widespread nature of Early Spanish Colonial–period remains in the downtown area is not replicated for the Late Spanish Colonial period (Cordelia Snow, pers. comm., 2008), despite the fact that Santa Fe has been continually occupied from 1693 to the present. Indeed, Elliot's (1988:69) analysis of site distributions by time period suggests that while most seventeenth-century Spanish sites were located around and within a few blocks of the plaza, sites dating to the Late Spanish Colonial period cluster in east Santa Fe and in the small communities extending south along the Rio Santa Fe. Nonetheless, Late Colonial features and deposits have been found in the downtown area. Snow (2003) encountered a Late Colonial trash pit in Cathedral Park. Eighteenth-century materials were found during excavations at La Castrense (Stubbs and Ellis 1955), and Elliot (1986) recovered Late Colonial pottery from Sena Plaza. A structure and associated features and deposits from this period were found during excavations at LA 1051 under Sweeny Center (Lentz 2005). A Late Colonial foundation and deposits exist under the Museum of Art (Post and Snow 1982). Extensive Late Colonial deposits and architecture were found at the Palace of the Governors (Post 2003; Seifert 1975), and deposits from this period occurred under the El Dorado Hotel (Elliot 1988:59). A small Spanish fort was built at La Garita (LA 608) during this period and used into the Santa Fe Trail period (Ellis 1978). While the comparative dearth of Late Colonial deposits and features near the study area might be used to suggest that this part of Santa Fe was unoccupied during that period, this was not so, and a change in refuse disposal patterns between the early and late Spanish periods may be responsible for this phenomenon. Rather than trying to reclaim the edge of the cienega using trash for fill, as people may have been trying to do in the seventeenth century (Snow 2003), the Late Colonial occupants of the capital appear to have exploited the cienega as a source of water and as a farming area (Appendix 1).

Santa Fe Trail–period remains are common in the downtown area. Extensive architectural features and trash deposits from this period were found at the Palace of the Governors (Post 2003; Seifert 1975), and excavations for a sewer trench along Palace Avenue in front of the Palace of the Governors encountered almost exclusively nineteenth-century materials (Snow and Snow 1992). Elliot (1986) found Santa Fe Trail– to early Railroad-period features and refuse during excavations at Sena Plaza. As noted earlier, the small Spanish fort at La Garita (LA 608) continued to be used into this period

(Ellis 1978). Santa Fe Trail–period materials were also found in Cathedral Park (Snow 2003). The Fischer Brewery on East Palace Avenue operated during the late part of this period and has been studied by Hannaford and Taylor (1999). Extensive earthworks associated with Fort Marcy occur on Fort Marcy Hill (Acklen 1999; Acklen et al. 1994), while more permanent buildings and extensive related deposits were found at the Civic Center (Lentz 2005). Walls from Fort Marcy buildings also occur under the Museum of Art (Post and Snow 1982), along Lincoln Street (Snow 1990), and at LA 35100 under the First Interstate Bank Building (Schaafsma 1982).

The Railroad period is also well represented in downtown, with many existing buildings having been remodeled or built during that period. Of particular interest are features and deposits in Cathedral Park related to a sanatorium opened by the Sisters of Charity in 1883. Snow (2003) identified a pit that once contained an associated fountain in Cathedral Park, as well as debris left by demolition of the sanatorium after it burned in 1896. Rudicoff (1987) found twentieth-century deposits and features at the Water Street parking lot (LA 54312). Late nineteenth- to early twentieth-century materials were recovered from Sena Plaza (Elliot 1986), and Barbour (2008a, 2008b) examined twentieth-century buildings, features, and deposits at the Capitol Parking Lot (LA 158037). Deposits from this period were also encountered under the Sweeny Center (Lentz 2005).

Environment of the Study Area

Susan M. Moga

Physiography

Santa Fe is in the Española Basin, a structural subdivision of the Southern Rocky Mountain physiographic zone (Fenneman 1931; Folks l975:110). The Española Basin is bordered by the Jemez Mountains on the west, the Sangre de Cristo Mountains on the east, the Taos Plateau on the north, and the Cerrillos Hills on the south. Streams eroding the Sangre de Cristo Mountains deposited sediments on an alluvial piedmont slope at the base of the mountains and eventually drained into the Rio Grande (Shroba et al. 2005:11). The Santa Fe River, situated directly south of the project area, is a tributary of the Rio Grande that flows across the piedmont slope and is bounded on both sides by an alluvial plain. The upper Rio Grande flows south through New Mexico within a fault-bounded basin known as the Rio Grande Rift. The Rio Grande Rift was formed by the shifting of continental plates that split apart, forming the Rio Grande depression and initiating formation of the river (Chapin and Seager 1975:299). Local topography varies from piedmont plains to rolling gravel terraces and steep, rocky slopes. The Santa Fe River is the main drainage for the area, and its tributaries have cut deeply into its wide and level floodplain, creating steep-sided valleys. The city of Santa Fe sits on that ancient alluvial plain at an elevation of 7,000 feet (2,133.6 m).

Geology and Soils

The geological history of this part of the Rio Grande Valley begins with Precambrian deformations and ends with recent erosional processes. Basement rocks in the Sangre de Cristos are Precambrian in age and include granites, metaquartzites, and micaceous schist (Miller 1963). The most prominent geological group in the Española Basin is the Santa Fe Group, which includes much of the Tesuque Formation. Most of the Santa Fe Group was deposited during the middle Miocene and early Pliocene periods, and initiated the current erosional pattern in the basin (Schroba et al. 2005:11–13; Kelley 1980:16–17). The erosion of Precambrian and later rocks in the Sangre de Cristos produced a variety of gravel types that were deposited in the Santa Fe Formation on the alluvial piedmont that includes cherts, quartzites, and other igneous and metamorphic materials that were eventually used for the manufacture of stone artifacts by the prehistoric inhabitants of the area.

The modern soils of the Rio Grande Valley were deposited by various streams during flooding episodes. While several soil associations occur within the region, Panky and Pojoaque soils dominate the site area (Maker et al. 1971). Panky soils occur in flat areas and on gentle slopes of drainages. These soils consist of a thin upper layer of light brown noncalcareous fine sandy loam, with a subsoil of a reddish clay loam (18–24 inches thick). Below the subsoil is approximately 20–40 inches of soft white caliche. Pojoaque soils occur on steep slopes with small crevices channeling into drainages. These soils consist of a reddish-brown calcareous sandy clay loam containing small amounts of igneous gravels (Maker et al. 1971). This layer is approximately 5 ft thick and includes strata of gravelly sandy loam, gravelly loam, or gravelly sandy clay loam. Also found in this layer are cobbles, pinkish-white lime fragments, and lenses of either sand or gravels (Maker et al. 1971:14–15). Both soil associations are suitable for irrigation, but because of the steep topography and high erosion rate of the Pojoaque soils, they are less desirable for this purpose.

Climate

Santa Fe is situated in a semiarid climatic zone (Tuan 1973:187). The mountain ranges bordering the Española Basin, in which Santa Fe is located, have a noticeable impact on climate and air movement within the basin. Orographic effects can produce enormous amounts of snow in high mountain peaks and smaller amounts in lower elevations. The mountains also protect

the region from arctic air coming from the Great Plains (Kelley 1980:6, 29). The mean annual temperature is 48.6–49.3 C (Gabin and Lesperance l977:341), and the growing season includes about 165 frost-free days, which allows for a successful agricultural season (Kelley 1980:39).

Mean annual precipitation in the Santa Fe area is 14.22–14.39 inches (Gabin and Lesperance l977:341). The main source of summer precipitation is the Gulf of Mexico, from which air masses push monsoons into the region during the months of July and August. These storms tend to only saturate the upper ground surface, and the resulting runoff can cause severe erosion. Winter storms originate in the northern Pacific, providing both rain and snow that tend to percolate into the soil, which stores more of this moisture than is possible during the summer monsoons (Kelley 1980:27–28).

Flora and Fauna

Santa Fe is located in the Upper Sonoran Life Zone, which supports a dominant plant community of piñon and juniper. These trees provide an abundant supply of fuel wood and a piñon nut crop that is a valuable food source since it is high in caloric value (Kelley 1980:60). The original understory vegetation includes muhly and grama grasses, Indian ricegrass, cholla, yucca, and prickly pear. However, since the project area has been situated in an urban setting for several centuries, only traces of the native flora exist. Currently, the only plants growing in the project area include modern landscaping and several pear trees planted by Bishop Lamy after his 1851 arrival in Santa Fe, which are still healthy, extraordinarily tall, and bear fruit on a yearly basis.

The most common animals in the area would have been cottontails and jackrabbits; other small mammals would have included varieties of mice, rats, squirrels, gophers, raccoons, bobcats, prairie dogs, and coyotes (Kelley 1980:122–136). The larger species living in this region included black bear and mule deer. Other species living in this area included amphibians (toads and frogs), reptiles (turtles, lizards, and snakes), and a variety of birds and ducks (Gottfried et al. 1995). The presence of these animals waxed and waned according to seasons, and the presence of humans impacted their usual habitats.

Testing Procedures

This section presents a discussion of the general procedures used during this study. Since testing was conducted using standardized excavation techniques (Boyer and Moore 1999), those techniques are not discussed in detail, and we focus more upon how areas were selected for examination and how assessments of the contents of test pits and mechanically excavated trenches were accomplished. Twenty-nine test units, consisting of 12 hand-excavated test pits and 17 mechanically excavated trenches, were used to assess the property for archaeological remains. The distribution of these units is shown in Figure 2.

Before beginning the actual testing, several control datums were established by a professional surveyor using a GPS unit. The surveyor's services were graciously provided by Zia Engineering, who were concurrently conducting a testing program on an adjacent parcel. This provided for consistency in measurements and point placement for both endeavors, hopefully enhancing our ability to combine data and examine the cultural use of a much larger parcel. All datums were assigned a UTM location using the 1927 North American Datum. This allowed the accurate overlay of excavational data on aerial photographs of the property, permitting a more useful plotting of data in relation to existing architectural features. This procedure also allowed us to overlay digital versions of Sanborn fire maps, showing the locations of former buildings in relation to those that currently stand on the property.

Test Pit Excavation Techniques

All test pits were 1 by 1 m units excavated in arbitrary 10 cm levels. Soil removed during excavation was screened through 1/4-inch mesh hardware cloth to facilitate the recovery of artifacts and other cultural materials. Modern trash was noted but usually was not retained as part of the collection. Fragments of building materials were also noted but were only sometimes retained for further examination. Since some of the soil strata encountered at LA 161535 were quite widespread and occurred in several test pits, samples of building materials associated with those strata were only retained from the first test pit in which the stratum was defined. This prevented the collection of too much redundant data considered to have limited interpretive ability for the soil units in which they were found. All collected cultural materials were bagged separately by artifact category and assigned a field specimen number linked to the excavation form for that unit. All materials recovered from a single level in a test pit were assigned the same field specimen number.

Excavational data for each level was recorded on standardized forms that included test pit number, level, stratum (if defined), beginning and ending depths, a narrative description of the deposits encountered, and an inventory of collected materials and the field specimen number assigned to them. Artifact data were also separately recorded on field specimen inventory forms to provide a centralized record of all materials recovered. For safety reasons, test-pit depths were limited to 1.30 m, though few test pits actually reached that depth. Excavation ended when sterile preoccupational deposits were encountered, the test pit had reached a depth of 1.30 m, or only artificial fill was encountered. Auger tests were often used to probe deeper into the soils at the base of excavations, especially in the latter case. When auger tests were used, excavation continued until the full extent of the auger shaft was reached or impenetrable deposits were encountered. This procedure helped ensure that potentially important cultural deposits were not located at deeper points in test pits. Brief descriptions and depths of strata encountered were recorded on auger test forms, including the field specimen numbers of any recovered artifacts.

When excavation in a test pit was finished, one wall was selected for profiling, the wall was cleaned, strata were defined, and a profile that included brief descriptions of soil units was completed. Digital photographs were taken of profiles in all but one test pit; the exception was a pit inadvertently placed on top of a modern

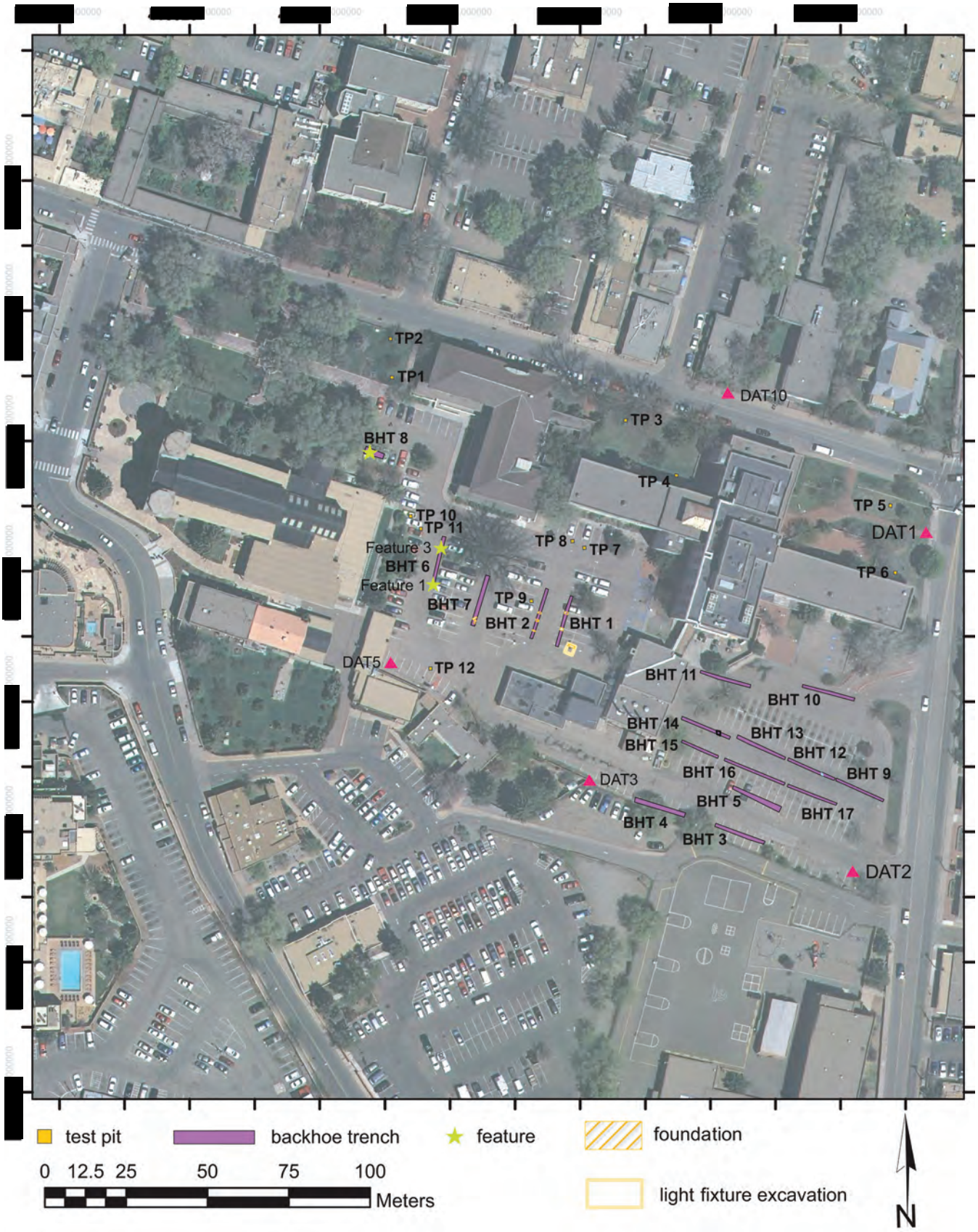

Figure 2. Aerial view of the property, showing the locations of test pits and mechanically excavated trenches.

sewer line, and which encountered only highly disturbed deposits. Black-and-white and color slide photographs were also taken of selected test pit profiles, especially those containing undisturbed cultural deposits. Flotation and pollen samples were not obtained during this phase of examination. The locations of all test pits and their associated datums were obtained using an EDM. When all the necessary documentation was finished, test pits were backfilled.

Mechanically Excavated Trenches

Mechanically excavated trenches were used to examine subsurface deposits in the east and west parking lots. With three exceptions, these trenches were 16 m long and 1 m wide. Exceptions were made to account for the location of a utility line in the east parking lot (one trench shortened and a second lengthened) and to inspect a comparatively small area in the west parking lot. Trench locations were marked by painting broken lines on the asphalt pavement, which was then cut and removed by a subcontractor. Asphalt cuts were all 2 m wide in order to allow trench walls to be stepped back, if necessary, for safety concerns. Since no trenches were excavated deeper than was safe for inspection, this extra space was not needed.

At least one archaeologist monitored the removal of soil from mechanically excavated trenches and stopped excavation whenever anything of potential interest or importance was observed, including possible foundations, cultural features, utility lines, and cultural deposits. When foundations or intact utility lines were encountered, excavation in that part of the trench halted to prevent any further damage to them. Excavation continued through cultural deposits and larger features to provide cross sections for inspection by archaeologists. Mechanical excavation generally ended when a depth of 1.30–1.40 m was reached, and in nearly all cases this was well into sterile preoccupational deposits. A visual inspection of trench walls was made, noting the locations of potential cultural features or deposits, if any were present. A standardized form was completed, noting trench location, dimensions, depth, and content. One or more profiles were drawn of 2 m long representative sections of trench walls, and trenches were photographed. The locations of all trenches were obtained using an EDM. Trenches were backfilled when all necessary documentation was completed.

Parameters for Locating Test Units

Both archaeological and logistical parameters were involved in selecting locations for test units. Archaeological parameters were guided by the results of geophysical testing and by where construction was planned at the time of fieldwork, since construction plans might greatly change by the time they are finalized. Logistical parameters mostly concerned how to excavate trenches and test pits in active parking lots while causing minimal disruption to other uses of the lots. Though construction activities are not planned for all parts of the property, as many areas as possible were examined because of the potential for changes in plans and the need for utility corridors that might not yet be completely accounted for.

Test Pits in Landscaped Areas

Six test pits were excavated in landscaped areas on the north and west sides of the LVR/Marian Hall complex to help determine whether potentially significant cultural deposits existed in those parts of the property. Test Pits 1 and 2 were on the west side of Marian Hall adjacent to Cathedral Park (Fig. 2). While no construction is currently planned for this area, there is at least one utility corridor (storm sewer) running through this part of the property, and further landscaping is anticipated. Thus, assessing the potential of this area to contain subsurface cultural deposits or features was advisable. Considering the results of Snow's (2003) study in Cathedral Park, the presence of seventeenth-century deposits in this area was considered likely.

Test Pits 3 and 4 were situated in a landscaped area between the breezeway connecting LVR and Marian Hall and the north wing of LVR (Fig. 2). Testing was indicated for this part of the property because of landscaping plans, which could potentially involve the removal of soil from at least the east end of the area for leveling. Test Pits 5 and 6 were placed in a landscaped area at the northeast corner of the property adjacent to the intersection of Palace Avenue and Paseo de

Peralta (Fig. 2). Test Pit 5 was used to examine an anomaly defined during geophysical testing that was thought to indicate the presence of a buried cultural feature or deposits containing numerous pieces of metal. Test Pit 6 was placed near the northeast corner of LVR because construction plans currently include the excavation of light wells for basement rooms in that area, and it was necessary to determine whether any potentially significant cultural features or deposits occur there that might be encountered during construction.

Test Pits in the West Parking Lot

Six test pits were excavated in the west parking lot to determine whether cultural features or structural foundations were present in areas containing anomalies defined during the geophysical survey. Test Pits 7 and 8 were placed in the northeast section of the west parking lot to investigate a possible anomaly in that area that was noted, but not plotted, during geophysical testing (Fig. 2). This area was also investigated by hand-excavated test units because several utility lines were present that might be damaged if mechanical excavation was used. While the anomaly defined in this area was initially thought to represent structural foundations, interference from unmovable metal objects and buried storm sewers in its vicinity made it impossible to positively identify the nature of the anomaly.

Test Pit 9 was used to look for a possible structural foundation defined in the east-central section of the parking lot during geophysical testing (Fig. 2). Test Pits 10 and 11 were placed to examine the area behind the modern cathedral-basilica, the former location of Seton Hall, a building that was part of the Sisters of Charity complex; we hoped that it contained evidence of the seventeenth-century parroquia (Fig. 2). Geophysical testing revealed the presence of a large anomaly in this area that was shaped like the footprint of Seton Hall as seen on Sanborn fire maps from the late nineteenth and early twentieth centuries. While we expected to encounter the remains of this more recent structure, it was hoped that in probing beneath the foundations of Seton Hall we would find evidence of the parroquia as well. Finally, Test Pit 12 was used to look for another possible structural foundation in the southwest section of the parking lot (Fig. 2). Geophysical testing encountered a linear anomaly in that area that was thought to be the remains of structural foundations. Examination of Sanborn fire maps from 1890 through 1930 suggested that several stables were once situated near this location, and the cobble foundation was initially thought to have been associated with a stable that was part of the Sisters of Charity complex.

Mechanically Excavated Trenches in the West Parking Lot

Five mechanically excavated trenches were used in addition to hand-excavated test pits to examine the west parking lot for evidence of structural foundations whose presence was suggested by the geophysical survey or historical maps, especially Sanborn fire maps dated between 1883 and 1930. As shown in Figure 2, four of these trenches were oriented on a north-south axis, and one was on an east-west axis. These orientations were selected because they provided for the least amount of disruption to parking, since the lot continued to be used during the period in which fieldwork was conducted. Four trenches (BHT 1–2 and BHT 6–7) were 16 m long by 1 m wide, while BHT 8 was 6 m long by 2 m wide.

In addition to parking concerns, the geophysical survey suggested that the west parking lot was crossed by numerous utilities (Appendix 2; Walker 2008), several of which are storm sewers. Trench locations were carefully selected to prevent damage to these utilities. No mechanically excavated trenches were placed in the northeast section of this lot because that area was crossed by a storm sewer line as well as a water line feeding a fire hydrant. At least one storm sewer, electrical lines serving light fixtures, and several unknowns identified during the utility check were located in the southwest corner of the lot, making it a risky proposition to place any mechanically excavated trenches in that area. Several storm sewer lines were known to cross the small northern extension of the parking lot adjacent to Marian Hall (Fig. 1), so mechanical excavation was avoided in most of that area as well. BHT 1, 2, 6, and 7 were all placed so they would miss small electrical lines running between light fixtures in the parking lot that were identified during the utilities check.

BHT 1 and BHT 2 were excavated in the

east-central section of the parking lot because that area once contained a building associated with the Sisters of Charity complex, which was demolished in 1954, and it was thought that structural foundations might still be present. Historical research (Appendix 1) suggested that the area containing BHT 6 and BHT 7 had never been built upon and that the seventeenth-century parroquia might have been located in that area, to the east of the modern cathedral-basilica. Thus, one of the main purposes of BHT 6 and BHT 7 was to look for evidence of the parroquia. BHT 6 was near the west edge of the parking lot directly behind the cathedral-basilica, a location east of an anomaly identified by the geophysical survey that was thought to represent the structural foundations of Seton Hall. It was hoped that BHT 6 would encounter associated foundations as well as evidence for the parroquia. BHT 7 was excavated in the central part of the west lot between BHT 2 and BHT 6, where another anomaly was identified during the geophysical survey.

BHT 8, a late addition to the testing program, replaced six of the hand-excavated test pits proposed in the testing plan. The placement of BHT 8 was sparked by the discovery of a seventeenth-century cobble pavement at the base of excavations in Test Pit 2 that was thought to represent a cobble-surfaced street or a stable/paddock floor. BHT 8 was placed in the southwest corner of the small northern extension of the parking lot adjacent to Marian Hall (Fig. 2) to see if another section of the pavement could be intercepted in that location. If so, we could interpret the pavement as a street surface, and if not, it probably represents a stable or paddock floor. While this trench was originally planned to be only 1 m wide, the discovery of the upper edge of a cultural feature caused us to expand it to 2 m in order to better define the feature.

Mechanically Excavated Trenches in the East Parking Lot

Twelve mechanically excavated trenches (BHT 3–5 and BHT 9–17) were used to examine the east parking lot for the presence of cultural deposits or features. The potential of this lot to contain archaeological remains was considered low, because no evidence for anomalies indicative of structural foundations or other cultural features was found in that part of the property during the geophysical survey. In addition, while examining trenches excavated by Zia Engineering during a testing project on a parcel directly south of the east parking lot to get a sense of the types of deposits we might encounter, we noticed that the east lot was between 50 cm and 1 m lower than the parcel to the south. This suggested that the upper fill was removed from the east parking lot when it was built and that any archaeological remains that might have been present were likely removed at that time. For these reasons, the mechanically excavated trenches were not augmented by hand-excavated test pits, as was done in the west parking lot. As shown in Figure 2, all of these trenches were oriented on an east-west axis, and most were concentrated in the south half of the lot, while only two were in the north half. This discrepancy was caused by difficulties posed by the long-term parking of trailers associated with a movie production company, which made it difficult to examine the north half of the lot in greater detail. Nonetheless, this did not really affect our ability to adequately assess the potential of the lot as a whole to contain cultural remains. The east-west orientation of these trenches was selected because it provided for the least amount of disruption to parking, since the lot continued to be used during the period in which fieldwork was conducted.

Whenever possible, trenches in the east parking lot were grouped in linear alignments to allow more extensive sectioning of deposits and create long, nearly continuous profiles across the entire lot or large sections thereof. BHT 3–5 were used to examine the southernmost section of this parking lot. BHT 3 and BHT 4 were separated by an electric line running between light fixtures but provided an almost continuous profile through this area. BHT 5, north of BHT 3–4, was isolated to avoid several utility lines running to the west of this trench, including the aforementioned electric line as well as a natural gas line. The rest of the entrance lanes and driveway leading to the west lot were left untested because of the need to allow traffic into and out of both lots.

BHT 15–17 formed a nearly continuous line across the south-central section of the east lot. These trenches were placed so that they blocked as few parking spaces at any one time as possible and did not extend further east to allow continuous access to the rest of the lot.

These trenches were separated by breaks used to avoid both definite and possible utilities. BHT 15 was shortened to 12 m long to avoid utility lines, while BHT 16 was extended to 20 m long to account for the comparative shortness of BHT 15.

BHT 9 and BHT 12–14 were placed in the central part of the east parking lot to provide a nearly continuous east-west profile across that part of the property. These trenches were arranged to block as few parking spaces at any one time as possible and were separated by breaks that permitted avoidance of utilities, mostly electric lines connecting light fixtures. BHT 10 and 11 were the northernmost trenches in the east parking lot and were situated to minimize traffic and parking disruptions in the most heavily used section of the lot. They were separated by a wide space to completely avoid the main electric line to LVR and, though offset a bit, they provided a good cross section of this section of the lot.

Results of the Testing Program

Summary of Testing Results

As mentioned in the introduction, testing at the LVR/Marian Hall complex was initiated to determine whether potentially important cultural features and deposits might occur on the property. Approximately 2 percent of the 2.9-acre property that was not covered by existing buildings was examined using a combination of hand-excavated test pits and mechanically excavated trenches. Testing determined that potentially important cultural features and deposits are, indeed, present on this property. Testing defined numerous cultural features and deposits in the west parking lot and the landscaped area between Marian Hall and Cathedral Park, and this area was registered as LA 161535. This is a multicomponent site containing remains from the seventeenth-century Spanish occupation as well as structural foundations and features associated with an industrial use of the property in the late nineteenth to mid-twentieth century. Following discussion of testing results, a full description of LA 161535 is presented. Each test unit is individually described in this chapter, and the deposits encountered during excavation are discussed. Test units are grouped by the parts of the property in which they were excavated. Counts of artifacts recovered from each test pit are summarized in Table 1.

Test Pits in Landscaped Areas

Six test pits were excavated in landscaped areas on the north and west sides of the LVR/Marian Hall complex to help determine whether potentially significant cultural deposits existed in those parts of the property. As noted earlier, while major construction activities are not currently planned for these areas, landscaping and the excavation of utility trenches might damage any important cultural deposits that might occur there. Thus, a series of test pits was excavated to determine what lay beneath the modern ground surface.

Test Pit 1

Test Pit 1 was excavated to a depth of 98 cm and encountered only the modern fill of a sewer line trench. The top of the sewer line was 84 cm below the modern ground surface. A total of 311 artifacts were recovered from this test pit (Table 1); this assemblage was dominated by construction materials, especially linoleum, and other historic trash. No potentially significant deposits or features were encountered in this test pit. A detailed description of the deposits in Test Pit 1 is not presented because of the disturbed nature of the fill.

Test Pit 2

Test Pit 2 was excavated to a depth of 1.21 m and was extended downward another 25 cm into sterile deposits using a soil auger. Four strata, three of which contained materials dating to the seventeenth and late-nineteenth to early-twentieth centuries, were encountered in this test pit (Fig. 3). Stratum 2 was uppermost and consisted of a 34–39 cm thick jumble of building debris and materials displaced from elsewhere on the property, probably during construction of Marian Hall. Stratum 7 was below Stratum 2 and was a similar 38–48 cm thick collection of refuse and building debris related to the 1896 destruction by fire of the original St. Vincent's Sanatorium. The deepest cultural layer was Stratum 8, which was a .46 m thick layer of mostly undisturbed seventeenth-century refuse lying on top of a cobble pavement. Since these deposits appear to constitute a midden, they were designated as Feature 5. The cobble pavement (Feature 6) is a single course thick and lies on top of the final soil layer encountered in this test pit. That was Stratum 5, consisting of sterile alluvial sands. A total of 3,345 artifacts were recovered from Test Pit 2 (Table 1), constituting nearly 45 percent of the assemblage recovered from LA 161535 during testing. Ninety percent of the artifacts recovered from this test pit came from the seventeenth-century deposits in Feature 5, suggesting intense trash deposition in the midden. While not much

Table 1. Artifact totals by category and collection provenience

Provenience	Local Ceramics	Euroamerican Ceramics	Ceramic Pipe	Tile	Adobe	Mica	Plaster	Minerals	Chipped Stone	Ground Stone	Slag	Metal	Glass	Bone	Composite Materials	Coin	Leather	Shell	Paper	Linoleum	Plastic	Bakelite	Rubber	Brick	Jaspe	Ornaments	Macrobotanical Sample	Sample	Miscellaneous	Totals
Test Pit 1	28	9	5					2	3	1	1	35	52	14	1	1				154	4			3	3	2				318
Test Pit 2	1,974	35	1		8	75		1	18	10	7	37	74	1,064					2	4	2			2	28		1	3	3	3,349
Test Pit 3	1	5		1					4			23	16	2						2				110						164
Test Pit 4	11	8								1		58	65	22								1						1		167
Test Pit 5	1	10				1			42			144	16	13												1				228
Test Pit 6	1	6							3	1		240	22	6						2				2						283
Test Pit 7	126	11		1		1		1	3			231	92	1,023											1			1		1,491
Test Pit 8	41	22							1			55	69	239			1	1			1		1			2				433
Test Pit 9	52	10			2				2			61	33	230							1							2	1	394
Test Pit 10	8	2		16								34	5	5						1			1		3		1	1		77
Test Pit 11	9	7		7					1		1	40	53	5										31			3		2	159
Test Pit 12	39	35		12	4				3			81	148	26							11		2	1			1		3	366
BHT 3																												1		1
BHT 6	2	4		1									2	8				1												18
BHT 8		2					1		1			5	3	6											17					35
Total	2,293	166	6	38	14	77	1	4	81	13	9	1,044	650	2,663	1	1	1	2	2	163	19	1	4	149	52	5	6	9	9	7,483

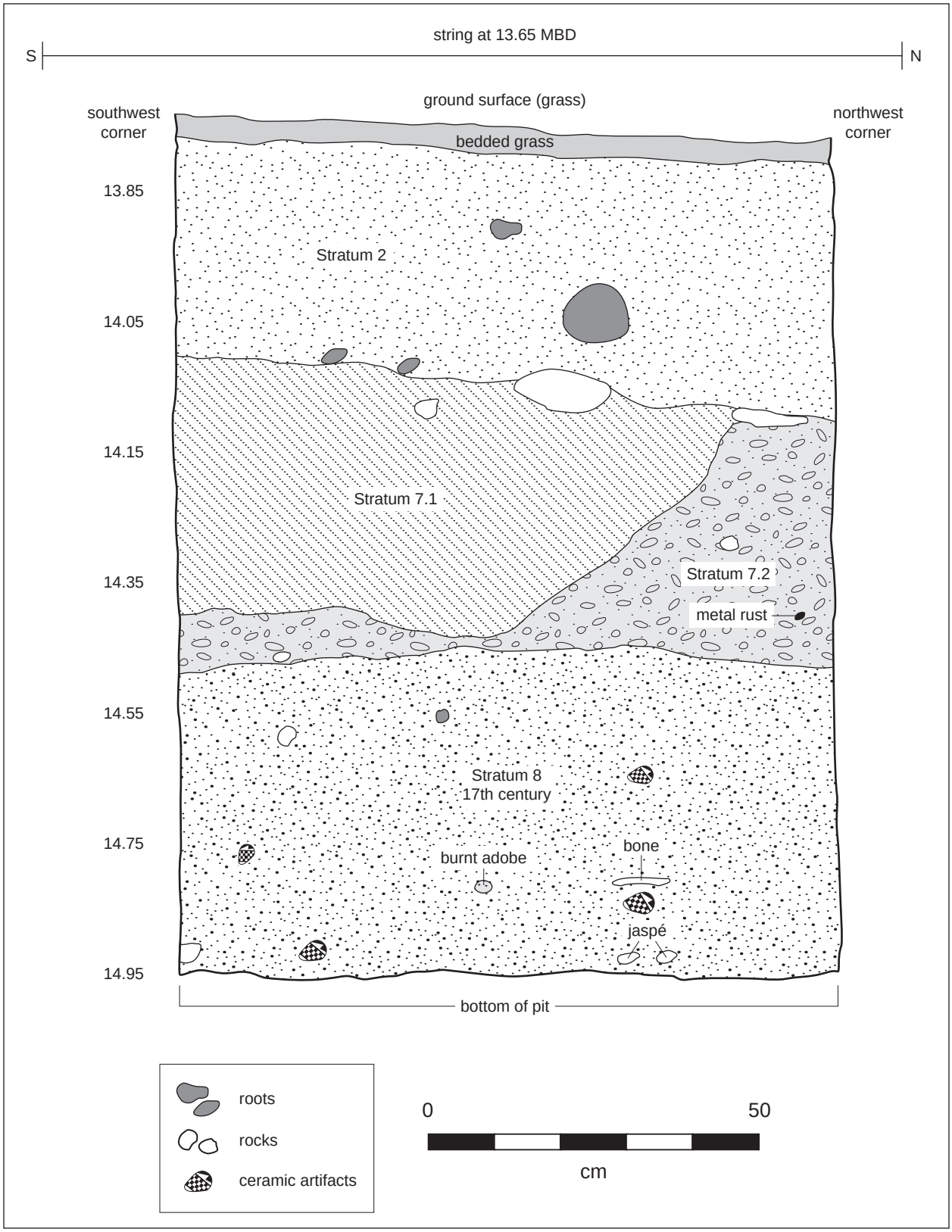

Figure 3. Profile of the west wall of Test Pit 2.

of the cobble pavement was exposed, preliminary comparisons to similar pavements at other seventeenth-century sites in New Mexico suggest that it may represent the floor of a stable yard or paddock. Since Strata 2 and 7 appeared to have been displaced and contain debris from at least two episodes of large-scale disturbance, they have little ability to provide further important information. However, Stratum 8 appeared to be intact and mostly undisturbed and could potentially provide important information on the initial period of Spanish occupation in Santa Fe.

Test Pit 3

Test Pit 3 was excavated to a depth of 76 cm and extended downward another 1.82 m into sterile deposits using a soil auger. Four strata, only two of which contained cultural deposits, were encountered. Stratum 2 was uppermost and was a 20–28 cm thick layer of jumbled building debris and late-nineteenth to early-twentieth-century artifacts that appears to have been deposited after construction of LVR in the mid-1950s, probably while leveling the area for landscaping. Below this was Stratum 3, a 16–22 cm thick layer of angular fragments of sandstone and sand from deteriorating sandstone. Stratum 3 rested on top of Stratum 4, which consisted of nearly sterile clays deposited in the cienega that was situated in this area at the time of initial Spanish occupation. Stratum 4 was about 90 cm thick, and under it was a series of sandy clays and fine-grained sands that constituted Stratum 5 and extended to the base of the auger hole. A total of 166 artifacts were recovered from this test pit (Table 1), mostly fragments of brick. Other artifact categories were most abundant in Stratum 2, and the few artifacts recovered from Stratum 4 were probably intrusive. Since Strata 2 and 3 appear to have been related to construction activities they contain little potential to provide further important information.

Test Pit 4

Test Pit 4 was excavated to a depth of 70 cm and was extended an additional 1.62 m down into sterile deposits using a soil auger. Three strata, only one of which was cultural in origin, were encountered. Stratum 2 was uppermost and consisted of a 60 cm thick jumble of building debris and late-nineteenth to early-twentieth-century artifacts that appear to have been deposited after construction of LVR in the mid-1950s, probably while leveling the area for landscaping. Below this was Stratum 4, a 1.72 m thick layer of nearly sterile clays deposited in the cienega situated in this area at the time of initial Spanish occupation. Augering ended at the top of what is probably Stratum 5—alluvial sands and gravels—when gravels were encountered that prevented further penetration by the auger. Only 88 artifacts were recovered from this test pit (Table 1), most of which came from the upper 30 cm of Stratum 2. While a few artifacts were found in the upper 10 cm of Stratum 4, they probably represent intrusive materials. Because Stratum 2 appears to be related to construction activity, it has little potential to provide further important information.

Test Pit 5

This test pit was excavated to a depth of 50 cm and was extended downward an additional 1.59 m into sterile deposits using a soil auger. Three strata, two of which were culturally deposited, were encountered. Stratum 6 was uppermost and consisted of 34 cm of mixed soils and gravels deposited on the surface of a parking area. Below this was Stratum 2, which was 92 cm thick in this area and consisted of a jumble of building materials and probable late nineteenth- to early twentieth-century artifacts that appears to have been deposited after construction of LVR in the mid-1950s, probably while leveling the area for landscaping. Stratum 4 was next in the sequence and consisted of sterile cienega deposits that continued to the base of the auger test. A total of 279 artifacts were recovered from this test pit (Table 1), most of which came from Stratum 2. A comparatively large number of chipped stone artifacts was found at the base of Stratum 6 and may indicate that this layer of artificial fill came from a prehistoric site. Because Strata 2 and 6 represent artificial fill rather than layers of cultural fill, they have little potential to provide further important information.

Test Pit 6

Test Pit 6 was excavated to a depth of 75 cm and was extended downward an additional 1.62 m

into sterile deposits using a soil auger. Six strata, five of which were culturally deposited, were encountered. Stratum 22 was uppermost and was a 10–12 cm thick layer of sandy clay containing numerous pea gravels. Under this was Stratum 23, another 10–12 cm thick layer of sandy clay. Next in the sequence was Stratum 24, a 14–16 cm thick layer of compact clay and sandy clay, under which was Stratum 25, a 2–6 cm thick lens of loose sand. Below this was Stratum 26, an 82 cm thick layer of loosely compacted sandy clay containing gravels. Stratum 5 was found at the base of the auger hole and consists of sterile alluvial deposits. Artifacts were recovered from all layers except for Stratum 5 and appeared to be late nineteenth to early twentieth century in origin, with building debris occurring to the base of excavated deposits. A total of 323 artifacts were recovered from this test pit (Table 1), with the bulk coming from Stratum 24. All five strata above the sterile alluvial deposits (Stratum 5) appear to be artificial fill used to level this part of the property after construction of LVR. Thus, these strata have little potential to provide further important information.

Test Pits in the West Parking Lot

In addition to mechanically excavated trenches, six test pits were used to examine and assess subsurface deposits in the west parking lot (Fig. 2). While mechanically excavated trenches enable archaeologists to search for structural remains and potentially important deposits at a coarse-grained level, the use of test pits permits a finer-grained examination of subsurface deposits. In turn, this allows a more accurate determination of what areas might have potential to provide further important information.

Test Pit 7

Test Pit 7 was excavated to a depth of 88 cm and encountered three strata, two of which were culturally deposited (Fig. 4). Stratum 2 was uppermost and consisted of a 38–40 cm thick jumble of building debris and materials displaced from elsewhere on the property, probably following construction of LVR, when the area was leveled to build a parking lot. Under this was Stratum 9, a 42–46 cm thick layer of stratified trash deposits, which contained a considerable amount of animal bone. These deposits were designated as Feature 2, and are tentatively defined as the midden associated with a detached kitchen that served the sanatorium and hospital annex between 1886 and about 1902. Directly beneath Stratum 9 was Stratum 5, nearly sterile alluvial deposits. A total of 1,611 artifacts were recovered from this test pit (Table 1), with about 86 percent coming from Stratum 9. While up to 68 artifacts were found in the upper levels of Stratum 5, they were most likely intrusive and probably originated in Stratum 9. Since Stratum 2 appears to have been displaced and represents artificial fill used to level this area, it has little potential to provide further important information. However, Stratum 9 appeared to be intact and undisturbed and could provide important information on diet and other economic aspects of the late nineteenth-century hospital.

Test Pit 8

Test Pit 8 was excavated to a depth of 1.14 m and was extended downward another 1.19 m into sterile deposits using a soil auger. Three strata, two of which were culturally deposited, were encountered (Fig. 5). Stratum 2 was uppermost and was a 40–44 cm thick jumble of building debris and materials displaced from elsewhere on the property, probably following construction of LVR, when the area was leveled. Under this was Stratum 9, a .52–.60 m thick layer of stratified trash deposits, which contained a considerable amount of animal bone. These deposits were designated as Feature 2 and are tentatively defined as a midden associated with a detached kitchen that served the sanatorium and hospital annex between about 1886 and 1902. Directly beneath Stratum 9 was Stratum 5, nearly sterile alluvial deposits. A total of 438 artifacts were recovered from this test pit (Table 1), with nearly 90 percent coming from Stratum 9. A single artifact found in the upper level of Stratum 5 was most likely intrusive and probably originated in Stratum 9. Since Stratum 2 was displaced and represents artificial fill used to level this area, it has little potential to provide further important information. However, Stratum 9 appeared to be intact and undisturbed and could provide important information on diet and other economic aspects of the late nineteenth-century hospital.

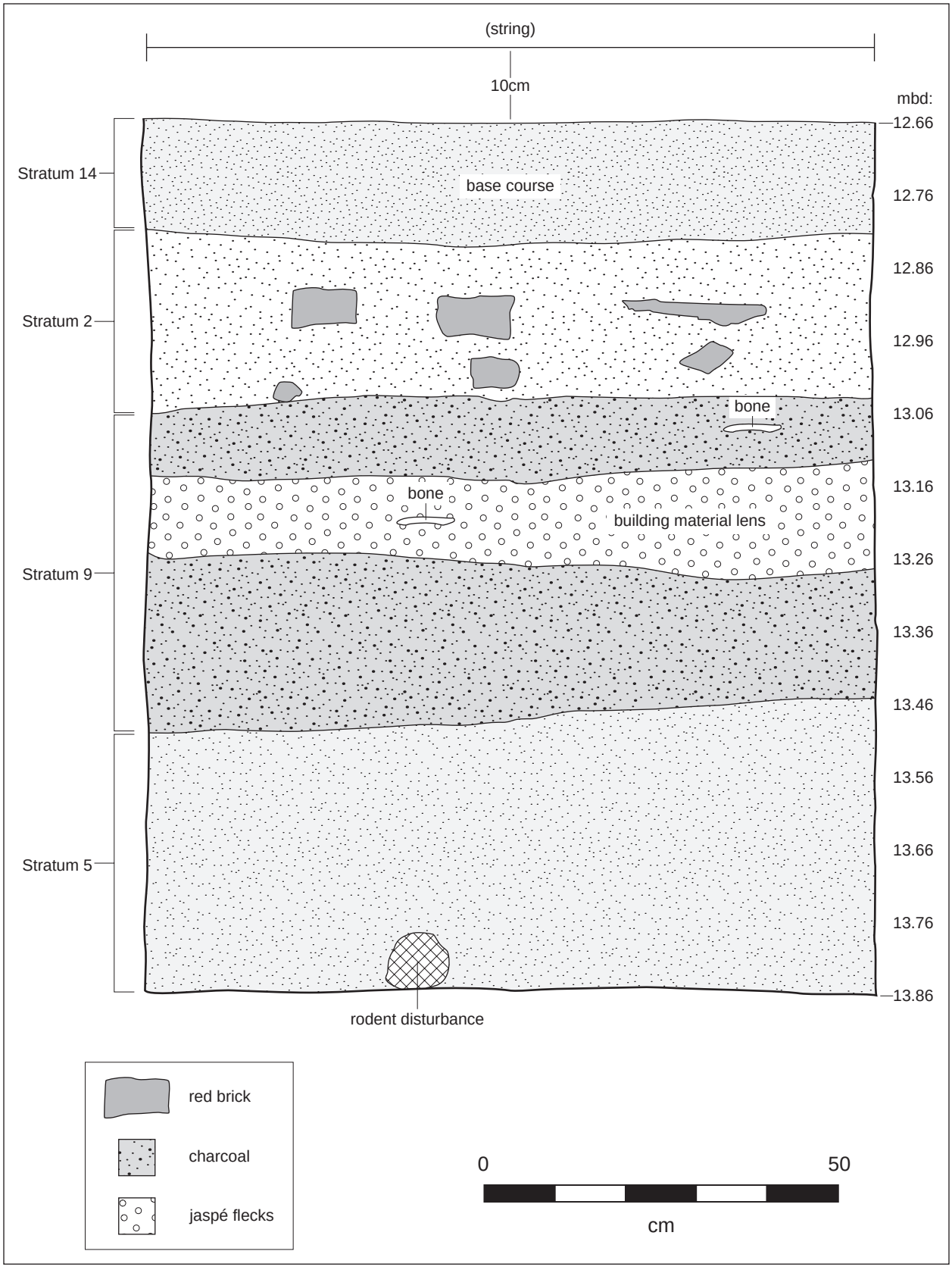

Figure 4. Profile of the south wall of Test Pit 7.

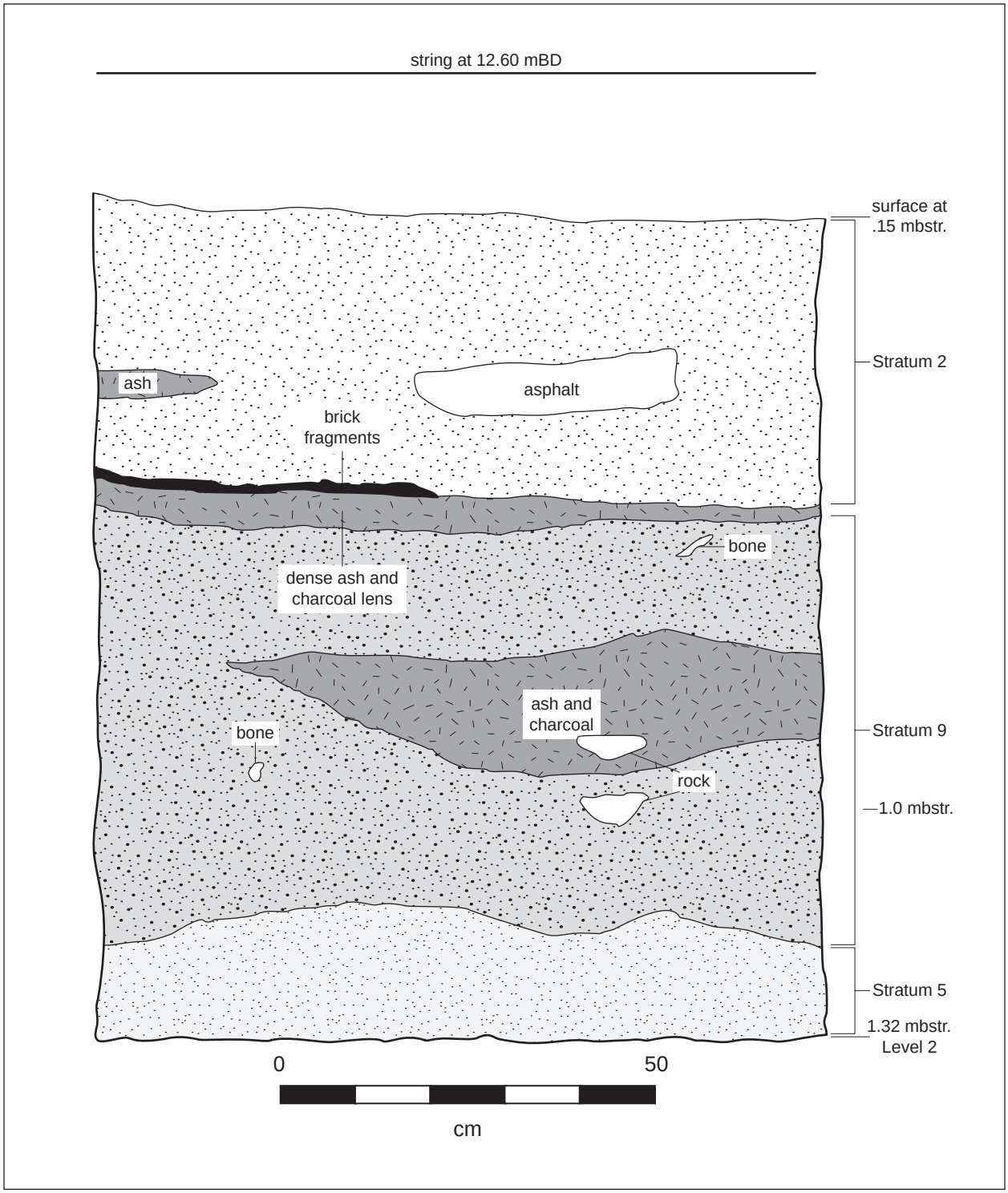

Figure 5. Profile of the south wall of Test Pit 8.

Test Pit 9

Test Pit 9 was excavated to a depth of 1.34 m and encountered six strata, five of which were culturally deposited. Stratum 2 was uppermost and, as elsewhere, was a 26 cm thick jumble of building debris and other materials displaced from elsewhere on the property, probably following construction of LVR, when the area was leveled. Under this was Stratum 10, a 4–5 cm thick layer of loose sandy clay containing some gravels, brick fragments, and chunks of coal. Stratum 11 was next in the sequence and was a 16 cm thick layer of loose clayey sand containing brick and charcoal fragments, adobe, charcoal, and other artifacts. Under this was Stratum 12, a thin layer of oxidized adobe with whitewash across much of it. Stratum 12 varied between 2 and 4 cm in thickness and could represent a floor or exterior activity surface that formed from adobe melting off an adjacent wall. Below this surface was Stratum 13, a 62 cm thick layer of loose clayey sand containing historic artifacts. This was underlain by Stratum 5, the sterile alluvial substrate. A total of 404 artifacts were recovered from this test pit (Table 1), with the highest densities occurring in Stratum 11 (29.7 percent) and the upper two levels of Stratum 13 (32.2 percent). While Strata 2 and 10 probably formed during leveling of this area for the parking lot, Strata 11–13 appear to be intact and are probably related to use of the nearby orphanage building. Thus, while Strata 2 and 10 have little ability to provide further important information, Strata 11–13 have the potential to do so. In particular, the nature of Stratum 12 should be investigated to determine what the function of this area may have been at the time it was formed or in use.

Test Pit 10

This test pit was excavated to a depth of 1.08 m and encountered six strata, all of which were of cultural origin. Stratum 14 was uppermost and was a 2–6 cm thick layer of base course for the asphalt pavement. Below this was Stratum 15, a 20–24 cm thick layer of fine-grained sand containing a few artifacts and some building debris. Stratum 16 was next in the sequence and consisted of a 14–24 cm thick layer of sand and clayey sand, which also contained a few artifacts and some building debris. Under this was Stratum 17, a 12–16 cm thick layer of sand that also contained a few artifacts and some building debris. Stratum 18 was below this and was a 20–38 cm thick layer of compact clayey sand containing a few artifacts and fragments of red brick. The deepest layer of soil was Stratum 19, a 14–22 cm thick layer of coarse sand containing pea gravels and no artifacts, which probably represents sterile alluvial sediments. A total of 75 artifacts were recovered from this test pit (Table 1), mostly from Strata 16 and 17 (34.7 percent, apiece). The abundance of building debris in Strata 15–17 suggests that those layers formed as this area was leveled and filled after demolition of Seton Hall, which formerly stood in this location. Thus, these strata have little ability to provide further important information. The character and position of Stratum 18 was similar to that of Stratum 8 in Test Pit 2, except that it contained considerably fewer artifacts. Despite the presence of several small fragments of brick in the upper level of this layer that are probably intrusive from the rubble above, this stratum may date to the seventeenth century. Thus, investigation of Stratum 18 could provide further important information.

Test Pit 11

Test Pit 11 was excavated to a depth of 58 cm and encountered three strata, all culturally deposited and replicating the upper three strata identified in Test Pit 10. The base course layer—Stratum 14—was uppermost and was about 10 cm thick. Under this was Stratum 15, which was 14–18 cm thick. The lowest layer investigated was Stratum 16, about 30 cm of which was removed. However, a large piece of concrete curb was encountered in Stratum 16, covering about 70 percent of the bottom of the test pit and making further excavation impossible. Because of this impediment, excavation terminated in Stratum 16. A total of 174 artifacts were recovered from this test pit (Table 1), mostly from the base of Stratum 15 and Stratum 16 (96 percent). As was determined in Test Pit 10, the three strata encountered in Test Pit 11 probably formed after demolition of Seton Hall when this area was filled and leveled. Thus, these strata have little ability to provide further important information.

Test Pit 12

This test pit was excavated to a depth of 97 cm and encountered four strata, three of which appeared to be of cultural origin (Fig. 6). Stratum 14, base course for the asphalt pavement, was uppermost and was 10–18 cm thick. Next was Stratum 2, a 6–20 cm thick jumble of building debris and materials that was thickest on the east side of the trench and was displaced from elsewhere on the property, probably during construction of LVR. Below Stratum 2 was a probable cobble pavement that was designated Feature 7; coarse sand fill was encountered between the cobbles. Below the cobble pavement was a vertical break between strata that appeared to represent a foundation trench. Stratum 21 (at least 68 cm thick) was on the east side of the test pit, and consisted of coarse sand containing gravels and large cobbles. Stratum 20 (at least 80 cm thick) was on the west side of the test pit and consisted of loose, redeposited clayey sand containing gravels, large cobbles, and chunks of adobe and mortar. The limited data available from this test pit suggest that Stratum 20 represents a foundation trench in which large cobbles and boulders were laid to support a wall. Stratum 20 was excavated down into Stratum 21, with the latter representing sterile alluvial sediments. Thus, most artifacts recovered during excavation of these strata, which were not separately dug, probably came from the Stratum 20 foundation trench. A total of 375 artifacts were recovered from this test pit (Table 1), mostly from Strata 2 (31.5 percent) and 14 (27.2 percent), as well as the two upper levels of Strata 20/21 (30.1 percent). The occurrence of abundant glass and metal as well as a few pieces of rubber and tile in Strata 20/21 (probably actually from Stratum 20), indicates that the foundation dates to the late nineteenth–early twentieth century. As elsewhere, Strata 2 and 14 have little potential to yield further important information. However, the cobble foundations and probable cobble pavement may be related to a stable that once stood near this location, and might provide further useful information.

Mechanically Excavated Trenches in the East Parking Lot

Only mechanically excavated trenches were used to assess the potential of the east parking lot to contain cultural features or deposits because no evidence of such was identified during the geophysical survey. Had the mechanical trenches encountered evidence of potentially important cultural features or deposits, they would have been augmented by a few judiciously placed test pits. Twelve mechanically excavated trenches were used to examine this area and, as discussed in an earlier chapter, their orientation and placement was determined by the pattern of parking spaces and driving lanes, as well as what areas could feasibly be closed to allow mechanical excavation to proceed unhindered. Ten trenches were 16 m long, and all 12 were 1 m wide. A variation in trench length was necessitated in two cases by the presence of a subsurface utility lines, causing one trench to be shortened to 12 m and a second to be lengthened to 20 m to avoid a utility line while retaining the necessary amount of coverage. Only the exceptions are noted in individual trench discussions. All of these trenches were oriented roughly east-west.

BHT 3

BHT 3 was one of three trenches used to examine the southernmost section of the east parking lot (Fig. 2). This trench was 1.30 m deep at its east end and 1.52 m deep at its west end; the latter also marked the maximum depth reached. Topping the profile was an 8 cm thick layer of sand and gravel base course used to level the area for paving. High-velocity stream deposits were exposed in the central 8 m of this trench and occurred under a thin (ca. 22 cm) layer of very dark sandy clay cienega deposits (Stratum 4). The stream deposits were up to 94 cm thick and were underlain by sterile sands of undetermined thickness. Stratum 4 cienega deposits were under Stratum 2 in the easternmost 5 m and westernmost 3 m of the trench and were also underlain by sterile sands. The high-velocity deposits in the central section of BHT 3 appeared to represent a former stream channel trending north-northwest. Channel deposits consisted of waterworn cobbles in a bed of coarse-grained sand. No potentially important cultural

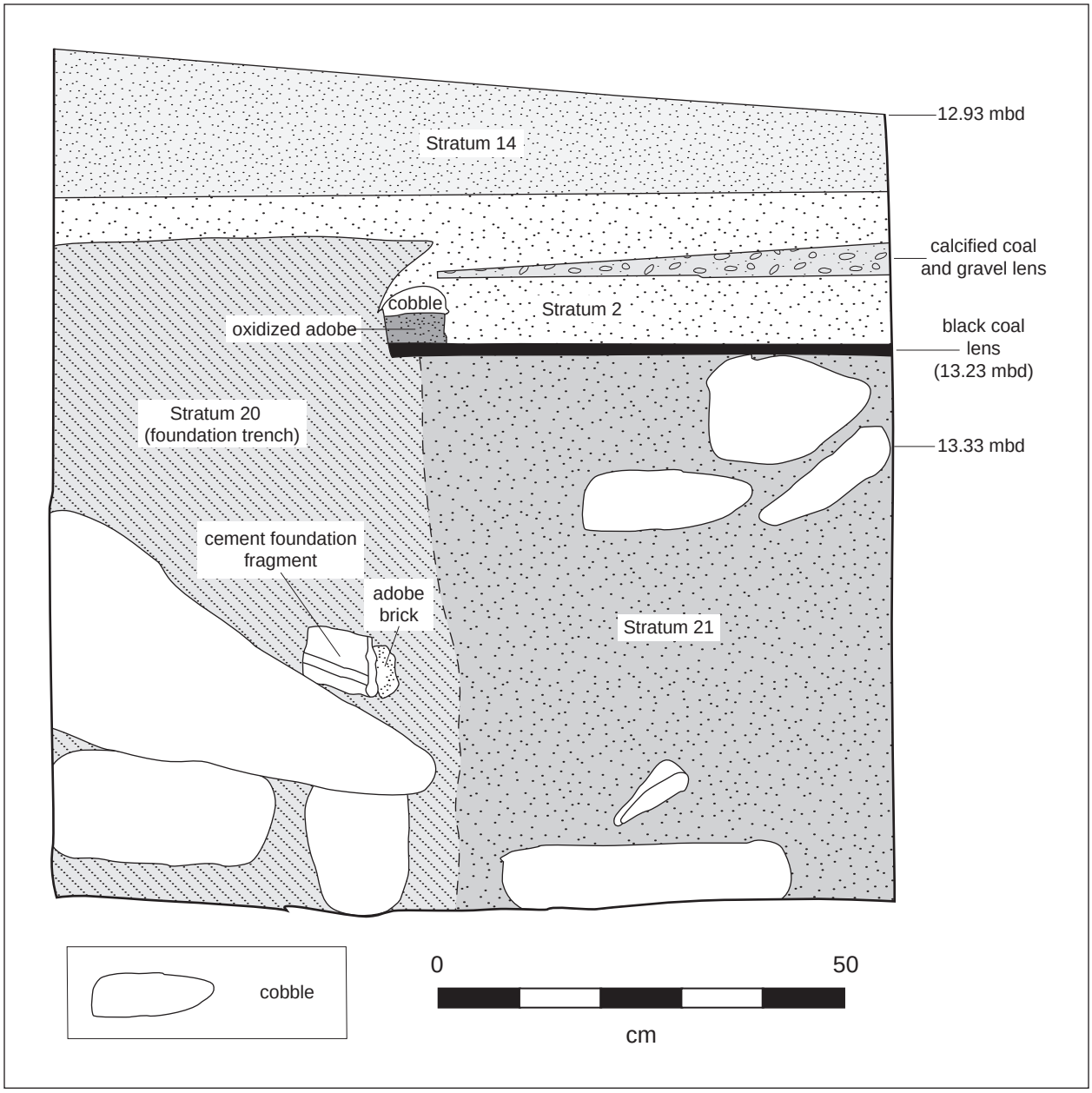

Figure 6. Profile of the north wall of Test Pit 12.

features or deposits were noted in this trench.

BHT 4

BHT 4 was also one of the trenches used to examine the southernmost section of the east parking lot and was aligned with and to the west of BHT 3 (Fig. 2). BHT 4 was excavated to a depth of 75 cm and encountered probable stream deposits under a thin mantle of cienega deposits (Stratum 4; 4–12 cm thick), which occurred beneath a 4–8 cm thick layer of sand and gravel base course used to level the area for paving. The stream deposits consisted of an upper layer of sterile sand that was up to 20 cm thick and a lower layer of cobbles averaging about 30 cm long, interspersed by coarse sands; the thickness of this layer was undetermined. Several unmarked subsurface utility lines were encountered in this trench including a sewer line, two small metal pipes, and a PVC irrigation line. The metal pipes did not appear to connect to any known utility lines, and probably represent materials discarded during construction rather than active utility lines. No potentially important cultural features or deposits were noted in this trench.

BHT 5

BHT 5 was the last of the trenches used to examine the southernmost section of the east parking lot and was located north of BHT 3 (Fig. 2). This trench was 1.30 m deep at its east end and 1.40 m deep at its west end; the latter also marked the deepest point reached. The upper 6–10 cm of fill consisted of sand and gravel base course used level the area for paving. Under this was a 10 cm thick layer of Stratum 2, which in this area consisted of a mixture of cienega deposits and debris deposited during the construction of LVR (Stratum 2). The remaining fill consisted of cienega deposits unmixed with cultural materials (Stratum 4). A metal pipe was encountered in this trench and probably represented material discarded during construction. No potentially important cultural features or deposits were noted in this trench.

BHT 9

BHT 9 was easternmost in a series of four trenches that spanned the width of the central section of the east parking lot (Fig. 2). BHT 9 was 80 cm deep at its west end and 1.20 m deep at its east end, with a maximum depth of 1.30 m that was reached 6 m west of the east end of the trench. The uppermost 12–16 cm of fill consisted of sand and gravel base course added to level the area before paving. Under this was 14–34 cm of Stratum 2, a mixture of cienega deposits and debris deposited during construction of LVR. The lowest soil layer encountered consisted of cienega deposits (Stratum 4) and was of undetermined depth. Two metal pipes that probably represent materials discarded during the construction of LVR were noted during excavation, as was an empty trench filled with clean sand that represents the location of a utility line that was removed at some point in the past, or an erosional gully that filled with sand during construction. No potentially important cultural features or deposits were noted in this trench.

BHT 10

BHT 10 was the easternmost of two trenches used to examine the north section of the east parking lot (Fig. 2). BHT 10 was 1.20 m deep at its west end and 1.30 m deep at its east end; the latter also marked the deepest point reached. The uppermost 40–44 cm of fill consisted of a thick layer of sand and gravel base course used to level the area for paving. Under this was a thin (9–10 cm) layer of mixed cienega deposits and debris discarded during the construction of LVR (Stratum 2). The deepest layer encountered consisted of sterile cienega deposits (Stratum 4) of undetermined depth. No potentially important cultural features or deposits were noted in this trench.

BHT 11

BHT 11 was the second of two trenches used to examine the north section of the east parking lot and was west of BHT 10 (Fig. 2). This trench was 1.15 m deep at its west end and 1.20 m deep at its east end; the latter also marked the deepest point reached. The uppermost 60–76 cm of fill consisted of mixed cienega deposits and debris discarded during the construction of LVR (Stratum 2). Under this were sterile cienega deposits (Stratum 4) of undetermined depth. A large concrete sewer line was encountered during the excavation of this trench, as was a small unmarked PVC

irrigation line. No potentially important cultural features or deposits were noted in this trench.

BHT 12

BHT 12 was directly west of BHT 9 in a line of four trenches that crossed the entire width of the central part of the east parking lot (Fig. 2) and was about 1.20 deep across its entire length. A thin (3–4 cm thick) layer of sand and gravel base course was uppermost and was used to level the area before paving. Under the base course was a 4–14 cm thick layer of building debris mixed with cienega deposits (Stratum 2). Below this was a layer of unmixed cienega deposits (Stratum 4) of undetermined thickness. A small drainage cut into the top of the cienega deposits about 4 m from the east end of the trench and at the base of Stratum 2; it was filled with fine compacted sand. Like a similar drainage encountered in BHT 9, this channel probably represents an erosional gully that developed and filled during the construction of LVR. No potentially important cultural deposits or features were noted in this trench.

BHT 13

BHT 13 was directly west of BHT 12 in a line of four trenches that spanned the width of the central part of the east parking lot (Fig. 2). This trench was 1.10 m deep at its east end and 1.20 m deep at its west end; the latter also marked the deepest point reached. Deposits in this trench were topped by a 4 cm thick layer of sand and gravel base course that was used to level this area before paving. Below this was a 10–21 cm thick layer of debris discarded during construction of the LVR mixed with cienega deposits (Stratum 2). This was underlain by a layer of unmixed cienega deposits (Stratum 4) across most of the length of the trench; the thickness of these deposits was undetermined. At the base of the west end of the trench a mixture of gravels, pea gravels, and coarse sands representing stream deposits was encountered but not examined in detail. No potentially important cultural deposits or features were noted in this trench.

BHT 14

BHT 14 was westernmost in a line of four trenches that crossed the width of the central part of the east parking lot and was directly west of BHT 13 (Fig. 2). BHT 14 was 90 cm deep at its west end and 1.15 m deep at its east end; the latter also marked the deepest point reached. A 5–8 cm thick layer of sand and gravel base course was at the top of deposits in this area. Below the base course was an 8–19 cm thick layer of debris discarded during construction of LVR mixed with cienega deposits (Stratum 2). Stratum 4 (unmixed cienega deposits) was encountered below Stratum 2 and continued beyond the base of the trench, so no thickness could be determined for this layer. A large concrete sewer line was in the east third of the trench, causing considerable disturbance in that area. Just west of the midpoint of the trench were two lengths of pipe, one each of copper and iron. The copper pipe had old unmended holes in it, and this suggested that the pipes were debris discarded during construction rather than abandoned utility lines. A single PVC irrigation line was found near the west end of the trench. Also in that area was a pit filled with construction debris related to the construction of LVR. No potentially important cultural deposits or features were noted in this trench.

BHT 15

BHT 15 was westernmost in a line of three trenches that crossed most of the south-central part of the east parking lot (Fig. 2). This trench was only 12 m long to allow avoidance of a utility line and was 60 cm deep at its west end and 1.30 m deep at its east end; the latter also marked the deepest point reached. The uppermost layer was a 6–7 cm thick layer of sand and gravel base course that was used to level this area for paving. Below this was a 56–62 cm thick layer of building debris discarded during the construction of LVR mixed with cienega deposits (Stratum 2). The deepest layer encountered consisted of unmixed cienega deposits (Stratum 4), which continued to near the base of the trench where alluvial sands, gravels, and cobbles indicative of an abandoned stream channel began to appear but could not be explored in detail. A single PVC irrigation line was noted near the west end of this trench. More importantly, the iron and copper pipes found in BHT 14 did not continue into BHT 15 as they would have had they represented active

or abandoned utility lines, adding support to our conclusion that they represent building debris. No potentially important cultural deposits or features were noted in this trench.

BHT 16

BHT 16 was central in a line of three trenches that crossed most of the south-central part of the east parking lot (Fig. 2). The length of BHT 16 was extended by to a length of 20 m to account for the shortening of BHT 15. The east end of this trench was excavated to a depth of 1.24 m, while the west end was 1.44 m deep; the latter marked the deepest point reached. Sand and gravel base course comprised the upper 3–5 cm of fill. Under the base course was a 6–10 cm thick layer of debris discarded during the construction of LVR mixed with cienega deposits (Stratum 2). About 9 m from the west end of the trench an 8–11 cm thick layer of sand and gravel was found between Strata 2 and 4. This suggests that Stratum 2 was artificially deposited as this area was leveled during construction of the parking lot. This sort of soil movement and leveling would help account for the variable thickness of Stratum 2 throughout the east parking lot, and the depths to which construction materials are often mixed with cienega deposits. Alluvial sands and gravels representing an abandoned stream channel were noted about 14 m from the west end of the trench and dominated deposits in its east end. No potentially important cultural deposits of features were noted in this trench.

BHT 17

BHT 17 was easternmost in a line of three trenches that crossed most of the south-central part of the east parking lot (Fig. 2). This trench was 1.10 m deep at its east end and 1.20 m deep at its west end; the latter marked the deepest point reached. A 4–5 cm thick layer of sand and gravel base course was applied to this area before paving. Below this was a 5–30 cm thick layer of artificial fill that was very compact and perhaps oiled, which contained debris discarded during construction but differed from Stratum 2, which most commonly occurred directly beneath the base course. Unmixed cienega deposits (Stratum 4) were under this layer and extended nearly to the base of the trench, where they were beginning to be replaced by alluvial sands, gravels, and cobbles, indicating the location of an abandoned stream channel. Two sections of iron pipe occurred at the base of the artificial fill; one was continuous across the width of the trench, while the second was not. As was the case with similar lengths of pipe found in other trenches, these were probably discarded during construction rather than representing the locations of utility lines. No potentially important cultural features or deposits were noted in this trench.

Mechanically Excavated Trenches in the West Parking Lot

In addition to test pits, five mechanically excavated trenches were used to examine the west parking lot and assess its potential to contain cultural features or deposits. Because the geophysical survey and utility check identified the locations of numerous probable buried utility lines in this lot, locations in which mechanically excavated trenches could be placed were more limited than they were in the east lot. In addition to the buried utility lines, several storm sewers could be traced on the surface of the pavement, occurring as slightly depressed areas connecting grated openings. The sewer lines further limited potential locations for mechanically excavated trenches. As discussed in an earlier chapter, the orientation and placement of most of these trenches were determined by the pattern of parking spaces and driving lanes, as well as what areas could feasibly be closed to allow mechanical excavation to proceed unhindered. Four trenches were 16 m long by 1 m wide and were oriented approximately north-south. The fifth trench was a later addition and was used to determine whether the cobble pavement encountered in Test Pit 2 extended further to the south. This trench was oriented roughly east-west and was 6 m long by 2 m wide. Only the exception is noted in individual trench descriptions.

BHT 1

BHT 1 was excavated in the east-central part of the west parking lot to look for evidence of a building associated with the Sisters of Charity complex, which was demolished in 1954 (Fig. 2). This trench was excavated to a fairly even depth

of 1.24 m, except where cultural remains were encountered. No base course was noted at the top of the fill; rather, asphalt was poured directly on top of a thick layer of construction debris mixed with cienega deposits (Stratum 2) that was 42–56 cm thick. Below this were sterile alluvial sands and gravels that continued to the base of the trench and were of undetermined thickness. Rather than being related to the construction of LVR, as Stratum 2 was in the east parking lot, this layer in BHT 1 was related to late nineteenth-century construction. This was indicated by the discovery of two structural foundations in BHT 1 (Fig. 7), which supported a late nineteenth- to mid-twentieth-century building. Since these foundations extended down through Stratum 2 to the top of alluvial deposits, this area was probably raised and leveled prior to construction using a mixture of cienega deposits moved from elsewhere on the property and debris from the demolition of earlier structures, including the first St. Vincent's Sanatorium, which burned in 1896.

Both foundation alignments were 40–50 cm below the top of the asphalt pavement; they were made from dressed limestone blocks and were aligned on an east-west axis. The south foundation is three courses high and measures 89 cm wide by 54 cm tall (Fig. 8). Stones in the bottom course are larger than most of those in the upper two courses, and average about 89 by 31 cm in size; upper course stones average about 17 by 7 by 5 cm. The north foundation is also three courses high and measures 89 cm wide by 70 cm high (Fig. 9). Like the south foundation, these blocks were secured using a sandy mortar and average 58 by 52 by 27 cm in size. Several of the blocks in this foundation were displaced during mechanical excavation. In both of these foundation the base course was wider than the upper courses, creating an offset (Fig. 8 and 9).

BHT 2

BHT 2 was excavated in the east-central part of the west parking lot to look for a building associated with the Sisters of Charity complex, which was demolished in 1954 and was west of BHT 1 (Fig. 7). This trench was excavated to a fairly even depth of about 1.30 m except where cultural remains were encountered. No base course was noted at the top of the fill in this trench, with asphalt being poured directly on top of a 34–54 cm thick layer of building debris mixed with cienega deposits (Stratum 2). Lenses of tan sand occurred inconsistently under Stratum 2. Below this was a layer of artificial fill that was at least 1.10 m thick and consisted of a clay loam containing variable amounts of charcoal and other building debris that probably represents a pit or low area filled to facilitate construction in this area. Sterile alluvial sands and gravels (Stratum 5) were found at the south end of the trench and represent stream deposits that extend to an undetermined depth. Unlike in BHT 1, Stratum 2 was related to mid-twentieth-century construction, as was the tan sand and upper 42–54 cm of the loamy sand. The lower section of loamy sand probably represents cienega deposits moved from elsewhere on the property that were used to fill and level this area before building in the late nineteenth century. Two modern utility lines were encountered in this trench, a PVC irrigation line and a 5-inch metal sewer pipe.

Three alignments of limestone blocks were found at depths of 40–50 cm below the surface of the asphalt, at least two of which were the remains of structural foundations (Fig. 7). The middle (Fig. 10) and south (Fig. 11) alignments were both built of dressed limestone blocks. The middle foundation aligns with the south foundation in BHT 1 and is probably part of the same wall. This foundation is 1 m wide at its base, 60 cm wide at the top, and 80 cm high, displaying the same sort of offset between basal and upper courses seen in the alignments in BHT 1. The limestone blocks in this alignment average 60 by 40 by 20 cm and are held together by a sandy mortar. The south foundation aligns with a foundation section defined in the north wall of a trench that was opened by building maintenance to replace a parking lot light fixture (LFR in Fig. 7), and they are probably parts of the same wall. This foundation is smaller than the middle alignment and is built of smaller blocks that average 20 by 20 by 20 cm and are also held together by a sandy mortar. The north alignment is very different from the others found during this study and is made from undressed and variably sized limestone blocks that are aligned but rather jumbled (Fig. 12). The area between the north and middle alignments evidenced intensive burning (Fig. 13), suggesting that the north alignment was

Figure 7. Aerial view of the west parking lot, showing the locations of mechanically excavated trenches, and the features and structural foundations that were encountered during trenching.

Figure 8. The south alignment in BHT 1, showing the larger stones in the base course and the smaller stones in the upper courses, slightly offset from the base course.

Figure 9. The north alignment in BHT 1, showing a slight offset in the upper courses from the base course and disturbance caused by mechanical excavation.

Figure 10. The middle alignment in BHT 2, showing no offset between basal and upper courses.

Figure 11. The south alignment in BHT 2, showing much disturbance caused by mechanical excavation.

Figure 12. The north alignment in BHT 2, showing the jagged and unshaped character of the stones used to build it.

Figure 13. Burned area between the north (to right) and middle (to left) alignments in BHT 2.

expediently built during construction to contain an area in which debris was disposed of by burning, so this alignment probably does not represent part of a structural foundation as do the others.

BHT 6

This trench was placed near the west edge of the parking lot directly behind the cathedral-basilica to search for evidence of the seventeenth-century parroquia. BHT 6 was excavated to a depth of 1.32 m at its north end and 1.33 m deep at its south end; the latter marked the deepest point reached. Though no evidence of the parroquia was found, two cultural features were identified in profile (Fig. 7). Feature 1 is a nineteenth-century trash pit located at the south end of the trench, which measured at least 10 m long by 1.10 m deep. The pit appears to have been excavated into cienega deposits (Stratum 4), which were visible in the lowest 10–15 cm of the trench. The upper section of the trash pit appeared to have been truncated during construction, with a layer of sand and gravel base course being laid directly above it that was 16–58 cm thick. The second feature identified in BHT 6 was Feature 3, a possible statue base built of brick on a concrete slab. This function was assigned because Feature 3 is in the approximate location of a statue standing on a raised base in a 1930 photo of Seton Hall. The exposed section of Feature 3 was 1 m wide by 50 cm deep. The top of this feature appeared to have been truncated by earth-moving activities, probably during the construction of LVR, and the remaining section was covered by a 46–62 cm thick layer of artificial fill (Fig. 14). Both of these features may have been associated with Seton Hall, which was directly west of BHT 6. Two utility lines—a PVC irrigation line and an electric line feeding a street light in the parking lot—were also noted during excavation.

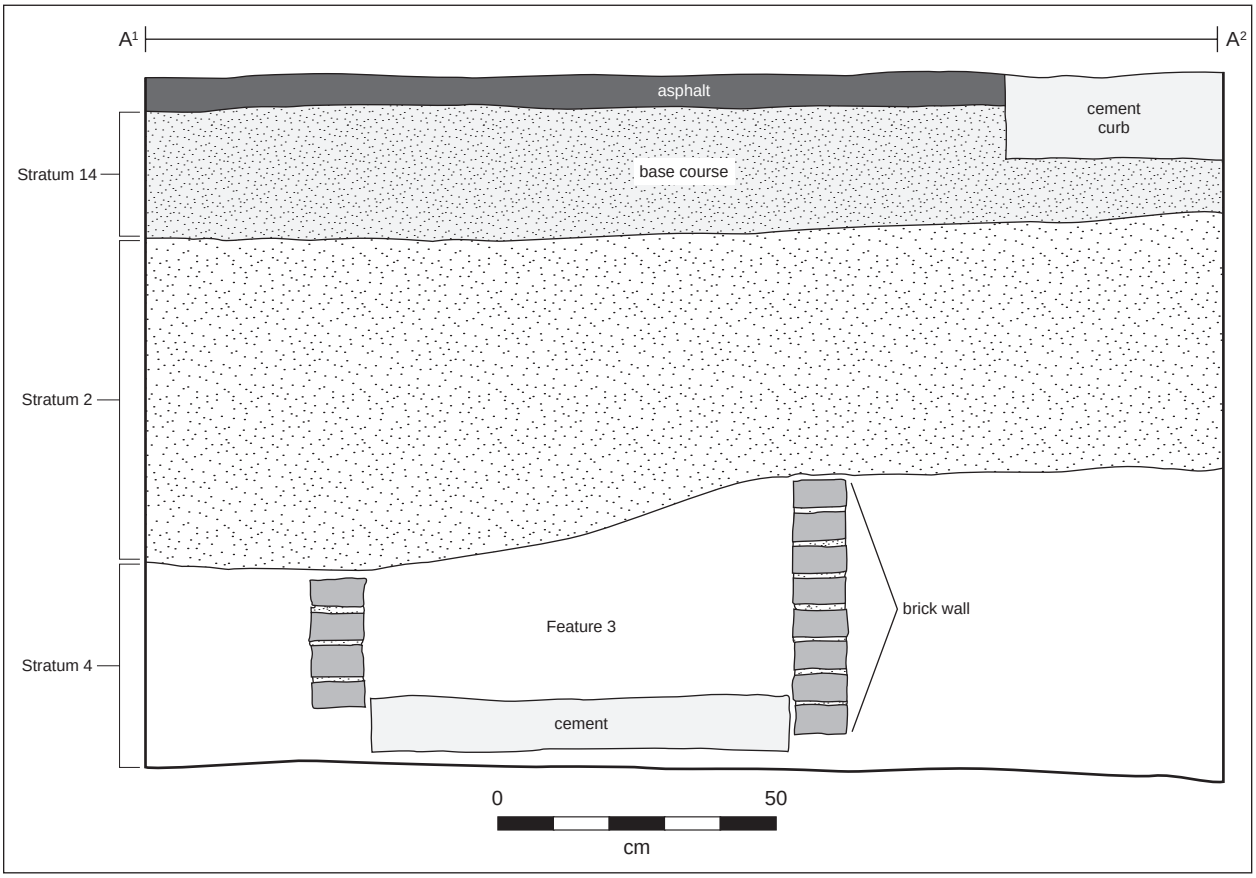

Figure 14. East wall profile of BHT 6, showing the location of Feature 3.

BHT 7

BHT 7 was placed between BHT 2 and BHT 6 to search for evidence of the seventeenth-century parroquia. BHT 7 was excavated to a depth of 35 cm at its south end and was 1.05 m deep at its north end; the deepest point reached was 1.15 m in the center of the trench. A 22 cm thick layer of base course topped the fill in this area and covered a thick layer of building debris mixed with cienega deposits (Stratum 2), which appears to have been moved from elsewhere on the property to fill and level this area before construction. An auger hole near the center of BHT 7 encountered sterile alluvial sands (Stratum 5) 20–25 cm below the floor of the trench, indicating that Stratum 2 was 1.35–1.40 m thick in this area. A single foundation alignment was found near the south end of this trench (Fig. 15) and was difficult to define owing to damage from the mechanical equipment used for excavation. This foundation was built from large river cobbles and boulders as well as partly dressed limestone blocks and seemed to form a corner of a structure that occupied this location before the construction of LVR. Either the northeast or southeast corner could be represented by this section of foundation, but this was difficult to determine because many stones were displaced during mechanical excavation. The top of this foundation was 30–40 cm below the surface of the asphalt, and it was two stones and 40–50 cm wide. The exposed section of this foundation was at least three courses high. Considering the difference in stone types used to build this foundation in comparison with those identified in BHT 1 and BHT 2, a different building is likely represented. Since the foundation is near the top of Stratum 2, that layer was formed by the filling and leveling of this area before construction of the building in the late nineteenth century.

BHT 8

BHT 8 was in the south part of a semiattached parking lot adjacent to Marian Hall (Fig. 2). As noted earlier, this was the only east-west oriented trench in the west parking lot and was 6 by 2 m in size. This trench was 75 cm deep at its east end and 80 cm deep at its west end; the latter marked the deepest point reached. Two strata were encountered in BHT 8; sand and gravel base course comprised the upper 20–22 cm of fill and was underlain by what appeared to be Stratum 2, consisting of a mixture of building debris and cienega deposits that were 20–28 cm thick. Considering the presence of plaster fragments and numerous nails within this stratum, a late nineteenth- to early twentieth-century date is probably appropriate.

This trench was excavated to explore the possibility that the cobble pavement encountered in Test Pit 2 was the surface of a seventeenth-century street that ran between the plaza and the front of the parroquia. Originally planned to be a single meter wide, the trench was expanded to a width of 2 m in order to examine the upper expression of an apparent subsurface vault or pit (Feature 4) encountered during excavation. A cobble foundation wall was found in the north profile of the trench, occurring just below the base course at about 30 cm below the asphalt surface (Fig. 16). The location of this foundation matches that of the footprint of a building associated with the Sisters of Charity complex, which was demolished as unsafe in 1954. The foundation was two courses and .25 m high, and its width was undetermined. Debris associated with the demolition of this or another structure was noted in the trench and included plaster, nails, and other rubble. Since, as discussed later, this building was constructed in 1853, the rubble may date to the late nineteenth or early twentieth century.

No evidence of the cobble pavement defined in Test Pit 2 was found in this trench, suggesting that Feature 6 is not part of a cobble-lined street. Cienega deposits were encountered at a depth of about 40–50 cm, and at their top was a line of whitewash delineating a subterranean vault or pit (Feature 4) excavated to an unknown depth into sterile deposits. Probing along the edge of this line showed that deposits in the vault are looser than the adjacent cienega sediments and contain quite a bit of burned adobe and charcoal. The wall was followed down about 10 cm, showing that it was an unfinished surface to which a thin coat of whitewash (probably anhydrated gypsum) had been applied. The vault is 2.70 m long by at least 60 cm wide and has an unknown depth and function. From its placement, Feature 4 could date to the seventeenth century, but if so, its function remains a mystery. Two other possibilities exist for the date and function of this feature: it could

Figure 15. South end of BHT 7, showing the cobble and limestone block foundation.

Figure 16. West end of BHT 8, showing the cobble foundation.

be a lime-slaking pit used during construction of the cathedral-basilica in the late nineteenth century, or it could be related to the Old Seminary, which once occupied this approximate location.

Discussion of Testing Results

As discussed at the beginning of this chapter, testing at the LVR/Marian Hall complex defined the presence of an archaeological site—LA 161535—that has been named the Sisters of Charity complex because of the association of the foundations and several extramural features with structures built in the late nineteenth century by that order. While most archaeological remains at LA 161535 are associated with this late nineteenth- to mid-twentieth-century use, a few areas also contain seventeenth-century or probable seventeenth-century deposits and features. LA 161535 encompasses most of the west parking lot and extends into the grassy area between Marian Hall and Cathedral Park (Fig. 2). However, these limits are artificial and were constrained by property boundaries rather than the actual edge of cultural remains. The foundations of several buildings identified during this study extend beyond the modern property boundary into areas that could not be examined. Thus, site limits could and should be extended by future archaeological studies on adjacent properties to the south and west. No potentially significant archaeological remains were encountered in the east parking lot or in the grassy areas on the north side of LVR.

Seventeenth-Century Spanish Remains

Seventeenth-century remains include a midden (Feature 5) and cobble pavement (Feature 6) in Test Pit 2, possible cultural deposits in Test Pit 10 (Stratum 18), and a subterranean vault or pit (Feature 4) in BHT 8. The latter association is tentative, since no temporally sensitive artifacts were found in association with Feature 4 during our limited investigation. However, the stratigraphic placement of this feature and an apparent break between the cienega deposits that contain the feature and the nineteenth-century deposits found above it suggest a seventeenth- rather than a nineteenth-century date. The dating of this feature is discussed in greater detail in the feature description presented later in this report. While it is possible that Feature 4 was associated with the seventeenth-century parroquia, this is impossible to demonstrate with the small amount of data available from testing. However, the abundant burned adobe and charcoal noted in the fill of this feature suggests that it may have been. The midden deposits in Feature 5 appear to be intact and mostly undisturbed by later uses of the area. While not much of the cobble pavement was exposed, a comparison with similar features in other seventeenth-century New Mexican sites, including San Marcos Pueblo and LA 20000, near La Cienega, suggests that it might represent part of a paved stable yard or paddock (pers. comm., Cordelia Snow, 2008). No maps or detailed descriptions of seventeenth-century Santa Fe exist, but Snow's overview of the property (Appendix 1) suggests that no permanent structures were built in that area during the seventeenth century and that the cienega was primarily used for farming and to provide fodder for livestock. This use continued into the eighteenth century, with the Urrutia map of 1767 showing that the project area was occupied by fields at the time that map was drawn, with no permanent structures east of the parroquia.

The Nineteenth- to Twentieth-Century Sisters of Charity Complex

Late nineteenth- to mid-twentieth-century remains include the foundations of at least four buildings, rubble associated with a fifth, and several associated features. Examination of Sanborn fire maps from 1883, 1886, 1890, 1898, 1902, 1908, 1913, 1921, and 1930 aided in defining these structures and their presumed functions. The following discussion presents our evidence for these buildings, incorporating the basic plans shown on the Sanborn fire maps. Since the focus of this discussion is on individual buildings rather than separate maps, other related buildings are only introduced as they become relevant.

The earliest building known to have been constructed on the property originally served as Bishop Lamy's rectory and was built by Carlos Brun in 1853 (see Appendix 1). The lack of buildings on the property before this date is supported by the Gilmer map of 1846–1847 and the Emory-Gilmer map of 1846–1847, both of which show

only fields in the project area. Lamy's rectory was sold to the Sisters of Charity in 1865 and was subsequently used as a hospital and orphanage; it became known as the "Old Seminary," a name that is used to designate this structure in the rest of this report. Sometime after acquiring the Old Seminary, the Sisters of Charity added a second story and two-story sleeping porches on all sides of the building. Figure 17 presents a section of the 1883 Sanborn map showing the Old Seminary between the cathedral's north transept and the southeast corner of St. Vincent's Hospital. These buildings also appear on the Hartmann map of 1885. The dotted line around the building in Figure 17 represents the sleeping porches added by the Sisters of Charity. Interestingly, a long wing runs between the southeast corner of the Old Seminary and a building identified as a stable and has a porch on its west side. The nature of this extension and when it was built are unknown, but through time this adobe building served as an orphanage, sisters dormitory and classroom, and all-around structure (see Appendix 1). Neither of these buildings appear on the J. J. Stoner bird's-eye view of the city of Santa Fe from 1882, so they may have been built between 1882 and 1883. Conversely, they may simply have been omitted from that drawing. Direct evidence for the Old Seminary was found in BHT 8, where we encountered a section of cobble foundation belonging to that building. Use of cobble foundations is consistent with adobe construction, which characterized the Old Seminary. No evidence for the south wing of this building was found during testing and should be looked for during data recovery, provided further examination of that area is needed or desired.

Evidence for a stable may have been found in Test Pit 12: a cobble foundation, the foundation trench, and a cobble pavement (Feature 7). Unfortunately, this was not the stable mentioned above in conjunction with the south wing of the Old Seminary, but it may have been part of that complex of buildings. By 1886 (Fig. 18) the stable was extended to the south, and a shed was built between it and the east edge of the cathedral complex. Further modifications to these buildings are evident by 1890 (Fig. 19): the south section of the south wing of the Old Seminary was demolished to make way for an adjacent building, the porch

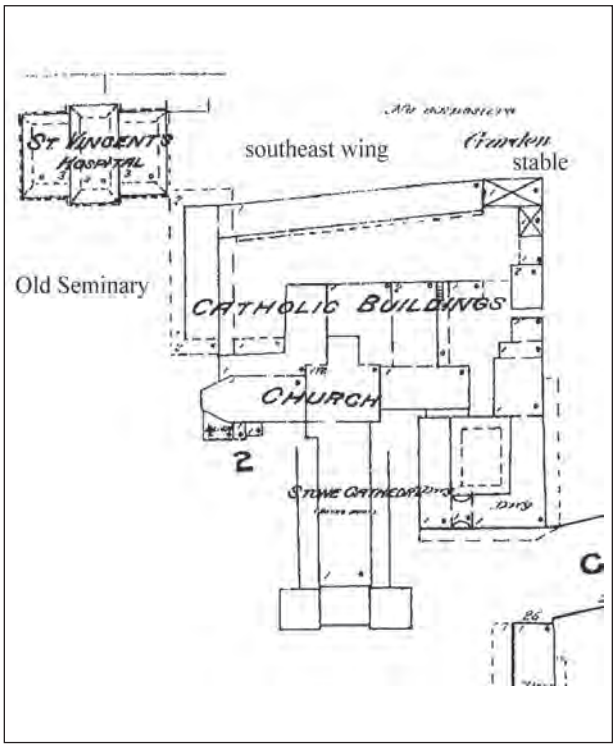

Figure 17. Section of the 1883 Sanborn map, showing the location of the Old Seminary.

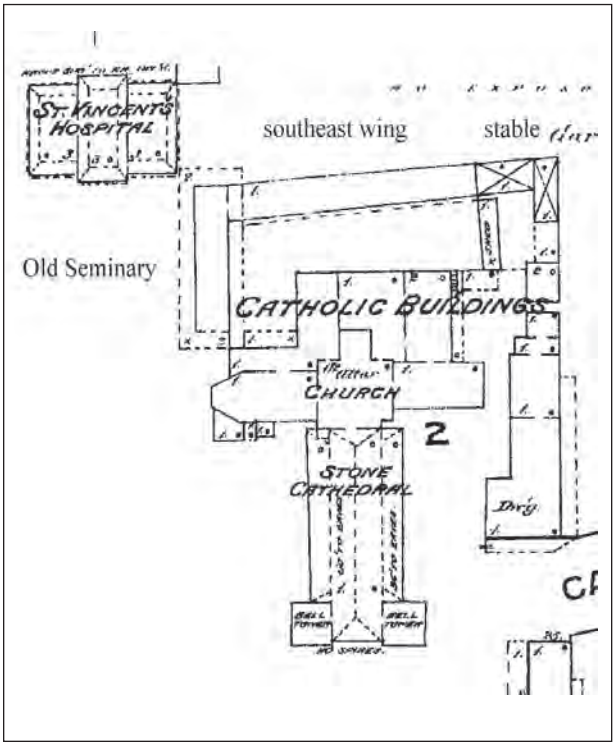

Figure 18. Section of the 1886 Sanborn map, showing changes in the configuration of the stable.

on its west side was removed, and a new porch was added to the east side of the south wing. By this time, the stable had also been extended to the west by incorporating a section of the shed seen in Figure 18, as well as to the east by an addition. The foundation and cobble pavement found in Test Pit 12 could represent part of the eastern extension of the stable. No large changes to these buildings are seen on the 1898 Sanborn map (Fig. 20), but a few minor modifications are visible, including the addition of a small two-story detached structure to the south of the Old Seminary, and some minor changes to the configuration of the stable. By 1902 (Fig. 21), the oldest section of the stable was demolished, leaving only the east and west extensions. Also by this time, the south wing of the Old Seminary was either separated from the older section of the building or demolished, with that part of the structure being modified or rebuilt into Seton Hall. This construction scenario differs from that presented elsewhere, which indicates that Seton Hall was built in 1886 to replace the Old Seminary as a convent for the Sisters of Charity (see Appendix 1). It could be that the entire south wing was demolished in 1886 and reconfigured as shown in Figure 19, with the new south wing representing an early stage in the footprint of Seton Hall, and the final configuration of that structure taking shape between 1898 and 1902. A second possibility is that the Sanborn maps of 1890 and 1898 did not take the new configuration into account. The latter seems most likely, since documentary evidence clearly shows that Seton Hall was built in 1886.

Though no foundations that could be associated with Seton Hall were identified during testing, considerable rubble from the demolition of that building occurred in Test Pits 10 and 11. Anecdotal information indicates that the foundations of Seton Hall are preserved beneath the modern parking lot. This information was disclosed during an interview with a plumbing contractor who worked on the remodeling of Marian Hall in 1985. While searching for sewer lines behind the cathedral-basilica, the contractor encountered what appeared to be dressed limestone foundations in the area where Seton Hall formerly stood. Since this type of foundation matches those of other nineteenth-century buildings in the area, including the nearby orphanage, these foundations are undoubtedly the remains of Seton Hall rather than those of the seventeenth-century parroquia, which would have been built of cobbles and boulders, as was typical of Spanish architecture in New Mexico. Thus, defining the exact location where Seton Hall stood and examining its foundations might be a goal of data recovery investigations, should further excavations be needed or desired in that area. Two other features may have been associated with Seton Hall, though this relationship is unclear at present. They include the possible brick-and-concrete statue base (Feature 3) and trash pit (Feature 1) identified in BHT 6.

Figure 22 presents a section of the 1913 Sanborn map, adding a few details to our knowledge of buildings in the Sisters of Charity complex. The detached two-story addition on the south side of the Old Seminary is identified as a bathroom, perhaps a separate bathhouse rather than a fully functional bathroom in the modern sense, and an exterior staircase was added to the north side of Seton Hall. More extreme changes are evident for the stable: the western extension has been demolished, and the south part of the eastern addition has been removed. The configuration of these buildings remains essentially unchanged on the 1921 Sanborn map (Fig. 23). The latest Sanborn map used for this analysis was that of 1930 (Fig. 24). The only significant change that seems to have occurred to the buildings discussed thus far on that map is that at least the south half of the stable was turned into a garage, while the symbol denoting the function of the north half was unreadable. According to the map (Fig. 24), this building was constructed of hollow tile block, suggesting that the stable may have been demolished and a new building erected on the same location. The Old Seminary was being used as a dormitory for the Sisters of Charity and nurses employed at the hospital and is still listed as being built of adobe, while Seton Hall was constructed of red brick. Both the Old Seminary and Seton Hall were used until 1954, when they were demolished to make way for a new and much larger St. Vincent's Hospital (see Appendix 1).

Indirect evidence for the St. Vincent's Sanatorium that opened in 1883 and burned in 1896 was also found during testing, especially in the upper levels of Test Pit 2 above the seventeenth-century midden. This evidence mainly took the form of several mostly complete

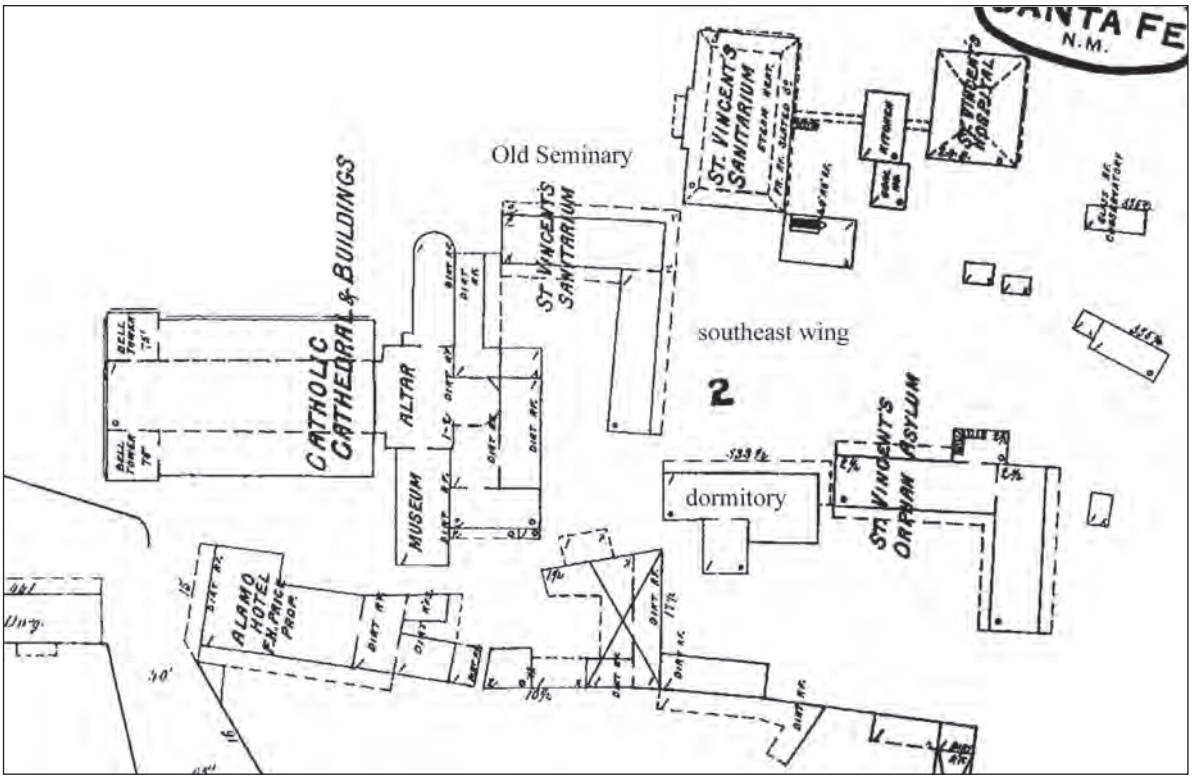

Figure 19. Section of the 1890 Sanborn map, showing the configuration of the Sisters of Charity complex.

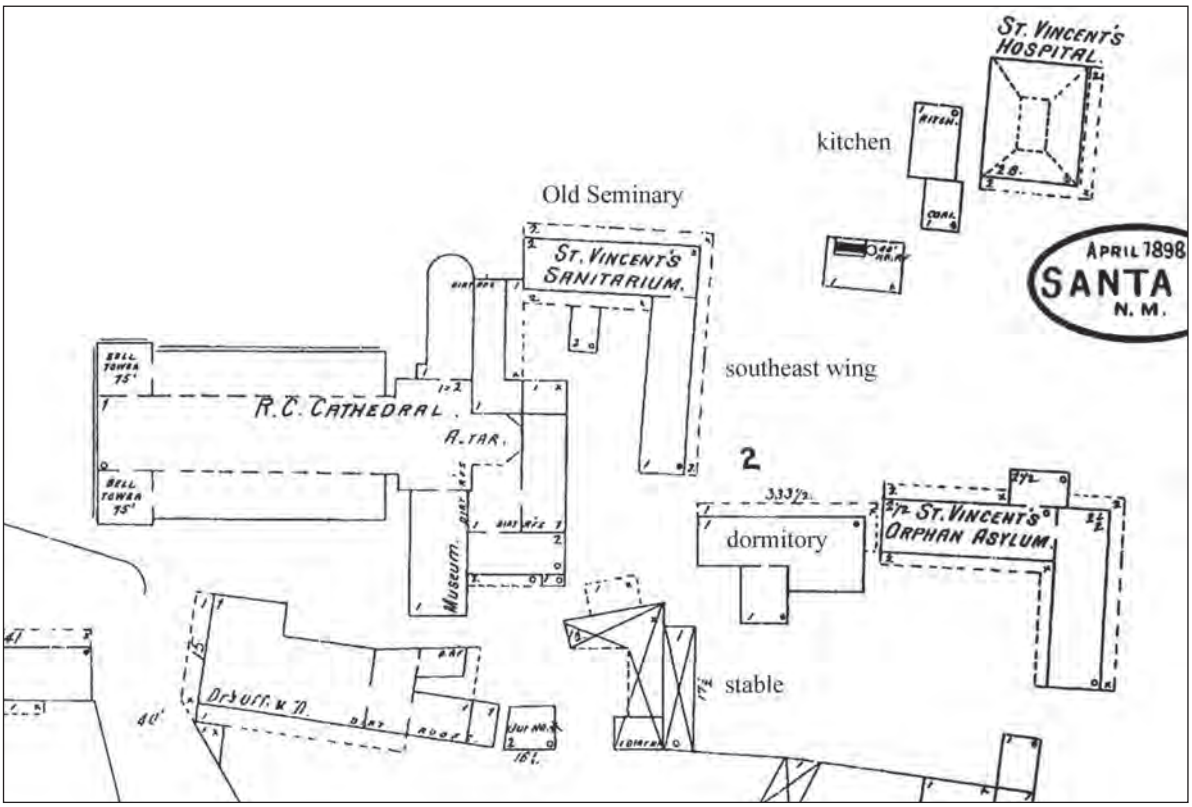

Figure 20. Section of the 1898 Sanborn map, showing the configuration of the Sisters of Charity complex.

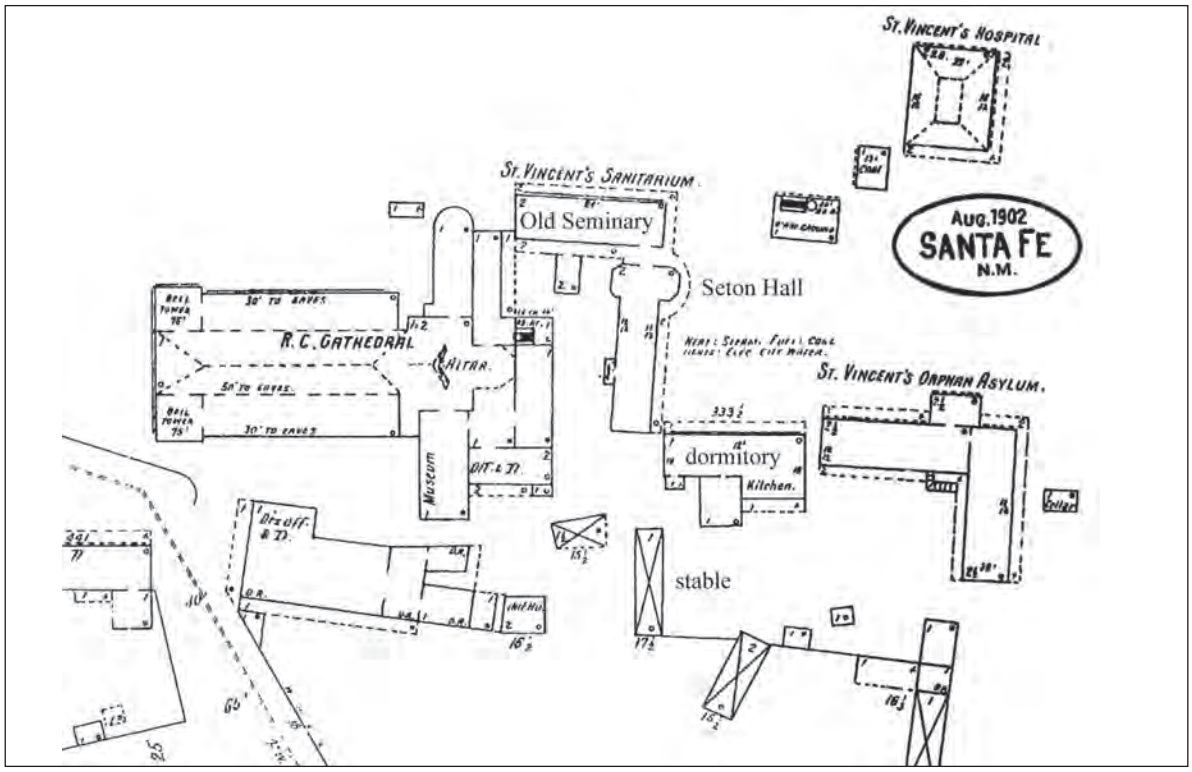

Figure 21. Section of the 1902 Sanborn map, showing the configuration of the Sisters of Charity complex.

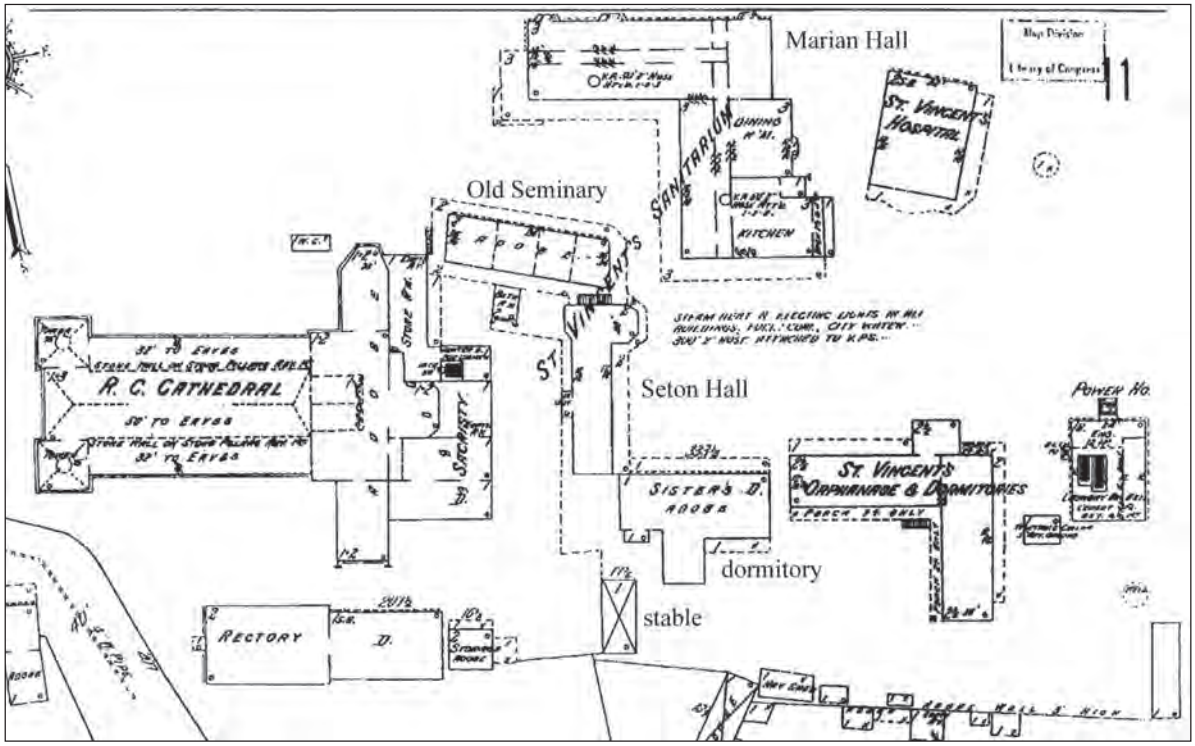

Figure 22. Section of the 1913 Sanborn map, showing the configuration of the Sisters of Charity complex.

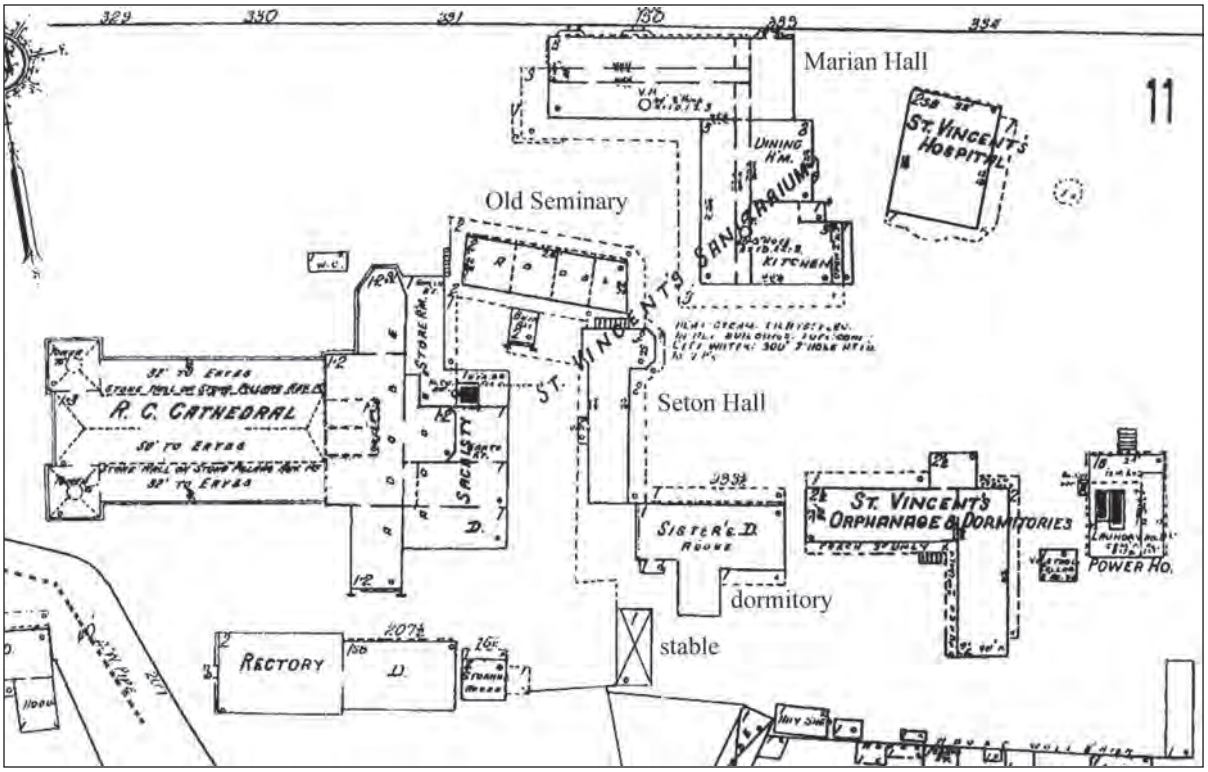

Figure 23. Section of the 1921 Sanborn map, showing the configuration of the Sisters of Charity complex.

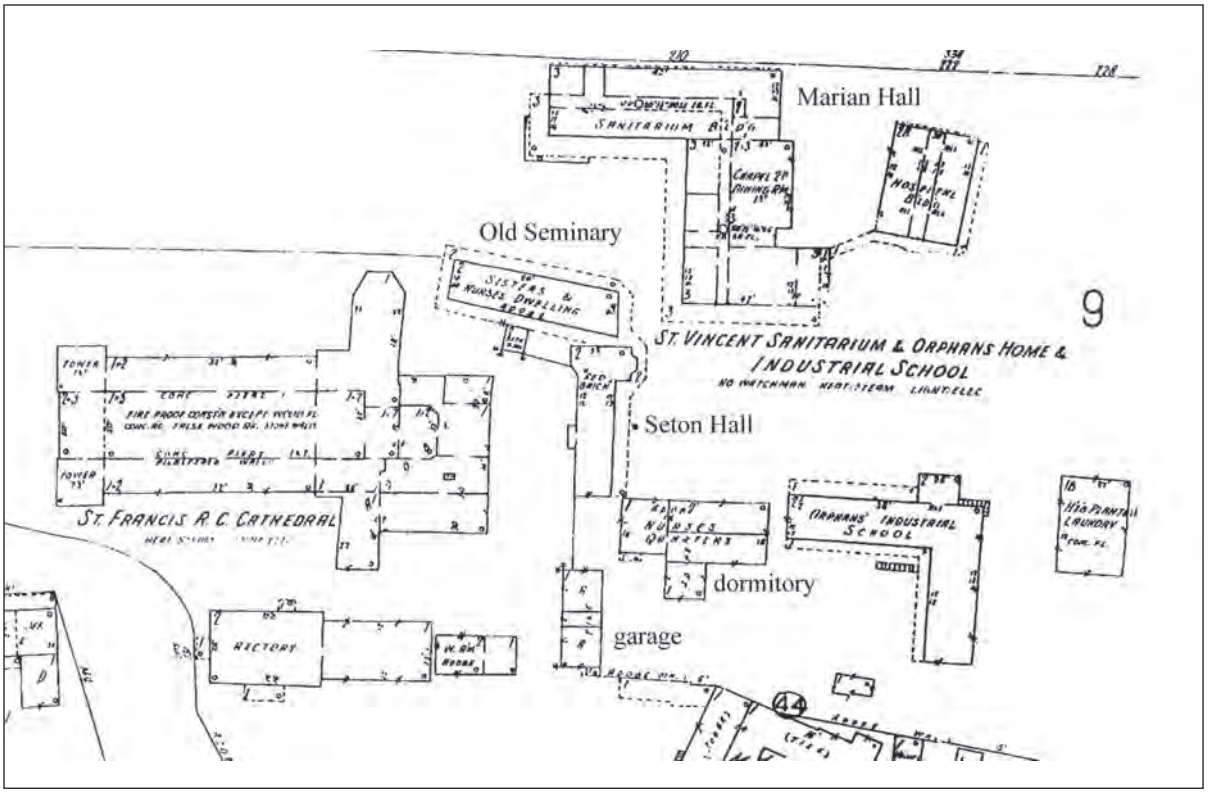

Figure 24. Section of the 1930 Sanborn map, showing the configuration of the Sisters of Charity complex.

and rather soft bricks and an articulated section of brick wall (Fig. 25); the bricks are thought to have been produced by Sister Blandina Segale's brickyard, the first in Santa Fe. Fragments of these bricks may also have occurred in Test Pits 3 and 4 on the north side of LVR, but this was more difficult to establish since only small unidentifiable pieces were recovered from those units. Since Marian Hall currently occupies most of the original St. Vincent's Sanatorium location, encountering more direct evidence of that building during subsequent studies is unlikely.

Two other buildings are represented by foundations uncovered in the west parking lot: an orphanage and a dormitory. Snow (Appendix 1) notes that the brick and frame orphanage was built in 1890, and it first appears on the 1890 Sanborn map as an L-shaped structure with a small extension on the north side and porches on the inside and outside of the L (Fig. 19), where it is listed as St. Vincent's Orphan Asylum. Archaeological evidence for this building consists of the dressed limestone foundations encountered in BHT 1 and 2 and in the hole excavated for a new light fixture (Fig. 7, 8–12). Trash deposits, adobe, and other materials noted in Test Pit 9 may be associated with the use of this building, perhaps representing an extramural use-area. The second building was a dormitory built of adobe located directly west of the orphanage that was used by nurses and the Sisters of Charity, and which had a porch on its north and part of its east sides (Fig. 19). This dormitory was represented by the cobble foundations encountered in BHT 7 (Fig. 7 and 15) and also appears for the first time on the 1890 Sanborn map, suggesting that it was built at the same time as the orphanage. As noted earlier, modifications to the south wing of the Old Seminary also occurred at this time and probably represent the construction of Seton Hall. A small structure was also built directly east of the orphanage, probably about the same time. No changes to these buildings can be seen on the 1898 Sanborn map (Fig. 20), though the small building to the east of the orphanage is missing from this plan. However, the small building again occurs on the 1902 Sanborn map (Fig. 21) and is finally identified as a cellar. Between 1898 and 1902

Figure 25. Section of brick wall from the sanatorium found in the southeast corner of Test Pit 2.

there were a few modifications to the dormitory, including a small addition to the southwest corner, removal of the porch from the east side, and construction of a porch on the southeast side of the building. A staircase may also have been added to the porches on the south side of the orphanage during this interval, or it simply could have been omitted from earlier maps. No significant modifications to these buildings are visible on the 1913 or 1921 Sanborn maps (Fig. 22–23). However, by 1930 the cellar is no longer visible, and the porches appear to have been removed from the dormitory (Fig. 24). The east porch has also been removed from the orphanage, a staircase has been added to the northeast corner, and a staircase on the south side of the building appears to have been moved and reconfigured.

Other buildings relevant to this study also appear on the Sanborn maps but are only briefly discussed since we expect to encounter few of their physical remains. Several buildings are associated with St. Vincent's Sanatorium in Figure 19, including the St. Vincent's Hospital Annex built in 1886, which shared a kitchen with the sanatorium that is shown between those buildings in Figure 19. Directly south of the kitchen and abutting its south side was a structure used to store coal. At the southeast corner of the sanatorium was a boiler room containing a horizontal steam boiler. To the southeast of the sanatorium/hospital annex complex were four small buildings, including a conservatory with a glass roof; the functions of the other three buildings are unknown. The 1898 map (Fig. 20) reflects the fire that destroyed the sanatorium in 1896: that building is absent. Also absent are the four small outbuildings mentioned above, including the conservatory. However, the hospital annex, kitchen, coal room, and boiler room remained in place. The kitchen appears to have been demolished by 1902 (Fig. 21), leaving only the hospital annex, coal room, and boiler room. Only the hospital annex was left by 1913, the coal and boiler rooms having been demolished to make way for the construction of Marian Hall, which opened in 1910 (Fig. 22). A new powerhouse was built to replace the boiler room, with construction apparently beginning by 1904 (see Appendix 1); this building was east of the orphanage (Fig. 22). No further significant changes were seen on the maps that were available for study. None of these buildings were directly represented by discoveries made during testing, but some evidence for the location of the kitchen between the sanatorium and hospital annex may have been found. Test Pits 7 and 8 produced a huge amount of animal bone in addition to other refuse and probably represent the location of a midden associated with the kitchen.

Description of LA 161535

Archaeological test excavations at the LVR/Marian Hall complex resulted in the definition of an archaeological site—LA 161535—that was not previously recorded or visible on the surface in the project area. As defined by this study, LA 161535 measures 127 by 89 m along its largest axes and covers approximately 4,859 sq m (Fig. 26). These measures are approximate because most of the site remains buried, and its extent was estimated from the locations of cultural features and deposits found in test pits and mechanically excavated trenches. The remaining section of LA 161535 is covered by landscaping and an asphalt parking lot; other parts of the site were completely removed during the construction of LVR in the mid-1950s. Parts of LA 161535 most likely extend outside project limits to the west and south, but their presence in those areas can only be defined by subsurface investigations on adjoining properties, an activity that was well outside the scope of this study. However, a previous study by Snow (2003) in Cathedral Park documented features associated with both components identified at LA 161535, indicating that occupational and use boundaries extend onto that property.

As discussed at length earlier, LA 161535 contains deposits and features related to two components. The earliest component dates to the seventeenth-century Spanish occupation of Santa Fe and was definitely identified in two excavational units and tentatively in a third. Test Pit 2 contained a stratum of midden deposits including numerous sherds, lithics, bone, and miscellaneous materials. This deposit was designated Feature 5 and lay on top of a cobble pavement (Feature 6) thought to represent a stable or paddock floor. These features occur in a grassy area on the west side of Marian Hall, between that building and Cathedral Park. The second area in which seventeenth-century deposits occur was Test Pit 10, in which Stratum 18 contained a few seventeenth-century artifacts. A subterranean vault or pit (Feature 4) was found in BHT 8 and may also date to the seventeenth-century Spanish occupation, though this has not yet been demonstrated. Feature 4 may also be associated with the seventeenth-century parroquia, late nineteenth-century construction of the cathedral-basilica, Lamy's use of the Old Seminary as a rectory (1853–1865), or a late nineteenth- to early twentieth-century bathroom (house), but these possibilities remain tentative and untested. All locations currently known to contain definite or probable seventeenth-century deposits or features are in the northwest quarter of LA 161535 (Fig. 26).

The second component represents the main occupation of the site and dates to the late nineteenth- to early twentieth-century use of the property for a variety of health care facilities and an orphanage operated by the Sisters of Charity between 1865 and 1979. The foundations of four buildings were identified, and rubble from two others was found. As discussed earlier, the foundations include those of the Old Seminary (1853–1954), the orphanage (1890–1955), a nurses/sisters dormitory (1890–1953), and a possible nineteenth- to mid-twentieth-century building of uncertain function. Rubble belonging to the first St. Vincent's Sanatorium (1883–1896) was found in Test Pit 2 on the west side of Marian Hall, and possibly in Test Pits 3 and 4 on the northwest side of LVR. The rubble found in these test units represents materials left over after the sanatorium burned and was demolished in 1896, and its presence here indicates that at least some rubble remained in this location after the debris was cleared and was subsequently used as fill for raising and leveling the area. Since none of these materials are in place, they provide little information other than the fact that rubble remained in this location after the building was demolished. Rubble belonging to Seton Hall (1890–1954) was encountered in Test Pits 10 and 11 behind the cathedral-basilica on the extreme west edge of the west parking lot. Information obtained from an interview, presented in more detail earlier, suggests that dressed-limestone foundations related to Seton Hall are also present in this area, but they were not encountered by any of our test units.

Indirect evidence for a detached kitchen that served both the sanatorium and hospital

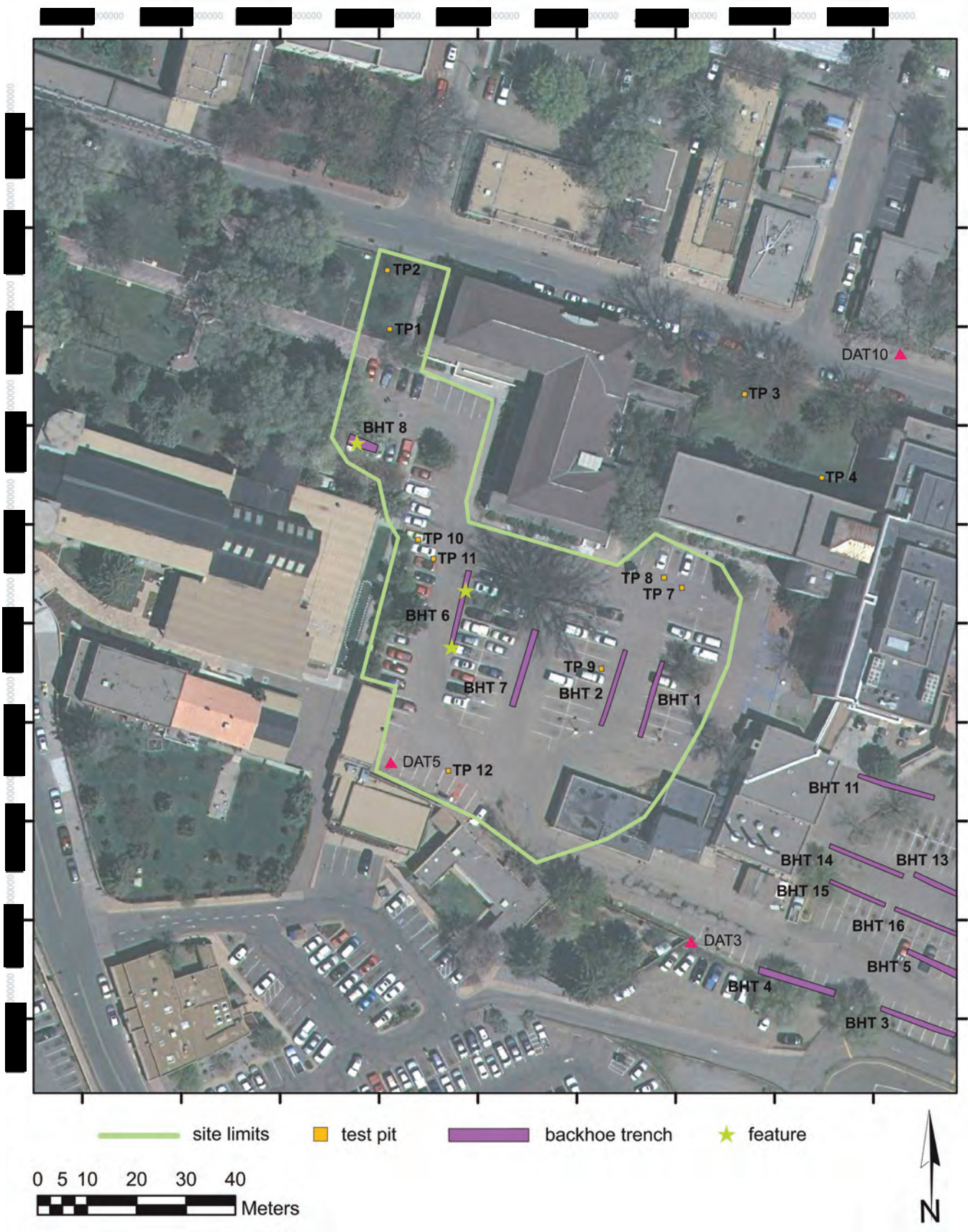

Figure 26. Plan of LA 161535 overlain on an aerial photograph of the property.

annex (1886–ca. 1902) took the form of probable kitchen midden deposits (Feature 2) found in Test Pits 7 and 8 in the northeast section of LA 161535 (Fig. 26). Two other late nineteenth- to early twentieth-century features were also defined, both in BHT 6: a possible statue base (Feature 3) and a trash pit (Feature 1). Both of these features are thought to have been associated with Seton Hall because of their close proximity to the former location of that building.

Features Identified at LA 161535

Seven features were identified during testing; this total does not include the structural foundations of four buildings that were defined during this phase. Since features were identified during testing but were not fully excavated, we have no idea of their total extent. Full documentation will occur if features fall within areas scheduled for further examination during data recovery. Cursory feature descriptions are provided, based on the few data available from this initial examination.

Feature 1

Feature 1 was a probable late nineteenth- to early twentieth-century trash pit encountered at the south end of BHT 6 (Fig. 7). The exposed section of this trash pit was 10 m long by 1.10 m deep; no measurement of feature width was possible. This pit was excavated into sterile cienega deposits (Stratum 4) and was filled with a mixture of cultural debris and sandy clay. The upper section of feature was truncated during construction of the parking lot, and base course for the asphalt-paved lot was laid directly over feature fill. Further examination of this feature could provide information on the lifestyle associated with a late nineteenth- to early twentieth-century religious order involved in medical care and teaching.

Feature 2

Feature 2 was a midden deposit associated with the detached kitchen that served both the sanatorium and hospital annex (ca. 1886–1890 to 1898–1902). Midden deposits were defined as Stratum 9, which consisted of a 42–46 cm thick layer of stratified trash deposits containing a considerable amount of animal bone, metal, glass, pottery, and other types of historic artifacts (Fig. 27). The horizontal extent of this feature was undetermined because most of it remains concealed under the asphalt pavement, but it was identified in Test Pits 7 and 8. The upper section of this midden was probably removed when this area was leveled for paving, but the lower section appears to be intact. This feature could provide important dietary information on late nineteenth-century medical facilities in New Mexico.

Feature 3

This feature was a comparatively small structure of brick and concrete and may have served as a statue base, as suggested by a 1930 photograph of Seton Hall in which a statue stands on a raised platform in the approximate location of Feature 3. The width of Feature 3, as seen in profile, is 1 m, and the remaining section is 50 cm deep (Fig. 14). A cement slab forms the base of the feature, which contains a loosely consolidated dark brown silty loam that has numerous roots growing through it. The west end of Feature 3 is missing in Figure 14 but was probably intact before excavation, since a large section of articulated bricks from the feature was found in backdirt. Whatever the original function of this feature, its proximity to Seton Hall suggests that it was associated with the use of that building. Further examination of this feature would be needed to determine its actual function and how it related to the Sisters of Charity complex.

Feature 4

Feature 4 was a subterranean vault or pit found in BHT 8. As discussed earlier, this feature was excavated into sterile cienega deposits (Stratum 4) and may date to the seventeenth-century occupation of Santa Fe, though this remains undemonstrated. The vault (Fig. 28) measured 2.7 m east-west, and its north-south dimensions could not be determined because the entire feature was not exposed. A 10 cm deep probe along one edge showed that the walls of the vault were not finished and had a thin layer of whitewash applied to their surfaces. From this cursory examination, the interior fill of this feature is fairly loose and contains abundant charcoal and burned adobe. Several nails were also found but

Figure 27. View of the south profile wall of Test Pit 8, showing stratified midden deposits in Feature 2.

seemed associated with later fill above the vault, though this was not conclusively demonstrated.

Three temporal associations are possible for this vault. As noted above, a possible date is seventeenth century, since there is a break between the upper level of the vault and nineteenth-century deposits lying above it. While feasible that this feature was associated in some way with the seventeenth-century parroquia, this association is quite tentative, and we have no idea what purpose it might have served in that context. Feature 4 could also be a lime-slaking pit associated with the late nineteenth-century construction of the cathedral-basilica, but this is questionable because the vault appears to have been under the Old Seminary. The Old Seminary was built as Lamy's rectory in 1853 and deeded to the Sisters of Charity in 1865. Since construction on the cathedral-basilica began in 1869, its use as a lime-slaking pit would be impossible if the location given for the Old Seminary is correct on the Sanborn maps. A third and much less likely possibility is that Feature 4 was related to a two-story brick bathroom or bathhouse associated with the Old Seminary built between 1890 and 1898 and demolished in 1954. The possible function of Feature 4 in this context remains unknown. Only with more intensive excavation can the date and function of this feature be determined.

Feature 5

Feature 5 was a seventeenth-century trash midden encountered in Test Pit 2 (Fig. 26). While no horizontal measurements were possible, the trash-bearing layer (Stratum 8) was .46 m thick and contained numerous artifacts, including 957 fragments of bone, 1,892 Pueblo sherds, 16 Euroamerican sherds, 9 pieces of metal, 7 pieces of slag, 4 glass shards, 10 chipped stone artifacts, and 75 mica fragments. The presence of 10 pieces of mostly seventeenth-century Mexican majolica, 2 pieces of Chinese porcelain, and 265 pieces of late Pueblo glaze wares provide a firm seventeenth-century date, and the rarity of metal and glass and lack of brick fragments

Figure 28. BHT 8, showing the location of Feature 4, which appears as a line of whitewash in the center of the photo.

suggest that these deposits are mostly intact and mostly undisturbed by later uses of the property. However, the occurrence of a few pieces of glass and metal dating to the nineteenth century in Stratum 8, as well as the movement of a few glaze ware sherds from Stratum 8 into higher and later deposits, indicates that some bioturbation of these deposits has occurred. The moderately intact nature of Stratum 8 indicates that these deposits have the potential to provide further information on seventeenth-century Santa Fe.

Feature 6

Feature 6 was a cobble pavement lying directly beneath Feature 5, indicating that it also dates to the seventeenth-century Spanish occupation of Santa Fe. As seen in Figure 29, the pavement was not continuous across the grid but covered only its eastern half. The pavement is a single cobble thick and was laid on top of sterile cienega deposits (Stratum 4). While this feature was initially thought to represent the cobble surface of a road, perhaps preserved today

Figure 29. Feature 6, a seventeenth-century cobble pavement found at the base of cultural deposits in Test Pit 2.

as Otero Street, excavation in BHT 8 showed that it did not continue that far to the south, suggesting that it actually does not represent a street. A second, and more likely, possibility is that the cobble pavement represents a stable or paddock yard (pers. comm., C. Snow, 2008). If so, we remain uncertain whether this feature was related to the parroquia or a nearby private residence. Like the midden deposits above the pavement, the information potential of Feature 6 was not exhausted by this cursory examination. Further studies will be needed before the actual nature of this feature can be determined.

Feature 7

Feature 7 was a possible second cobble pavement identified at a depth of about 30 cm below the surface in Test Pit 12. The cobbles in this section of pavement were variably sized (Fig. 30) and fairly level, and they extended across the entire grid. As discussed in the description of Test Pit 12, this feature was directly above what appeared to be a trench holding a cobble foundation. Analysis of Sanborn fire maps indicates that a stable formerly stood near this location and was built sometime before 1883 and demolished sometime before 1921, at which time it was replaced by a hollow tile block garage. The foundation identified in Test Pit 12 may have been used to support one of the stable walls, probably built of adobe blocks. However, this location does not match that shown in the series of Sanborn maps available for analysis, so the actual function and association of the possible cobble pavement and foundation remain uncertain. The pavement was a single cobble thick, and coarse sand filled the interstices between cobbles. Further examination of this area could result in definition of the function of these features.

Artifact Assemblages

A total of 7,479 artifacts were recovered during testing (Table 1). While most artifacts came from excavation units placed in LA 161535, part

Figure 30. Feature 7, a late nineteenth-century cobble pavement found in Test Pit 12.

of the assemblage came from disturbed areas examined by four test pits (Test Pits 3–6) on the north side of LVR, which is technically not part of the site. However, since most materials recovered from these test pits are related to the various permutations of buildings in the Sisters of Charity complex, they are included in this discussion as part of that assemblage.

Local Ceramics

The analysis of native pottery types recovered during testing at LA 161535 resulted in the recording of typological and descriptive categories for 2,293 sherds. The assemblage included 68 sherds (2.97 percent) assigned to prehistoric types and 2,225 sherds (97.03 percent) assigned to historic types (Table 2). Almost all of the prehistoric sherds exhibit pastes and tempers indicative of Northern Rio Grande types (Habicht-Mauche 1993; McKenna and Miles 1990; Stubbs and Stallings 1953; Wendorf 1953) and include both gray wares and white wares. In addition, one prehistoric Mogollon brown ware sherd was classified as Reserve Smudged. Prehistoric types make up a very small proportion of the pottery recovered (Table 1) and probably are intrusive from nearby prehistoric contexts known to occur under much of the downtown Santa Fe area (Scheick 2006).

Most of the native pottery types identified reflect utility and decorated forms known to have been produced by Northern Tewa potters living in several villages in the Española Basin, just north of Santa Fe (Batkin 1987; Frank and Harlow 1990; McKenna and Miles 1990; Harlow 1970; 1973). A total of 512 sherds (22.33 percent of assemblage) were assigned to historic micaceous utility ware types, most of which were probably produced by Northern Tewa potters but could have been made by several other ethnic groups as well. Historic plain ware types exhibit fine tuff temper and combinations of polished and slipped treatment commonly used by Northern Tewa potters during various parts of the historic period and include 1,133 sherds (49.41 percent of total assemblage). Sherds derived from polychrome types

Table 2. Pottery type and tradition by excavation unit (counts and column percentages)

Tradition	Pottery Type		Test Pit 1	Test Pit 2	Test Pit 3	Test Pit 4	Test Pit 5	Test Pit 6	Test Pit 7	Test Pit 8	Test Pit 9	Test Pit 10	Test Pit 11	Test Pit 12	BHT 6	Total
Prehistoric Northern Rio Grande Gray Ware	Plain Gray Body	Count	1	2					1							4
		%	3.57%	0.10%					0.79%							0.17%
	Indented Corrugated	Count		1												1
		%		0.05%												0.04%
	Smeared Plain Corrugated	Count							1							1
		%							0.79%							0.04%
	Smeared Indented Corrugated	Count		6					9			1	1			17
		%		0.30%					7.14%			12.50%	11.11%			0.74%
Prehistoric Northern Rio Grande White Ware	Unpainted Undiff.	Count		27					2	2		2	1			34
		%		1.37%					1.59%	4.88%		25.00%	11.11%			1.48%
	Santa Fe Black-on-white	Count		1					3	2	1					7
		%		0.05%					2.38%	4.88%	1.92%					0.31%
	Santa Fe/Poge variety unpainted	Count		1					2							3
		%		0.05%					1.59%							0.13%
Mogollon Brown Ware	Reserve Smudged	Count	1													1
		%	3.57%													0.04%
Historic Tewa Micaceous Ware	Highly Micaceous Paste	Count		7					5	2				1	1	16
		%		0.35%					3.97%	4.88%				2.56%	50.00%	0.70%
	Smudged Interior Mica Slip Exterior	Count	2	187		3			5	4	3		2	3		209
		%	7.14%	9.47%		27.27%			3.97%	9.76%	5.77%		22.22%	7.69%		9.11%
	Polished interior with Mica Slip	Count		120		1			6	1	2					130
		%		6.08%		9.09%			4.76%	2.44%	3.85%					5.67%
	Unpolished Mica Slip	Count	2	133					3	2						140
		%	7.14%	6.74%					2.38%	4.88%						6.11%
	Tewa Polished Gray with Mica Slip	Count		16												16
		%		0.81%												0.70%
	Plain Tan Micaceous, White Slip	Count		1												1
		%		0.05%												0.04%
Historic Tewa Plain Ware	Tewa Buff Undiff.	Count	3	87		3			4	2	7	1		7		114
		%	10.71%	4.41%		27.27%			3.17%	4.88%	13.46%	12.50%		17.95%		4.97%
	Tewa Polished Gray	Count	1	60	1				11	1	7			1		82
		%	3.57%	3.04%	100.00%				8.73%	2.44%	13.46%			2.56%		3.58%
	Tewa Polished Black	Count	1	41					5	3	2	2		4		58
		%	3.57%	2.08%					3.97%	7.32%	3.85%	25.00%		10.26%		2.53%
	Tewa Polished Red	Count	5	634		1		1	20	3	19		3	15		701
		%	17.86%	32.12%		9.09%		100.00%	15.87%	7.32%	36.54%		33.33%	38.46%		30.57%
	Smudged Interior Buff Exterior	Count		8												8
		%		0.41%												0.35%
	Tewa Unpolished Black	Count	1	4		1			1	3						10
		%	3.57%	0.20%		9.09%			0.79%	7.32%						0.44%
	Tewa Unpolished Buff	Count		129			1		15	2	1		1	2		151
		%		6.53%			100.00%		11.90%	4.88%	1.92%		11.11%	5.13%		6.59%
	Smudged Exterior Buff Interior	Count		5												5
		%		0.25%												0.22%
	Smudged Interior Unpolished Exterior	Count		1												1
		%		0.05%												0.04%
	Smudged Interior Corrugated Exterior	Count		1								1				2
		%		0.05%								12.50%				0.09%
	Historic Brushed	Count							1							1
		%							0.79%							0.04%

Table 2 (continued)

Tradition	Pottery Type		Test Pit 1	Test Pit 2	Test Pit 3	Test Pit 4	Test Pit 5	Test Pit 6	Test Pit 7	Test Pit 8	Test Pit 9	Test Pit 10	Test Pit 11	Test Pit 12	BHT 6	Total
Historic Tewa Polychrome	Tewa Polychrome type	Count		1												1
		%		0.05%												0.04%
	Tewa Polychrome Painted Undiff.	Count	1	48												49
		%	3.57%	2.43%												2.14%
	Black-on-cream Undiff.	Count	1	30		1			7	2	2			1	1	45
		%	3.57%	1.52%		9.09%			5.56%	4.88%	3.85%			2.56%	50.00%	1.96%
	Historic Organic Paint Undiff. No Slip	Count	1	7					3							11
		%	3.57%	0.35%					2.38%							0.48%
	Historic White\Cream Slipped Unpainted	Count	1	28					5	1			1			36
		%	3.57%	1.42%					3.97%	2.44%			11.11%			1.57%
	Red-on-tan Unpainted	Count		1												1
		%		0.05%												0.04%
	Historic Unpainted Red & Cream Slipped	Count	1	12					1	2	2					18
		%	3.57%	0.61%					0.79%	4.88%	3.85%					0.78%
Middle Rio Grande Utility Ware	Plain Utility Ware	Count		15												15
		%		0.76%												0.65%
	Carnue Gray	Count		1												1
		%		0.05%												0.04%
	Historic Polished Black	Count		14												14
		%		0.71%												0.61%
Middle Rio Grande Glaze Ware	Glaze Red Body Unpainted	Count		21					1	1	1			1		25
		%		1.06%					0.79%	2.44%	1.92%			2.56%		1.09%
	Glaze Yellow Body Unpainted	Count	4	75					2							81
		%	14.29%	3.80%					1.59%							3.53%
	Glaze Unslipped Unpainted	Count		75		1			5	4	1	1				87
		%		3.80%		9.09%			3.97%	9.76%	1.92%	12.50%				3.79%
	Glaze-on-polychrome Undiff.	Count		1							1					2
		%		0.05%							1.92%					0.09%
	Glaze Red Body Undiff.	Count	1	5					1					1		8
		%	3.57%	0.25%					0.79%					2.56%		0.35%
	Glaze-on-yellow Undiff.	Count		72						1	1					74
		%		3.65%						2.44%	1.92%					3.23%
	Glaze Unslipped Undiff.	Count	1	15						1						17
		%	3.57%	0.76%						2.44%						0.74%
	Espinosa Glaze Polychrome	Count									1					1
		%									1.92%					0.04%
	Puaray G-yellow	Count		1										1		2
		%		0.05%										2.56%		0.09%
	Kotyiti G-yellow	Count		3												3
		%		0.15%												0.13%
	Kotyiti G-red	Count		1												1
		%		0.05%												0.04%
Middle Rio Grande Polychrome Wares	Santa Ana Area Red Slipped Painted	Count		1					2	1						4
		%		0.05%					1.59%	2.44%						0.17%
	Santa Ana Area Red Slipped Unpainted	Count		19										1		20
		%		0.96%										2.56%		0.87%
	Santa Ana Area White Unpainted	Count		36					1	1				1		39
		%		1.82%					0.79%	2.44%				2.56%		1.70%
	Santa Ana Area Unslipped, Unpainted	Count		9					2							11
		%		0.46%					1.59%							0.48%
	Santa Ana Area White Slipped, Painted	Count		2					1							3
		%		0.10%					0.79%							0.13%
Jemez White Ware	Jemez Black-on-white	Count									1					1
		%									1.92%					0.04%
Acoma/Zuni Polychrome Wares	Acoma-Zuni Polychrome undiff.	Count		2												2
		%		0.10%												0.09%
	Acoma/Zuni Red Slipped Unpainted	Count		4					1							5
		%		0.20%					0.79%							0.22%
Navajo Wares	Gobernador Polychrome	Count		1												1
		%		0.05%												0.04%
	Dinetah Gray	Count		2												2
		%		0.10%												0.09%
Total		Count	28	1974	1	11	1	1	126	41	52	8	9	39	2	2293
		%	1.22%	86.09%	0.04%	0.48%	0.04%	0.04%	5.49%	1.79%	2.27%	0.35%	0.39%	1.70%	0.09%	100.00%

characterized by the presence of fine tuff temper, red and cream slips, and decorations in organic paint known to have been used by Northern Tewa potters during the Historic period totaled 161 (7.02 percent of assemblage). The only other organic painted type identified in this assemblage was a single sherd of Jemez Black-on-white, a type produced by Towa groups in the Jemez Valley.

Most of the other historic pottery types identified in this assemblage were produced by various Pueblo groups in the Middle Rio Grande and include 301 sherds (13.13 percent of assemblage) assigned to glaze ware types that were largely made in areas just south of Santa Fe (Franklin 1997; Mera 1933; Snow 1982). Most of these sherds are from vessel bodies and could not be assigned to a specific temporally distinct type. The glaze wares appear to be fairly crudely decorated and in general exhibit characteristics commonly noted for types produced during the historic period. A few of these sherds could have come from vessels produced during the early Classic period, when there was a sizable community in the downtown Santa Fe area, but if so they are extremely rare. Most of the glaze ware sherds more likely are indicative of occupation during the early seventeenth century to around the beginning of the eighteenth century, when the production of glaze wares ended. The glaze ware sherds exhibit a wide range of tempers, including latite, basalt, sandstone, and vitric tuff, indicative of production in a variety of areas including the Galisteo, Pecos, Puname, and Pajarito provinces. Other types from the Middle Rio Grande include types produced at Santa Ana Pueblo by the early eighteenth century (Harlow 1973; Harlow et al. 2005). This pottery is characterized by a combination of sand temper, dark red paste, white slip, and painted decorations executed in the Puname style in black and red mineral paint, and comprised 3.22 percent of the assemblage. Another group of nonlocal decorated pottery includes a few sherds exhibiting white pastes, sherd temper, and decoration in red and black mineral paint that were produced in the Acoma and Zuni areas (Lammon and Harlow 2008; Woodbury and Woodbury 1966). A final group includes three distinctive sherds identical to types produced by the Navajos during the seventeenth and eighteenth centuries (Brugge 1963; Wilson and Blinman 1992).

Examination of pottery from two strata found in features at LA 161535 appears to support our initial assumptions and other artifact analyses, and suggests that most of these sherds date to the seventeenth or eighteenth centuries (Stratum 8 from Feature 5), with some evidence of occupation in the nineteenth century (Stratum 9 from Feature 2). The distribution of types recovered from Stratum 8 seems consistent with assignment of Feature 5 to the Early Spanish Colonial period (Table 3). The strongest evidence for an Early Spanish Colonial–period occupation is the dominance of glaze wares, which comprise 14.01 percent of the pottery from Stratum 8 and which outnumber Tewa decorated types by over two to one. Rim sherds include one specimen assigned to Glaze E and four to Glaze F types. The lower frequency of Tewa Polychrome types is also consistent with expectations for an occupation during this period (Table 3).

The rarity of sherds assigned to specific Tewa Polychrome types from LA 161535 presents an interesting problem, which partly stems from the small size of many of the sherds recovered, making their assignment to specific types very difficult. However, this problem is also related to difficulties in defining certain transitions that occurred in Tewa tradition polychromes but are poorly understood and are almost entirely based on whole pots from unprovenienced contexts. Several sherds exhibit design motifs similar to those noted for Tewa Polychrome but with cream slips under a narrow red-slipped band more similar to the much later Powhoge Polychrome. Unlike early historic Tewa decorated types such as Sankawi Black-on-cream, bowls often appear to be shallow and exhibit unslipped exteriors, with the exception of a thin red band near the rim. These sherds could reflect a transition between Tewa Polychrome and Powhoge Polychrome and if so would date to the late half of the eighteenth century. Another possibility is that they reflect the transition between early black-on-cream types and Tewa Polychrome and could ultimately represent some of the variation in Sakona Polychrome that is not yet very well documented or understood. If this is the case, a date sometime during the late seventeenth and early eighteenth centuries is more likely, especially when one considers an apparent lack of Sankawi Black-on-cream and Sakona Black-on-cream, which appear to normally occur in contexts dating to the early

Table 3. Pottery type and tradition by stratum for ceramic assemblages from from Features 2 and 5 (counts and column percentages)

Tradition	Pottery Type		Feature 5: Stratum 8	Feature 2: Stratum 9	Table Total
Prehistoric Northern Rio Grande Gray Ware	Plain Gray Body	Count	2	1	3
		%	0.11%	1.19%	0.15%
	Indented Corrugated	Count	1		1
		%	0.05%		0.05%
	Smeared Plain Corrugated	Count		1	1
		%		1.19%	0.05%
	Smeared Indented Corrugated	Count	6	4	10
		%	0.32%	4.76%	0.51%
Prehistoric Northern Rio Grande White Ware	Unpainted Undifferentiated	Count	27	4	31
		%	1.43%	4.76%	1.57%
	Santa Fe Black-on-white	Count		3	3
		%		3.57%	0.15%
	Santa Fe/Poge variety unpainted	Count	1		1
		%	0.05%		0.05%
Historic Tewa Micaceous Ware	Highly Micaceous Paste	Count		3	3
		%		3.57%	0.15%
	Smudged Interior Mica Slip Exterior	Count	181	6	187
		%	9.57%	7.14%	9.46%
	Polished interior with Mica Slip	Count	115	3	118
		%	6.08%	3.57%	5.97%
	Unpolished Mica Slip	Count	129	3	132
		%	6.82%	3.57%	6.68%
	Tewa Polished Gray with Mica Slip	Count	16		16
		%	0.85%		0.81%
	Plain Tan Micaceous with White Slip	Count	1		1
		%	0.05%		0.05%
Historic Tewa Plain Ware	Tewa Buff Undifferentiated	Count	69	4	73
		%	3.65%	4.76%	3.69%
	Tewa Polished Gray	Count	59	5	64
		%	3.12%	5.95%	3.24%
	Tewa Polished Black	Count	37	3	40
		%	1.96%	3.57%	2.02%
	Tewa Polished Red	Count	616	9	625
		%	32.56%	10.71%	31.63%
	Smudged Interior Buff Exterior	Count	8		8
		%	0.42%		0.40%
	Tewa Unpolished Black	Count	4	4	8
		%	0.21%	4.76%	0.40%
	Tewa Unpolished Buff	Count	120	5	125
		%	6.34%	5.95%	6.33%
	Smudged Exterior Buff Interior	Count	4		4
		%	0.21%		0.20%
	Smudged Interior Unpolished Exterior	Count	1		1
		%	0.05%		0.05%
	Smudged Interior Corrugated Exterior	Count	1		1
		%	0.05%		0.05%
Historic Tewa Polychrome Ware	Tewa Polychrome Painted Undifferentiated (Two Slips)	Count	48		48
		%	2.54%		2.43%
	Black-on-cream Undifferentiated	Count	28	6	34
		%	1.48%	7.14%	1.72%
	Historic Organic Paint Undifferentiated No Slip	Count	7	3	10
		%	0.37%	3.57%	0.51%
	Historic White\Cream Slipped Unpainted	Count	27	2	29
		%	1.43%	2.38%	1.47%
	Red-on-tan Unpainted	Count	1		1
		%	0.05%		0.05%
	'Historic Unpainted Red and Cream Slipped'	Count	12	2	14
		%	0.63%	2.38%	0.71%

Table 3 (continued)

Tradition	Pottery Type		Feature 5: Stratum 8	Feature 2: Stratum 9	Table Total
Middle Rio Grande Utility Ware	Plain Utility Ware	Count	15		15
		%	0.79%		0.76%
	Carnue Gray	Count	1		1
		%	0.05%		0.05%
	Historic Polished Black	Count	14		14
		%	0.74%		0.71%
Middle Rio Grande Glaze Ware	Glaze Red Body Unpainted	Count	19	1	20
		%	1.00%	1.19%	1.01%
	Glaze Yellow Body Unpainted	Count	74		74
		%	3.91%		3.74%
	Glaze Unslipped Unpainted	Count	75	4	79
		%	3.96%	4.76%	4.00%
	Glaze-on-polychrome Undifferentiated	Count	1		1
		%	0.05%		0.05%
	Glaze Red Body Undifferentiated	Count	5		5
		%	0.26%		0.25%
	Glaze-on-yellow Undifferentiated	Count	72	1	73
		%	3.81%	1.19%	3.69%
	Glaze Unslipped Undifferentiated	Count	14	1	15
		%	0.74%	1.19%	0.76%
	'Puaray G-yellow'	Count	1		1
		%	0.05%		0.05%
	'Kotyiti G-yellow'	Count	3		3
		%	0.16%		0.15%
	'Kotyiti G-red'	Count	1		1
		%	0.05%		0.05%
Middle Rio Grande Polychrome Ware	Santa Ana Area Red Slipped Painted	Count	1	3	4
		%	0.05%	3.57%	0.20%
	Santa Ana Area Red Slipped Unpainted	Count	19		19
		%	1.00%		0.96%
	Santa Ana Area White Unpainted	Count	36	1	37
		%	1.90%	1.19%	1.87%
	Santa Ana Area Unslipped, Unpainted	Count	9		9
		%	0.48%		0.46%
	Santa Ana Area White Slipped, Painted	Count	2	1	3
		%	0.11%	1.19%	0.15%
Western Pueblo Polychrome Ware	'Acoma-Zuni Polychrome undifferentiated'	Count	2		2
		%	0.11%		0.10%
	Acoma/Zuni Historic Red Slipped Unpainted	Count	4	1	5
		%	0.21%	1.19%	0.25%
Navajo Utility Ware	Dinetah Gray	Count	2		2
		%	0.11%		0.10%
Navajo Polychrome Ware	Gobernador Polychrome	Count	1		1
		%	0.05%		0.05%
Total		Count	1892	84	1976
		%	95.75%	4.25%	100.00%

and middle parts of the seventeenth century. The earlier date is better supported by other data, including the dominance of glaze ware sherds.

These dating interpretations are also supported by observations concerning distributions of utility ware types, including the dominance of micaceous pottery with polished and sooted interiors and the absence of those with highly micaceous pastes. Also supporting an occupation fairly early in the Colonial period is a dominance of Tewa Polished Red within the historic plain wares, and a rarity of polished gray and polished gray or black wares (Table 3). The presence of Dinetah Gray and Gobernador Polychrome is also consistent with dates in the late seventeenth or early nineteenth century.

While the very small size of the sample (84 sherds) from Stratum 9 makes the assignment of a date for Feature 2 based on ceramic assemblages very difficult, we can at least state that this stratum contains more pottery from later contexts than was noted for Stratum 8 (Table 3). This later date is indicated by a lower percentage of glaze ware types (8.33 percent) and a higher percentage of Tewa polychrome types (15.48 percent versus 6.50 percent for Stratum 8). Further supporting this possibility are slightly higher, though still extremely low frequencies of polished black and gray wares and specimens with highly micaceous pastes. The presence of larger percentages of prehistoric types from Stratum 9 (15.48 percent versus 1.96 percent for Stratum 8) may indicate more mixing from nearby deposits than occurred in Stratum 8.

Animal Bone

Full analysis of the animal-bone assemblage was not possible because of time and scheduling constraints and will be completed during the data recovery phase. The collection was scanned to look for any human bone that might be present, and at that time preliminary data were collected concerning species represented in various proveniences and which species were most prevalent (when discernible). For the most part, only easily identified specimens were considered, and presence/absence tabulations were made. This preliminary examination provides baseline data that can be used to help guide further research at LA 161535.

Seventeenth-century deposits containing animal bone were identified in Test Pit 2 (Stratum 8) and Test Pit 10 (Stratum 18), which yielded a total of 965 specimens, only 4 of which were from Test Pit 10. Sheep/goat and cow bone each occurred in five of the seven samples in this assemblage, but sheep/goat predominated in 57.1 percent of the samples, while cow predominated in none. Other domestic species include chicken, pig, and horse. Some specimens from nondomesticated animals were noted, but are not yet identified to species, though at least one bone from a carnivore was identified. Fish bone was found in two samples from Stratum 8, and this is the only context at LA 161535 in which fish has as yet been identified.

Probable late nineteenth- to early twentieth-century deposits containing animal bone were identified in Test Pits 2 and 7–12, and these areas yielded a total of 1,504 specimens, though in many cases the deposits they came from displayed some evidence of disturbance. Sheep/goat bone occurred in most of the 38 samples assigned to this period and predominated in 5. Cow bone was much more common than it was in seventeenth-century contexts but predominated in no samples. Evidence of saw cuts was seen in 36.8 percent of the samples, and 26.3 percent contained identifiable steak or chop bones; these characteristics suggest dates in the 1880s or later (pers. comm., N. Akins, 2009). Other domestic species include chicken and pig, and nondomesticated animals were found in two samples (5.3 percent). A possible large-bird bone was seen in one sample, but whether or not it represents a turkey remains unclear. The contexts in which saw cut specimens or steak/chop bones were found included Stratum 7 in Test Pit 2, Stratum 9 in Test Pits 7 and 8, Strata 11 and 13 in Test Pit 9, Stratum 15 in Test Pit 10, and Stratum 20/21 in Test Pit 12.

Mixed deposits containing animal bone were identified in Test Pits 1, 2, 4–9, and 12. For the most part these deposits were from a sewer trench (Stratum 1 in Test Pit 1) or consisted of mixed building debris and cienega deposits (Stratum 2), which mostly yielded late nineteenth- to mid-twentieth-century artifacts but could feasibly also contain earlier materials. Twenty-one samples were assigned to this category and contained a total of 134 pieces of bone, which is only slightly more than 5 percent of the total sample. Sheep/goat bone occurs in 85.7 percent of these samples and

predominates in only one. Cow bone was noted in 42.8 percent of these samples and predominates in one. Other than definite turkey bone in one sample and possible turkey in another, no other species were identified. Saw-cut bone or steak/chop bone were noted in six samples, suggesting that they probably mostly date to post-1880. Two of these samples were from mixed deposits in a sewer trench (Test Pit 1), while the other four were from Stratum 2 in Test Pits 4, 5, 9, and 12.

Bone was recovered from cienega deposits (Strata 4 and 5) in two excavation units (Test Pits 3 and 7). Five samples were assigned to this category, and they contained a total of 34 pieces of bone, which is only 1.3 percent of the total assemblage. All but 2 of these specimens were recovered from Test Pit 7. The presence of domestic animal bone in preoccupational fill can probably be explained by downward movement by rodent activity from higher strata. Only cow bones were recovered from Test Pit 3, while mostly sheep/goat, some cow, and some woodrat bones were identified in Test Pit 7. Since one of the two cow bones from Test Pit 3 was from a steak or chop, those specimens probably date after 1880.

Chipped Stone

A total of 81 chipped stone artifacts from LA 161535 were examined according to standard OAS analytic methods (OAS 1994a). Chipped stone artifacts were recovered from ten test pits and one mechanically excavated trench (Table 1). Two proveniences yielded 62.5 percent of this assemblage: 18 chipped stone artifacts were recovered from Test Pit 2, and 42 came from Test Pit 5. Twelve of 18 chipped stone artifacts from Test Pit 2 came from seventeenth-century contexts and represent Spanish use; the 6 remaining artifacts came from probable nineteenth-century contexts. All 42 chipped stone artifacts recovered from Test Pit 5 came from a layer of artificial fill that represents materials moved from elsewhere, and these artifacts probably came from a prehistoric site in an unknown location. Test Pit 6 yielded 3 chipped stone artifacts from contexts similar to those in Test Pit 5, and they probably derive from the same prehistoric site. Three chipped stone artifacts were recovered from mixed deposits in a sewer trench in Test Pit 1 and may represent seventeenth-century materials. Four chipped stone artifacts came from mixed building debris and cienega deposits in Test Pit 3 and are probably evidence of late nineteenth- to early twentieth-century use. Late nineteenth- to early twentieth-century deposits in Test Pit 7 yielded 3 chipped stone artifacts, and 1 came from otherwise sterile cienega deposits in Test Pit 8. The latter is the only possible prehistoric chipped stone artifact recovered during testing. A single chipped stone artifact from Test Pit 11 came from solid late nineteenth- to early twentieth-century contexts, as did three from Test Pit 12 and one from BHT 8.

Only one formal tool was identified—a Madera chert biface found in mixed deposits. Five pieces of debitage were informally used as tools and include 1 piece of chert, 2 of Madera chert, and 2 of quartzite. All informal tools were recovered from historic contexts—3 from seventeenth-century deposits and 2 from late nineteenth- to early twentieth-century deposits. Surprisingly, no strike-a-light flints were identified. Chert was the most common material type in the seventeenth-century assemblage (n = 7; 58.33 percent), followed by quartzite (n = 3; 25 percent), and obsidian (n = 2; 16.67 percent). Chert was even more dominant in late nineteenth- to early twentieth-century deposits (n = 8; 80 percent), with gabbro and quartzite also occurring (for each, n = 1; 10 percent). The mixed deposit assemblage closely resembles that of the late nineteenth-early twentieth century, with cherts dominating (n = 9; 81.82 percent), followed by granite and quartzite (for each, n = 1; 9.09 percent). In contrast, cherts comprised only 21.73 percent of the probable prehistoric assemblage (n = 10), which was dominated by quartzite (n = 29; 63.04 percent). Other materials in the prehistoric assemblage include obsidian (n = 1; 2.17 percent), undifferentiated igneous (n = 1; 2.17 percent), gabbro (n = 1; 2.17 percent), and orthoquartzite (n = 4; 8.70 percent).

A simple core-flake reduction trajectory is indicated for each assemblage, with no evidence for biface manufacture identified. Though a biface was recovered from historic contexts, there is no evidence in the associated assemblage to suggest that it was made on-site, though the small size of our sample area makes this a weak assertion. Flake-to-angular-debris ratios range between 1.00:1 and 3.60:1, all comfortably within a range considered consistent with core-flake reduction.

Ground Stone

Thirteen pieces of ground stone were recovered (Table 1), mostly from Test Pit 2 (76.9 percent). Analysis of these artifacts was conducted using standard OAS methods (OAS 1994b). Nine of ten specimens recovered from Test Pit 2 came from Stratum 8, which dates to the seventeenth century. A quartzite lapidary stone from Test Pit 2 came from mixed building debris and cienega deposits (Stratum 2), which primarily seem to date to the late nineteenth to early twentieth century. A quartzite polishing stone was recovered from Stratum 1 in Test Pit 1, which contained mixed materials from seventeenth-century and nineteenth- to twentieth-century components, so this specimen probably also dates to the earlier component. The remaining specimens include a ground sandstone sphere from Stratum 2 in Test Pit 4 that might be a toy or gaming piece, and a quartzite one-hand mano fragment from Stratum 26 in Test Pit 6. Both of these specimens are from disturbed contexts and were either moved from elsewhere on the property or, in the case of the one-hand mano, from an unknown prehistoric site.

The assemblage from Test Pit 2 is dominated by palette fragments, with at least four examples of this type of tool occurring, including two of granite, and one apiece of orthoquartzite and sandstone. Another tool made from orthoquartzite is a palette fragment or a metate. The remaining ground stone tools include a quartzite polishing stone, two quartzite mano fragments (one burned), and a shaped granite slab. These tools represent a variety of tasks, including painting (palettes), pottery manufacture (polishing stone), and food processing (manos). Only the shaped granite slab cannot be assigned to any specific task.

Euroamerican Artifacts

A total of 2,419 Euroamerican artifacts were recovered from 12 test pits in which the fill was systematically removed, and few artifacts were collected during mechanical excavation of two backhoe trenches for dating purposes. Analysis of the Euroamerican artifacts was performed according to standard OAS methods (l994c). Field specimen (FS) numbers were assigned in the field, and additional lot numbers were assigned to each group of artifacts in the laboratory. Descriptive attributes, including function, material type, dating, manufacturing technique, decoration, and measurements were recorded. Functional attributes refer to the activities performed at a site during its occupation, and the variety of activities that occurred are recorded using ten category types, discussed individually below.

The largest frequency in the *unassignable items* category was unidentifiable glass, which included shards of curved bottle and flat glass (n = 488). The curved pieces came in a number of colors and probably belonged to a variety of bottle types. The flat glass may have belonged to paneled bottles or window panes, but this was difficult to distinguish using thicknesses, since historic bottles and window panes were produced in a wide range of sizes. When window glass was specifically identified, it was placed in the category of construction and maintenance. The color range for flat glass was not as varied as that of bottle glass and was recorded as clear, aqua, or light green. Scrap metal was the second most abundant artifact type in this category. A variety of other unassignable items were also identified but were substantially lower in number or were unique items. The distribution of artifact types by test pits is shown in Table 4.

The large number of artifacts in the *construction and maintenance* category (n = 1,249) demonstrates the multiple building and demolition episodes identified at LA 161535. Round (wire) nails (n = 532) were the most common artifact category, with smaller numbers of square (common), finishing, roofing, and carpet nail also occurring (Table 4). These artifacts were often heavily encrusted in rust and were at times difficult to differentiate. A variety of other hardware items such as screws, bolts, cotter pins, etc. were also found but were much less common.

Fragments of building materials including brick, linoleum (flooring), mortar, pipes, plaster, jaspe, ceramic tiles, solder, wire mesh, window glass, and roofing tiles (slate) were unevenly spread across the site. The roofing tiles (n = 12) are represented by fragmented slabs of slate, probably belonging to the mansard roof of the original sanatorium, which burned in 1896. Several glazed ceramic tile fragments from Seton Hall were stamped with a copyright date of 1881 on the reverse side and have been traced to the J. & J. G. Low Art Tile Works in Chelsea, Massachusetts (Kovel

Table 4. Category and function for Euroamerican artifacts (counts)

Category	Function	Test Pit 1	Test Pit 2	Test Pit 3	Test Pit 4	Test Pit 5	Test Pit 6	Test Pit 7	Test Pit 8	Test Pit 9	Test Pit 10	Test Pit 11	Test Pit	Totals
Unassignable	Unidentifiable	2				2	1	2	2	11	1	2	5	28
	Bottle	33	23	7	17	8	9	13	13	6	2	39	82	252
	Plug/Cap	2												2
	Disc	1				1					1			3
	Jar									3				3
	Mineral/Rock		85			1		1						87
	Ring					4								4
	Shell								1					1
	Slag	1	7						1			1	1	11
	Rod					1								1
	Tubing												2	2
	Wire					1								1
	Plate				1	1							4	6
	Sheet												1	1
	Band				1		1							2
	Washer												1	1
	Chain												1	1
	Decorative object	3	2			1		19	2	1			3	31
	Scrap		6	2		111		140						259
	Flat glass	23	30	6	48	8	13	15	28	8	2		55	236
	Foil	1												1
	Paper		2											2
	Pipe												1	1
	Totals	66	155	15	67	139	24	190	47	29	6	42	156	936
Economy/ Production	Clinker	1												1
	Totals	1												1
Food	Condiment: plastic package		1											1
	Unidentifiable												1	1
	Peach Pit		1											1
	Totals		2										1	3
Indulgences	Soda Bottle							2						2
	Ginger beer bottle		2							1				3
	Unidentifiable							1						1
	Wine Bottle		20							1	1			22
	Beer Bottle							2						2
	Totals		22					5		2	1			30
Domestic	Drinking straw - plastic												1	1
	Unidentifiable		1											1
	Crock								1					1
	Dough bowl				1									1
	Cup or bowl		1											1
	Unidentifiable		10		2	8	1							21
	Bowl								2					2
	Cup		3						9					12
	Soup plate											1		1
	Handle, Indet.		1		1								2	4
	Vessel, Indet.	2	12	3			1	5	1	7		6	23	60
	Plate		1	2				1	1				2	7
	Soup Bowl		1											1
	Plate/Saucer	1	1								1		1	4
	Cup or bowl		1					4	2	1				8
	Safety Pin	1												1
	Totals	4	32	5	4	8	2	10	16	8	1	7	29	126
Furnishings	Candlestick									1				1
	Light globe							1						1
	Unidentifiable	3			1									4
	Totals	3			1			1		1				6

Table 4 (continued)

Category	Function	Test Pit 1	Test Pit 2	Test Pit 3	Test Pit 4	Test Pit 5	Test Pit 6	Test Pit 7	Test Pit 8	Test Pit 9	Test Pit 10	Test Pit 11	Test Pit	Totals
Construction/ Maintenance	Plate							5	1	4	1	3		14
	Ring		1											1
	Rod		1		2	5		1						9
	Strap/Band/Strip	1		1	1									3
	Wire				10		1		1			3		15
	Pipe			1			6							7
	Steel marker		1							1				2
	Bolt, Machine											2		2
	Cotter Pin	1												1
	Hook		1											1
	Nail, Roofing		1	1			5			2			1	10
	Nail, Indet. Wire	7	10		32	19	196	77	50	22	29	28	62	532
	Nail, Finish	1	2		3		11			5	3	1		26
	Spike				1									1
	Nail, Common	4	11	17	3		2	7	3	26	1	2	5	81
	Bracket, Indet.	2												2
	Tack, Indet.											1		1
	Screw: indeterminate									1				1
	Bolt: Hex				1									1
	Nail: Double headed-scaffold			1	3		12	1						17
	Nail: Carpet		1											1
	unidentifiable						3	6						9
	Brick - solid	1	2	110	3		2			2		31	1	152
	Linoleum	154	4	2			2			1	1		4	168
	Mortar		1											1
	Pipe	1												1
	Plaster	3												3
	Tile	2	1	1				1			16	7	4	32
	Window Glass							30	25			13	8	76
	Jaspe		27					1			3			31
	Solder							1	1				1	3
	Wire mesh	15	1											16
	Concrete		1											1
	Roofing tiles (ex: slate)												12	12
	Insulator								1	1				2
	Fence						5							5
	Pipe Cap	1												1
	Sewer Pipe	5	1											6
	Totals	200	67	134	59	24	246	129	82	65	54	91	98	1249
Personal Effects	Button, 4-Hole							1	1			1	1	4
	Jean Stud/Rivet					1								1
	Boot, Indet.								1					1
	Ring												1	1
	Comb									1				1
	Syringe									2				2
	Medicine bottle, indeter.								1					1
	Dime	1												1
	Totals	1				1		1	3	3		1	2	12
Entertainment/ Leisure	Unidentifiable												8	8
	Jack												1	1
	Doll									1			2	3
	Miniature cup								4					4
	Paper Clip				1									1
	Pencil With Eraser												1	1
	Pigment							1						1
	Totals				1			1	4	1			12	19
Transportation	Emblem		1											1
	Totals		1											1

and Kovel 1986:182-C). The factory that produced these tiles operated between 1877 and 1907.

Most of the *domestic routine* items are found in a kitchen environment and include such items as cups, bowls, soup plates, saucers, plates, and mixing and dough bowls. None of the artifacts in this category were intact. When curved or flat fragments of pottery could not be specifically classified they were recorded as indeterminate vessels. Most of the ceramic items were whitewares, with smaller numbers of majolica, stoneware, ironstone, porcelain, and earthenware also occurring. Other domestic items identified were a safety pin and a fragment of a plastic drinking straw. The *furnishings* category contained part of a candlestick and a piece of a glass light globe. The only two items included in the *food* category were a peach pit and a plastic condiment package.

Personal effects items included evidence of clothing (buttons, a rivet, and part of a boot), grooming (an intact ring and a comb fragment), medicine (portion of a syringe and an indeterminate medicine bottle fragment), and money (one 1988 dime). The latter postdates the two historic components investigated and represents later contamination. The *entertainment, leisure, and education* category included a jack, doll parts, a miniature cup, a paper clip, a pencil, and pigment. The *indulgences* category contained fragments of soda, ginger beer, wine, and beer bottles. The *transportation* category contained only one artifact, a metal Chrysler emblem with an estimated date of 1962, which postdates both historic components and represents later contamination.

Test Pit 1 contained the largest amount of construction and associated materials in comparison with the other test pits. Linoleum fragments were the most common type of construction material found in this excavation unit. A variety of unidentified items was also recovered, with bottle and flat glass fragments occurring in moderate amounts. Only a few *domestic, furnishing, and personal effect* items occurred in this excavation unit. Beginning dates for artifacts from Test Pit 1 range from 1598 for a possible piece of Chinese porcelain to a contemporary 1988 dime, with beginning dates for the remaining artifacts ranging mostly between 1800 and 1930.

Test Pit 2 contained an Early Spanish Colonial–period assemblage in addition to nineteenth-century materials and produced high frequencies of unidentified bottle, flat glass, and mineral fragments. Most of the wine bottle fragments came from this excavation unit, as well as a variety of fragmented eating and serving dishes. Construction materials were present but infrequent; most consisted of pieces of jaspe. Part of a 1962 metal Chrysler automotive emblem was recovered from this test pit and was placed in the *transportation* category. Most of the majolica fragments in the LA 161535 assemblage came from Test Pit 2 (n = 12), with one other piece occurring in Test Pit 11. Based on the presence of Chinese porcelain and Mexican majolica, a solid Spanish Colonial component dating between 1600 and the very early 1800s is represented, as well as a later historic component dating to the late nineteenth to early twentieth century.

Test Pits 3, 4, 5 and 6 were located on the north side of LVR and yielded a moderate number of artifacts, with the largest number found in Test Pit 6. The latter can be attributed to the presence of 196 wire nails, several other nail types, and a variety of other hardware and construction items. Construction of the existing LVR building and revamping of the northeastern hospital parking lot into a landscaped area may have contributed to the deposition of these construction materials. Domestic items were rare in each of these test pits and included single occurrences of a rivet from jeans, a paper clip, and various unidentifiable objects such as bottle fragments, minerals, tubes, plates, and wire fragments. A large amount of unidentifiable scrap metal (n = 111) was recovered from Test Pit 5. Beginning dates for artifacts recovered from these test pits mainly clustered between the 1820s and 1930s.

Test Pits 7 and 8 produced large amounts of animal bones and were considered to be in the location of a kitchen midden. Domestic and indulgence items (soda and beer) were uncommon, and unassignable items were the most common artifacts, especially in Test Pit 7 (n = 190). Smaller numbers of artifacts represent the furnishings, personal effects, and entertainment categories. Most of the datable artifacts from these test pits have beginning dates that cluster between 1820 and 1930.

The Test Pit 9 assemblage was dominated by the construction category, mostly consisting of wire and common nails, and items in the unassignable category were also abundant.

Artifacts belonging to the indulgence, domestic, furnishings, personal effects, and entertainment categories were much less common. The beginning dates for most of the artifacts from this test pit clustered between 1820 and 1930.

Test Pits 10 and 11 were within the footprint of the former Seton Hall. The demolition of this building probably contributed to the presence of moderate numbers of construction category artifacts (nails and bricks) found in these excavation units. Unidentifiable bottle fragments were fairly common in Test Pit 11, with a few pieces also coming from Test Pit 10. One wine bottle fragment (indulgence category) and a few broken dishes and a blue-jean stud were also recovered. Pottery including porcelain, white-ware, and ironstone sherds was found in both test pits, with ironstone sherds occurring much more commonly in Test Pit 10. One unidentified Mexican majolica sherd was recovered from Test Pit 11. Most of the beginning dates assigned to artifacts from these test pits clustered between 1820 and 1930.

Test Pit 12 contained the second largest number of Euroamerican artifacts. Most of these artifacts were unidentifiable items (n = 156), primarily consisting of bottle and flat glass fragments. Smaller amounts of unidentified domestic vessel fragments (n = 21) and construction materials (n = 98) were recovered. Wire nails were the most common construction material, with smaller numbers of brick, linoleum, ceramic tile, and slate roofing tiles also occurring. A few personal items including children's toys and a pencil were found in this excavation unit. Most artifacts from this excavation unit dated to the late nineteenth to early twentieth centuries.

A sample of artifacts was also recovered from BHT 6 and 8 for dating purposes. Eight artifacts were collected from BHT 6, and 28 came from BHT 8. The categories represented include unidentifiable, domestic, construction, indulgence, and personal effects. The few artifacts from BHT 6 date between 1830 and 1880, while those from BHT 8 date from 1830 to 1930. The later ending date for BHT 8 is attributable to the presence of a single clear window glass fragment.

The results of this analysis suggest two periods of occupation. The Spanish Colonial period is represented by the early component artifacts in Test Pit 2. Dates between 1800 and 1940 are suggested by assemblages from Test Pits 1, Test Pits 3 to 12, and BHT 6 and 8. Except in Test Pit 2, few of the porcelain and majolica sherds with beginning dates at 1598 were actually manufactured that early and are probably more accurately assigned to the eighteenth and nineteenth centuries. The artifacts with late dates, including the 1962 Chrysler emblem and 1988 dime, represent a continuum of displaced objects that were deposited through time.

Within the functional categories, construction and maintenance items were the most common. This function provides evidence of construction and demolition activities related to the numerous buildings that once stood on the property or that remain to this day. Unidentifiable artifacts were the second most common category recovered. These fragmented objects could not be associated with any specific activities, so they were not placed in distinct categories. Domestic category items were uncommon but occurred in every test pit and both of the sampled mechanically excavated trenches. A few examples of food, indulgences, furnishings, personal effects, entertainment, and transportation category items were identified in several units.

Human Bone

A single piece of human bone was recovered from Test Pit 7. This specimen was a section of an adult cervical or thoracic vertebra and was found in late nineteenth-century kitchen midden deposits (Stratum 9).

Discussion and Summary of Artifact Assemblages

Artifacts were recovered from all test pits and a few of the mechanically excavated trenches, providing potential temporal and economic information concerning the two periods of occupation at LA 161535. Table 1 shows the distribution of collected artifacts by excavation unit. Nearly half of the artifacts recovered during this project came from Test Pit 2 (44.75 percent), with 40.66 percent of the overall assemblage originating in Stratum 8 in Test Pit 2. Stratum 8, which represents Feature 5 midden deposits, produced by far the largest number of artifacts of all the strata defined during testing. The second most productive soil layer was Stratum 9, which represents Feature 2 midden deposits in Test Pits 7 and 8 and yielded 22.25 percent of the overall assemblage. Together

these test pits yielded 25.72 percent of the overall assemblage. The only other excavation unit that yielded over 4 percent of the overall assemblage was Test Pit 1, which was excavated into disturbed contexts and provided 4.29 percent of the assemblage. Though potential culturally deposited strata were identified in Test Pits 9 and 12, those excavational units yielded only 5.27 percent and 4.89 percent of the overall assemblage, respectively. Thus, in terms of ability to provide further information concerning both periods of occupation at LA 161535, the areas containing Features 2 and 5 have the highest potential.

Aspects of temporal control and dating that are mostly applicable to the test pits that encountered relatively undisturbed historic deposits can now be discussed in more detail. The occurrence of a few prehistoric sherds in various test pits is evidence of a very thin underlying prehistoric component or the historic collection of prehistoric materials and subsequent deposition in corresponding trash. A few prehistoric sherds were recovered from Test Pits 2, 7, 8, and 9, with the largest number coming from Test Pit 7. Prehistoric sherds were found in Strata 2, 9, and 5 in Test Pit 7, with only two Santa Fe Black-on-white (Poge variety) sherds from Stratum 5 potentially representing in situ materials. Ten of eleven prehistoric sherds in Test Pit 2 came from Stratum 8—seventeenth-century midden deposits—and were mixed throughout that layer. This distribution suggests that the prehistoric sherds were collected by seventeenth-century people and eventually discarded in corresponding trash deposits. Prehistoric sherds commonly occur in historic Spanish middens and are usually considered curated objects rather than evidence for an underlying prehistoric component. Considering the proximity of LA 161535 to Coalition-period sites, these materials would have been readily available for casual collection. Despite the occurrence of a few prehistoric sherds at various points around the property, no definite evidence for a component predating the seventeenth century was found. The few sherds and perhaps chipped stone artifacts dating before the Early Spanish Colonial period represent objects that were moved during later periods or are part of a halo of prehistoric materials around the actual centers of late Developmental- and Coalition-period occupation in the downtown Santa Fe area.

Stratum 2—fill moved from elsewhere on the property—contains artifacts with beginning dates ranging from the seventeenth to the twentieth centuries, demonstrating the mixed nature of this deposit. Stratum 2 was encountered in 7 of 12 test pits and contained mixed materials in all areas. Except for one majolica sherd from Test Pit 2, no Euroamerican artifacts that definitely predate 1800 were found in Stratum 2. That sherd was from a Guadalajara Polychrome vessel, with an estimated manufacturing date between 1650 and 1800, so it could date to either the seventeenth or eighteenth century. While most of the local pottery types from test pits have fairly long manufacturing spans, seventeenth-century glaze wares were recovered from Stratum 2 in Test Pits 4, 7, 9, and 12. Again, this shows evidence for the mixing of materials dating from several centuries of occupation, verifying our conclusion that Stratum 2 represents materials moved from elsewhere on the property as artificial fill.

Examination of dates associated with Euroamerican artifacts from Feature 5 in Test Pit 2 suggests some downward mixing of later materials rather than completely intact midden deposits. About half of the Euroamerican artifacts (11 of 23) from Stratum 8—the seventeenth-century midden deposit—have beginning dates up to 1700, while the rest have beginning dates in the eighteenth through twentieth centuries. Seven of the former are from majolica vessels that probably date to the late seventeenth century, and two are Chinese porcelain sherds that almost certainly date to that period. The two remaining specimens are majolica and unrefined earthenware sherds that have beginning dates at 1700 and were used through most of the eighteenth century. These two sherds could represent contaminants from the early part of the Late Spanish Colonial occupation. The later materials found in Stratum 8, especially those from the nineteenth and twentieth centuries, most likely moved downward through bioturbation, partly contaminating the midden deposits with later materials. This should not prove to be an insurmountable obstacle to a more detailed analysis of the assemblage from Feature 5, since the later materials can usually be identified and removed from consideration. Stratum 18 in Test Pit 11 was also considered a candidate to contain seventeenth-century deposits. Eight locally manufactured sherds

were recovered from this stratum, most of which cannot be accurately dated. However, the presence of a single glaze ware sherd suggests a seventeenth-century date. Coupled with a total absence of Euroamerican artifacts, a seventeenth-century date for this stratum seems likely.

Stratum 9, representing nineteenth-century midden deposits in Feature 2, was only found in Test Pits 7 and 8. Locally manufactured pottery was fairly common in both test pits, with a few prehistoric sherds occurring in both. Several seventeenth-century glaze ware sherds were also recovered from Test Pit 8, mostly from the uppermost level in Stratum 9, but none came from Test Pit 7. Since this level was directly below Stratum 2, the presence of these sherds in Stratum 9 may represent downward movement through bioturbation from the overlying mixed deposits. No seventeenth-century Euroamerican artifacts were recovered from either of these test pits; all dated Euroamerican artifacts probably originated during the nineteenth or early twentieth centuries.

Test Pit 9 also contained apparently in-place historic-period deposits. All datable Euroamerican artifacts from this excavation unit were made in the nineteenth or twentieth centuries. Seventeenth-century glaze ware sherds were recovered from Strata 2, 10, 11, and 13, the latter lying just above sterile preoccupational deposits (Stratum 5). This suggests that there is some mixing of materials from both the early and late historic-period occupations, but the extent of this mixing and how it came about are impossible to determine from the small sample currently available. However, the culturally deposited strata in Test Pit 9 appear to have been laid down in the late nineteenth to early twentieth centuries.

The last excavation unit containing what appear to be intact cultural deposits is Test Pit 12, which contained a possible foundation laid in a trench and a cobble pavement, both believed to date to the late nineteenth to early twentieth centuries. The presence of a number of fragments of clear bottle glass dating after 1930 in the foundation trench suggests that this feature was built after that date. This would explain why no structure was seen in this location on any of the Sanborn maps, since the last map we had available for examination was from 1930. Most of the locally manufactured pottery recovered from the foundation trench may represent earlier materials that were mixed into the deposit when the trench was excavated, especially since one of the sherds is a seventeenth-century glaze ware.

Summary of the Sisters of Charity Complex Site and Recommendations

The Sisters of Charity complex site (LA 161535) is a multicomponent manifestation located under the west parking lot and landscaped area next to Cathedral Park of the LVR/Marian Hall complex in downtown Santa Fe (Fig. 26). Test excavations have revealed the presence of a seventeenth-century component comprised of Features 5 and 6 in Test Pit 2, Stratum 18 in Test Pit 10, and possibly Feature 4 in BHT 8. This component is in the northwest quadrant of LA 161535 and is temporally and mostly spatially separated from the later component.

The second and dominant component includes the remains of buildings and features associated with the late nineteenth- to mid-twentieth-century use of the property by the Sisters of Charity, who operated a hospital, orphanage, and school, as well as residing in dormitories on the property. The foundations of up to four associated buildings and rubble from two others were identified, along with several features including a hospital kitchen midden (Feature 2), trash pit (Feature 1), possible statue base (Feature 3), and possible stable yard or paddock (Feature 7).

All of the features and foundations identified by this testing project have the potential to provide further information, both on the use of the property in the seventeenth and late nineteenth to early twentieth centuries, and concerning contrasts in lifestyle, including economic and dietary variation between these occupational periods. We recommend that LA 161535 is significant according to Ordinance 14.75.15(F) and that data recovery be initiated prior to construction in order to provide more detailed information on the cultural resources that exist at LA 161535. Because the entire property will not be developed, some features and structural foundations will not be directly impacted by construction activities but could feasibly be damaged by later utility work or landscaping. Thus, we propose a phased plan for data recovery, giving high priority to areas that will be directly impacted by construction and low

priority to areas outside the construction zone that might be affected by related activities. While further examination of the resources included in the high-priority phase is considered necessary before construction proceeds, examination of resources in the lower-priority phases should only be conducted at the discretion of DSW. Implementation of optional phases would become high priority should construction plans change to the extent that those resources will be directly affected. The latter includes the construction of utility corridors and landscaping as well as modifications to existing buildings and construction of the planned below-ground parking garage. One or more of the optional phases could also be implemented at the discretion of DSW in order to collect information that would expand and amplify the results of testing.

In the rest of this report we develop a data recovery plan and detail the recommended phases. We begin by providing a short theoretical framework, followed by a discussion of excavation methods. Analytic frameworks for various artifact classes expected to be recovered are provided, and the types of data available from these analyses are discussed and linked to the overall plan. Finally, parameters for the various data recovery phases are discussed, and details of the areas, structures, and features that will be examined by each are provided.

A Data Recovery Plan for the Sisters of Charity Complex (LA 161535)

Economic and Political Changes

LA 161535 is a multicomponent historic site with evidence for both seventeenth- and late nineteenth- to mid-twentieth-century occupations. Differences in the structures of artifact assemblages from these components are related to a long series of economic changes that correspond to political events and demography as well as variation in transportation systems. The interplay between political forces, available sources of imported goods, demand for certain goods, and methods of transportation helped shape the economic livelihood and development of New Mexico throughout the historic period. That interplay can be modeled and used to predict how assemblages from these periods will vary and help explain that variation.

Santa Fe may be an especially good laboratory in which to examine some of these changes because of its unique position as the only capital of the province, territory, and eventually state of New Mexico during the historic period. Besides serving as the political capital, Santa Fe was also the social and economic center of New Mexico during much of its history. Thus, economic changes would be expected to occur there early and to be readily visible, where they might be delayed and less visible in the hinterlands. While we can discuss and model the series of economic changes that occurred throughout the historic period, we must keep in mind that our data will probably be limited to two periods rather than spanning the entire Spanish and Anglo-American occupations. This necessarily will limit the scope of expected results.

While the historic occupation of Santa Fe has been continuous since its founding around 1610, there have been important periods of political disruption that affected the economy. The first critical disruptive event was the Pueblo Revolt of 1680–1693 (Sando 1979). This short period represents a hiatus in the Spanish occupation of Santa Fe, as the Pueblo Indians and their Apachean allies briefly united in rebellion and successfully drove the Spanish from New Mexico. Until the Spanish reconquest and resettlement of New Mexico in 1693, they were supplanted as occupants of the capital by Pueblo Indians, predominantly Tanos that formerly inhabited villages in the Galisteo Basin (Kessell et al. 1995). The Pueblo occupation of Santa Fe allegedly saw massive changes to the villa, including the transformation of houses and government buildings around the plaza into a large, contiguous, multiroomed pueblo (Kessell et al. 1995). The parroquia was burned and leveled and was being used as a corn field when Vargas returned in 1693 (Kessell et al. 1995:495). The Tano pueblo was demolished after the Pueblos were forced from Santa Fe, and the Spaniards rebuilt the capital in 1699.

This short period is difficult to account for, archaeologically, because the material culture reflected in deposits from the Pueblo Revolt period are probably very similar to those produced by the Spaniards before and just after that event. Some materials recovered during excavations at the Palace of the Governors in the 1970s are often thought to have originated with the Pueblo occupation of the capital (Seifert 1979), but this remains uncertain because of the aforementioned similarities. While likely that the seventeenth-century deposits encountered during testing at the LA 161535 are related to the early Spanish occupation of Santa Fe, we cannot rule out the possibility that they could have been generated by Tanoans during the Pueblo Revolt period, or by Spaniards early in the eighteenth century. Thus, all of these possibilities must be considered.

With the Pueblo Revolt, the long Spanish Colonial occupation can be neatly divided into three temporally discrete periods: Early Spanish Colonial period (1598–1680), Pueblo Revolt period (1680–1693), and Late Spanish Colonial period (1693–1821). Each of these periods was characterized by different economic patterns tied to the respective political and transportation systems (Moore 2004). The success of the Pueblo Revolt resulted in a major change in the role filled by New Mexico in the Spanish Empire. The focus during the Early Colonial period was on missionization, and this made the church a major player in the province, both politically and

economically (Ellis 1971; Simmons 1979). The secular population received little official support from the Crown, and this created friction between church and state that got rather nasty at times. While the missions received goods and supplies from Mexico on a regular basis (Scholes 1930, 1935), the Spanish settlers had to rely heavily on locally produced goods (Moore 2001, 2003, 2004). As discussed in the historical overview, Spaniards exploited the Pueblo Indians as sources of tribute and cheap or free labor during the Early Spanish Colonial period. This also contributed to the friction between church and state, since both entities were exploiting the Pueblos. Caught in the middle of this conflict and resenting the enforced missionization and attempts to supplant their native religions with Christianity by the church as well as requirements that they supply tribute and labor to the secular population, the Pueblos finally successfully revolted in 1680 (Sando 1979).

While the Pueblo Revolt only served to drive the Spaniards from New Mexico for a dozen years, it resulted in important and far-reaching changes in the focus of the Spanish government's interest in New Mexico. The encomienda and repartimiento systems were eliminated after the Reconquest (Simmons 1979), so the Pueblos could no longer be legally forced to provide labor, and that role had to be filled by the Spaniards themselves. This eventually led to the development of new labor systems, such as the partido system of sheep management (Baxter 1987). Rather than a field for missionization, the function of the New Mexican colony became the protection of more prosperous territories to the south from raids by nomadic Indians (Bannon 1963). This led to a severe reduction in the power of the church, with a concomitant increase in the power and influence of the secular government.

Throughout the Spanish Colonial period the New Mexican economy was based on a stable barter system, and money did not circulate freely (Baxter 1987:69; Frank 2000:141; Thomas 1932:113). Hard specie was concentrated in the hands of a few wealthy families and was mainly used to pay taxes or purchase goods in Mexico for resale in New Mexico (Simmons 1968; Weber 1982). Documentary and archaeological evidence both suggest that, despite long-held beliefs, New Mexico was better supplied with imported durable goods during the Early Spanish Colonial period than it was during the Late Spanish Colonial period (Moore in prep.). In addition to the mission supply caravans, seventeenth-century New Mexico was also supplied by independent traders, many of whom obtained their goods from Parral in northern Mexico rather than from Mexico City, farther to the south (Hendricks and Mandel 2002). With the demise of the mission supply system in the early 1700s, the supply system came to depend on annual caravans that transported goods to Mexico and back using mule trains (Connor and Skaggs 1977:21). Despite the almost annual nature of these caravans, fewer widely affordable durable goods were apparently available in New Mexico than was the case for the Early Colonial period. While wealthy citizens may have been able to purchase sufficient quantities of needed durable goods in the Late Colonial period, this was not true for the lower classes, who appear to have been able to afford fewer durable imported goods than they could during the Early Colonial period.

Thus, we have a situation that is the reverse of conventional wisdom, which held that, other than the missions, New Mexico was very poorly supplied with goods imported from Mexico during the Early Colonial period, with the supply of such goods improving in the Late Colonial period. Fewer durable imported goods appear to have been available through most of the eighteenth century, with supply only improving after peace was made with the Comanches and Apaches in the late 1780s, when New Mexico underwent an economic renaissance of sorts (Frank 2000). Mainly attributable to improved attention to the security and economic condition of New Spain during the reign of Carlos III, the peace that prevailed from about 1790 to 1812 coupled with a relaxation of trade restrictions led to a boom in the New Mexican economy, which ended during the turmoil of the Napoleonic takeover of most of Spain and the beginning of the Mexican Revolution (Frank 2000; Parkes 1960; Weber 1992). In order to procure goods from Mexico for resale in New Mexico, merchants had to have goods to export, and peace was needed to produce those exports and get them safely to markets in the south. While not directly participating in the Mexican Revolution, that conflict caused unsettled conditions in the south that severely impacted the markets for

New Mexican goods. The short recovery came to an end, once again, because of the effect that the political situation had on the economy.

Throughout the Spanish Colonial period, Spaniards depended on Pueblos to provide certain commodities that were difficult and expensive to import from Mexico. Chief among these goods was pottery, most of which was obtained through barter with the Pueblos. Indeed, Pueblo pottery is the most common durable good found on Spanish sites throughout the Colonial period in New Mexico, with imported pottery generally comprising very small percentages of assemblages (Moore 2001, 2003, 2004). Most durable imports whose source is traceable were manufactured in Mexico, though Chinese porcelain sometimes occurs in seventeenth-century assemblages and was carried up the Camino Real from Mexico after being imported from China via the Philippines. Goods from northern European sources or manufacturers in the United States are very rare because of Spanish trade restrictions, which required colonies to trade only with other Spanish colonies or with Spain itself (Weber 1982:123). Thus, throughout the Colonial period, goods could only be imported up the Camino Real from the south—a few attempts by French traders to establish ties with New Mexico were frowned upon and actively discouraged by arrest and confiscation.

This period of economic isolation ended with the opening of the Santa Fe Trail in 1821, resulting in another major change in economic patterns that is also traceable to political change. When Mexico won its independence from Spain in 1821, one of the first changes in policy was the elimination of monopolies held by entities in Spain that made them the sole source of certain imported goods such as iron, for which Vizcaya enjoyed a monopoly on production for the New World (Simmons and Turley 1980:18). Though the importation of merchandise over the Santa Fe Trail improved the supply of durable goods in New Mexico to a certain extent, the focus of that trade soon became markets to the south in Mexico proper, where demand was higher and cash more readily available. Early Santa Fe traders often complained about the lack of cash in New Mexico and were most often paid through the traditional New Mexican system of barter (Conner and Skaggs 1977).

The final major political change that affected the local economy occurred when New Mexico was annexed by the United States in 1846 during the Mexican War. This acquisition seems to have begun to jolt New Mexico into a cash economy and further improved the supply of durable goods. However, New Mexico was not fully integrated into the United States economy until after the railroad arrived in 1880, providing more rapid and cheaper shipping for imported goods (Glover and McCall 1988). Analysis of the structure of assemblages from Spanish sites dating between the Early Spanish Colonial and Railroad periods shows that this series of economic and political changes are visible in percentages of durable imports as well as the types and sources of goods being imported (Moore 2004). Percentages of durable imports in assemblages decrease between the Early and Late Spanish Colonial periods, increase a fair amount in the Santa Fe Trail period, and increase greatly in the early Railroad period. At the same time, we see a decrease in imports from Mexico during the Santa Fe Trail period, and again in the Railroad period. By the 1920s, Spanish assemblages seem to be mostly comprised of goods imported from the eastern United States, though there remains some evidence for the use of traditional goods such as Pueblo pottery and even chipped stone.

Immigrants from the United States arrived in this economic milieu at the beginning of the Santa Fe Trail period, but comparatively few tended to remain as residents until after New Mexico was acquired by the United States. After that date we see increasing numbers of immigrants from the east arriving in New Mexico and causing major changes in consumption patterns with their demands for the types of goods and foods they traditionally consumed. This finally brings us to the second component, which mainly represents the beginning of the Railroad period into the early to mid-twentieth century but may date as early as the Santa Fe Trail period. Rather than reflecting the long-time Spanish occupants of Santa Fe, the Sisters of Charity complex reflects the influx of people from the eastern United States in the late nineteenth century, often blending indigenous characteristics with nontraditional consumption patterns. The new consumption patterns that arrived with the immigrants should contrast with those of the native Spaniards.

Besides representing an economic pattern different from that of the Spanish occupants of New Mexico through the late 1800s, the Sisters of Charity complex also represents an industrial institution providing a variety of services to the community including a hospital, sanatorium, orphanage, and old folks home (Kimball and Clark 1977; Appendix 1). Thus, the associated assemblage may contrast not only with those of Spanish households during the Colonial through late Santa Fe Trail periods, they may also contrast with assemblages from Anglo households occupied at about the same time, as well as with military remains from the Fort Marcy complex.

Data Recovery Phasing

A series of phases is recommended for examining archaeological remains at LA 161535, including investigations that should be completed before the initiation of land-altering activities during construction as well as several focused on areas outside proposed construction limits that are considered voluntary on the part of DSW, unless some aspects of construction should impinge on those areas. Investigations that should be completed before initiation of land-altering activities will encompass the section of LA 161535 in which construction is scheduled, and a buffer zone around that area to help account for any difficulties that might occur during construction. Voluntary phases are aimed at investigating remains in areas of the site outside the construction and buffer zones that might be impacted by secondary construction activities such as utility work or landscaping, or for which DSW desires the collection of further information concerning the extent of remains for future planning or other purposes. Though the phases are numbered in this plan, there is no need to implement them in any particular order, since they are all essentially independent of one another. Figures 31–33 present overlays of sections of Sanborn fire maps showing various plans of buildings associated with the Sisters of Charity complex on an aerial photograph of the LVR/Marian Hall complex and provide estimated locations for buildings that once existed on this part of the property and that will or may be encountered during data recovery. Since the correspondence between these maps is not exact, building locations can only be considered relative until verified through excavation.

Phase 1: The Construction Zone at LA 161535

Currently, the construction zone will encompass the west third of LA 161535, including areas in which the foundations of the orphanage were found in BHT 1 and 2, a possible exterior activity area in Test Pit 9, and Feature 2 in Test Pits 7 and 8. Since construction plans were incomplete at the time this report was in preparation, these approximate boundaries may change, so the definition of this area will remain general until plans are finalized. When exact construction boundaries have been determined, the area within those boundaries as well as a buffer zone extending at least 10 m beyond the construction zone within property limits will be examined. The addition of the buffer zone will help avert the potential for inadvertent damage to cultural remains located beyond defined limits during construction.

Testing defined the foundations of an orphanage building, a kitchen midden (Feature 2), and a probable exterior activity area within the projected construction zone. These remains will be examined and recorded in more detail in order to ensure that sufficient archaeological data are collected to provide a full record of these manifestations. For the orphanage, data recovery will entail the definition, mapping, and description of remaining structural foundations and any associated features that might be encountered during excavation. The examination of Feature 2 will be aimed at defining the horizontal and vertical extent of this midden and the recovery of a representative sample of cultural materials, with the percentage of feature to be examined dependent on its overall size. A small size will result in the examination of a large section of the feature, while a large size will result in the examination of a comparatively small part. For example, excavation of 40–50 percent of a feature that covers 10 sq m or less might be necessary and desirable to provide a detailed examination of its contents, while a feature size of 100 sq m or so might only require excavation of 10 percent or less to reach the same level of detail. The amount of excavation needed will be determined when the full extent of the feature is known.

A possible exterior activity area in Test Pit 9

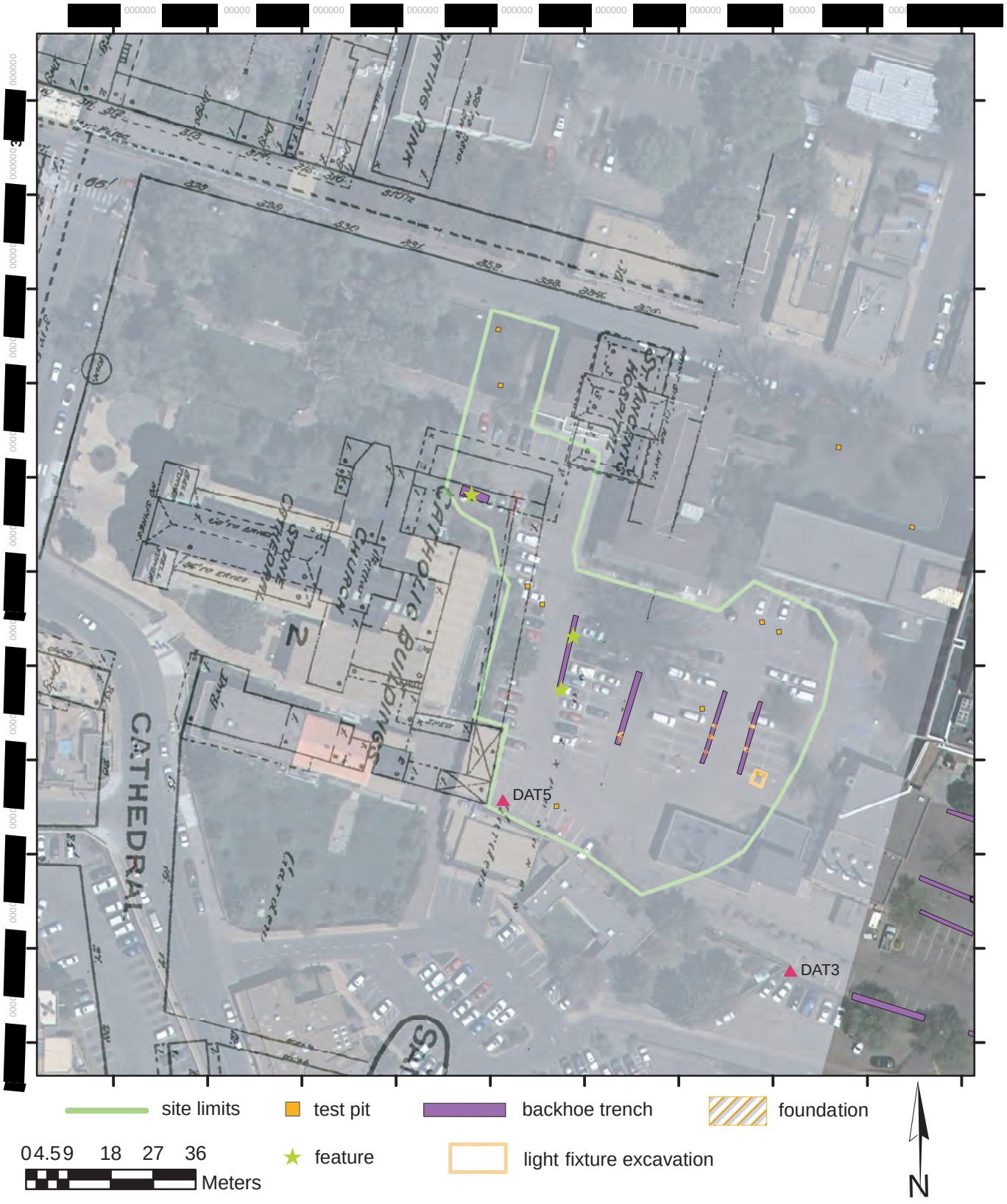

Figure 31. Overlay of the 1886 Sanborn map on an aerial view of the LVR/Marian Hall .complex, showing the locations of excavation units, foundations, and features.

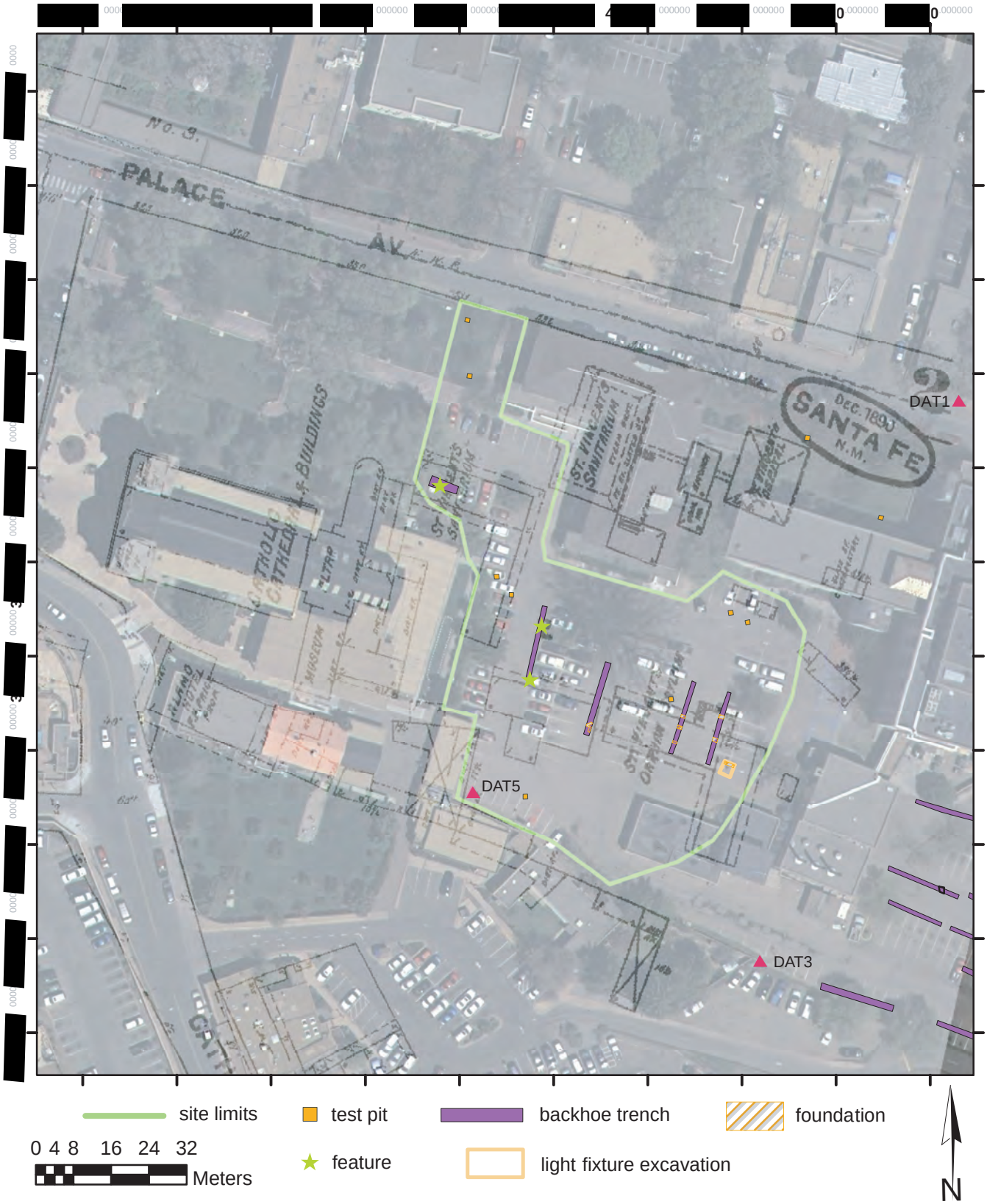

Figure 32. Overlay of the 1890 Sanborn map on an aerial view of the LVR/Marian Hall complex, showing the locations of excavation units, foundations, and features.

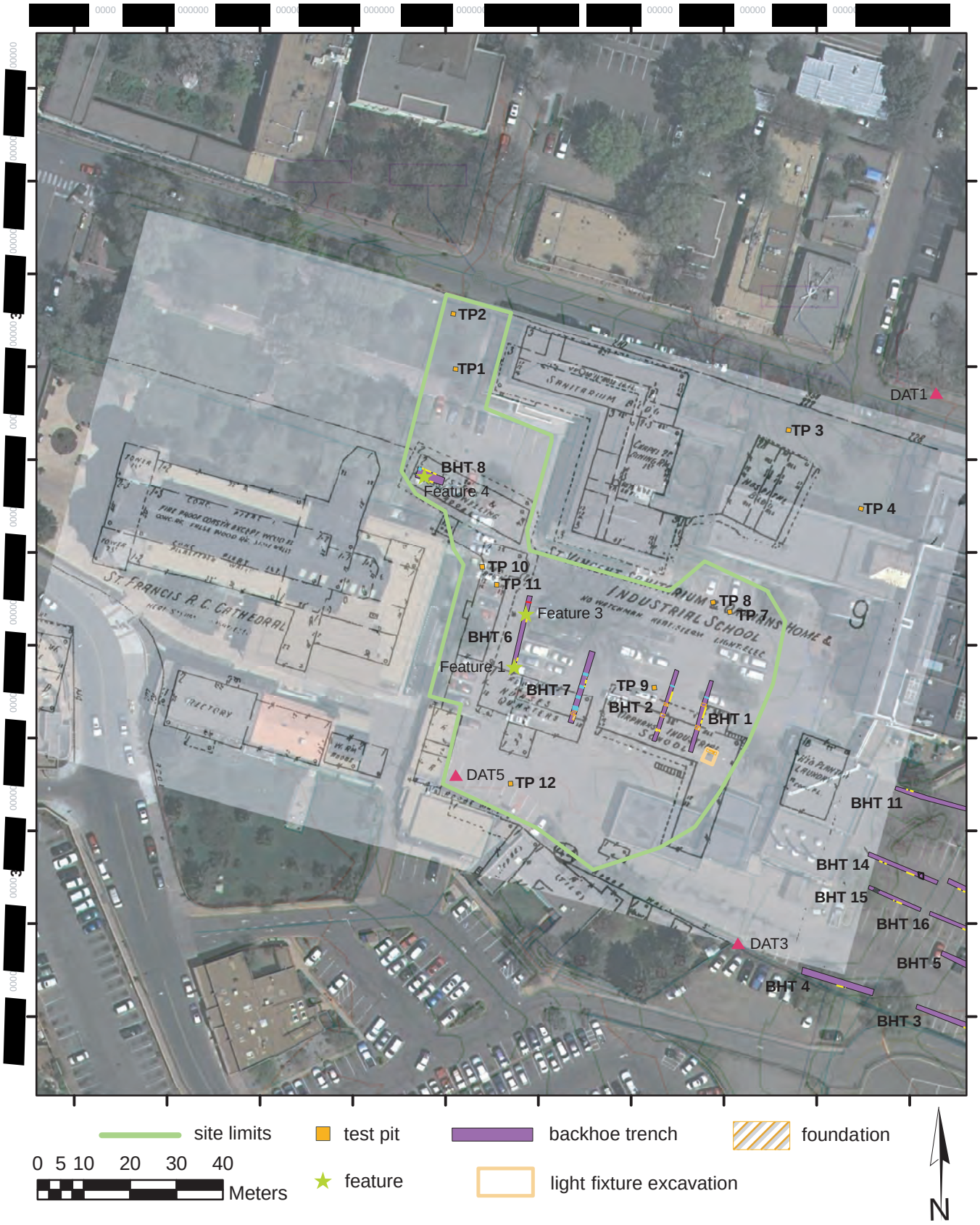

Figure 33. Overlay of the 1930 Sanborn map on an aerial view of the LVR/Marian Hall complex, showing the locations of excavation units, foundations, and features.

will be examined to determine its actual nature, function, and period of use. If the location of the orphanage in Figure 33 in relation to foundations encountered in BHT 1 and 2 and the current buildings on the property is correct, then the area investigated by Test Pit 9 was in the front yard of the orphanage. According to a historic photograph of that part of the building, this area was once landscaped with grass and bushes. Since the orphanage was a brick building, the presence of adobe melt is difficult to explain and requires further study. The nature of cultural deposits beneath the adobe melt layer should also be examined in more detail to determine whether it represents cultural fill. If cultural fill is present, a sufficient sample should be excavated to allow assessment of its nature and depth, as well as possible relationships with buildings in the complex.

Because the remains of other structures associated with the Sisters of Charity complex may also exist within the construction zone in areas that were not examined during testing, an effort will be made to locate and record any evidence of such structures that might still exist. Specifically, the northeast section of the west lot may contain the remains of three small structures associated with the complex that were built sometime between 1886 and 1890 and were demolished by 1898 (Fig. 32). Since this part of the parking lot suffered considerable disturbance during the construction of LFR and contains several sewer and other utility lines, the possibility that remains of these structures will be found is probably low. The remains of a cellar associated with the orphanage may also still exist between the foundations of that structure and the modern power plant. Though that area has also suffered considerable disturbance, data recovery efforts will include an attempt to find and define that structure, to determine the type of fill it contains, and record any structural details that are still available.

The east edge of the dormitory may extend into the construction area, and almost certainly will fall within the 10 m buffer zone (Fig. 33). Phase 1 examination of this building will focus on the section of its foundations that extends into these zones. Likewise, the possible structural foundations found in Test Pit 12 may be on the edge of the buffer zone, and if so, will also be examined in more detail. Overlays of Sanborn maps on an aerial photograph of the property (Figs. 31–33) do not show a building at the location of Test Pit 12, and analysis of artifacts from the foundation trench suggests a post-1930 date. Examination of the area containing the foundations identified in Test Pit 12 will help date them and may aid in determining the accuracy of the Sanborn maps and their utility in predicting the locations of former buildings on a site, as well as helping to identify the function of these remains.

Phase 2: Associated Buildings outside the Construction Zone

Evidence of several other buildings associated with the Sisters of Charity complex was found during testing and as historic plans of the property were analyzed. While data recovery is not mandatory for these remains, some level of documentation and examination is desirable because of the potential for changes in construction plans, utility construction, or landscaping to cause damage to them. Should DSW request that this phase of investigation be carried out, its focus would be the delineation and detailed mapping and description of foundations related to the footprints of those other buildings including the remaining section of the dormitory, Seton Hall, the Old Seminary, and the foundations identified in Test Pit 12 should they not be within project limits during Phase 1 investigations. Because of its probable association with Seton Hall, Feature 3—a possible statue base—should also be examined and recorded in more detail to help determine whether the presumed function is correct.

Phase 3: Nineteenth-Century Trash Deposits outside the Construction Zone

Testing encountered a late nineteenth- to early twentieth-century trash pit (Feature 1) at the south end of BHT 6 that is outside probable construction limits as well as the 10 m buffer zone. While further examination of Feature 1 is not mandatory, recovery of further information on its contents would help in confirming its date and presumed function and could provide information that would supplement data recovered from excavations in Feature 2. The goals of this phase include definition of the entire extent of Feature 1, recovery of a sample

of associated artifacts sufficient to provide an accurate date for its use-life, and determination (if possible) of whether the source of the trash was related to the nearby health care facilities or the domestic use of nearby residential facilities, in particular the dormitory located immediately to the south (Fig. 33). This can be accomplished by classifying the artifacts according to function and comparing the range of functions with those that might be expected for both types of facility.

The amount of hand excavation performed in Feature 1 will depend on its size, as determined during the data recovery phase. A small size will result in the examination of a large percentage of the feature, while a large size will result in the examination of a comparatively small percentage of the feature. For example, excavation of 40–50 percent of a feature that covers 10 sq m or less might be necessary and desirable to provide a detailed examination of its contents, while a size of 100 sq m or so might only require excavation of 10 percent or less to reach the same level of detail.

Phase 4: The Continuing Search for the Seventeenth-Century Parroquia

Testing failed to uncover any definite evidence for the location of the seventeenth-century parroquia, but analysis of the little data available concerning the location of that building suggests that it could still be somewhere in the west parking lot of the LVR/Marian Hall complex (see Appendix 1). Though further searching for the remains of this building in areas outside the construction and buffer zones is not mandatory, either confirming its presence or absence in this area would be an important contribution to the history of Santa Fe. In addition, confirming presence or absence would be important should construction plans change or utility lines be placed through areas with the potential to contain these remains. Because of the potential for human burials to occur beneath the floor of the parroquia and in areas adjacent to it that may have served as a camposanto, this information could be crucial to future planning. Thus, this phase will focus on three areas with the potential to contain evidence of the parroquia.

First is a section of the west parking lot just south of Marian Hall that was not closely examined during testing because it contains a major storm sewer line and other utilities. Carefully conducted mechanical excavation can be used to examine this area and determine whether the remains of the parroquia or other seventeenth-century manifestations are present.

The second area of focus is Feature 4, the subterranean vault encountered in BHT 8. As Figure 33 shows, when part of the 1930 Sanborn map is overlaid on an aerial photograph of the property and excavation areas are plotted, Feature 4 appears to have been located under the Old Seminary. If this positioning is correct, it eliminates two of the possible functions for the vault that were discussed earlier: it could not be a slaking pit used during construction of the cathedral-basilica, and it could not have been associated with the two-story brick bathroom/house built to the south of the Old Seminary. This leaves two possibilities: Feature 4 may still be a seventeenth-century feature in possible association with the parroquia, or it could be a subsurface feature of unknown purpose associated with use of the Old Seminary in its original role as Lamy's rectory. Later use of this feature is unlikely, since when the building was deeded to the Sisters of Charity they had wooden floors installed. Further investigation of Feature 4 should clarify its function and date, and allow it to be properly placed in the sequence of cultural remains identified on the property. Examination of Feature 4 would be conducted using hand excavation supplemented by mechanical trenching in areas adjacent to the feature to help locate any associated foundations that might exist, should it be determined that the vault could have been part of the parroquia.

The third area of interest is under the remains of Seton Hall, directly behind the cathedral-basilica. Though BHT 6 examined the section of parking lot just east of Seton Hall, the footprint of that later building could still be concealing part of the foundation of the seventeenth-century parroquia. Further mechanical trenching both inside and outside the foundations of Seton Hall would be used to further investigate this area in order to determine whether the foundations of the parroquia can be located.

Should any human burials related to use of the seventeenth-century parroquia be encountered during these investigations, standard procedures as outlined by legal statutes pertaining to unmarked burial areas would be instituted, and DSW as well as the archdiocese would be

contacted. Excavation and removal of any such remains would be done only with the direction of DSW and in accordance with legal statutes. However, considering the results of the testing phase, the likelihood of encountering any intact human burials associated with the parroquia is considered very low. Indeed, the presumed location of the parroquia would place the camposanto, which is usually located outside the entrance to the church, under the modern cathedral-basilica.

Phase 5: Further Examination of the Seventeenth-Century Midden and Cobble Pavement

Two seventeenth-century features—a midden (Feature 5) and a cobble pavement (Feature 6)—were identified during testing, but only limited data is available concerning these cultural manifestations because they were found in only one excavational unit (Test Pit 2). Further investigation of the area in which they are located would provide more extensive data concerning these features and could help identify the function of the cobble pavement. Because of the large number of artifacts found in the midden (Feature 5), further excavation in this section of LA 161535 could be quite expensive in terms of analysis time and curation, but those expenses might be partly offset by limiting the area excavated to only a few grid units, or by excavating a larger area but conducting detailed analysis on a sample of the recovered materials, with the rest of the assemblage being examined by an abbreviated analysis. While the latter option might allow the function of the pavement to be identified as well as providing more data concerning the content and age of the midden, the former option would be aimed at further examination of the midden and a cursory study of the pavement.

Data recovered from Feature 5, the midden, will provide information on seventeenth-century life in Santa Fe, including types and degree of interactions with various Indian groups, diet, and trade contacts with Mexico. Numerous data bases from other Spanish sites in New Mexico are available for comparison with the information derived from this phase to help determine how Santa Fe fits into the general economic pattern. Economic models developed for other studies suggest that the residents of Santa Fe might have had better access to imported durable goods and different dietary patterns than people living outside the economic and social core (Moore 2000, 2001, 2003, 2004, in prep.). Data recovered during this phase can be used to address these models, and can be compared and contrasted with other Spanish assemblages dating between the seventeenth and late nineteenth centuries in New Mexico. Comparisons with data recovered from the excavation of Feature 2 will also be facilitated, providing a better understanding of how economic and consumption patterns have varied in Santa Fe through time.

Summary of Data Recovery Phases

As stated at the outset of this discussion, not all investigative phases are mandatory or essential to the recovery of data from archaeological manifestations identified within the area that will suffer the greatest impact from construction. However, unanticipated impacts often occur during construction, often because of an unforeseen need for modifications to plans or because of utility work or landscaping. Thus, while we would urge that one or more of the optional data recovery phases be considered by DSW for implementation, whether or not that is done remains their decision based on the possibility of future needs or their wish to provide a fuller understanding of the archaeological remains present at LA 161535.

Only Phase 1 is considered essential to prevent construction-related damage to known archaeological remains at LA 161535. Phases 2–5 are recommended for consideration because, as noted above, their completion would mitigate in advance any potential damages caused by unanticipated construction or utility needs. However, completion of all five data recovery phases should also provide complete clearance for the portion of LA 161535 located within project boundaries, hopefully removing such considerations from future plans for land-altering activities within that area.

The successful implementation of Phase 1 will complete the recovery of data from the portion of LA 161535 that extends into proposed construction limits, ensuring that important archaeological manifestations in that area are fully examined and recorded, allowing construction to proceed unhindered. However, successful completion of Phase 1 will only provide clearance for the

section of LA 161535 located within construction limits and the 10 m buffer zone proposed above. Subsequent work in areas of LA 161535 falling outside this zone that might require subsurface excavations or other major alterations to the landscape would require archaeological clearance before construction efforts could proceed, unless optional investigative phases aimed at recovering information from known archaeological remains in those areas have been completed.

Problem Domains

A few of the potential problem domains that can be approached with data recovered from excavations at LA 161535 were mentioned in the last section of this plan and are stated more explicitly and expanded upon in this section. Other potential problem domains are also considered, and the investigative phases that are expected to provide necessary information to address them are discussed. Because of the phased nature of this plan and the optional nature of most phases, not all problem domains discussed here can be fully explored unless all of the recommended phases are implemented, and it may not be possible to address some of them at all. Which of the problem domains can be addressed will only become clear when the full parameters of data recovery at LA 161535 are established.

Problem Domain 1: Examining Building Footprints and the Accuracy of the Historical Record

Thanks to the existence of a series of maps dating between 1767 and 1930, we have a fairly clear picture of when buildings were constructed on the property and how they were arranged, through time, in relation to buildings that still exist in the immediate vicinity. Though the earliest maps lack the accuracy of later plans, this probably does not matter because there is no record of any structures having been built on the property before Lamy's rectory (the Old Seminary) in 1853. Sanborn maps produced between 1883 and 1930 show the development of the Sisters of Charity complex and are augmented by aerial photographs dating between 1935 and the recent past. Thus, we have a fairly unique opportunity to study the accuracy of these maps as part of the historical record.

Chief among the questions that can be addressed using excavational data from Phases 1 and 2 concerns the accuracy of the Sanborn maps. Using GIS, we are able to overlay relevant sections of Sanborn maps on aerial photographs of the property, using the cathedral-basilica and (later) Marian Hall as reference points. Adding the footprints of excavated buildings to these plots should enable us to judge the accuracy of the Sanborn maps and, thus, their predictive utility as indicators of the former locations of buildings in urban environments like Santa Fe. The locations of some of the foundations encountered during testing do, indeed, appear to match the locations of walls on Sanborn maps (Figs. 31–33). This is particularly true for the foundations of the orphanage encountered in BHT 1 and 2. However, there is not as close a match for the foundations of the dormitory found in BHT 7, and the possible foundations identified in Test Pit 12 do not match any known building location. Using the Sanborn overlays, we will also be able to target the locations of buildings that were not identified during testing, which will permit further evaluation of these historical maps. However, if Figures 31–33 are closely compared, we see that the building footprint locations do not always match from map to map. Thus, the Sanborn maps need to be evaluated and assessed individually to determine which (if any) are the most accurate representations of the locations of former buildings.

Data derived from Phase 1 investigations will be particularly useful in addressing these question, since the complete foundations of the orphanage should be identifiable during this phase, as well as the easternmost foundations of the dormitory. In addition to these buildings, a search for the remains of three other small buildings that once existed in the northeast part of the west parking lot and a cellar located just east of the orphanage will be implemented (Fig. 32), further testing the veracity of the historic record. A glass-roofed conservatory also existed near this part of LA 161535 but appears to have been in the area now occupied by LFR and was undoubtedly destroyed during construction of that building. These data can be augmented by implementing Phase 2, which would examine foundations of the remaining buildings known to have existed at LA 161535 including the rest of the dormitory, Seton Hall, and the Old Seminary. In

addition, this phase would enable us to determine whether any foundations associated with the long south wing attached to the Old Seminary exist, and if so, whether this footprint matches that seen for the building on Sanborn maps from the 1880s. The question of where the foundations in Test Pit 12 fit into the general historical framework might also be resolved by this study.

A detailed discussion of modifications to building footprints through time, including approximate dates of construction and demolition, was presented in Results of the Testing Program during analysis and discussion of the Sanborn maps. Evidence of some of these building phases may be preserved at LA 161535, occurring as foundations left behind when superstructures were demolished. If located during data recovery, the foundations of additions would be expected to differ from those of the main building, either in construction style, the types of materials used for construction, or both.

Data needed to address this problem domain should be available from building remains known to exist at LA 161535, as demonstrated by test excavations. Those remains are expected to consist of foundations that were left in place when superstructures were demolished. A major focus of data recovery, especially during Phases 1 and 2, will be the exposure and delineation of any remaining foundations within targeted areas, and needed data will be provided by the instrument mapping of foundations, and a detailed examination and description of foundation construction styles and materials including extensive photographic documentation.

Problem Domain 2: Economic and Consumption Patterns at a Nineteenth-Century Hospital

Feature 2 is southeast of the location of a late nineteenth-century kitchen that served both the St. Vincent's Sanatorium (now Marian Hall) and Hospital Annex (Fig. 32). Because of the large amount of bone and other debris found in this midden, Feature 2 is thought to have been mainly associated with the kitchen, but it could have also been a location where general nonmedical debris from the hospital was disposed. Thus, these deposits exhibit an interesting dichotomy: they represent industrial rubbish that would have included quite a bit of material that is generally associated with a residential function. Specifically, these materials include debris associated with the preparation and consumption of meals for patients and staff in the hospital and sanatorium.

Several questions can be asked of data retrieved from Feature 2. Recent archaeological studies have investigated contemporary and earlier deposits from a number of locations in downtown Santa Fe, including the Palace of the Governors, the remains of Fort Marcy under the Santa Fe Civic Center, an early twentieth-century neighborhood under the capital parking lot, and excavations at the Santa Fe Railyard. Data from Feature 2 can be compared with these and other contemporary sites in downtown Santa Fe to see how they resemble or differ from those related to other industrial as well as residential sites. Is the structure of the hospital assemblage similar to those from a military establishment, which also combined industrial and residential functions? How does the character of a hospital assemblage compare to those obtained from roughly contemporary residences? Can we estimate the scale of meal preparation for these industrial operations based on evidence from the associated midden? Is there evidence that patients and staff at the hospital were provided with traditional New Mexican foods as well as those more usual to an Anglo-American diet, or did the latter predominate? For example, the Spaniards in New Mexico mainly consumed sheep and goat meat, with cattle and chickens comprising only a small part of the diet (Trigg 2005:102–103; pers. comm., Nancy J. Akins, 2009). In contrast, Anglo immigrants preferred pork, followed by, beef, poultry, offal, fish, lamb, and mutton (Crass and Wallsmith 1992). A predominance of sheep/goat meat would be indicative of a primarily New Mexican diet, while a predominance of pig and cow bones would indicate a mainly Anglo diet. Equal proportions might be evidence for a more balanced diet. This question can be examined in more detail through analysis of butchering methods, since Spaniards and Anglos tended to use different meat cuts and methods of butchering (Akins 2001; Crass and Wallsmith 1992). These differences are explored in more detail in the discussion of research questions based on the faunal assemblage, presented later in this volume.

The data needed to address these questions will be available through analysis of artifacts

obtained during further excavation of Feature 2. An adequate sample size for the materials from this feature is difficult to define at this time, since the horizontal extent of the midden has not yet been determined. Sufficient excavation needs to be performed so that the limits and nature of this feature can be adequately defined, but complete excavation may not be feasible because of the costs involved in recovering, analyzing, and curating artifacts. Thus, a sample of materials from Feature 2 will be obtained, with sample size dependent on overall feature size, as discussed in an earlier section. The actual nature of Feature 2 also needs to be assessed. Does the midden represent a heap of trash on the ground surface, or were these materials deposited in a pit? During testing, considerable variation in numbers of artifacts recovered was demonstrated in the two test units excavated into Feature 2. Data recovery should attempt to determine whether this variation reflects internal diversity in artifact distribution, perhaps reflecting different disposal episodes or sources for these materials. These questions can only be addressed through controlled excavation, preferably entailing removal of deposits by stratum in 1 by 1 m grids along two axes of the feature so that its complete dimensions can be defined, perpendicular cross sections obtained, and any spatial variability in artifact distributions accounted for. Depending on the size of the feature and the assemblage derived by this method of excavation, further grids can be excavated if needed.

Should Phase 3 of this plan be implemented, data comparable to those from Feature 2 may also become available from Feature 1, which testing demonstrated to be a trash pit rather than a surface midden. To ensure data complementarity, the same methods would be used to excavate Feature 1 as those proposed for Feature 2, since the data needs would be the same. Since Feature 1 appears to have been more closely associated with a residential structure than a sanatorium and hospital, as is the case for Feature 2, the structure of the artifact assemblage from Feature 1 will probably differ from that of Feature 2. Presumably, mainly domestic refuse will occur in Feature 1, and it should contain much less evidence for the preparation of meals on an industrial level, as is expected for Feature 2. However, we must also address the possibility that the deposits in Feature 1 represent artificial fill from other parts of the site, and that this pit was filled to level the area during construction. Unfortunately, only through excavation and retrieval of a sample of the contents of this feature can this possibility be addressed.

Problem Domain 3: Spanish Colonial Economics

Currently, midden deposits in Feature 5 are thought to mostly date to the seventeenth-century occupation of Santa Fe, based on the presence of seventeenth-century Mexican majolica, Pueblo glaze wares, and Chinese porcelain. These three artifact categories tend to be indicative of the Early Spanish Colonial period and generally do not occur in deposits from later periods. A few Navajo sherds (Dinetah Utility and Gobernador Polychrome) were also found, with the latter type traditionally being dated to the early eighteenth century. However, recent research indicates that Gobernador Polychrome occurs as early as the mid-seventeenth century and possibly earlier (pers. comm., C. D. Wilson, 2009), so these sherds do not change our proposed dating scheme. Several questions can be generated for these deposits, based on an economic model developed for data recovery excavations in the Pojoaque Corridor and applicable to these remains (Moore 2000). This model examines characteristics of Spanish artifact assemblages in relation to the type of transportation systems used and the source from which goods were imported. Improvements in transportation systems are expected to appear in archaeological assemblages as increases in percentages of durable goods. When the New Mexican trade system expanded to include goods imported from the eastern United States, a similar increase in percentages of durable goods should have occurred, and the origins of many goods should reflect non-Spanish Euroamerican manufacture.

Trade throughout the Spanish Colonial period depended on goods obtained from Mexico and transported north by institutions as well as individual entrepreneurs. During the Early Spanish Colonial period, goods were initially obtained from Mexico City and later from Parral, and were transported north in two ways. Best known was the mission supply system in which goods were hauled north in large wagons on a triennial basis. Less is known about independent merchants who also carried goods north, though

there is some evidence for private freighting by wagon (Chávez 1992:55; Hendricks and Mandell 2002:268–269) and pack animals (Sanchez 1993; Snow 1993). Current analysis of data obtained from Spanish sites in New Mexico suggests that the supply of durable goods was better during the Early Colonial period than it was in the Late Colonial period (Moore 2001, 2003, 2004), and this in turn suggests that the methods used for transporting goods north were more efficient during the early period. While the mission supply caravans continued for a time after the Spanish return in 1693, they were soon eliminated, and trade came to depend on annual caravans to the south which transported goods by mule. Despite the almost annual nature of these caravans, they appear to have been less efficient in supplying goods to the province than were earlier methods. This was partly due to the dangers involved, with hostile Indian attacks usually threatening to interfere with trade. However, the main reason for this disparity may simply have been the fact that New Mexico had little to offer in the way of easily transported exports that could be used to barter for manufactured goods in the south, except for sheep, the export of which was often restricted or forbidden (Baxter 1987).

After Mexico obtained its independence from Spain in 1821, trade with the United States began almost immediately, though initially at a rather low level. Into at least the 1850s and probably later, goods flowed into New Mexico from two directions—south and east—and introduced more abundant and cheaper durable imports to the inhabitants. Numerous trade caravans entered New Mexico via the Santa Fe Trail on an annual basis, except for hiatuses before and during the Mexican War, with large wagons being used to haul goods from the east. While the ultimate destination for most of these goods was further south in Mexico proper, some traders would stop in New Mexico as well. This system represented a huge increase in efficiency over the traditional method of importing goods on mule back and increased supplies of imports tremendously, though traditional patterns of consumption were only slightly affected. Trade continued over the Santa Fe Trail until the railroad finally reached the vicinity of Santa Fe in 1880. Not only did the railroad represent a tremendous improvement in transport over the wagon trains of the Santa Fe Trail period, it also affected traditional consumption patterns to a far greater degree than did trade over the Santa Fe Trail.

Evidence of the differences between these economic periods is visible in archaeological assemblages from historic Spanish sites and demonstrates the effect transportation efficiency had on the supply of durable imports and the use of locally manufactured goods. The seventeenth-century assemblage from LA 161535 can be used to expand and supplement the data base used for this economic analysis and should provide additional detail on how residents of the capital fit into the economic system. If, as expected, Santa Fe served as the economic as well as political capital of New Mexico during the Early Spanish Colonial period, we should see some disparity in percentages of imported goods in assemblages from the capital versus the hinterlands. Thus, durable imports should comprise a higher percentage of the assemblage from LA 161535 than in sites located outside the capital, if this model is correct in its assumptions. Similar percentages should be evident at contemporary Spanish sites in Santa Fe including the Palace of the Governors. In contrast, Late Spanish Colonial–period deposits from Santa Fe should demonstrate lower percentages of durable imports than are evident in Early Colonial–period assemblages because of changes in the transport system discussed above.

While some data are available from testing that can be used to address this problem domain, an expansion of that data base through implementation of Phase 5 would strengthen any conclusions made concerning these questions. Those data are available in deposits remaining in Feature 5, and could be collected by expanding out from Test Pit 2 to help further explore that midden. An additional two to four grid units could be used to collect further information from Feature 5, while at the same time the nature and extent of the cobble pavement (Feature 6) could be further explored. Considering the large number of artifacts recovered from Feature 5 during the excavation of Test Pit 2 and the potential cost of analyzing and curating these materials, a larger excavation area is not recommended unless specifically requested by DSW.

Problem Domain 4: The Changing Economy in Santa Fe

Significant economic changes should be evident between the Early Spanish Colonial–period occupation of Santa Fe, as represented by Feature 5, and the late nineteenth-century occupation as represented by Features 1 and 2. Besides the changes in transportation systems and sources of imported goods discussed in Problem Domain 3, this variation is also due to the changing ethnic makeup of Santa Fe, with a large influx of people from the eastern United States beginning after 1846, when New Mexico was acquired by the United States. This variation is expected to be visible in artifact patterns, as well as in the types of foods consumed by the original occupants versus the immigrants, unless the immigrants were completely assimilated into the existing society. Since total assimilation appears to have been rare, we should be able to see the presence of the newer nineteenth-century residents in the trash they left behind.

By comparing patterns of material culture use and function we should be able to discern the degree to which immigrants from the eastern United States either emulated the native Hispanic and Indian populations or differed from them. This will help determine the degree of assimilation demonstrated by the immigrants, which is expected to be fairly low. Data generated during further excavations at LA 161535 will provide a rather coarse-grained level of comparison between the earliest period of European occupation in Santa Fe, and an occupation marking the influx of immigrants dating to about two hundred years later. However, these comparisons can be brought into finer resolution by using data derived from other archaeological excavations conducted in downtown Santa Fe and northern New Mexico in general, which should provide information from intervening occupational periods as well as more data from the two periods represented at LA 161535.

Data needed to address this problem domain will be available from further excavations in Features 1, 2 and 5, should Phases 3 and 5 of this plan be implemented. By assigning artifacts to functional categories, the types of uses represented in these assemblages can be compared and contrasted. Evidence of food-preference differences and similarities between periods can be examined using data derived from the analysis of faunal remains, as well as macrobotanical and flotation samples. Since the latter were not obtained during testing, procuring floral samples is a critical need during data recovery. Should Phase 5 not be selected for implementation by DSW, Test Pit 2 could be reopened during data recovery to obtain flotation samples from profiles in Feature 5 to provide this needed data. Minimal information for faunal comparisons is available from the testing phase, but augmenting these data by collecting further specimens during a more intensive excavational phase would strengthen any conclusions made. Feature 1 cannot be included in this analysis unless Phase 3 is implemented.

Problem Domain 5: Cobble Pavements and Stable Floors

Two probable cobble pavements were encountered during testing: Feature 6 in Test Pit 2 and Feature 7 in Test Pit 12. These pavements date to widely disparate periods in the historic occupation of the property, with Feature 6 dating to the Early Spanish Colonial period and Feature 7 to the late nineteenth-century Santa Fe Trail/Railroad period occupation. Through comparisons with similar features at other Spanish sites in northern New Mexico, we assume that these pavements represent the floors of either paddocks or stables (pers. comm., C. Snow, 2008), but this assumption remains unproven. Further examination of these features, provided Phases 2 and/or 5 are implemented, would be aimed at determining whether the assumed functions of these pavements can be demonstrated. While further exposure of these pavements would aid in assessing their function, complete exposure would be time consuming and costly, and may be beyond the scope of activities acceptable to DSW. For this reason, data recovery excavations in these features would be aimed at partial exposure of the pavements to help determine whether they are continuous beyond the areas found during testing and could have served the assumed function. This level of investigation would also facilitate the collection of soil samples from just above, between, and beneath cobbles for chemical and flotation analyses to help determine whether evidence of livestock use can be found.

Data needed to address this problem domain

will only be available if Phase 2 is implemented, allowing the collection of further information from these features. As noted above, data recovery efforts would be aimed at two goals: the exposure of several more square meters of each feature in order to determine whether they were continuous outside the areas seen in test pits, and the collection of soil samples for chemical and flotation analysis. The collection of these data is particularly critical in assessing the potential function of Feature 7, because cobbles in that feature were not set as regularly as they were in Feature 6, and Feature 7 was also underlain by more cobbles and rocks believed to be related to the presence of a cobble wall foundation in that area. Only sterile cienega deposits were beneath the cobbles in Feature 6, indicating that they were intentionally placed. This potential difference could be an indication that these features served different purposes, and only further examination of both will provide the information needed to address this question. The continuation of these pavements outside the grids in which they were initially exposed could suggest that they had the assumed function, and this conclusion would be greatly strengthened by evidence for the presence of livestock in these features in flotation and other soil samples.

Problem Domain 6: Locating the Seventeenth-Century Parroquia

Historic research suggests that the remains of the seventeenth-century parroquia should be within the boundaries of LA 161535, somewhere east of the modern cathedral-basilica (see Appendix 1 for a discussion of this topic). Only the foundations of this building should remain, since documentary information indicates that the parroquia was burned during the Pueblo Revolt before the Spaniards retreated south from Santa Fe, any remaining superstructure was leveled during the subsequent Pueblo occupation of Santa Fe, and the area had been turned into fields by the time of the Spanish Reconquest. Yet, neither the geophysical survey or the testing program found any tangible evidence for the existence of this structure. Three possibilities remain: (1) foundations belonging to the parroquia exist in parts of LA 161535 that were not closely examined during testing; (2) the remains of the parroquia are buried deeper than the levels reached during testing; and (3) the seventeenth-century parroquia never extended as far east as the LVR/Marian Hall property and is probably mostly situated under the modern cathedral-basilica. Possibility 2 is unlikely in light of the results of testing, which encountered sterile cienega deposits not too far beneath the remains of Seton Hall. Thus, we must consider the likelihood that we simply did not find the parroquia, or that it never extended as far east as the LVR/Marian Hall property.

This problem domain can only be examined if Phase 5 of the data recovery plan is implemented. Some of the data needed to address this issue would be generated by a more detailed examination of Feature 4, which potentially represents a vault that was originally associated with the seventeenth-century parroquia. Additional data would come from further mechanical trenching, concentrating in two areas: (1) a location just south of Marian Hall that was not examined during testing because of the presence of several large utility lines; and (2) beneath the remains of Seton Hall. Since the parroquia was burned, razed, and turned into agricultural fields during the Pueblo Revolt, only the foundations of this structure should remain. Thus, our mechanical testing may simply have not been extensive enough to find those foundations. More extensive mechanical excavations involving longer and more closely spaced trenches should facilitate the search for any remains of the seventeenth-century parroquia and demonstrate whether or not they are present on the LVR/Marian Hall property.

Summary

Five potential data recovery phases are proposed to examine LA 161535 in greater detail than was possible during testing, focusing on areas that could be impacted by construction. Data recovered from these investigations would be used to address a series of questions posed as six problem domains. These questions are mainly aimed at eliciting information concerning the accuracy of historical maps as planning tools, and at examining the fit of data from the seventeenth and late nineteenth to early twentieth centuries in relation to an economic model based on transportation efficiency (Moore 2000). The latter predicts patterning in material culture

assemblages based on the type of transportation system used. Changes in transportation and political systems through time affected the supply of durable imported goods in New Mexico, and data recovered from LA 161535 will join that collected from other sites in northern New Mexico in allowing us to test the accuracy of this model. Beyond this level of examination, variation in the structure of artifact assemblages for each component may provide information on different ethnic preferences and the process of assimilation.

As noted several times in this discussion, not all five phases are mandatory, and not all may be implemented, depending on the desires of DSW. If all five phases are not implemented, our ability to examine all of the problem domains in detail will be curtailed, but some level of consideration should still be possible. While only five problem domains are discussed in this document, further questions that could be addressed with data from LA 161535 will almost certainly be developed during field and laboratory studies. If this occurs, the new problem domains will be added to those already posed and discussed in the final report for the data recovery phase of investigation.

Data Recovery Field Methods

This chapter provides a general overview of field methods that will be used during data recovery, mainly summarized from Boyer and Moore (1999). While the same general methods will be used during each investigative phase, some variation will be necessitated by the different goals of each phase or the types of features being examined. For instance, the methods used to study building foundations will vary greatly from those used to examine middens. General methods of excavation that will pertain in most situations are discussed first, followed by more specific applications tailored to the needs of the various types of resources that will be investigated during data recovery.

General Excavation Procedures

Horizontal Proveniencing: The Grid System

A Cartesian grid system was established during testing that tied all measurements into the NAD 27 UTM projection, allowing precise placement of excavation areas and features on overlays of aerial photographs showing the current configuration of buildings on the property. This system will continue to be used during the data recovery phases, and a 1 by 1 m grid system originating at the main site datum will be imposed over the entire site to facilitate horizontal referencing. Grid lines will be established at even meter intervals within the UTM system. Individual grid units will be referenced by the grid lines that cross at their southwest corners, and grid lines will be labeled according to the last three digits in their UTM designation. Thus, a grid line placed along the E345567 UTM line will be labeled as the 567E grid line.

Grids may not be used for excavation under all circumstances, because they are not always the most efficient unit of excavation. This is particularly true when dealing with structures. Except when on or just above floors, excavation by grids may provide a higher level of horizontal control than is needed or desired. It is also very time consuming, which is an important consideration. When a series of strata reflecting a sequence of depositional episodes over time is present, vertical control is often more important than horizontal control. While it is necessary to know what soil stratum is represented, the grid location may not be as meaningful. Of course, both horizontal and vertical controls are important when deposits reflect specific cultural activities. Thus, excavational units will differ in size and shape depending on the nature of the deposits being investigated.

It must also be remembered that grids are artificially imposed over sites. They are a construct used to provenience cultural materials and features so that their original relationship can be preserved for later study. Rarely do features conform to a grid system. When features are large it may be desirable to excavate by grid to provide detailed data on the placement of materials within them. However, excavation in grids is often awkward in small features, especially when they extend into one or more grids. Thus, features, rather than the grids in which they occur, may be treated as independent excavation units.

Vertical Proveniencing: Strata and Levels

Just as the grid system is tied to a main datum, so are all vertical measurements; thus, the main site datum is also used to reference all vertical measurements. However, in this case, rather than establishing an exact elevation above sea level for the main datum, it is assigned an arbitrary elevation of 10 m below datum. This procedure also allows us to avoid problems inherent in dealing with both positive and negative measurements. Since it is often difficult to use one datum to provide vertical control for an entire site, subdatums will be established when needed. Horizontal and vertical coordinates will be measured for each subdatum so that its location relative to the main datum can be plotted.

The vertical treatment of deposits will vary according to their nature. Cultural deposits will be carefully excavated to preserve as much of the

vertical relationship between materials as possible. Such care will not be taken with noncultural deposits, since the relationship between artifacts in deposits that built up naturally or as artificial fill is rarely meaningful. For example, trash can be discarded in one area and used as artificial fill in another, and both deposits will have completely different meanings. Artifacts can be plentiful in both cases, yet they have completely different meanings. Trash represents materials that were purposely discarded and can often be separated by strata to determine the sequence of deposition and allow researchers to look for minute changes in artifact assemblages. Artifacts in artificially deposited strata rarely have any similar meaning. Trash deposits require careful excavation to preserve the relationship between artifacts discarded at different times. Noncultural deposits, including artificial fill, tend to be jumbled and mixed, and the relationship between artifacts is almost always obscured because they were moved from their original context and redeposited.

Thus, accurate vertical controls may be unnecessary in some cases. While we will always attempt to excavate cultural deposits by stratum, that level of control will only be attempted in noncultural strata if it appears that it will provide data of potential importance to site interpretation. Excavation by strata is considered optimal in cultural deposits because soil layers tend to represent specific depositional episodes. While artificial fill can technically be considered to have been culturally deposited, the types and distributions of artifacts those layers contain have little meaning because the context in which they originated has been lost. Thus, trash deposits that became artificial fill when they were moved to level areas following construction are not considered to be cultural in nature and will only rarely be excavated by stratum.

While testing has already defined soil-strata sequences for most of the areas in which further examination is planned during data recovery, other exploratory grids may be needed in parts of the site that were not examined during that phase. Thus, any further exploratory units will consist of 1 by 1 m grids dug in arbitrary 10 cm vertical levels unless natural stratigraphic divisions are encountered. When natural divisions are found, they will be used to delimit the boundaries of a level. Outside exploratory grids, both those that were excavated during testing and any further units of this type that might be required during data recovery, soil strata will be used as the main units of vertical excavation. Exceptions may include noncultural deposits and cultural strata that are very thick and need to be subdivided to make excavation easier.

Two methods will be used to track vertical excavation units: strata and levels. Soil strata will be assigned unique numeric designations as they are encountered, and descriptions of each will be recorded on individual forms. Since the surface represents an arbitrary layer with no thickness, it will be designated Stratum 0. In order to track the sequence of strata from one area to another, each vertical excavation unit will also be assigned a level number, beginning with the surface. Again, since the surface is an arbitrary level with no thickness, it will be designated Level 0. The first vertical excavation unit to be dug will be labeled Level 1, the second Level 2, and so on. Since stratum and level numbers represent two completely different series, stratum numbers may not be in sequence as excavation proceeds downward, but level numbers will always be in order.

Recording Excavation Units

The excavation of a grid or other unit will begin by filling out a form for the surface that provides initial depths and other pertinent data. Ending depths for each succeeding level will be recorded on relevant forms, providing a record of all excavations. Recording forms will be completed for each level, including the surface, and will describe soils and inventory cultural materials recovered, and provide other observations considered relevant by the excavator or site supervisor, including depths, stratum, and level. A description of soil matrix will also be provided and should include information on cultural and noncultural inclusions, presence of building rubble, evidence of disturbance, and how artifacts are distributed if variations are noticed.

Recovery of Cultural Materials

Most artifacts will be recovered in two ways: visual inspection of levels as they are excavated and screening though hardware cloth with variably sized mesh. Other materials will be

collected in bulk samples that can be processed in the laboratory rather than the field. Regardless of how cultural materials are collected, they will all be inventoried and recorded in the same way. Collected materials will be assigned a field specimen (FS) number, which will be listed in a catalog and noted on all related excavation forms and bags of artifacts. This will allow us to maintain the relationship between recovered materials and where they were found. All materials collected from an excavation unit will receive the same FS number. Thus, if metal, ceramic, and bone artifacts are recovered from the same level, they will all be designated by the same FS number, as would any samples taken from that level. Architectural or chronometric samples that are not associated with specific excavation units will receive unique FS numbers.

Most artifacts will be recovered by systematically screening soil strata. All sediments from exploratory grids and features will be passed through screens. Two sizes of screen will be used. Most fill will be passed through 1/4-inch mesh hardware cloth, but 1/8-inch mesh hardware cloth may be used in certain circumstances. While most artifacts are usually large enough to be recovered by 1/4-inch mesh hardware cloth, some that are to small to be retrieved by that size screen can also provide important clues to the activities that occurred at a site. However, there is a tradeoff in gaining this additional information. As the size of mesh decreases, the amount of time required to process soil and recover artifacts increases. Sampling is a way to balance these concerns; thus, smaller mesh will only be used under certain circumstances. Rather than establishing specific guidelines for sampling by 1/8-inch mesh screens, it is considered better to leave this up to the discretion of the site supervisor. Artifacts from noncultural strata, including artificial fill, will only be recovered by visual inspection for analysis, especially if they appear to be temporally diagnostic, complete, or otherwise have potential to expand the data base in a meaningful way. While this will not be a statistically valid sample, it will expand the number of artifacts recovered and provide more detailed data.

Other cultural materials, primarily botanical in nature, will be recovered from bulk soil samples. Sampling methods for these materials are detailed later. In general, however, sediments for flotation analysis will be collected from culturally deposited strata and features, and should contain at least 2 liters of soil, if possible. Macrobotanical materials like corncobs and piñon shells will be collected as individual samples whenever found. Botanical samples will be catalogued separately and noted on pertinent excavation forms.

Mechanical Excavation

Mechanical excavation using a backhoe or blade will be used in conjunction with several of the data recovery phases proposed earlier. In particular, a blade will be used to expose the surfaces of known foundations and to aid in our search for the foundations of other building that might exist at LA 161535. A backhoe will be used to excavate exploratory trenches under certain conditions, including to help define the extent of features like trash middens if hand excavation is considered to be inefficient for this task, and to look for deeply buried foundations, especially those belonging to the seventeenth-century parroquia. An effort will be made to confine mechanical excavation to boundaries consistent with the grid system established at LA 161535, while at the same time remembering that this might not be possible in all circumstances. All mechanical excavations will be mapped so their locations can be accurately plotted on site plans, and documentation will be completed that will include the dimensions of excavation areas, beginning and ending depths, and a description of soil strata encountered and any cultural materials noted. Any previously unknown features identified by this method will be further examined if within the construction area or buffer zone. If located outside those zones, further examination of previously unknown features will be completed only if relevant to the research questions posed in this document and with the concurrence of DSW.

Specific Excavation Methods

The excavation of various parts of LA 161535 will be approached in different ways, even though the mechanics of excavation will be essentially the same. Most excavation will be accomplished using hand tools. However, in some cases mechanical equipment will be used to expedite the removal of

noncultural deposits and expose cultural features. In particular, mechanical equipment will be used to strip overburden from buried extramural cultural strata, to expose structural foundations, and to explore areas in which structural remnants are expected to exist. Methods of excavation will vary depending upon whether a structure, a feature, or an extramural area is being examined.

Structures

Because the superstructures of most buildings in the Sisters of Charity complex were demolished during or shortly after construction of the LFR, only foundations were encountered during testing and are all that can be expected for other buildings that once stood on the property. Thus, the examination of these structures will depart from methods usually used by the OAS. In order to define the extent of structures found during testing, mechanical equipment will be used to scrape overburden away from the tops of remaining foundation walls. Hand tools will be used to finish exposing foundations, concentrating on defining their total remaining extent so they can be accurately mapped. One meter–wide trenches will be excavated at selected locations around the circumference of each structure to expose sections of foundation for detailed recording and photographic documentation. These locations will be selected while in the field, but at a minimum one trench should be excavated on each side of the foundation, exposing both interior and exterior surfaces. Since the excavation of these trenches will be aimed at uncovering and recording architectural features rather than cultural materials in stratigraphic sequences, they will not necessarily be placed according to the grid system. These trenches also will not be excavated by level or stratum, and fill removed from them will only occasionally be screened to recover artifacts. Even though names can be assigned to the known structures at LA 161535, unique numeric designations will also be assigned to them, as well as to any individual rooms that can be defined. This will facilitate computerized data entry.

In only one case is it possible that more than simply foundations remain for a building at LA 161535. That exception is a cellar located between the orphanage and power plant (Fig. 33). Though this structure was not found during testing, it may have simply been filled rather than totally removed during construction. Thus, one of the aims of Phase 1 is to attempt to locate the remains of this structure. If it can be found, standard excavational techniques will be used to examine it. Excavation will begin by digging an exploratory trench from one wall to the center of the structure and excavating the exploratory trench by grids to provide a cross section of deposits. When the nature of the fill is defined, the rest of the structure will be excavated by quadrants. Quadrant boundaries will be determined by the locations of grid lines that cross the structure; thus, they may not all be exactly the same size. Mechanical equipment may be used to expedite the removal of noncultural fill from the cellar, if it is located. Complete excavation is desirable to allow documentation of any features (or remains of features) a structure of this type might contain.

A sample of fill from the cellar will be screened through 1/4-inch mesh hardware cloth. If deposits within this structure are demonstrated to be artificial fill, the exploratory trench will serve as the sample area, and most of the remaining fill will be removed by mechanical equipment. Otherwise, the screened sample will include both the exploratory trench and one quadrant. The quadrant selected for sampling will be determined in the field, but it will be the last quadrant excavated because there will be two visible profiles available to guide excavation rather than just one. Remaining fill will be removed without screening, either by hand or mechanically, and visible artifacts will be collected for analysis. The face of each quadrant will be profiled to provide a record of the placement of strata along both north to south and east to west axes. Because of safety concerns, the exploratory trench will be no more than 1.3 m deep before it is expanded. Expansion will be accomplished by removing all quadrants to the same depth. Quadrant excavation will halt between 5 and 10 cm above the floor to prevent damage to its surface, and to permit a more systematic sampling of materials in contact with or near the floor. These materials will be removed by grid using hand excavation and may be screened through 1/8-inch mesh hardware cloth if the situation is felt to warrant this level of recovery.

Structure descriptions will include information on size and dimensions, a general description, and a sketch plan. In addition to

profiles, plans of each structure will be drawn detailing the locations of rooms and internal features, artifacts found in direct contact with floors, and any other details considered important. A series of 35 mm black-and-white, 35 mm color slide, and digital photographs will be completed for each structure showing its form, individual rooms, construction details, and the relationship of features with other architectural elements.

Features

Features will constitute individual units of excavation. As they are encountered at a site, features will be assigned a unique number. Small features (less than 2 m in diameter) may be excavated differently than large features (greater than 2 m in diameter). Materials removed from features will be screened through 1/4-inch mesh hardware cloth, unless finer screening is considered necessary. The latter will be done at the discretion of the site supervisor. After defining the horizontal extent of small features, they will be divided in half. One half will be excavated in 10 cm arbitrary levels to define internal stratigraphy, and a profile will be drawn. The second half will then be removed by strata. Plans showing the locations and sizes of excavation units will also be drawn. A second cross section illustrating the feature's vertical form perpendicular to the profile will be drawn, and a plan of the feature and a form that describes and details its shape and contents will be completed.

Large features, such as trash middens, will be excavated by grid. The number of exploratory grids will be kept to a minimum, and as much of the feature as possible will be excavated by soil strata. At least two perpendicular profiles will be drawn if feasible, and forms and plans that describe and detail their shape and contents will be completed. A series of 35 mm black-and-white, 35 mm color slide, and digital photographs will be taken during and after excavation of all features, when possible. Other photographs showing construction or excavation details may be taken at the discretion of the excavator.

Extramural Excavation Areas

Areas outside structures were often used for a variety of work and recreational activities. Thus, certain zones may be examined to determine whether this type of activity area can be defined. In particular, the zone around Test Pit 9 will be examined in this manner. Excavation in extramural areas will proceed by grids. Most soil encountered during these investigations will be screened through 1/4-inch mesh hardware cloth, though a smaller-sized mesh may be used to sample certain areas. Plans of each extramural area investigated will be drawn, detailing the grids investigated and any features that are encountered. Excavation will continue until some idea of the function of an extramural area has been determined.

Collection of Botanical Samples

Botanical samples will only be obtained from contexts with the potential to yield information relevant to this study. For the most part, they will include 2-liter soil samples from trash midden contexts, and at least one sample will be taken from each stratum defined. Multiple samples from strata may be obtained, and the maximum number will be one sample per stratum from each grid. Botanical samples will also be obtained from above and within the cobble pavements (Feature 6 and 7), if they are excavated, in order to help determine whether livestock might have been present in those areas. Outbuildings like root cellars and sheds are particularly important data sources because of their association with the storage of plant foods for people and/or livestock. Thus, if the cellar between the orphanage and the power plant is found, one or more samples will be obtained from floor fill. Noncultural strata and artificial fill layers will not be sampled for botanical remains. Macrobotanical samples, if observed, will be collected for analysis and identification and will be provenienced according to the level from which they were removed.

Special Situations

Sensitive Materials

Since no evidence for the seventeenth-century parroquia was found during testing and historical research has turned up no references to burials on the property while it was owned by the archdiocese or the Sisters of Charity, the presence of any formal

on-site human burials is considered unlikely. Any finds of human bone or burials while in the field or during laboratory analysis will be completely inadvertent and unexpected. If remains of this type are discovered, standard archaeological excavation techniques will be employed to remove them after all appropriate consultations have been completed. The consultation procedure is discussed in Appendix 3, along with specific excavation techniques and analytic standards and procedures. Consultations will include informing the appropriate law enforcement and review authorities, DSW, and the Archdiocese of Santa Fe. The excavation methods used will include definition of the burial pit, use of hand tools to expose skeletal materials, mapping and photographing of the position of the skeleton and any grave goods, and retrieval of soil for pollen analysis. Field and laboratory treatment of human remains and other sensitive cultural discoveries will be based on the Museum of New Mexico policy adopted March 20, 1986, "Collection and Display of Sensitive Materials" (SRC Rule 11; Appendix 2). If human remains or other sensitive materials are uncovered, no person will be allowed to handle or photograph them except as part of data recovery efforts. Data recovery related photographs of sensitive materials will not be released to the media or general public.

Unexpected Discoveries

There is always a risk of finding unexpected deposits or features during an archaeological excavation, and the project outlined in this plan is no exception. The procedure that will be followed in the event of an unexpected discovery will vary with the nature and extent of the find. Should human remains be found, appropriate consultations will be completed, and they will be treated according to procedures outlined above. Small features, structures, or cultural deposits that were not found during testing will also be excavated according to procedures outlined above. On the other hand, finds that have the potential to significantly alter the scope and intent of this plan will require consultation with DSW, the City of Santa Fe Archaeological Review Committee, the Historic Preservation Division of the Department of Cultural Affairs, and other agencies or entities involved in permitting.

Analytic Methods and Artifact-Specific Inquiries

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Laboratory analysis will be conducted by OAS staff and qualified professional consultants. Standardized analysis techniques have been developed by the OAS for chipped stone, ground stone, and Euroamerican artifacts (OAS 1994a, 1994b, and 1994c). Other analyses are being standardized and will be completed in a framework that is comparable to those used by the OAS in previous studies in northern New Mexico. Discussions of general analysis methods are provided in this chapter for all artifact categories that we anticipate will be recovered. Artifact-specific research questions are also detailed, where applicable.

It may be necessary to sample certain categories if large numbers of artifacts are recovered. If so, all artifacts in sampled categories will be rough-sorted to collect a minimum amount of data including (but not limited to) count and a general artifact classification. Full analysis will be completed on artifacts selected for the sample. The selection of samples will vary according to artifact category and will be aimed at deriving data that are directly applicable to the research questions generated in this document. Sample size will vary according to the raw numbers of artifacts in a category, and the amount of information needed to address research questions.

Chipped Stone Artifacts

All chipped stone artifacts will be examined using a standardized analysis format (OAS 1994a). This format includes a series of mandatory attributes that describe material, artifact type and condition, cortex, striking platforms, and dimensions. Several optional attributes have also been developed that are useful for examining specific questions. This analysis will include both mandatory and optional attributes.

The primary areas our analysis format explores are material selection, reduction technology, and tool use. These topics provide information about ties to other regions, mobility, and site function. While material selection studies cannot reveal *how* materials were obtained, they can usually suggest *where* they were procured. A study of mobility is not integral to this project, but our analysis will provide baseline data useful for evaluating information from other sites. By studying the reduction strategy employed at a site it is possible to compare how different cultural groups approached the problem of producing useable chipped stone tools from raw materials. The types of tools in an assemblage can be used to help assign a function to a site and to aid in assessing the range of activities that occurred there. Chipped stone tools provide temporal data in some cases but are usually less time-sensitive than other artifact classes like pottery and wood.

Chipped Stone Analytic Methods

Each chipped stone artifact will be examined using a binocular microscope to aid in defining morphology and material type, examine platforms, and determine whether it was used as a tool. The level of magnification will vary between 20X and 100X, with higher magnification used for wear-pattern analysis and identification of platform modifications. Utilized and modified edge angles will be measured with a goniometer; other dimensions will be measured with a sliding caliper. Analytic results will be entered into a computerized data base to permit more efficient manipulation of the data and to allow rapid comparison with other data bases on file at the OAS.

Attributes that will be recorded for all chipped stone artifacts include *material type*, *material quality*, *artifact morphology*, *artifact function*, amount of surface covered by *cortex*, *portion*, evidence of *thermal alteration*, *edge damage*, and *dimensions*. Other attributes are aimed specifically at examining the reduction process and can only be obtained from flakes. They include *platform type*, evidence of *platform lipping*, presence or absence of *opposing dorsal scars*, and *distal termination type*.

Research Questions

Data provided by chipped stone analysis will be used to address questions posed in Problem Domains 2–4, as well as several others pertaining to the use and manufacture of this artifact category. While some chipped stone artifacts recovered from LA 161535 were produced and used by Spaniards, other specimens may reflect prehistoric occupations on sites located elsewhere from which materials were taken for fill dirt. Patterns in material selection, reduction techniques, and tool use could be used to differentiate between these temporal groups, lending credence to our assumed origin for the prehistoric materials.

By combining chipped stone information with other data from the seventeenth-century component, we will be able to assess the economic condition and degree of acculturation demonstrated by early Spanish occupants of Santa Fe. Comparison of chipped stone artifact data with information from sites of similar type and date may aid in the isolation of specific manufacture or use patterns that are culturally rather than functionally determined. By comparing Spanish chipped stone assemblages with those of local Pueblo groups we may be able to find enough differences in reduction strategy, material selection parameters, tool use, and formal tool manufacture techniques to allow us to define a signature for Spanish assemblages. In cases of uncertain ethnicity, this could prove useful in helping to determine what group occupied a site. These data will also help in examining how the Spanish approach to flintknapping differed from or was similar to that of the Pueblos, and may provide clues concerning the degree to which the Spanish assimilated Pueblo reduction technology and strategy.

Chipped stone assemblages from later contexts can be compared with those recovered from seventeenth-century deposits as well as those thought to represent materials transported from prehistoric sites. This may help in determining whether the use of chipped stone tools persisted in Santa Fe into the late nineteenth century or reflects a mixing with materials from earlier periods.

Chipped stone artifacts should have been used for a wide range of tasks at frontier sites, in many cases being substituted for metal tools. In the Santa Fe core the opposite may be true—most chipped stone artifacts should have been used in fire-making activities and not in tasks for which metal tools were better suited. The use of various classes of chipped stone tools should vary with the availability of imported goods, especially those that became available with trade via the Santa Fe Trail and railroad. Are these changes visible in chipped stone assemblages? Better access to metal tools should mean less need for chipped stone substitutes and should lead to a decrease in the use of chipped stone cutting tools in Santa Fe Trail period and later assemblages. Are these changes also reflected in material selection parameters? Cherts and flints are the primary materials suitable for use in fire-making activities. Other materials would be useful for tasks that required substitutes for tools that were too expensive or rare for general use. As access to manufactured goods improved, we would expect to see a corresponding decrease in the percentages of noncherts used in Spanish chipped stone assemblages.

Ground Stone Artifacts

Ground stone artifacts will be studied to provide data on material procurement and selection, range of activities, and alterations. Raw material choice, procurement costs, and production costs will be studied by examining material-selection parameters, how extensively raw materials were modified, and how tools were shaped. Because ground stone artifacts are large and durable, they may undergo a long life history and be used for a variety of purposes, even after they are broken. Several attributes will be used to monitor artifact life histories by identifying postmanufacture changes in form and treatment including evidence of physical alterations, reuse after breakage, and multiple uses. Relative tool and assemblage age can be measured by examining the cross section form of manos, and the depth and cross section of metate grinding surfaces.

Ground stone artifact analysis may also provide information about the range of foods consumed by site occupants. Pollen often adheres to plants that are processed with ground stone tools and can be recovered by a washing procedure. The material acquired in this way can be analyzed like other pollen samples. A study of this nature

can potentially provide two types of information. The first is economic in focus. Recovery of pollen that adhered to materials processed by ground stone tools can help determine what those foods were. Of course, our ability to accomplish this depends on whether pollen is preserved in pores in the rock and the condition of preserved pollen. Like many other analyses, the examination of economic pollen recovered from ground stone tools is a hit-or-miss proposition. Thus, our study of the use of plants for food will not focus on this analysis, but any information derived will be used to expand and amplify other sources of data. Grains of corn starch can also sometimes be identified on ground stone and will be monitored to supplement and amplify pollen information. Since recovery of economic pollen from ground stone tools is not a given, tools that appear to have been buried since discard or abandonment will be the focus of this analysis.

Ground Stone Analytic Methods

Ground stone artifacts will be examined using a standardized methodology (OAS 1994b), which was designed to provide data on material selection, manufacturing technology, and use. Artifacts will be examined macroscopically, and results will be entered into a computerized data base for analysis and interpretation. Several attributes will be recorded for each ground stone artifact, while others will only be recorded for certain tool types. Attributes that will be recorded for all ground stone artifacts include *material type*, *material texture and quality*, *function*, *portion*, *preform morphology*, *production input*, *plan view outline*, *ground surface texture and sharpening*, *shaping*, *number of uses*, *wear patterns*, *evidence of heating*, *presence of residues*, and *dimensions*. Specialized attributes that will be recorded in this assemblage include information on *mano cross-section form* and *ground-surface cross section*.

By examining function(s) it is possible to define the range of activities in which ground stone tools were used. Because these tools are usually large and durable, they may undergo a number of different uses during their lifetime, even after being broken. Several attributes are designed to provide information on the life history of ground stone tools, including dimensions, evidence of heating, portion, ground-surface sharpening, wear patterns, alterations, and the presence of adhesions. These measures can help identify postmanufacturing changes in artifact shape and function, and describe the value of an assemblage by identifying the amount of wear or use. Such attributes as material type, material texture and quality, production input, preform morphology, plan view outline form, and texture provide information on raw material choice and the cost of producing various tools. Mano cross-section form and ground-surface cross section are specialized measures aimed at describing aspects of form for manos and metates, since as these tools wear they undergo regular changes in morphology that can be used as relative measures of age.

If ground stone artifacts amenable to the recovery of economic data through pollen washes are recovered from LA 161535, this procedure will be conducted in the laboratory, necessitating certain precautions. Ground stone tools from trash deposits that are considered likely to yield data by undergoing this procedure will be placed in plastic bags after removal from the ground and will be lightly brushed to remove loose soil. Laboratory processing will proceed as follows: The entire surface of tools will be brushed before samples are collected. Using distilled water and a toothbrush, grinding surfaces will be scrubbed to collect embedded materials. The size of the area sampled will be measured and noted. Wash water will be collected in a pan placed under the sample and packaged for storage. Samples selected for analysis will receive a short (ca. 10-minute) acetolysis wash. Under certain circumstances, this may help preserve the cytoplasm in some modern pollen grains, allowing recent contaminants to be distinguished from fossil pollen. Pollen samples from ground stone artifacts will be subjected to full analysis to attempt to distinguish economically used wild plants as well as cultigens.

Research Questions

Data provided by ground stone analysis will be useful in addressing the questions posed in Problem Domains 2–4. In general, analysis of ground stone tools may yield both direct and indirect information on subsistence and could help determine the types of foods consumed by site occupants. Most of these tools, at least those associated with food processing, are expected

to occur in the seventeenth-century component. What foods were the Early Spanish Colonial–period occupants of Santa Fe grinding? To what other uses did they put ground stone tools? Was the use of ground stone tools at LA 161535 similar to patterns discernible at other contemporary and later Spanish sites in northern New Mexico, or is there a difference that perhaps reflects Santa Fe's position as the economic core of the province?

The morphology of ground stone tools can be used to determine whether they were used in food preparation or for other purposes. Tools that do not appear to have the correct shape for grinding foods will be examined for residues to help define their function. The presence of such tools may provide subsidiary economic information. Were site occupants supplementing their income by making jewelry, were they grinding pigments for painting, or were they sharpening metal tools with grinding stones?

We may also be able to determine how ground stone tools were acquired. In particular, were ground stone tools obtained from nearby prehistoric sites, or were they manufactured for Spanish use? Tool morphology will be especially important in addressing this question. How do the shapes of ground stone tools from Spanish sites compare with those from prehistoric Pueblo sites in the area? If they are identical, we must consider the possibility that these tools were acquired from local sites. If they differ significantly, they were probably made for Spanish use.

Local Ceramic Artifacts

Analysis of local ceramic artifacts is concerned only with locally produced pottery and does not include Euroamerican wares. "Native pottery" refers to types made or inspired by the ceramic technology long associated with Pueblo groups in the Northern Rio Grande. While Colonial- and Territorial-period ceramic assemblages from Pueblo and Spanish settlements in the Northern Rio Grande are dominated by pottery made by Pueblo potters, native types found at sites in this region may also include forms that were inspired by Pueblo pottery traditions but were made by Jicarilla Apache, Navajo, Genízaro, or Hispanic potters residing in this region.

Local Ceramic Analytic Procedures

Detailed and systematic examination of various attributes is needed to fully determine the timing and nature of the occupations at this site. Ceramic studies may contribute to this by using distributions of ceramic types and attribute classes from dated contexts to examine patterns related to ethnic affiliation, place of origin, form, and use of ceramic vessels. In order to examine these issues, it is necessary to record a variety of data in the form of both attribute classes and ceramic type categories.

Attribute categories used in this study are similar to those employed in recent OAS projects in the Northern Rio Grande. Attribute categories recorded for sherds recovered during testing included *temper type*, *paint type*, *surface manipulation*, *modification*, and *vessel form*. These attributes will also be recorded for sherds examined during data recovery. Other studies planned for data recovery involve more detailed characterizations of selected subsamples of sherds. Such studies will include analysis of refired paste color, petrographic characterizations, design style, and construction methods. All categories employed will be defined and described during that phase of investigation. Studies of the distributions of these descriptive attributes will be used to examine various issues discussed below.

Many trends can also be examined using ceramic type categories. "Ceramic types," as used here, refers to groupings identified by various combinations of paste and surface characteristics with known temporal, spatial, and functional significance. Sherds are initially assigned to specific traditions based on probable region of origin as indicated by paste and temper. They are then placed in a ware group on the basis of general surface manipulation and form. Finally they are assigned to temporally distinctive types previously defined within various tradition and ware groups.

While a number of historic Tewa ceramic types have been formally defined and described (Batkin 1987; Frank and Harlow 1974; Harlow 1973; Mera 1939), most of these type definitions are based on whole vessels and tend to emphasize decorated types. Historic Tewa decorated types are often distinguished from each other by characteristics such as overall design field or shape that are only observable on complete vessels. Such distinctions are of limited

use in studies of pottery from archaeological assemblages, which tend to be dominated by plain-ware sherds. Thus, this analysis will focus on the definition and use of sherd-based categories more suitable for sherd collections.

Sherd-based definitions of historic Tewa types have been used to examine historic archaeological assemblages (Dick 1968; Lang 1997; Snow 1982). In addition, a number of descriptive categories have been proposed for sherds that exhibit ranges of characteristics that differ from those used to define types from whole vessels. These categories are defined by a range of characteristics that may be ultimately connected to but are not necessarily equivalent to types previously defined for whole vessels. The degree of correlation between vessel and sherd defined categories varies for sherds from vessels of the same type and depends on how much stylistic or decorative information is present. For example, unpainted sherds from a Powhoge Polychrome vessel would be placed into an unpainted historic slipped category, while sherds exhibiting some paint but without distinct decorations would be classified as "Tewa" Black-on-cream undifferentiated. In such cases, the assignment of sherds to Powhoge Polychrome would be limited to examples with distinct design styles indicative of that type. Still, a broken vessel of a specific pottery type should produce a recognizable pattern of sherds assigned to various formal and informal types. Information on this type of patterning may be derived from looking at how types are assigned to sherds that are eventually reconstructed into whole or partial vessels.

Examination of very basic ceramic patterns may be most efficiently served by creating a small number of ceramic ware groups by lumping types that share characteristics. Such groups include decorated "Tewa" polychrome, red-slipped utility, plain utility, black utility, micaceous utility, as well as a nonlocal group. The use of these basic broad categories allows determination of coarse-grained patterning in ceramic assemblages, as opposed to the more basic patterning available from type distributions.

Research Questions

Data provided by this analysis will be used in addressing questions posed in Problem Domains 2–4 and 6. In addition, data derived from analysis of local ceramics will also be used to examine a series of broader questions concerning pottery manufacture, sequencing, exchange patterns, the cultural affiliation of manufacturers, and functional changes through time.

Temporal patterns. Distributions of ceramic types and ware groups can help determine the period of occupation for a particular site or provenience within a site, based on the temporal ranges and frequencies of specific types and groups. Assignment of ceramic dates to historic assemblages is complicated by a general lack of detailed sherd-based ceramic dating studies for Spanish sites in New Mexico. These include widely traded types produced by Pueblo potters as well as native forms produced by various groups, including Hispanics. Many of the ceramic types and groups occurring in Spanish sites in New Mexico tend to have very long temporal spans, crossing several periods as currently defined. Moore (2001) noted trends in the overall frequencies of different native pottery types and used those observations to recognize several ceramic-based dating periods, including the Early Spanish Colonial (1598 to 1680), Late Spanish Colonial (1692 to 1821), Santa Fe Trail (1821 to 1880), and Railroad (post-1880) periods. Trends noted include a decline in frequencies of decorated wares and polished red wares, and an increase in frequencies of polished black wares and micaceous wares (Moore 2001). Other trends include a gradual decline in the frequency of jars and soup plates, and a corresponding increase in percentage of bowls.

Ceramic distributions from various proveniences may provide an opportunity for finer dating resolution of historic sites. Careful comparisons of native ceramics and historic artifacts may also provide information concerning temporally sensitive changes in distributions of native ceramics. Comparisons of pottery distributions from different spatial and vertical units may provide data that will allow us to make finer temporal distinctions. Thus, comparisons of ceramic distributions between levels within a stratigraphic profile may allow documentation of changes that occurred within very short temporal spans, between and within presently defined periods.

Examination of ceramic trends. The assignment

of ceramic dates to proveniences will provide an opportunity to examine issues associated with trends in the production, decoration, and use of native pottery at Spanish settlements. Distributions of local ceramics may also provide information concerning the nature of ceramic production technologies and interaction between Spanish and Indian groups, as well as the nature of activities for which this pottery was used by households on the New Mexico frontier.

Pottery exchange and affiliation. The determination of area of production and cultural affiliation will provide important clues concerning the nature of production and acquisition of ceramic vessels, as well as the interaction between various groups in the seventeenth and late nineteenth centuries. One important issue concerns relative rates of acquisition of native pottery vessels compared with Euroamerican pottery containers produced in Europe, Mexico, and the United States. Thus, the relative frequency of native to European-produced or inspired forms will be compared and may provide clues concerning the relative isolation or self-sufficiency of Spanish settlers in the early versus the late occupation.

It may also be possible to examine shifting interaction with more distant Pueblos and other groups through the identification of types produced in other regions. Pottery produced in the Keres area can be identified by distinct basalt temper that sometimes occurs in glaze and Puname matte painted wares. Pottery produced in the Zuni, Acoma, or Laguna areas may be identified by white paste, sherd temper, and matte mineral paint. Other ceramics that may reflect exchange with other areas include Jemez Black-on-white, Jeddito Yellow ware, Taos micaceous ware, and Navajo ware. It is also important to determine the nature of local pottery production by identifying the area or group associated with the production of pottery found at LA 161535.

Functional trends for historic pottery. Assemblages from Spanish sites in the Northern Rio Grande occupied during the Colonial and Santa Fe Trail periods reflect the isolated and largely self-sufficient economy of the New Mexican frontier. These assemblages tend to be dominated by Indian-made utility wares associated with the storage and preparation of food. Certain sherd characteristics can provide data concerning the forms of ceramic vessels that were used and discarded at these settlements. Overall distributions of sherds assigned to various categories provide clues concerning the types and ranges of activities for which they were used.

Functional trends may be documented through the use of basic ware categories and ceramic groups as well as categories that reflect the shape and portion of a vessel from which a sherd derived. Vessel-form identification is based on rim shape, the presence and location of polish and painted decorations, and other traits indicative of form. It is often easy to identify the basic form (bowl versus jar) of body sherds from prehistoric vessels for many Southwestern regions by the presence and location of *polishing*. However, such distinctions are not as easy to make for plain ware body sherds from historic Northern Rio Grande vessels, because polishing on both sides is common in vessels of a variety of forms. Thus, while body sherds from most decorated vessels can be assigned to basic vessel forms, most plain utility ware body sherds are assigned to a series of descriptive categories representing combinations of surface treatments of unknown functional significance. These categories provide information that may be of functional significance without making more specific distinctions that are difficult to derive from plain ware body sherds alone. Examinations of rim sherds will provide more specific information about vessel form. *Rim diameters* of sherds and vessels will provide information concerning the overall size of vessels reflected by various forms.

Studies of pottery recovered during data recovery will attempt to define the activities that used native pottery in much more detail. The distribution of ceramic classes and artifacts from different features and proveniences may provide data concerning the organization of cooking, serving, and storage activities. Functional distributions will be compared to determine whether different ranges of activities occurred in the two components represented at LA 161535. Finally, pottery distributions from dated proveniences will be compared to examine changes in use patterns that may reflect shifting economies.

Faunal Artifacts

From the Spanish Colonial period onward, domestic animals dominated the animal diet of

both colonists and native groups. After the Pueblo Revolt, Vargas brought new supplies of sheep, goats, and cattle for the colonists. The roughly 1,000 colonists received more than 4,000 sheep, 170 goats, 500 cows, and 150 bulls that were to be used for breeding draft animals (Baxter 1987:15–16; 1993:106). Households practicing subsistence-level agriculture and livestock raising generally had small numbers (20 to 100 animals) of sheep, goats, cattle, oxen, mules, horses, burros, and pigs. These provided the household with meat, hides, wool, lard, transportation, manure, and hoof action for threshing grain (Scurlock 1998a:115).

Sheep were the primary livestock into the twentieth century. Early sheep were a variety called *churros* that were common to southern Spain. Churros were small with minimal amounts of coarse, long-stapled wool. Adapted to semiarid pastures and able to withstand drought and drives, the wool was well suited to hand processing, and churros had excellent meat (Baxter 1987:20), making them ideal for conditions on the New Mexican frontier (Baxter 1993:103). At a time when sheep were valued primarily for food, there was little incentive to improve these small, easily herded, and well-traveling sheep.

By 1750 sheep ranching was New Mexico's most important industry (Baxter 1987:31). Into the early 1800s, sheep were raised to meet local needs and for markets in northern Mexico. By the early days of the Santa Fe Trail (1820s and 1830s), some wool was traded east, but sheep were not driven east or west for food (Carlson 1969:26–27). Much of the commerce with Mexico ended abruptly at the end of the Mexican War, and the sheep trade remained dormant until the discovery of gold in California created new markets for meat. Prices eventually fell, and the Civil War stopped the trade (Baxter 1987:112).

The Civil War was at least partly responsible for major changes in the sheep industry. As the demand for wool increased, the industry turned from producing meat to producing wool. Heavy-set, wool-bearing *merino* rams were brought from the east to cross with churros (Carlson 1969:30). Bred by Berber tribesmen from North Africa, merinos have kinky, high-yielding fleece and are well adapted to seasonal drives between mountains and plains (Baxter 1987:20). A merino produced as much as seven or eight pounds of wool compared to one and a half pounds for churros and three to four pounds for the crossbreeds, which were also hardy, prolific, and good to eat. It was not until after 1868 that New Mexico had enough merinos to significantly affect the quality of sheep (Baxter 1987:149; Carlson 1969:33–34, 46). The wool clip rose from 14,500 kilos in 1850 to 223,600 kilos in 1860, 310,700 in 1870, and over 1,814,000 in 1880 (Grubbs 1960:171–172).

Herds of sheep increased in size dramatically. In 1850 there were 380,000 rather unprofitable sheep. By 1880, over 2,000,000 sheep were shorn annually. Meanwhile, another market was developing in the Midwest. Sheep shipped to feedlots in Kansas, Nebraska, and Colorado were fattened, then taken to meat-packing plants in Chicago, St. Louis, and Omaha. Railroads transformed the market by providing more outlets. In the 1890s, mercantile establishments began to play an increasingly important role in improving the stock and financing small operations, taking the place of the partido system. Key operations were established at railheads in Las Vegas, Socorro, Albuquerque, and Española. But the rails also allowed the cattle industry to compete for markets. Control of the range, the demise of the partido system, fences, private ownership of watering holes, placing land in forest reserves, and other factors reduced sheep husbandry to a sedentary industry by 1900 (Carlson 1969:34–39).

Although much less numerous, goats played a vital role in Spanish livestock raising. Goats are relatively easy to care for, do well on diverse types of terrain, and are more healthy and disease resistant than sheep (Scurlock 1998b:8). Spanish goats were long-legged with small bodies and provided meat, milk, and cheese (Scurlock 1998b:11). By the late nineteenth century the angora goat, with its longer and more easily processed and woven hair, began to replace the Spanish goat. With the opening of new rail markets, angoras spread rapidly since their pelts brought higher prices and their wool could be used for rugs. By the early 1900s there were 30,000 angoras in New Mexico (Scurlock 1998b:14). Concerned with overgrazing of public land, the government reduced the number of sheep and goats allowed on the public domain in the 1930s. Spanish and Indian households continued to keep a few around their villages, but the overall number was greatly reduced (Scurlock 1998b:17–18).

Cattle also arrived with early settlers from

Mexico and were an integral part of the subsistence economy at the end of the seventeenth century (Baydo 1971:12, 16). Early cattle were probably of a breed known as *criollos*, a meat and draft variety of Iberian origin. A docile breed, they had twisted, handlebar-shaped horns (Porter 1991:308–309). In the 1800s oxcarts were the most common mode of transport (Hallenbeck 1950:340), but oxen were also used for farming (Simmons 1985:85).

Horses were introduced by the Spaniards, but so many were lost to Indian raids that breeding was difficult, and horses had to be imported into the 1800s (Baxter 1987:69). Mules were another common form of transportation in the eighteenth century, hauling goods and carrying ore out of mines. The Asiatic donkey or burro came later, probably not before 1830, then quickly supplanted the mule (Baxter 1993:106; Hallenbeck 1950:340).

Pigs arrived in Mexico with Cortez in 1524 (Bennett 1970:230). The breed, Iberians, are a small (50 to 150 kg) lean pig with heavy shoulders, long legs, a long narrow snout, small erect ears, and an uncurled tail. In Mexico they multiplied rapidly, adapting well to new environments (Gade 1987:36). Pigs were reportedly scarce in New Mexico in 1803 (Baxter 1987:69) and remained so in 1849 (Carroll and Haggard 1942:103). They were expensive to keep because there was little mast available for feed, so they had to be fed corn (Crass and Wallsmith 1992:12).

In his 1803 report to his superiors in Chihuahua, Governor Fernando de Chacón lamented that there was an abundance of skins from small animals, elk, deer, mountain sheep, buffalo, bear, mountain lion, wolf, fox, and coyote, but the trade was not practiced due to lack of ability and inclination among the inhabitants of the province (Simmons 1985:86). Hunting small mammals and birds and fishing was of little importance, but big-game hunting, especially of bison, was more important due to the meat and value of their hides (Carroll and Haggard 1942:99). In general, settlers relied on bartering with Indians for wild animal meat and hides, except for bison (Scurlock 1998a:119).

Faunal Analytic Methods

Preliminary indications from testing suggest that LA 161535 will produce large amounts of bone during data recovery. If sampling is necessary, proveniences analyzed will include not only those with the potential to contribute the highest-quality data on availability and consumer choice but also those that will inform on site structure. In addition, an effort will be made to collect age and metric data from the unanalyzed portion of the assemblage. This type of information is relatively sparse but can add considerably to information on age selection and the potential breeds of animals represented.

Specimens from proveniences chosen for analysis will be identified using the OAS comparative collection supplemented by those at the Museum of Southwest Biology, when necessary. Recording will follow an established OAS computer coded format that identifies the animal and body part represented, how and if the animal and part was processed for consumption or other use, and how taphonomic and environmental conditions have affected the specimen. Each data line will be assigned a *lot number* that identifies a specimen or group of specimens that fit the description recorded in that line. Lot numbers also allow for retrieving an individual specimen if questions arise concerning coding or for additional study. A *count* will also be included to identify how many specimens are described in a data line.

Taxonomic identifications will be made as specific as possible. When an identification is less than certain, this will be indicated in the *certainty* variable. Specimens that cannot be identified to species, family, or order will be assigned to a range of indeterminate categories based on the size of the animal and whether it is a mammal, bird, other animal, or cannot be determined. Unidentifiable fragments often constitute the bulk of a faunal assemblage. By identifying these as precisely as possible, information from the identified taxa is supplemented.

Each bone (specimen) will be counted only once, even when broken into a number of pieces during excavation. If the break occurred prior to excavation, the pieces will be counted separately and their articulation noted in a variable that identifies *conjoinable pieces*, parts that were articulated when found, and pieces that appear to be from the same individual. Animal skeletons will be considered single specimens so as not to inflate the counts for accidentally and intentionally buried taxa.

The *skeletal element* will be identified by *side*, *age*, and *portion* recovered. Side will be recorded for the element itself or for the portion recovered

when it is axial, such as the left transverse process of a lumbar vertebra. Age will be recorded at a general level: fetal or neonate, immature, young adult, and mature. Further refinements based on dental eruption or wear will be noted as comments. The *criteria used for assigning an age* will also be recorded. This will generally be based on size, epiphysis closure, or texture of the bone. The portion of the skeletal element represented in a particular specimen will be recorded in detail to allow determination of how many individuals are present in an assemblage and to investigate aspects of consumer selection and preservation.

Completeness refers to how much of that skeletal element is represented by a specimen and will be used in conjunction with portion to determine the number of individuals present. This variable will also provide information on whether a species is intrusive, and will inform on processing, environmental deterioration, animal activity, and thermal fragmentation.

Taphonomy is the study of preservation processes and how they affect the information obtained by identifying some of the nonhuman processes that affect the condition or frequencies found in an assemblage (Lyman 1994:1). *Environmental alteration* includes degree of pitting or corrosion from soil conditions, sun bleaching from extended exposure, checking or exfoliation from exposure, root etching from the acids excreted by roots, and polish or rounding from sediment movement, when applicable. *Animal alteration* will be recorded by source or probable source and where it occurs.

Burning, when it occurs after burial, is also a taphonomic process. Burning can occur as part of the cooking process, part of the disposal process when bone is used as fuel, or after it is buried. Here, the color, location, and presence of crackling or exfoliation will be recorded. Burn color is a gauge of burn intensity. A light tan color or scorch is superficial burning, while bone becomes charred or blackened as the collagen is carbonized. When the carbon is completely oxidized, it becomes white or calcined (Lyman 1994:385, 388). Burns can be graded over a specimen, reflecting the thickness of the flesh covering portions of the bone when burned. Dry burned bone is light on the exterior and black at the core or has been burned from the interior. Graded burns can indicate roasting. Completely charred or calcined bone and dry burns do not occur as part of the cooking process. Uniform degrees of burning are possible only after the flesh has been removed and generally indicate a disposal practice (Buikstra and Swegle 1989:256).

Evidence of butchering will be recorded as various orientations of cuts, grooves, chops, abrasions, saw cuts, scrapes, peels, and intentional breaks. This type of evidence is much less ambiguous in historic assemblages, where metal knives, axes, and cleavers leave more distinct marks than stone tools. The location of butchering will also be recorded. Additional detail will be obtained by indicating the exact location on diagrams of the body parts.

Fauna recovered from historic sites is typically so fragmented that few attempts have been made to collect measurement data. Yet this information has the potential to differentiate varieties of sheep and goat, perhaps distinguish beef from draft cattle, and differentiate species of equids, along with the social and economic consequences thereof. Because these data have such potential, all possible *measurements* will be taken on domestic fauna. Measurements will be taken following von den Driesch (1976), who provides a comprehensive list of measurements for virtually every element. While this site may not provide enough data to confidently answer questions concerning the varieties represented, it will add to our data base of measurements from other Historic-period sites.

Research Questions

Data provided by the faunal analysis will be useful in addressing the questions posed in Problem Domains 2–4. In addition, data derived from analysis of local ceramics will be used to examine a series of broader questions concerning availability, consumer choice, and site structure.

The framework that will be used for analyzing the faunal data from these sites is mostly based in part on one outlined by Huelsbeck (1991:62) that focuses on availability and consumer behavior. It will emphasize the impact of social and economic forces on the acquisition and consumption of animal products, as well as on aspects of site structure. Comparisons with faunal assemblages representing demonstrably different types of sites, such as isolated homesteads and urban Santa Fe, those from other areas but

dating to the same period, those generated by different ethnic and social groups, and those from before and after are our best means of evaluating the collections from this site as part of the New Mexican adaptation. Without a broader context, the data are merely descriptive.

Availability refers to the range of animals available to the household and the community. This will depend, at least in part, on the range and kinds of contacts site inhabitants had with those outside the immediate area. Location on or near communication and trade corridors should increase the variety of animals available as well as the likelihood that site inhabitants participated in and were influenced by market forces. For example, an assemblage from a group who raised animals simply for household and community consumption should differ from one that also raised animals for export. When animals were raised for export, there should be differences based on whether they were raised for food or for other products, such as wool. Beyond simple availability, acquisition by purchase or trade raises questions of form (e.g., live animals, cuts of meat, etc.), concerning the respective relationship between parties (family, community, patron and peon, alliance maintenance with other groups), and the quality of the product available.

Consumer choice addresses what species and portions were chosen for consumption or use. By looking at the cuts represented and the age of animals selected we may be able to determine the status of the consumer. Animal selection also informs on the role of the animals themselves. Was there selection for certain age and sex groups that are better eating, or were older individuals culled when their usefulness as draft or transportation animals declined? Seasonality also plays a part. Before refrigeration, larger animals like cows were either divided among many or butchered during the cold season. Choice of preparation method can be indicative of group size and composition. Dietary preferences and butchering practices also inform on ethnicity.

Site structure is reflected in household and community disposal practices. Trash distribution is seldom a random process. Initial butchering refuse might be deposited in areas distinct from household garbage. The former and other noxious refuse might be burned or taken farther from the residence than material generated by household sweeping or cleaning hearths. Household and community size, spatial arrangement, and local topography will also influence disposal practices. Looking at distributions of taxa, body parts, fragmentation, and the length and type of exposure can help distinguish where different activities took place.

Fauna recovered from LA 161535 will be used to address problems related to the period of occupation and to changes in household and community economics. As the background material suggested, churro sheep and Spanish goats should dominate the seventeenth-century faunal assemblage. Both varieties were used primarily for food at the household and community level, but large numbers could have been raised for export. A different pattern is expected for the late nineteenth- to early twentieth-century component. By 1870, the market was for wool and larger, heavy-set merino sheep were crossed with local stock to increase wool production. A similar change in goat variety occurred after 1872, when angora goats were introduced. The size and age structure of cattle remains could inform on whether they were used primarily for food or as draft animals. The simple presence of transportation species—horses or mules—would suggest more active participation in regional markets.

An ethnic difference in site occupants is suggested for each component, with the earlier component reflecting Spanish occupancy and the later a primarily Anglo occupancy. Different meat consumption and butchering practices should be evident if this supposition is correct. Spanish meat consumption was dominated by sheep and goat, as discussed above. Conversely, after the Civil War, US citizens (presumably Anglos) preferred pork followed by beef or veal, poultry, offal, fish, lamb, and mutton (Crass and Wallsmith 1992). Thus, large numbers of pig or cattle bone could suggest that later site residents were predominantly Anglo, and the presence of certain cuts might indicate purchase from Anglo merchants.

Patterns of butchering could also differ between components. The American butchering pattern used after the Civil War for cattle and sheep entailed the selection of young animals. Limbs were removed at the joints, usually with a saw, turning the carcass into sides of meat by sawing down either side of the vertebral column. Commercial cuts removed from beef sides

included short loin, sirloins, round, chuck, and short plate; cuts from lamb or mutton included loin, leg, breast, shoulder, and other cuts suitable for stewing (Crass and Wallsmith 1992:16–17). Spanish sites display a different pattern of butchering. Axes, cleavers, and knives were the most commonly used tools for this purpose. The basic pattern was to remove the head and detach the mandible. The vertebral column was cut into segments, rather than sides, and ribs into slabs. Limbs were separated at the joints with very little evidence of processing (Akins 2001). The presence of cut marks near the ends of long bones probably results from stripping meat rather than disarticulation. Similar patterns were observed for sites along Alameda Boulevard just north of Albuquerque (Brown 1997:247–253).

Euroamerican Artifacts

Euroamerican artifacts will be examined using a standardized analysis format (OAS 1994c). The main emphasis of this analysis is the identification of artifact function. One of the major benefits of this type of analysis is that "the various functional categories reflect a wide range of human activities, allowing insight into the behavioral context in which the artifacts were used, maintained, and discarded" (Hannaford and Oakes 1983:70). It also avoids some of the pitfalls of an analytic framework that focuses on categorizing artifacts by material type. Material-based analyses frequently include attributes that are appropriate for only some of the functional categories that might be included in a single material class. For instance, variables that are often selected for the analysis of glass artifacts are usually appropriate for glass containers, but may be inappropriate for flat glass, decorative glass, or items like vehicle headlights.

This analytic framework was designed to be flexible, which hopefully enables it to avoid these and other problems. The function of each artifact is described by a hierarchy of attributes that classifies it by functional category, type, and specific function. These attributes are closely related, and provide a chain of variables that specify the exact function of an artifact, if known.

Analysis Methods

A series of *functional categories* is used in this analysis, each of which encompasses a series of *types*, and includes *classes* of items whose specific functions may be different but are related. An example is a pickle jar and a meat tin, both of which would be included in the food category but which are made from different materials and had different specific functions. The exact use to which an artifact was put is recorded as a specific function within a type. In essence, this attribute represents a laundry list of different kinds of artifacts that may be familiar to most analysts and is the lowest level of the identification hierarchy. Other variables are recorded to amplify the hierarchy of functional variables and to provide a more detailed description of each artifact that warrants such treatment. Included in this array of attributes are those that provide information on *material type*, *date*, *manufacturer*, and the *part(s) represented*.

Chronological information is available from a variety of descriptive and manufacturing attributes, and especially from the latter. If the array of available variables provide enough information to assign beginning and ending dates to an artifact, it is recorded as date. *Manufacturer* is the name of the company that made an artifact, when known. This attribute can be critical in assigning a specific date to an artifact, because dates for the opening and demise of most manufacturing companies are available. A related attribute is the *brand name* associated with a product. Many brand names also have known temporal spans. At times, the manufacturer or brand name can be determined from the *labeling/lettering* present on an artifact, which was used to advertise the brand name or describe its contents or use.

The *technique* used to manufacture an artifact will be recorded, when it can be determined. Since manufacturing techniques have changed through time, this attribute can provide a relative idea of when an artifact was made. A related attribute is *seams*, which records the way in which sections of an artifact were joined during manufacture. Like manufacturing techniques, the types of seams used to construct an artifact are often temporally sensitive. The type of *finish/seal* will be recorded to describe the shape of the opening in a container and the means of sealing it. Many finishes and seal types have known date

spans of limited duration. Related to this attribute is *opening/closure*, which records the method of retaining or extracting the contents of a container.

In some instances, attributes such as *color*, *ware*, and *dimensions* can provide information on artifact dating. Thus, the current color of an artifact will be recorded if considered to be of diagnostic value. A good example of where this attribute applies is glass, where the various colors present at a site can be used to provide some idea of date. *Ware* refers to pottery and categorizes the specific type represented, when known. Since dates exist for most major ware types, this attribute can provide critical temporal information. Dimensions can also be of chronologic value, especially when examining artifacts like nails or window glass, where lengths or thicknesses varied through time.

A few attributes will be used to provide information on the manufacturing process. In some instances these attributes also have descriptive value and can be used to verify functional information. *Material* records the material(s) from which an artifact was made. *Paste* describes the texture of clay used to manufacture ceramic objects and is differentiated by porosity, hardness, vitrification, and opacity. *Decoration* describes the technique used to decorate an artifact, including pottery. A simple description of decoration on an artifact is recorded as *design*.

In addition to most of the attributes already discussed, several others are used to provide more comprehensive descriptions. *Fragment/part* describes the section of an object that is represented by an artifact. Artifacts or fragments of artifacts within a single excavation unit whose functions and descriptions are identical are recorded together, and the number of specimens present is listed under *count*.

Cultural and environmental changes will also be recorded. *Reuse* describes evidence of a secondary function, and any physical modifications associated with that use are described as *condition/modification*. If environmental conditions have had any effect on the surface of an artifact, it is recorded as *aging*.

Other variables are used to describe the appearance of an artifact. *Shape* describes physical contours and is generally only recorded if an artifact is whole. Several different measurements are taken to complete descriptions including *volume*, *length/height*, *width/diameter*, *thickness*, and *weight*. Measurements are taken using industry standards, where appropriate. The entire range of measurements are rarely applicable to a single artifact, and only those deemed appropriate are taken.

Research Questions

Data provided by the Euroamerican artifact analysis will be useful in addressing the questions posed in Problem Domains 2–4 and 6. In addition, data derived from this analysis will provide information in several critical areas including chronology, activities performed at these sites, site functions, trade contacts, and social standing. As discussed in the previous section, this analysis should be able to provide critical information concerning the timing and length of use of features at LA 161535. The range of artifacts recovered will give us an idea of the types of activities performed and should allow us to gauge what functions are reflected in the various features that are examined in more detail. The sources of various artifacts may provide an idea of the scale of the mercantile system represented in each site component.

Botanical Artifacts

Along with faunal remains, botanical materials provide direct evidence of subsistence practices. Charred seeds reveal what plants were eaten, both domestic and wild. Charcoal from hearths and trash deposits can be used to examine wood-gathering activities. Floral materials contained in adobe bricks can be used to augment other types of botanical data, and samples from corrals provide information on the diet of livestock. These types of data not only tell us what plant foods site occupants were gathering, growing, or trading for, they also provide important information on what the local environment might have looked like. Good botanical information is also critical to our examination of economic changes between the seventeenth- and late nineteenth- to early twentieth-century components at LA 161535.

Analysis Methods

Botanical studies will include flotation analysis of soil samples, species identification and (where

appropriate) morphometric measurement of macrobotanical specimens, and species identification of wood specimens from both flotation and macrobotanical samples. Flotation is a widely used technique for the separation of floral materials from soil. This type of analysis takes advantage of the simple principle that organic materials (especially those that are nonviable or carbonized) tend to be less dense than water and will float or hang in suspension in a water solution. The processing of flotation samples entails the immersion of the sample material in a bucket of water. After a short interval allows heavier particles to settle out, the solution is poured through a screen lined with fabric (approximately 0.35 mm mesh). The floating and suspended materials are dried indoors, then separated by particle size using nested geological screens (4.0, 2.0, 1.0, and 0.5 mm mesh) before sorting under a binocular microscope at 7–45X.

This basic method was been used as long ago as 1936, but did not become widely used for recovery of subsistence data until the 1970s. Seed attributes such as *charring*, *color*, and aspects of *damage or deterioration* are recorded to help determine cultural use versus postoccupational contamination. *Relative abundance of insect parts*, *bones*, *rodent and insect feces*, and *roots* help to isolate sources of biological disturbance in the ethnobotanical record.

All macrobotanical samples are examined individually, identified, repackaged, and catalogued. *Condition* (carbonization, deflation, swelling, erosion, and damage) is noted as a clue to cultural alteration or modification of original size dimensions. When less than half of an item is present it will be counted as a fragment; more intact specimens are measured as well as counted. Corn remains (if present) are treated in greater detail. *Width* and *thickness* of kernels, *cob length* and *mid-cob diameter*, *number of kernel rows*, and several *cupule dimensions* are measured following Toll and Huckell (1996). In addition, the following attributes are noted: *over-all cob shape*, *configuration of rows*, *presence of irregular or undeveloped rows*, and *postdiscard effects*.

Research Questions

Besides being used to help address questions in Problem Domains 2–5, floral studies provide direct evidence of the patterning of daily economic activities, contributing an informative layer of details to the emerging picture of historic occupation in the Northern Rio Grande. Multiple questions at issue can be addressed by examining associated plant remains. With colonization and trade along the Santa Fe Trail, Old World plants were available, as well as maize, beans, and squash from the New World. Comparing floral assemblages across time can produce information about changing dependence on cultigens and wild plants, and the integration of Old and New World plants in the diets of Spanish and Anglo settlers. Horses and wagons provided access to a wider range of choices in foods, medicinals, construction materials, and firewood. Floral studies can help define household function and organization by delineating spatial components of specific food processing and preparation tasks. By extension, apportionment of activities in specific parts of a community can be explored: did certain areas or structures in the community have specific functions, or did similar activities take place at all site components?

Chronometric Samples

Accurate dates are needed in every archaeological study to place site components in the proper context, both locally and regionally. This study is no exception, and chronometric data are needed to fulfill many aspects of the research design. Inaccuracies are built into many chronometric techniques, or perhaps more properly phrased, some methods may not actually reflect the event they are being used to date. In order to assign accurate occupational dates to a site, it is usually desirable to obtain as many types of chronometric data as possible. That way they can be used to cross-check one another and permit the researcher to identify and eliminate faulty dates.

While good temporal information is already available from documentary sources for the late nineteenth- to mid-twentieth-century component, the same is not true for the seventeenth-century component. Thus, the acquisition of data that would allow better temporal resolution of the date for the deposits in Feature 5 is desirable. This is because patterns reflected in the artifact assemblage from that component might have

different meanings if they came from early in the seventeenth century rather than late in the century. Indeed, since a Pueblo Revolt period or slightly later date is also possible for these materials, deriving a better idea of exactly when these materials were deposited could be very important. Several categories of chronometric data are potentially available for this component including dateable artifacts, radiocarbon samples, and tree-ring samples. Each of these categories can provide useful and important temporal information, but there are also problems associated with each.

Datable Artifacts

At least two categories of artifacts have the potential to provide dates: Euroamerican artifacts and native ceramics. Only Euroamerican artifacts with known dates of production have good potential for providing accurate chronometric information. Native pottery can be used to provide relative dates, but historic types from this area are woefully lacking in good chronological controls (Moore 1998).

Euroamerican artifacts can often provide fairly precise dates for a site. Unfortunately, Mexican majolicas and other earthenwares often have very long temporal spans and do not provide accurate dates. Since this may be the primary type of datable Euroamerican artifact from this component, this artifact category is unlikely to provide the dating precision that is desired. Some of the types of glass and metal artifacts that might be recovered can also be useful in providing dates, but these types of artifacts also often had very long production ranges that only allow the derivation of relative dates.

Native ceramics can also be used to provide temporal information, but again, types often have very long temporal ranges that only allow the derivation of relative dates. While specific types do not appear to have a great degree of temporal sensitivity, changing patterns of ware use through time do seem to provide good relative information that can be used to augment other sources of temporal data.

Radiocarbon Dating

Since the 1950s, radiocarbon (or ^{14}C) analysis has been used to date archaeological sites. While this process was initially thought to provide accurate absolute dates, several problems have cropped up over the years that must now be taken into account. The three most pervasive problems have to do with the ways in which wood grows and is preserved. Both animals and plants absorb a radioactive isotope of carbon (^{14}C) while they are alive. Immediately following death, ^{14}C begins decaying into ^{13}C at a known rate. Ideally, by simply measuring the proportion of each carbon isotope, it should be possible to determine how long ago that entity stopped absorbing radioactive carbon. Since plant materials are often available on sites, this technique is usually applied to those types of materials. However, research has tossed a few bugs into the system. For example, some plants use carbon in different ways. This variation can be taken into account by determining the type of plant being dated.

A more serious problem is encountered when wood or wood charcoal is submitted for dating (Smiley 1985). Only the outer parts of trees continue to grow through their lives, hence only the outer rings and bark absorb carbon. Samples of wood submitted for dating may contain numerous rings, each representing growth in a different year. Thus, rather than measuring a single event (when the tree died or was cut down), the dates of a series of growth years are averaged. This often tends to overestimate the age of the material. Smiley (1985:385) notes that a large error in age estimation can occur in arid or high altitude situations, where tree-ring density may be high and dead wood can preserve for extremely long periods of time. Disparities as large as 1,000+ years were found in dates from Black Mesa, and there was an 80-percent chance that dates were overestimated by over 200 years and a 20-percent chance that the disparity was over 500 years (Smiley 1985:385–386).

The disparity in dates was even greater when fuel wood rather than construction wood was used for dating (Smiley 1985:372). This is because wood can be preserved for a long time in the Southwest, even when it is not in a protected location. Thus, wood used for fuel could have been lying on the surface for several hundred years before it was burned. Again, the event being measured is the death of the plant, not when it was used for fuel.

One other problem with the use of this method is caused by solar activity. Sunspots

cause fluctuations in atmospheric ^{14}C levels, and thus in the amount of radioactive carbon absorbed by living entities. This introduces error into the calculations, which is currently corrected by using a calibration based on decadal fluctuations in atmospheric ^{14}C as measured from tree-ring sequences (Suess 1986). While this problem may no longer be as significant as the others mentioned, it indicates that we are still learning how this isotope is absorbed and decays, and that it is affected in many ways that were not originally taken into consideration.

Even considering these problems, radiocarbon analysis can provide relatively sensitive dates when properly applied. For example, annuals or twigs from perennials represent short periods of growth and can often be confidently used. Construction wood can also be sampled in a way that measures the approximate cutting date rather than a series of growth years. This can be accomplished by obtaining only bark and outer rings from construction wood instead of sending in a large lump of charcoal. This is often difficult and time consuming, but should provide dates that are much more reliable.

We will only obtain radiocarbon samples from the seventeenth-century component in certain circumstances. Samples of fuel woods will not be submitted. Construction wood is considered the best type of material for radiocarbon dating but is unlikely to be available. Thus, the only types of samples that will be considered for radiocarbon analysis are seeds from annuals, or twigs and leaves from trees. In particular, carbonized seeds found during flotation analysis will be considered for radiocarbon analysis. Because of the small size of these materials, the best technique for dating them will probably be accelerator mass spectrometry (ASM), a type of radiocarbon analysis that allows fairly precise dating of very small samples.

Archaeomagnetic Dating

Archaeomagnetic dating analyzes the remnant magnetization in materials that have been fired. Those materials must contain particles with magnetic properties (ferromagnetic minerals), usually iron compounds like magnetite and hematite. Ferromagnetic minerals retain a remanent, or permanent, magnetization, which remains even after the magnetic field that caused it is removed (Sternberg 1990:13–14). When ferromagnetic materials are heated above a certain point (which varies by the type of compound), the remanent magnetization is erased and particles are remagnetized (Sternberg 1990:15). Samples of that material can be analyzed to determine the direction of magnetic north at the time of firing. Since magnetic north moves over time and the pattern of its movement has been plotted for about the last 1,500 years in the Southwest, comparison of a sample with the archaeomagnetic plot can provide a reasonably accurate date. However, it should be remembered that only the last event in which the material was heated to the point where remagnetization could occur is being dated. Thus, a feature could have been in use over a span of decades, but only the last time it was fired to the proper heat can be dated by this method. Unfortunately, the archaeomagnetic curve for the Southwest is not well defined after AD 1500, because not enough samples have been examined for this period to accurately extend the curve. Thus, we cannot expect accurate dates for our components from this method. However, by collecting any such samples that are available, the process of providing sufficient data from the historic period can be continued and augmented. Thus, archaeomagnetic samples will be taken if available.

Tree-Ring Dating

This method is based on the tendency of growth rings in certain types of trees to reflect the amount of moisture available during a growing season. In general, tree-rings are wide in years with abundant rainfall and narrow when precipitation levels are low. These tendencies have been plotted back in time from the present, in some cases extending over several thousand years. By matching sequences of tree-rings from archaeological samples to master plots, an absolute date can be obtained. This is the most accurate dating technique available because it can determine the exact year in which a tree was cut down. However, once again it is necessary to determine what event is being dated.

Because the reuse of wooden roof beams was common in the Southwest, it is not always possible to determine whether a date derived from a beam is related to the construction of the structure within which it was found or

to a previous use. Clusters of similar dates in roofing materials are usually, but not always, a good indication that the approximate date of construction is represented. Isolated dates may provide some information, but are often of questionable validity. Another problem associated with tree-ring dating concerns the condition of the sample being analyzed. In order to apply an accurate date to a specific event (in this case, the year in which a tree stopped growing), the outer surface of the tree is needed. An exact date can only be obtained when the outer part of a sample includes the bark covering of the tree or rings that were at or near the tree's surface. In addition, enough rings must be present to allow an accurate match with the master sequence. Samples can often be dated when they contain only inner rings, but this does not provide a cutting date.

Even considering the potential problems associated with this technique, it represents the best method available for dating sites. If wood or wood charcoal samples from seventeenth-century features seem amenable to this dating technique, they will be collected and submitted for dating. Unfortunately, the likelihood of encountering any such samples is very low.

Research Questions

The main research question that can be addressed using data from further studies at LA 161535 concerns the dates of deposits in Feature 5. Was this feature deposited during the seventeenth century, or can it be assigned to somewhat later periods during the Pueblo Revolt or in the early years of Spanish resettlement of the capital following that hiatus? Chronometric data derived from artifact assemblage analysis will most likely be the most useful for this purpose, though precisely dated radiocarbon samples might also be helpful. Tree-ring and archaeomagnetic samples will probably not be available for this use from Feature 5.

Determining the period of construction and use for Feature 4 might also be explored with chronometric data, should Phase 5 be implemented. Since there was no evidence that this feature was burned, any dates derived for this vault would be through analysis of the associated artifact assemblage and, potentially, the radiocarbon dating of charcoal found within it. This might also be the case for evidence of the seventeenth-century parroquia, should any be found. Should any sections of the adobe floor or superstructure of the parroquia be found that are relatively intact and evidence in situ burning, archaeomagnetic dating could also be applied. Other than these examples, most structures and features at LA 161535 will be dated through analysis of associated artifact assemblages and relevant documentary sources.

Analysis of Architectural Materials

Analysis of the techniques and materials used to build a structure can provide interesting and potentially important data concerning basic construction technology and occupational history. Certain samples may also help date the period of initial construction, while others could provide information on subsistence activities. A study of construction techniques is integral to providing basic site information.

Collection and Analysis Methods

We will collect a series of standard samples and observations to enable us to analyze construction methods and structure use; samples will mainly consist of adobe construction materials (when available). Plans will be drawn for every structure investigated. All drawings will be tied into the grid system imposed over LA 161535. Standard forms will be completed for each feature, room, and structure excavated, and will include information on contents, construction techniques, and associated artifacts and samples. Samples of nonadobe construction materials will be obtained when they are considered relevant to this study or can be compared to samples of building materials available from other studies. Materials that will potentially be sampled include, but are not limited to: complete bricks, mortar used in foundations, plaster, and flooring materials including tiles. The acquisition of building material samples will depend on their availability and whether they can be tied to a specific structure rather than representing general rubble.

Wooden architectural elements will be sampled and described, if any examples are found. Diameter measurements will be taken for all wooden building elements, focusing on those

with relatively intact cross sections. If suitable specimens are available, we will collect samples. Analysis of these specimens will be aimed at identifying the types of woods used for building, and collection of chronometric data. The latter will consist of cross sections of tree rings and suitable radiocarbon samples, as discussed in the section in the section on chronometrics.

Research Questions

The main area of interest concerns the methods of construction of individual buildings, or as much of those methods as can be reconstructed from the remaining sections of foundations and associated rubble. Are the additions and remodeling episodes that were noted in the sequence of Sanborn maps identifiable archaeologically? If some or all of these additions and remodeling episodes are visible, do they appear archaeologically as different foundation types or nuances in construction details, or are these changes discernible from the maps only? Knowing what we do of the types of construction techniques represented in the buildings at LA 161535, how much of that is traceable in the archaeological record? Is there adobe rubble around the dormitory, which was built of this material, or would this be an archaeological supposition based on the type of foundation used for this building? Conversely, can we tell that the orphanage was built of brick from the distribution of related rubble?

Human Remains

As discussed earlier, the probability of locating and recovering human remains at LA 161535 is very low. If any human remains are recovered, the sample should be extremely limited. Under such circumstances, it will not be possible to establish that they are representative of the human biological populations that created the site. The main goal of skeletal analysis will therefore be a nondestructive study of the remains in order to add to our general knowledge of historic human populations rather than to address specific questions raised in the research design. This nondestructive approach will include standard metric studies, aging and sexing of the remains, and documentation of pathologies.

Research Results

The final data recovery and analysis report will be published in the Office of Archaeological Studies' Archaeology Notes series. The report will present all important excavation, analysis, and interpretive results and will include photographs, site and feature plans, and data summaries. With the permission of DSW, field notes, maps, analytic notes, and photographs will be deposited with the Archaeological Records Management System of the State Historic Preservation Division at the Laboratory of Anthropology in Santa Fe. The artifact collection recovered during the course of this project will be the property of DSW. Should DSW decide to donate all or part of this collection to the Museum of New Mexico, those materials will be curated in perpetuity at the repository operated by the Museum of New Mexico. If human remains are recovered, their disposition will be based on consultations carried out in accordance with state regulations. This process will include DSW, the Catholic Archdiocese (if formal human burials are encountered), and other concerned parties identified through consultation with the Historic Preservation Division of the Department of Cultural Affairs.

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Appendix 1: The Sisters of Charity and Their Good Works: A History of Land Use and Ownership at 210-230 East Palace Avenue, Santa Fe, New Mexico

Cordelia T. Snow

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INTRODUCTION

Archival research was conducted on land use, ownership and history of property located at 210-230 East Palace Avenue, Santa Fe, New Mexico for Drury Southwest, Inc. The project area, which includes Marian Hall and old St. Vincent Hospital (Fig. 1), is scheduled for redevelopment following historical and archaeological investigations. The historical investigations include determination of property ownership and use through time and, more importantly, a determination of the location of the pre-Revolt parish church, or *parroquia*, in Santa Fe. Traditionally located in the area of the present Cathedral-Basilica of St. Frances, the precise location of the pre-Revolt parroquia is crucial to development of the area because prior to August 1680 when the church was in use, it was customary to bury the dead beneath church floors. In accordance with state law (Section 11.2 of the New Mexico Cultural Properties Act, 18-6-1 through 18-6-17, NMSA 1978) and the Archdiocese of Santa Fe Policy on Human Remains (1991) prohibits exhumation or removal of human burials on church property without a permit from the Historic Preservation Division.

Fig. 1. Aerial view of the project area. New Mexico DOT photo taken June 27, 1969.

While tradition places the *parroquia*, or parish church, in the project area during the decades between the formal founding of the Villa de Santa Fe in 1610 and August 1680 when Spaniards and their Mexican and other Indian slaves and servants abandoned the villa as the result of the Pueblo Revolt. Without specific documents and maps to provide us with the actual length of the plaza and location of the parish church, we can only guess at the plan of the villa. For example, we will never know how long the original plaza may have been, or if privately owned house and garden lots abutted church property prior to the Revolt, as was the case, based on extant archival evidence, during most, if not all, of the 18th and 19th centuries. Not until bishop, later archbishop, Jean Baptiste Lamy purchased the project area just a few years after his arrival in Santa Fe in 1851, did the property belong to the church and become part of the famed Bishop's Gardens. Lamy subsequently deeded the project area to The Sisters of Charity after they came to Santa Fe in 1865. An order devoted to healing, the Sisters of Charity operated hospitals throughout the eastern seaboard. In addition to a series of hospitals and sanatoriums in Santa Fe, the Sisters of Charity also operated an orphanage and an industrial school.

Archival research was undertaken at the State Records Center and Archives (SRCA), the Fray Angélico Chávez Library of the Palace of the Governors, the Santa Fe County Court House and Planning Department of the City of Santa Fe. The author is deeply grateful to Michelle Garcia and Minnie Murray, librarians at the Laboratory of Anthropology, and Tomas Jahn at the Fray Angélico Chávez Library for their assistance. Special thanks go to William Fields, a long-time member of the St. Vincent Hospital Foundation, and Robert Glick, president of the Foundation, for their assistance it trying to locate an archive of materials believed set up by Dr. Marcus Smith, author of an 800-page manuscript on the history of the Sisters of Charity, and their good works in Santa Fe. Based on my conversations with Mr. Fields and Mr. Glick, the archive no longer exists, if it ever did. Special thanks also go to Brian Nenninger and Scott Hayne of Drury Southwest who provided me with wonderful maps and photographs of the project area.

HISTORY OF THE CHURCH IN NEW MEXICO

Although a Catholic church may be any one of dozens of architectural styles and although it can be constructed of any medium, whether adobe, stone, fired brick and/or wood, according to Giffords (2007:43), a Catholic church must be permanent and must never be used for any other purpose. Further,

> ...It must have the following elements: a sanctuary area (in sight of, but separate from, the congregation) for an altar and celebrants, where services would be performed, a nave for the congregation, and a choir for the singers. If the church was a parochial church or was specially designated to provide baptisms (as were mission churches) then it would also have a baptismal font with suitable space around it, and a porch, portal, or some available space for use at the beginning of the baptismal rite. Both the height of the altar and the material used for its construction were prescribed. Whether mission or diocesan, the church had to be first consecrated, or sometimes merely blessed...and had to contain at least one consecrated altar or, in most cases, one *ara* [small, flat altar stone]" (Giffords 2007:43).

While a church could be located virtually anywhere, the Ordinances of 1573 promulgated by Philip II of Spain, later known as the Laws of the Indies, prescribed those churches away from coastal areas:

> No. 124. The temple in inland places shall not be placed on the square but at a distance and shall be separated from any other nearby buildings, or adjoining buildings, and ought to be seen from all sides so that it can be decorated better...efforts should be made that it be somewhat raised from the ground level in order that it be approached by steps, and near it next to the main plaza, the royal council and cabildo and customs houses shall be built...in a manner that would not embarrass the temple but add to its prestige...(Crouch, Garr and Mundigo 1982:115; C. T. Snow 1990:67).

In addition to the above requirements, canon law prescribed the church have a cemetery or *camposanto* (Giffords 2007:70; Will 2000; Will de Chaparro 2007). Traditionally, the camposanto was located in front of the church although it could also be located to either side or even behind the church. Regardless, throughout the Spanish Colonial period in New Mexico and elsewhere throughout the Spanish Empire, cemetery notwithstanding, many burials took place inside churches with the most important individuals being interred closest to the altar (Giffords 2007:70; Will 2000; Will de Chaparro 2007). Although outlawed in New Mexico by official decree in 1787 and again in 1804 because

it was unsanitary, according to Will (2000:5 fn.57), sub-floor burials within churches may have taken place in Las Trampas as late as 1905.

The first Catholic Church in New Mexico was built in August of 1598. Within weeks of the first permanent Spanish settlement in New Mexico, a small church dedicated to the Archangel San Miguel was constructed at San Gabriel del Yunque (Bloom and Scholes 1944:327; Hammond and Rey 1953). Because the church was intended for use by the Spaniards who settled at San Gabriel, it was the only parish church in the colony until the parroquia was constructed in the Villa de Santa Fe sometime during 1610. Shortly after the first parroquia was constructed at San Gabriel, Fray Lugo constructed the first of the mission churches in 1600 at San Diego de Guisewa, now Jemez State Monument in Jemez Springs (Bloom and Scholes 1944:328; Hammond and Rey 1953). Subsequently other missions were constructed at San Juan, San Ildefonso, Santo Domingo (which became the ecclesiastical center of the Province), and possibly San Felipe (Bloom and Scholes 1944:329-330).

With the ouster of Juan de Oñate and his son, Cristóbal after 1607 as sole proprietors of New Mexico, the focus of settlement in the province changed to an effort based on the missionization of the local natives. Fray Alonso de Peinado, the commissary or prelate for the missions arrived in New Mexico in the same wagon train as the new governor, Pedro de Peralta, who moved the capital of the province to Santa Fe. Beginning with the second decade of the 17th century both Spanish missionization and colonization efforts flourished in New Mexico. It should be noted insofar as churches are concerned that, as with the small parish church at San Gabriel, so long as there was only one villa in New Mexico, there was only one parish church. Further, even though Franciscan commissaries and custodians may have lived part-time in Santa Fe, the ecclesiastical center of the Church was located at the Mission of Santo Domingo. As a result, the parroquia in Santa Fe was always secondary to the missions and the clash of wills between strong individuals on both sides frequently exacerbated an already uneasy situation between church and state.

THE SEVENTEENTH CENTURY

Unfortunately, no 17th century maps of Santa Fe exist, and because there are few extant documents that pre-date the Pueblo Revolt of 1680, little is known of the

appearance of 17th century Santa Fe (Fig. 2). Equally unfortunate, much of what is believed to be known about the villa is based, willy-nilly, upon idealized stories of what could or should have been rather than fact. This illusory version of the history of the villa has come about in part because Santa Fe *was* the northernmost settlement in New Spain during the seventeenth century and contemporary writers *did* complain about the remoteness of the colony. At the same time, the mythological history of Santa Fe is also due to the fact that late-19th century boosters of Santa Fe created a history of the town out of whole cloth when the Tertio Millenial was celebrated in 1883 (Chavez 1955; Snow 1992). Content for the most part with legend, only within the last twenty years have historians really begun to study extant Inquisition and other records for clues both to the appearance of the villa and its inhabitants (Esquibel 2006; Post 2006; Snow 2004).

The fact of the matter is, while Colonial New Mexico *was* distant from central Mexico, and even farther removed from Spain, the province did not exist in isolation and the settlers who came to the settlement did not leave their culture or Spanish heritage in El Paso del Norte on their way north. Thus, even though there was no mineral wealth to speak of, the colony exported other goods including livestock, hides, mantas, salt, piñon nuts and slaves to work the mines in the south in sufficient quantities to make New Mexico an economically viable operation. Even though it was remote, Santa Fe, as the only official villa in the province, was laid out in accordance with the Ordinances of 1573, or Laws of the Indies. The *casas reales*, or government buildings which included the Palace of the Governors and the *casa de cabildo,* or house of the cabildo analogous to city hall, were constructed around the main plaza of the villa, while the parish church was constructed in semi-isolated splendor at the east end of the plaza then twice as long as it is today. Still it is curious that the main plaza in the villa was laid out on the north side of the Santa Fe River in the midst of a cienega, a swamp or marsh, when land better suited for development lay on the south side of the river in what became the Barrio de Analco. It appears at this late date, 400 years after the villa was founded, we shall never know the answer to that question.

Exactly where the earliest church was located in relation to the present Cathedral-Basilica of Saint Francis is unknown and has been the source of conjecture and debate among historians for decades (Chavez 1949; Ellis 1976; Hordes 1990; Pratt 1990; Snow

1990; Snow 2004). However, because of the proposed development of the project area the location of the parroquia has become more than just a matter of historical curiosity, it has become a necessity since it was customary to bury the dead beneath the floors of churches prior to the territorial period (Chávez and Chávez 2004:32; Giffords 2007:70; Will 2000; Will de Chaparro 2007). Moreover, because the Archdiocese of Santa Fe and State of New Mexico prohibit the disturbance of human remains, the location of the church must be determined so that it can be avoided or burials legally excavated and reburied prior to development of the area.

Without going into a lengthy discussion of when and by whom Santa Fe was founded, one of the first buildings constructed after Pedro de Peralta formally founded the villa in 1610 was the parish church (Scholes 1936:29). Although the parish church was one of three churches—the parroquia; a military chapel associated with the casas reales; and the *Ermita de San Miguel* in the Barrio de Analco—in the villa on the eve of

Fig. 2. The Urrutia Map of 1767 is the earliest extant map of Santa Fe. Drawn by Lt. José Urrutia more than 150 years after the founding of the villa, we can only suppose the map bears some resemblance to the villa prior to the Pueblo Revolt of 1680.

the Pueblo Revolt, the parroquia was the earliest, the most important, and the only church to serve the entire populace of the villa. While the earliest extant documents that refer to Santa Fe do not provide the location of the church, conventional wisdom and tradition have placed that edifice at the east end of the plaza on the north side of the Santa Fe River (Twitchell 2007:46). Again, according to tradition, the plaza during the 17th century was twice as long as the present plaza and extended east to present-Cathedral Place. However, since there are no known maps of 17th century Santa Fe to provide us with a view of the villa or relationship of structures to the plaza, the eastern boundary of the plaza is based on nothing more than conjecture. It may well be the original plaza actually extended east beyond present Cathedral Place which would place the original parroquia even further east than traditionally supposed. At the same time, the pre-Revolt church could have been located north or south of the present Basilica of St. Francis. Regardless, we may be assured that the earliest parish church in Santa Fe, as well as all other 17th and 18th century churches in the villa were constructed on sites and in styles consistent with Franciscan architectural precepts of the age (Giffords 2007).

It is not surprising that the earliest mention of the parish church in Santa Fe comes from documents that detail the bitter fight between the Church and the State as to who was more important to the wellbeing and success of the colony. Pedro de Peralta, appointed by the viceroy in March 1609 to follow Juan de Oñate and Juan Martinez de Montoya as governor, was responsible for laying out the site of the new villa in Santa Fe. Almost from the beginning of the arrival of Fray Isidro Ordóñez in 1611, he and Governor Peralta were at cross-purposes with one another (Scholes 1936:30-47). By 1613, matters had reached such an impasse Ordóñez threatened Peralta with excommunication (Scholes 1936:34). Subsequently, on July 7, 1613, Peralta found his chair—a symbol of his civic authority—thrown into the street in front of the church in Santa Fe. Peralta "ordered the chair...*placed inside the door near the baptismal font, and there among the Indians he sat down*, the others, captains, alcaldes and cabildo being seated near the high altar" (Scholes 1936:38; my emphasis). In other words, Peralta took his seat in the rear of the church, possibly under the choir loft, near the main door where the baptismal font was located. The fact there were Indians at the service would indicate there was no other church in the villa to provide services for the slaves and servants of

the Spaniards—as a result, it appears that San Miguel, known centuries later as the so-called "oldest church in Santa Fe," did not exist in1613. Unfortunately in any case, although matters escalated between Ordóñez and Peralta, which culminated in the former holding the latter prisoner until 1614, there are no further descriptions of the church.

Using George Kubler (1990) and his own historic structures reports as the basis for his work, historian James Ivey (n.d.; see also Ivey 1988; Ivey 1998) postulated a sequence for the architectural development of mission churches in New Mexico. According to Ivey (n.d: 11-14) there was a simple architectural progression from the "Temporary Church" through the "Interim Church" to the "Permanent Church." Ivey's "Temporary Church" (1598 to ca. 1609) "was a small, simple church with an attached convento of two or three rooms, effectively the same plan as used at visitas throughout the seventeenth century in New Mexico" (Ivey n.d:11). The "Interim Church (1609-1620)" was the

> ...standard church in New Mexico...all of the same general plan, with some variation: the sanctuary could be either shouldered or tapered, or a combination of the two. All were single-naved, and none had transepts (Ivey n.d:12).

Finally, the "Permanent Church," which first appeared in New Mexico around 1620, frequently included "Baroque stylistic concepts" such as transepts, transverse clerestory windows, and, as at Sandia, an *artesanado* or coffered ceiling (Ivey n.d: 13). If Ivey's architectural progression from temporary through interim to permanent were applied to the earliest parroquia in the Villa de Santa Fe, then the first parish church would fall into his 'interim' category. Accordingly, that church would be "relatively narrow, ranging from twenty to twenty-eight feet wide" (Ivey 1998:48). Based on other such churches, the length of the parish church would lie between "sixty-seven and one hundred fifteen feet with either polygonal or shouldered apses and flat, beam-supported roofs" (Ivey 1998:48-49). More than likely the church did not have a transverse clerestory window (Ivey 1998:49). Based on contemporary accounts, the church had an attached convento to house the resident friars (Scholes 1936:40).

Throughout New Spain the word *convento* referred to the living quarters for the priests associated with a given church or mission. The convento, occasionally two stories in height, consisted of a series of rooms or cells, storerooms, kitchen, dining room or

refectory, often built around a patio or courtyard. Conventos were usually located on the south side of the church. In addition to living quarters, a convento often contained classrooms, a *porteria*, or porch for travelers, gardens, orchards, and possibly a stable and corral. Occasionally, the convento also had quarters for Indian servants and others (Chavez 1949:89; Giffords 2004:61, 409, note 22; Ivey n.d:14-18).

The next mention of the parish church in Santa Fe occurs in 1620 during Juan de Eulate's term of office (Bloom 1928: 357-380). In the document, Governor Eulate was cautioned to remain on cordial terms with the "father Custodian of those Provinces and with the *guardian* of the convent of that Villa of Sanct. Fee and [with] to other *definidores* [councilors] of the Order if there be such and if not with the Two Religious of longest service in the Custody, and with the *cabildo* [village council] of that Said Villa" (Bloom 1928:363-364). Eulate was also told, contrary to the wishes of the cabildo or town council, that it was not advisable to move the location of the villa "to a better site on a squared location with four Towers; and for this object to erect a church [and] government buildings" (Bloom 1928:369). The governor and cabildo were further admonished:

> "And as to the parochial church which is proposed to found in that said Villa of Sancta Fee and as to sending a curate vicar for it, inasmuch as there is already there a church and a convent of Sant. Francisco which seems sufficient for the number of residents that there now is, there is no occasion at present for it to be done" (Bloom 1928:370).

Even though the viceroy denied the request of the cabildo to move the villa, he sent a quantity of tools, nails, and other materials to repair buildings already constructed there (Bloom 1928: 370).

The viceroy's counsel notwithstanding, within a matter of years the parroquia was either remodeled extensively, or rebuilt entirely because the church described in 1626 had a transept unlike the church of 1613 (Hodge, Hammond and Rey 1945:129). As we will see, the remodeled or rebuilt church was constructed along the lines of Ivey's permanent churches, which were larger and more impressive than 'interim' structures. In 1623, Fray Alonso de Benavides became the Custodian or head of the Franciscans in New Mexico although he did not arrive in the province until late in 1625 (Hodge, Hammond and Rey 1945:2). A reception celebrating Benavides' arrival was held in January 1626 (Hodge, Hammond and Rey 1945:3). There is no question that Benavides was aware of the

Fig. 3. La Conquistadora, Our Lady of Peace is the oldest Marian figure in the United States. She is shown here in a late 18th century retablo, or altar screen placed in the chapel dedicated to her located on the north side of the present cathedral-basilica in Santa Fe.

remodeling/rebuilding of the parroquia for he brought with him a wooden tabernacle "2 ½ yards [varas] high by 1 ¾ wide, octagonal in shape, its interior and appurtenances all gilt and laterals and panels adorned with oil paintings, all of it ornamented" valued at 210 pesos (Hodge, Hammond and Rey 1945:114). Benavides was also responsible for overseeing the shipping of a three-piece retablo or altar screen,[1] for the new church along with a *bulto* or statue of the Virgin (Fig. 3). That figure known today as *La Conquistadora*, Our Lady of Peace is the oldest Marian bulto in the United States (Fig. 3; Chávez 1948; Hodge, Hammond and Rey 1945:120-121; Sheehan 1998: xix).

When Benavides entered Santa Fe on January 24, 1626, Fray Pedro de Hortega and all the Franciscans in the province, along with the governor, alcaldes, cabildo, and residents of the villa (Hodge, Hammond and Rey 1945:128), greeted him. After being escorted "through the principal streets" of the villa, he was led to his cell in the convento attached to the parroquia (Hodge, Hammond and Rey 1945:138). The following day a high mass was held in the parish church to celebrate the arrival of the new custodian:

> ...The said governor, alcaldes, cabildo and all the other people and the harquebusiers came to the cell of the said father commissary to accompany him to the church. This they did, the banner of our holy Catholic faith being carried before them in the hands of the said sargento mayor, accompanied by the captains. Behind him came the alguacil mayor, accompanied by the friars and I, the said notary [Hortega], with the most prominent friars of this custodia...In this order we entered the church up to the place of the father commissary, which was on the side of the gospel [to the left of the altar; the epistle side refers to the right] at the main altar. He had a kneeling chair with a cushion, and opposite him, on the other side, a platform covered with a carpet where I, the present notary [Hortega], sat and also the alguacil mayor and the sargento mayor, who carried the banner. *The said governor* [Felipe de Sotelo Osorio] *took his seat at the transept of the church* and high mass began (Hodge, Hammond and Rey 1945:128-129; my emphasis).

The fact that the parroquia had a transept in January 1625 would make it one of the earliest transepted churches in New Mexico, and characteristic of Ivey's "permanent" churches (Ivey 1998; Ivey, personal communication May 2004).

Fray Alonso de Benavides remained in Santa Fe until 1629 and upon his return to Mexico wrote two memorials of his stay in New Mexico: *The Memorial of Fray Alonso*

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[1] Frequently referred to by the French word *reredo* or *reredos*, the correct word in Spanish for altar screen is *retablo*.

de Benavides 1630 (Ayer, Hodge and Lummis 1965) and the *Revised Memorial of 1634* (Hodge, Hammond and Rey 1945). Actually, upon close reading there are significant differences in the descriptions of Santa Fe between the two Benavides' *Memorials* and the annotations made by the various editors. In the *Memorial of 1630*, Benavides noted that while about 1,000 people lived in Santa Fe there were only 250 Spaniards, at best, with no more than fifty men capable of carrying arms (Ayer et al. 1965:22-23). Benavides went on to say,

> ...They must have in service seven hundred souls; so that between Spaniards, half-breeds [*mestizos*], and Indians there must be a thousand souls [in Santa Fe]...There lacked only the principal [thing], which was the church. The one they had was a poor hut, for the religious attended first to building the churches for the Indians they were converting and with who they were ministering and living. And so, as soon as I came in as Custodian [1622, sic, 1623], I commenced to build the church and monastery – and to the honor and glory of God our Lord, it would shine in whatsoever place. There already the Religious teach Spaniards and Indians to read and write, to play [instruments] and sing, and all the trades of civilization...(Ayer et al. 1965:23).

Contrast this with Benavides' description of the villa from his *1634 Memorial*:

> ...There is the villa of Santa Fe, where reside the governors and the Spaniards, who may number up to two hundred and fifty. Most of them are married to Spanish or Indian women or to their descendents. With their servants they number almost one thousand persons. This city was founded by the Adelantado, Don Juan de Oñate [sic, meaning the villa was founded during the time Juan de Oñate was governor], when he entered [New Mexico] with seven hundred married Spaniards, but the majority returned to Mexico. The houses are not costly, but adequate as living quarters. They lacked a church, as their first one had collapsed. I built a very fine church for them, at which they, their wives and children, personally aided me considerably by carrying the materials and helping to build the walls with their own hands. We have them well instructed, and they set a good example. The most important Spanish women pride themselves on coming to sweep the church and wash the altar linen, caring for it with great neatness, cleanliness, and devotion, and very often they come to partake of the holy sacraments (Hodge, Hammond and Rey 1945:68).

In other words, it would appear from the *1630 Memorial*, Benavides built a new parish church and convento for the residents, both Spaniard and Indian, of the villa; however, the *1634 Memorial* introduces some uncertainty to the matter.

Since, as we have already pointed out, it was unlikely that the earliest parish church in Santa Fe had a transept, and since there is no evidence the Ermita de San Miguel ever had a transept, the fact that Governor Sotelo de Osorio sat at the transept of the church during high mass on January 25, 1626 suggests the parroquia had been remodeled prior to Benavides' arrival in Santa Fe. The fact that Benavides brought a wooden tabernacle, new altar screen and bultos with him lends credence to the suggestion the furnishings were for the remodeled church rather than for one that was not yet constructed. More important, perhaps, is that the only church mentioned in all of Santa Fe prior to Benavides arrival is the parroquia. Thus the church Benavides mentions building during his term as custodian appears to have been San Miguel (see also Hodge, Hammond and Rey, 1945: 274; Kubler 1990:80).

If, as Kubler (1990:80) believed, the Ermita of San Miguel was not constructed until1628, two years after Benavides came to Santa Fe that would explain why Indian slaves and servants who lived in the Barrio de Analco had worshiped at the parroquia. It would also explain why Benavides distinguished between the women and children who helped build a "very fine church...by helping to build the walls with their own hands" and the "important Spanish women who sweep the church and wash the altar linen" (Hodge, Hammond and Rey 1935:68). The latter chores are characteristic of duties performed by members of a *cofradia*, or confraternity, a local religious society whose members cared for the patron saint(s) of a church and assisted with parish affairs (Adams and Chavez 1975:353). The former are much more characteristic of local and other Native American groups where the women and children were actually responsible for adobe construction.

The remaining references to the parish church in Santa Fe before the Pueblo Revolt of 1680 are essentially anecdotal. One of the more curious of those references mentioned that, while the villa had a "very good church [and] a fair convento" the villa only had some 200 Indians under its administration. That figure is reminiscent of the number of Indian slaves and servants in Santa Fe in 1613 and considerably less than the 700 Indians mentioned in the Benavides' *Memorials* of 1630 and 1634. The difference in

numbers cannot be explained. An undated document that requests the services of five friars, four priests and one lay brother for the parish church (Scholes 1929:52) actually, possibly inadvertently, provides more unexpected information about the villa than the church. The author of the document noted that the reason additional religious personnel were needed was that the church in Santa Fe ministered to three visitas in addition to several estancias. Presumably, one of those visitas was San Miguel since that hermitage was located in the Barrio de Analco on the south side of the Santa Fe River opposite the Spanish plaza. The other two visitas are unknown although one could conceivably be the military chapel in the Palace of Governors. The location of the estancias or livestock and farming operations is also unknown; although, at least one of these operations may have been located on irrigated lands that included the *milpas de San Miguel* within and surrounding the Barrio de Analco, but that is pure speculation on the part of the author.

Bernardo López de Mendizábal, governor of New Mexico between 1659 and 1661, noted upon his arrival in Santa Fe that

> ...the church was without an organ, which seemed to him very improper, and so he said to Fray Juan Ramírez, Custodian, and to Fray Miguel Sacristán, guardian of the villa, that an organ ought to be brought there, and if it was too expensive to do so [he], the accused, would pay half the cost, and if the expense was moderate, he would bear it all (Hackett 1937:213).

Further, according to research conducted by historian José Esquibel (2005), during the López administration a religious procession led by a friar carrying a "a large crucifix of Jesus Christ elevated" made its way through the plaza every Monday, Wednesday and Friday.

Unfortunately, except for the fact that the pre-Revolt parish church in Santa Fe was cruciform in plan, we know nothing else of its appearance. However, we do have a contemporary 17th century description of the construction details and plan of the mission of Nuestra Señora de Guadalupe in El Paso del Norte, modern Cuidad Juárez. Although N. S. de Guadalupe was a mission and not a parish church, and although it was dedicated in 1668, some 40 years after the parish church in Santa Fe, the church was cruciform in plan and may have resembled the earlier structure in New Mexico.

> ...The nave is ninety-nine feet long and thirty-three feet wide; the transept measures twenty-eight feet by forty-five feet; and the chancel is

twenty feet long and twenty-one feet wide on the side of the transept. The altar steps are very beautiful...

The temple has a handsome choir loft, so spacious that the services of fifty clerics...could easily be celebrated there...

The baptistry has its door under the choir-loft, and is fifteen feet long and of the same width. The sacristy has its door at the transept, and is twenty-four feet long and eighteen feet wide; (it has) a very suitable closet for sacristy utensils...

The convent which has been built in this conversion has a good porter's lodge, a spacious cloister, and seven cells—one with a rear cell and little office, two with rear cells, and three, like the rest, spacious, well lighted, and nicely finished off in wood. In addition to these there is a little hall *de profundis*, a refectory with an office for the *intento*, a kitchen, and closets, all so spacious and orderly that it would be a pleasure to come to see them. Everything is finished with doors, windows, and keys.

In front of the church there is a garden, and the fruits of the orchard are already being enjoyed grapes, apples, quinces, plums, peaches and figs (Scholes 1929:198-199).[2]

The fact there was a garden in front of the church instead of a *cementerio,* or cemetery, is interesting as the area in front of the church was usually reserved for a *camposanto* (Giffords 2007:70). As noted elsewhere, while burial inside churches was common practice in New Mexico, and throughout the Spanish world in the 17th and 18th centuries, it was eventually banned for sanitary reasons (Giffords 2007:70).

CONSTRUCTION METHODS

Given the abundance of suitable soils and plentiful water found in the Santa Fe area prior to the third quarter of the 19th century when Archbishop Jean Lamy directed the construction of the Cathedral of St. Francis of coursed stone masonry, all churches in the villa were constructed of adobe bricks.[3] Whether any of the adobe bricks were fired prior to construction as at San Diego de Guisewa in the Jemez remains to be seen. It is likely the floor of the parroquia consisted of adobe bricks laid in herringbone or other patterns that may have been covered with a thin layer of poured adobe similar to floors uncovered in the portions of the 17th century Palace of the Governors (Snow 1974). As with all Spanish Colonial adobe structures two stories in height the foundations for the church would have been approximately one meter in width. At the same time, even

[2] The 17th century mission church of Nuestra Señora de Guadalupe still stands in Ciudad Juárez. It was the last of the missions built in New Mexico prior to the Pueblo Revolt.

[3] To the best of our knowledge the first church to be constructed of coursed stone masonry in Santa Fe was the Cathedral of St. Francis build under the aegis of Archbishop Jean B. Lamy and dedicated in 1886.

though the friars at each mission received "one box of loza de Puebla," majolica, every three years, it was highly unlikely churches or conventos in New Mexico were decorated with lead-glazed majolica tiles due to the excessive weight and prohibitive cost of shipping those tiles over the Camino Real into the province (Hodge, Hammond and Rey, 1945:101; Snow 2004). More likely, all decorations on the interior of the church would be painted on the walls, probably by local Indian artisans using local pigments. Whether the church had a transverse clearstory window is unknown; however, if it did, the window was likely glazed with selenite rather than glass. Finally, the ceiling of the pre-Revolt parroquia in Santa Fe was probably no different from the ceilings of most of the mission churches in the province. In other words, with the exception of the mission church at Sandia Pueblo which had an *artesanado* or coffered ceiling (Adams and Chavez 1975:139; see also Gifford 2007:124, 128), all other missions had carved and painted *vigas* or roof timbers rested on carved and painted *corbels* and the spaces between were filled with *latillas* or small branches. The ceilings would be covered by a foot or more of mud to provide a weather-proof roof.

Although the majority of construction materials were produced locally, metal for tools and building supplies had to be transported to the colony over the Camino Real (Bloom1928:370; Hodge, Hammond and Rey 1945; Ivey 1988:39) Tools and building materials sent by the viceroy in 1620 included:

> ...Six hundred-weight of crude iron and two of steel; two hundred picks, one hundred axes, thirty adzes, twelve doublebladed axes, two hundredweight of nails, ten hundredweight of powder, thirty of lead; eighty gratings [rajas were barred frames used to defend windows], and five hundred reaping hooks (Bloom 1928:370).

Each Franciscan friar sent to New Mexico received the following basic items with which to build a church:

> 10 axes for cutting trees for beams and other wooden items:
> 3 adzes for trimming beams, lintels and other wooden items;
> 10 hoes for the preparation and maintenance of the convento garden and for digging foundation trenches;
> 1 medium-sized saw for cutting boards;
> 1 chisel with collar and handle for detailed shaping of beams, lintels, and boards;
> 2 augers for drilling holes for pegs, the usual way of fastening the components of doors;

One box plane for planing board and beam surfaces flat (Hodge, Hammond and Rey 1945; Ivey 1988:39).

Ivey also included a list of construction materials received by each friar:

Six hundred tinned nails for decorating the church door;
Sixty nails about 4 inches long;
Sixty nails about 7 inches long;
One hundred nails *de a quinientos en suma*;[4]
Four hundred nails *de a mil en suma*;[5]
Eighteen hundred roofing nails;
Twelve hundred nails *de medio almud*;[6]
Eight hundred tacks;

Other Items included:

Ten pounds of steel for making other needed items and tools;
One large latch for the church door;
One pair of braces for double doors, probably the church doors;
Two small locks;
Twelve hinges for doors and windows;
Twelve hook and eye latches (Hodge, Hammond and Rey 1945:103-104; Ivey 1988:39-40).

Each friar would direct the work of crews of local and Mexican Indians, including as Benavides noted, women and children, in the construction of a church. Although we have no records for the earliest decades of Spanish settlement in the villa, we do know that by 1660 during the term of López de Mendizábal, at least one *albañil maestro*, or master mason, a native of the Valley of Mexico by the name of Juan Chamico or Chamiso, lived and worked in Santa Fe (Esquibel 2005).[7] Since Chamiso was responsible for work done on the Palace during the López administration, it seems likely that he and his crews probably worked on the parroquia and elsewhere in the villa too.

As mentioned previously, there were three churches in the Villa de Santa Fe on the eve of the Pueblo Revolt in August of 1680: the parroquia located on the east end of the main plaza; a military chapel in the casas reales or royal buildings, also on the north

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[4] Unknown Spanish weight and/or measure.
[5] Unknown Spanish weight or measure.
[6] An almud is a Spanish dry measure that varies by locality, "it can be from 3 to 23 liters," Adams and Chavez, *Missions 1776*, page 350.
[7] According to a muster roll in Hackett and Shelby, *Revolt of the Pueblo Indians*, (vol 1: 157) "Juan Chamico, Mexican Indian, passed muster [on October 1, 1680] with a horse and two jacks [mules], no arms and with twenty persons, including wife, children, grandchildren, and *servants*. He did not sign because of not knowing how." Juan Chamico's status can be determined from the fact that he had personal servants and was one of only several other Mexican Indians mentioned in the muster rolls.

side of the river; and the Ermita de San Miguel in the Barrio de Analco on the south side of the Santa Fe River opposite the plaza.

THE PUEBLO REVOLT, AUGUST 1680

On August 9, 1680, Governor Don Antonio de Otermín

> "...received three messages, one from the reverend father visitador, Fray Juan Bernal, another from the father preacher, Fray Fernando de Velasco and the third from Captain Marcos de Dehezas, alcalde mayor and war captain of the jurisdiction of Los Taos, all of which messages notify his lordship that the Christian Indians of this kingdom are convoked, allied, and confederated for the purpose of rebelling, forsaking obedience to his Majesty, and apostatizing from the holy faith; and that they desire to kill the ecclesiastical ministers and all the Spaniards, women, and children, destroying the whole population of this kingdom. They are to execute this treason and uprising on the thirteenth of the current month, as they have disposed and planned among themselves (Hackett and Shelby 1970:3).

On August 13, 1680, after receiving reports of fighting at Los Cerrillos and of the deaths of a number of Franciscans in addition to colonists, Otermín directed Fray Francisco Gómez de la Cadena "to consume the most holy sacrament, and take the images,[8] sacred vessels, and things appertaining to divine worship, close the church and convent, and bring everything to the Palace, accompanied by Father Fray Francisco Farfán (Hackett and Shelby 1970:11). Otermín then ordered the casas reales to be fortified with watches set and harquebusiers stationed on the roofs. The next day Otermín received a report that more than 500 Indians from the Pueblos of Pecos, San Cristóbal, San Lázaro, San Marcos, Galisteo and La Cienega were one league [between 2.5 and 3 miles] from the villa and were intent upon reclaiming the villa and all of New Mexico for their own (Hackett and Shelby 1970:13). On the morning of August 15, a Puebloan army was seen in "the maize fields of San Miguel and in the houses of the Mexicans, which they sacked shamelessly and in which they lodged in order to lay siege to the villa" (Hackett and Shelby 1970:13, 99-100). After negotiations failed, "they derided and ridiculed this reply. . .ringing the bells of the hermitage of San Miguel,

[8] The images included the bulto known today as La Conquistadora, Our Lady of Peace that had been brought to New Mexico by Fray Alonso Benavides in 1626.

spreading destruction among the houses of the district, and setting fire to the hermitage of San Miguel" (Hackett and Shelby 1970:14, 100), the Barrio de Analco became the focus of a pitched battle. When the Puebloan army on the south was joined by Puebloan forces from unspecified Tewa Pueblos, Taos, Picuris and Jemez, the Spaniards in the casas reales found themselves besieged (Hackett and Shelby 1970:13-14, 100). Fields and houses on the north side of the river were sacked and the parish church burned while the Spaniards were held captive for nine days, two of which were without water after the ditches to the casas reales were cut (Hackett and Shelby 1970:15, 100-101). Although the attackers even set fire to the military chapel in the casas reales, the siege was broken after hand-to-hand combat, and with that, Otermín and the surviving colonists and Franciscans prepared to leave Santa Fe, their homes and belongings (Hackett and Shelby 1970:103-105). The Spaniards would not return to Santa Fe until 1692. More important, the parroquia, or parish church that had been set on fire and burned during the uprising essentially disappears from the historic record.

THE AFTERMATH OF THE PUEBLO REVOLT, 1692-1694

Although Otermín attempted to retake the Province in 1681, he was not successful (Hackett and Shelby 1970). Meanwhile, Tanoan and other Puebloan peoples who had attacked Santa Fe moved into the former Spanish villa, remodeled, and rebuilt structures around the plaza into a multi-storied pueblo with a single entrance that apparently faced south towards the Barrio de Analco and San Miguel.

In 1692 when Diego de Vargas Zapata Luján Ponce de León reconnoitered and reclaimed the Province of New Mexico and Villa de Santa Fe for the Spanish Crown, he described the site of the former villa and suggested it be moved:

> ..."During the time I was in the villa of Santa Fe, I paid attention to and considered its terrain...I think the only place to found the villa is the very place where it is, making its very foundation on this side [south side] of the arroyo [Santa Fe River], which is high. From it, one dominates the area and the fortress-pueblo the Tewas and Tano nations have in the villa. The greater part of it was the palace and the casas reales of the governor and the houses of the settlers of the villa who left because of the rebellion. The Indians expanded and extended it, raising the walls and fortifying the ones it had, so that it is a walled pueblo. They found themselves in a swamp and on low ground that makes the waters from the sierras and surrounding mesas collect. Because the fortress is next to these hills, it is shady and for that reason the sun is late in shining on it in the morning.

> One would imagine that the sun does not favor it with its rays in the afternoon. According to the climate and temperature of that kingdom, so very cold with abundant snow and rain and such heavy frost and freezes, because of the shade, the fogs and vapors must be excessive, of known detriment, noxious and an obvious reason to reject that miserable outpost…
>
> The favor conceded to the Indians, as I promised them at the time of their conquest, is not to the detriment of the settlers, rather it is directed at settling them where I set up my company and camp on the day of the entrada, which is a musket shot away… (Kessell, Hendricks and Dodge 1995:110-111).

Vargas's camp was "on the llano beyond the milpas and within sight of the fortress" (Kessell and Hendricks 1992:391), which we assume to be the plain south of the fields of San Miguel. At the same time Vargas made a specific promise to "build the church and holy temple, placing in it the patron saint of that kingdom and the villa, Our Lady of the Conquest" which is the one they freed from the ferocity of those barbarians" (Kessell, Hendricks and Dodge 1995:112).

Subsequently Vargas returned to Santa Fe in December 1693 accompanied by the cabildo and about 1,000 people intent upon recolonizing New Mexico (Kessell, Hendricks and Dodge 1995:33). After he settled the colonists "in the place they call Camino de Cuma…about two musket shots from the villa," a camp traditionally believed to have been located in the area of present-Rosario Chapel and National Cemetery (Kessell, Hendricks and Dodge 1995:495; Twitchell 2007:122), Vargas reconnoitered the area surrounding the former villa (Kessell, Hendricks and Dodge 1995:476-477).

Aside from a brief mention that the church and all the houses belonging to the Spaniards had been torn down to the foundations (Kessell, Hendricks and Dodge 1995:495), Vargas does not mention the parroquia in either 1692 or 1693. At the same time, however, Vargas inspected the former "hermitage that served as the parish church for the Indians from Mexico City who lived in the villa. Its title was the advocation of their patron saint, the Archangel St. Michael" (Kessell, Hendricks and Dodge 1995:477). Vargas reported that he found San Miguel to be "a small church and not large enough for all the people", but because he needed a church "in which to celebrate the divine offices and the holy sacrament of the mass, and so that "Our Lady of the Conquest might have a decent place," he ordered San Miguel rebuilt (Kessell, Hendricks and Dodge 1995:477; Kessell Hendricks and Dodge 1998:68). However, the Indians who were ordered to

rebuild the church refused due to the weather and difficulty in obtaining the necessary building material. Subsequently after ordering that a kiva be remodeled into a chapel—a chapel/kiva Fray José Díaz refused to use because it was not suitable—Vargas was forced to find another structure to use as a church (Kessell, Hendricks and Dodge 1998:68). Eventually Vargas found a small house about a musket shot away from the villa that could be remodeled into a church (Kessell, Hendricks and Dodge 1988:68). Presumably, it was in this latter church that Vargas was buried after his death in Bernalillo in 1704 (Kessell, Hendricks, Dodge, and Miller 2002:227).

DISCUSSION

Based on the foregoing, there was a simple parish church in the Villa of Santa Fe as early as 1613. It appears the church was either remodeled or rebuilt to include a transept sometime before 1626 when Fray Alonso de Benavides assumed the custody of the Franciscan mission effort in the Spanish Province of New Mexico. Aside from a few brief mentions of the parroquia in the succeeding decades, the church is not discussed again until the Pueblo Revolt of August 1680 when Puebloan dissidents attacked and besieged the villa and its residents, set fire to the church and burned it to the ground. After the church was razed, the Tano and other Puebloan occupants of the former villa apparently used the area where the church had been for planting crops. It should be noted the wholesale demolition of the church and convento in Santa Fe was not without precedence for the great Suárez church at Pecos, once described as a "most splendid temple," was also razed and demolished during the Revolt (Ivey 2005:278-279). Twelve years after Otermín and the surviving colonists fled the villa in 1680, when Diego de Vargas entered Santa Fe he mentioned briefly that the parroquia had been razed to the ground but then never mentioned the church again. Instead, when Vargas returned a year later accompanied by nearly 1,000 would-be settlers he brought with him the bulto of La Conquistadora, which was eventually placed in a temporary church located about a musket shot from the villa.

REBUILDING SANTA FE, 1694-1720

After the reconquest of Santa Fe in December 1693, in addition to overcrowded living conditions the residents of the villa faced a drought and famine. To exacerbate those problems, the Pueblo Indians rebelled again in 1696. To make matters even worse

to some minds, Pedro Rodríquez Cubero replaced Vargas as governor; however, one of Cubero's first acts as governor was to donate land and begin construction of a convento for the Franciscans who served Santa Fe (Chavez 1949).

> "...Said Lord Governor and Captain-General had the convent begun which is now being built, which is situated in front of the ancient church and convent which borders on the north side with the water ditch that passes in front of this Villa. And on the south side, all that once was a street which forms a front before the convent and church which existed in olden times. And on the west side with the former plaza of this Villa...he made and has made Grant of said ground together with all the rest of the land which should be needed both for building the church as well as [that needed] if said Reverend Father Custos should wish to extend said Convent further, and likewise a piece of land for a Garden which is situated and extends along the east side and reaches up to said church..." (Chavez 1949:86-87).

Some years later John Kessell et al. translated the same passage as follows:

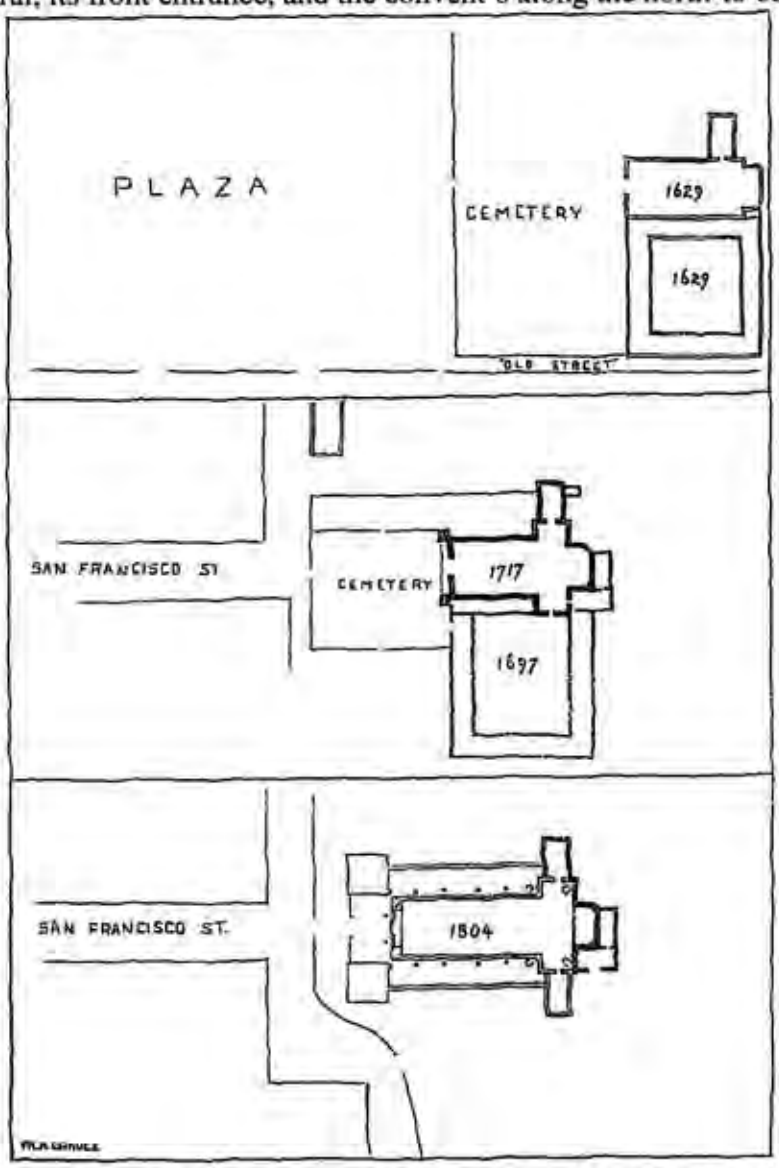
> ...It [the convento] is opposite the church and the old convento, which on the north borders the acequia that crosses in front of the villa. On the south it borders all of what was the street that passes in front of the church and the old convento. On the west it borders the former plaza of the villa (Kessell, Hendricks, Dodge and Miller 2000:403).

DISCUSSION

Looking at the descriptive sketch prepared by Fray Angélico Chávez (Fig. 4), one can see that Fray Angélico placed the pre-Revolt parroquia some distance behind, or east of the 1717 parish church and convento. Chávez based his location on the fact that "the 1697 convent, built as a quadrangle with inner cloister, touched this church [the 1717 church] at the front south corner and at the southwest corner of the sacristy" (Chávez 1949:92). Fray Angélico continued: "...therefore, the Santa Fe Plaza in its original form, from 1610 to 1680, ran clear up to the middle of the present Cathedral (Chávez 1949:92). If constructed as depicted by Chávez then the Cubero convento, and subsequently the 1717 church were built in part within the confines of the pre-Revolt cemetery (Fig. 4). It should also be noted that according to research compiled by Chávez (1992:342) this old cemetery was still in use as late as 1696.

> ...These church-convent foundations stood east of the 1697 convent, and with enough space left between them for a small garden. North of it ran a ditch, its water drawn from a marsh above; south of it was a street 'that

had been' before 1680, and directly on it was built the south flank of the convent. This would place the Benavides church of 1629 [the church built during Benavides time, but see above] almost directly behind the present Cathedral, its front entrance, and the convent's along the north-to-south



Descriptive but not accurate sketch showing relative position of the Plaza and Church-Convent before 1680 (*top*); the post-Reconquest Church-Convent (*center*) with San Francisco Street emerging between groups of houses built on the upper Plaza after 1693; and (*bottom*) the present Cathedral built around the 1804 Church, shown by shaded lines. Black outlines show 1717 sections still in use.

Fig. 4. Chávez sketch of relative positions of the parroquia and conventos before and after the Pueblo Revolt. From NMHR XXIV(2):84, 1949.

line now occupied by the hospital's two-story brick quarters [Marian Hall] to the rear of the Cathedral—and not on the front lawn of St. Vincent's facing the Post Office [present location of the I. A. I. A.

Museum], as commonly believed. The space between it and the original upper limits of the plaza would have been the logical place for the pre-Revolt cemetery in front of the Benavides Church (Chávez 1949:93; see also Snow 2002).

THE EIGHTEENTH AND EARLY NINETEENTH CENTURIES

By 1714, some ten years after the death of Diego de Vargas, members of the Franciscan order in Santa Fe decided to replace the temporary church constructed in 1694 with a new parish church located at the east end of the plaza (Fig. 4). Based on the information provided in the Cubero donation of land for the 1697 convento, Chávez placed the 1717 church west of the pre-Revolt church. The south façade of the 1717 church abutted the north side of the 1697 convento (Chávez 1949:93; Fig 4). Had Chávez used an overlay, the pre-Revolt structures would have been directly east, but in line with the 1717 church and earlier convento (Fig. 4). Because the 1717 church and all subsequent churches on that site are west of the present project area, they will not be discussed in the same detail as the pre-Revolt parish church.

Although Vargas had died in 1704, his wish to honor the bulto of Our Lady who had been brought to Santa Fe by Fray Alonso Benavides in 1626 was finally fulfilled with the construction of a small side chapel on the north side of the church dedicated to La Conquistadora, now also known as Our Lady of Peace (Fig. 3). This side chapel, although greatly altered, is the only remaining portion of the 1717 parish church. While we do not know the details of construction of the 1717 church and La Conquistadora Chapel, we do know construction was directed by the master carpenter, Diego Velasco or Velasquez, also known as the Lame Carpenter (Chávez 1992:309-310; Kubler 1939:20, 27).

The 1717 church is mentioned briefly in one of the most fascinating documents to survive in the colonial archives of New Mexico. In 1715 Diego Arias de Quiros, who owned land east of the Palace of the Governors on the edge of the cienega, decided to develop a spring to construct a tanque or pond for irrigation (SANM I:8; SANM I:169). However, the governor and others believed construction of the tanque would endanger the rest of the cienega and cause it to dry up. As a result, the governor called upon the cabildo who, aided by Roque and Lorenzo Madrid, vecinos of pre-Revolt Santa Fe,

inspected the tanque and after consultation, ordered it closed. After taking care of the matter of the tanque, the investigators toured the Barrio de San Francisco, the settlement of Spaniards on the north side of the river, to inspect the entrances and exits of the villa. As the inspectors stood on the edge of the cienega and looked toward the church that was under construction, they noted that the houses of Nicolas Ortiz and Miguel Carrillo both obscured the street in front of the new parroquia (SANM I:169).

Eventually, in 1746, then Governor don Joachin Codallos y Rubal [aka Rabal, or Roybal] purchased the former Ortiz house for the express purpose of demolishing it because it obstructed " the entrance to the church" (SANM I:181).

> A low house, this is very close to the church cemetery of the parish of this villa, and has its main door to the street that goes therefrom to the parish church, and which house is composed of four rooms, one story high, a kitchen and a hallway, all in poor condition, being constructed of adobe and having been built many years ago; and its boundaries are: On the north by the same house that was left after the death of Don Alfonso Rael de Aguilar; on the South by the public street [present San Francisco St.]; on the east by the cemetery; and on the West by a lot which is said to belong to the Parish residence (SANM I:181)

In other words, the house of Nicolas Ortiz must have been located in close proximity to the present Museum of the Institute of American Indian Art.

In 1767, the Bishop of Durango recommended that the parish churches in Santa Fe, Santa Cruz de la Cañada, Albuquerque and El Paso be turned over to secular priests instead of remaining with Franciscans (Martinez y Alíre 1998:331). Thus, when Fray Francisco Atanasio Domínquez was ordered in 1775 to make a detailed report on the "spiritual and economic status of the New Mexico missions," as part of an expedition led by Fray Silvestre Vélez de Escalante to investigate a route from New Mexico to California, he became the last Franciscan from the Archbishopric of Durango to visit the Spanish colony (Adams and Chavez 1975:xiv-xv).

Upon his arrival in Santa Fe on March 22, 1776, Fray Domínquez described, in his usual acerbic fashion, the parish church that had been constructed in 1717 (Adams and Chavez 1975:xv, 12-29). He noted, among other things, the walls of the church were more than a vara, or in excess of 33 inches, thick and that the nave was 44 varas [121 feet] long from the door to the high altar (Adams and Chavez 1975:12). He also noted the church had a transept and a transverse clerestory window, and that a cemetery or

camposanto was located on the Epistle, or left side of the church as one faced it, while the convento and convento garden lay on the Gospel or right side of the church (Adams and Chavez 1975:12). Finally, Domínquez reported that while more or less useable, portions of the old 1697 convento were generally neglected and in ruins.

SECULARIZATION AND THE SANTA FE TRAIL

After Fray Domínquez's visit to New Mexico, there was little change in the number of Franciscans who served in New Mexico until 1782 when their numbers began to drop (Wright:1998:221). By 1796, the only two Franciscans left in the colony prepared a report of the condition of the old parish church and that portion of the 1697 convento not in ruins for Governor Fernando Chacón (Ellis 1985:60-61). In 1798, the first secular priests arrived in New Mexico: while the priest assigned to Santa Cruz left shortly after he arrived, the second priest remained in Santa Fe until 1803 (Chavez 1987:14; Wright 1998:226).

As with all adobe buildings, the 1717 parish church was refurbished numerous times, but the most extensive repairs appear to have been undertaken and funded by Antonio José Ortiz in the last decade of the 18th and first decade of the 19th century (Ellis 1985: 59-63). Ortiz was a direct descendent of the Nicolás Ortiz who came to New Mexico in 1693 with Diego de Vargas (Chavez 1992:237) and who, in 1715, lived opposite the new church under construction (SANM 1:169), now the site of the Museum of the Institute of American Indian Art. Among other things, Ortiz was responsible for paying the construction costs of the San José Chapel on the south side of the parroquia, opposite the Conquistadora Chapel on the north and for the reconstruction of the walls of the nave and replacement of the roof after the church was hit by lightning (Ellis 1985:61-62). According to Ellis (1985:63) though, Antonio José Ortiz did somewhat more than simply rebuild the church as Ellis reports that Ortiz not only widened the transept by nearly 8 feet, but also "lengthened" the nave by almost 27 feet! At the same, Ortiz may not have rebuilt as many walls as he had stated (Ellis 1985:63). Additional remodeling and reconstruction was undertaken in 1814, 1817 and 1826 (Ellis 1985:65-81).

Meanwhile, in 1821 Mexico won independence from Spain and, as a result, Spanish rule in New Mexico came to an abrupt end after nearly 225 years. At the same time with the end of Spanish dominion, trade opened between the eastern United States

and Mexico via the Santa Fe Trail. Soon traders and their goods flooded into New Mexico.

Although secularization had started in 1767, according to Ellis (1985:83-84), the parroquia was not really affected until 1824 when the Mexican government decreed the mendicant orders could no longer own church property. This decision that the Franciscans could no longer own church property was to have tremendous ramifications some thirty years later, as we shall see. About the same time native New Mexicans Antonio José Martínez, José Manuel Gallegos, and Juan Felipe Ortiz went to Durango to train for the secular priesthood (Chávez and Chávez 2004:26). Ortiz, the grandson of José Antonio Ortiz, was appointed pastor in Santa Fe in 1828 and then in 1831was named Vicar Forane, the Bishop's "rural dean," the first New Mexican appointed to that post since Santiago Royal in 1730 (Chávez and Chávez 2004:26; Ellis 1985: 84). Shortly thereafter, Ortiz purchased the convento associated with the parroquia (Chávez and Chávez 2004:28; Ellis 1985: 84-85). The purchase of other lands belonging to the old parroquia followed.

Aside from buying land surrounding the parroquia, in 1833 Vicar Ortiz issued "an Episcopal edict" that banned burials inside churches "for sanitary reasons" (Chávez and Chávez 2004:32; Will 2000; Will de Chaparro 2007:137-167). Initially banned in 1804 by King Carlos IV of Spain, New Mexicans had generally ignored the edict in favor of burying selected individuals beneath the floor of the local churches as they had done for two centuries (Will 2000:2; Will de Chaparro 2007:137-167). While the ban may have been of limited effect in some areas, requests for sub-floor burial in churches continued at least until the 1850s, and possibly, in rare instances, into the early 20th century (Will 2000: 2-5, fn. 57; Will de Chaparro 2007:137-167). Throughout the period, of course, those who could not afford burial inside churches continued to be buried in the camposanto associated with a given structure. At the same time, anyone who committed suicide or was convicted of a crime such as murder was denied burial in sanctified ground; however, there are no records to indicate where such burial ground was located in Santa Fe.

Ironically, just as the Pueblo Revolt of 1680 occurred in the month of August, U. S. military troops under Brigadier General Stephen Watts Kearny invaded Santa Fe in

August of 1846. Both events brought lasting change to Santa Fe. When Governor Manuel Armijo announced the capitulation of his government in Santa Fe, Vicar Juan Felipe Ortiz, fearing for his safety, fled Santa Fe only to return several days later (Chávez and Chávez 2004:63-64). Within a matter of years, Ortiz was replaced as vicar by Bishop Jean Baptiste Lamy.

ACEQUIAS AND ROADS

Before embarking on a discussion of Lamy and the American Period in Santa Fe, it seems best at this point to review the acequias, roads and other colonial features besides the succession of churches and the cienega found in the project area. Prior to the first decades of the eighteenth century, there were no wells in Santa Fe and all domestic water was provided through a series of acequias or irrigation ditches. Because the acequias were free flowing and required nearly constant maintenance, they were usually bordered by roads to provide ease of access. One of the earliest mentions of an acequia within the project area was in 1696 when Cubero donated land for the construction of a convento for the Franciscans who had accompanied Diego de Vargas to Santa Fe (Chavez 1949:93). This ditch appears to be analogous with the Casas Reales Acequia that flowed from east to west along present Palace Avenue (D. H. Snow 1988:8; Twitchell 1912:52). That same ditch also appeared as the north boundary of property purchased by Bishop Lamy from José Baca y Terrus discussed in greater detail below (SFCO C:17; SFCO N:413-422). Traces of The Bishop's Garden ditch (Snow's Ditch 12) are found along the present south boundary of the project area (Snow 1988:38). Whether this ditch was once paralleled by the road that ran along the south side of property Cubero donated to the Church for the construction of the convento of 1696 is unknown.

Although San Francisco Street and a road analogous to modern Palace Avenue are mentioned frequently in the documents (see also Fig. 2, the Urrutia Map of 1767), with the exception of a road analogous to modern Cathedral Place, few roads that bisected the project area from north to south were mentioned. However, there is one modern road in the area, Otero Street, which appears to be a remnant of a 17th century feature. If one were to project Otero Street from its present terminus on Palace Avenue, through the project area, the street would run behind, or east of the sanctuary for the modern cathedral-basilica and intersect modern Alameda Street at the intersection of that

thoroughfare with Cathedral Place and the modern Brother's Path to San Miguel and the Barrio de Analco (Snow 2004).

LAMY AND THE AMERICAN PERIOD

Jean Baptiste Lamy was born in Lempdes, France in 1814, and was ordained in 1838. Lamy and his childhood friend, Joseph Priest Machebeuf, arrived in Cincinnati, Ohio in 1836 and were ordained in 1838. Both Lamy and Machebeuf were assigned parishes of their own in Ohio upon their ordinations. Subsequently, Lamy was elevated to Bishop in 1850 and shortly thereafter, in 1851, he and Machebeuf received orders to leave for Santa Fe in the Territory of New Mexico (Horgan1975). Upon the arrival of Lamy and Machebeuf as representatives of a synod of bishops and archbishops from Baltimore, Maryland, the clash between the newcomers, both former citizens of France, on the one hand, with Ortiz, a descendent of Nicolas Ortiz who once owned property opposite the 1717 church, and who had been appointed to his position by the Bishop of Durango, Mexico, was immediate and beyond reconciliation.

Although the initial meeting between the Bishop of Santa Fe, Jean Baptiste Lamy, and the Vicar of Santa Fe, Juan Felipe Ortiz was said to have been cordial, even to the point of the vicar preparing a gala reception for the bishop (Chávez and Chávez 2004:85), that cordiality quickly turned to mistrust and resentment on the part of Lamy, and even more so on the part of Machebeuf (Ellis 1985:86-87). Denied the use of the parroquia for services, Lamy insisted upon the return of La Castrense, the old military chapel located on the south side of the plaza, for English-language services (Horgan 1975). To add insult to injury, Lamy was even more horrified to find that Ortiz, in fact, owned the convento, the traditional residence of the Franciscans who served Santa Fe, in addition to numerous other pieces of property that belonged to the parroquia (Ellis 1985:85). However, before Lamy could set about buying back property he believed belonged to the church, he had to build a new rectory because he could not move into the convento.

Carlos Brun constructed Lamy's first rectory in 1853 (Fig. 5; Fig. 6; Sherman 1983:65). A single story building, the residence and sometime seminary or boys' school was located in the southeast quadrant of present Cathedral Park, north and east of the Conquistadora Chapel. Identified on occasion as "the Bishop's Palace (Segale 1948:86),

the building extended into the present parking lot south and west of Marian Hall. Once Lamy was able to arrange for living quarters, he set about raising funds to buy back land he believed belonged to the diocese and for construction of new buildings, especially a new parish church. In order to raise funds the first thing Lamy did was sell the former military chapel on the plaza, La Castrense, as well as property around San Miguel, to Simon Delgado (SFCO C:105).

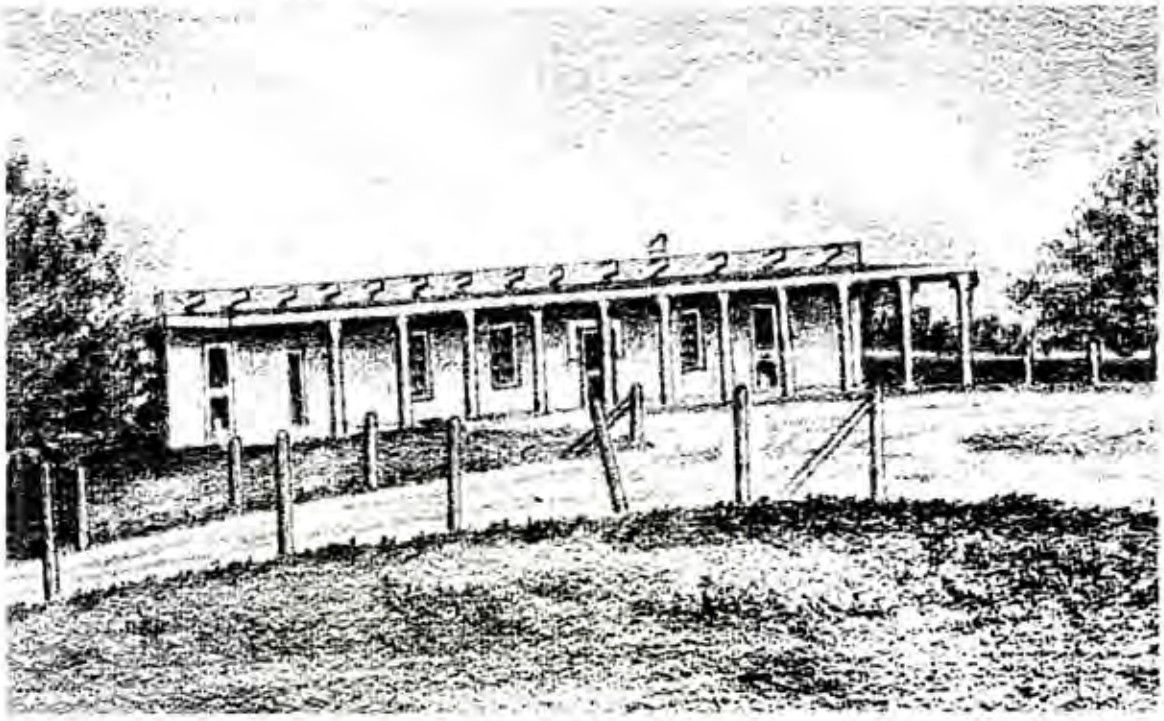


Fig. 5. The building later known as the Old Seminary, Lamy's rectory and boy's school constructed in 1853 by Carlos Brun. Figure from Kimball and Smith 1977.

Then in 1855, Lamy began to purchase property that had once belonged to the parish church. Oddly enough, one of the earliest of Lamy's purchases, if not the very first purchase he made, was a small parcel, which may have been the location of the pre-Revolt parroquia (Chavez 1949; Snow 2004). The small plot of land bought from Juan Felipe Ortiz measured approximately "100 varas [ca 275'] in length and 50 varas [ca 138'] in width" and lay immediately east of the parroquia (SFCO C:16-17; N:413-422), south of present Marian Hall. We do not know if Lamy purchased the lot because he was aware the old parish church might have been located there, or if the property was purchased for another reason entirely, but in any case this parcel, which has never been built upon, became the core of Lamy's gardens.

Lamy followed that purchase with purchase of "a house lot and land" that belonged to José Franciso Baca y Terrus (SFCO C:17; SFCO N:413-422), that is now the site of Cathedral Park and Marian Hall. In both cases, the properties were bounded on the east by the cienega. Unfortunately, it has not been possible to trace the Baca y Terrus property back in time, so we do not know how or when Baca obtained the land.

Juan Felipe Ortiz died January 20, 1858 (Chávez and Chávez 2004:201), unlamented by Lamy. Ironically, in direct opposition to his "Episcopal edict" of 25 years before, it appears that Ortiz was buried in the parroquia beneath the floor of San José Chapel that had been built by his grandfather more than 50 years earlier (Chávez and Chávez 2004:2003). Juan Felipe's death did not deter Lamy from buying back lands he believed belonged to "his" parish church (SFCO C:57-60; N:413-422), until he owned almost everything between present Palace Avenue and Alameda Streets, and from present Paseo de Peralta on the east, west to present Cathedral Place. The only land Lamy was not immediately successful in obtaining was the house and lot owned by Ana Maria Ortiz, half-sister of the old vicar (Snow 2004:51-52). Even then, Lamy had obtained the bulk of Ana Maria Ortiz's property by 1866 (SFCO F1:136; H:522; N:274-276; N:412-422; SRCA Avery Papers #17).

While Lamy continued to buy property surrounding the parroquia and elsewhere in New Mexico, he also was deeply involved in other matters such as education. Between 1852 and 1853, the Sisters of Loretto founded a school for girls in Santa Fe, and in 1859, the Christian Brothers, an order dedicated to teaching, founded St. Michael's College, a school for boys (Hanks 1998:388). Education taken care of, in 1865 Lamy invited the Sisters of Charity, an order located in Cincinnati, Ohio, to Santa Fe and New Mexico to provide hospital care and open an orphanage and industrial school for girls (Hanks 1998:389). Thus begins one of the more fascinating chapters of the history of land use and ownership of the project area.

THE SISTERS OF CHARITY AND THEIR GOOD WORKS

Sister Blandina Segale was not among the first of the Sisters of Charity to arrive in the Territory of New Mexico, but may have been among the most remarkable and influential members of that order to live in Santa Fe. Rosa Maria Segale was born in

Cicagna Italy, near Genoa, on January 23, 1850 (Fig. 7; Segale 1948:1-2). Four years later, Rosa Maria's family immigrated to the United States where they settled in Cincinnati, Ohio. In 1866, both Rosa Maria and her sister, Maria Maddelena entered the Sisters of Charity motherhouse in Cincinnati. Blandina, as Rosa Maria became known, and her

Fig. 6. The Old Seminary. Constructed in 1853 by Carlos Brun as a single story building for use as a rectory and boys school for Bishop Lamy (see Fig. 4). The second story with porches was added by the Sisters of Charity after 1865 when they used the building as a hospital. Sleeping porches on Marian Hall can be seen in the left. The Old Seminary was demolished in 1954. Photograph from Kimball and Smith 1977.

sister, Justina, the former Maria Maddelena, pronounced their holy vows in 1868 (Segale 1948:3). Sister Blandina was sent to New Mexico in 1877 where she remained until 1894 when she returned to Ohio. Blandina's journal, which she kept throughout her life, was first published in 1932 and reissued in 1948 (Segale 1948:3).

When Sister Blandina Segale arrived in Santa Fe in 1877, she found that Bishop Lamy had designed his new cathedral and laid the cornerstone, but that no further work had been done due to lack of funds. She also found that Lamy had sold his old rectory,

the Old Seminary, with the exception of two rooms reserved for his use, to the Sisters of Charity for a hospital in 1865 (Fig. 5; Fig. 6; SFCO D:438-441).

> Imagine the surprise of persons coming from places where houses are built with every convenience and sanitary device, suddenly to find themselves introduced into several oblong walls of adobes, looking like piled brick ready to burn, to enter which, instead of stepping up, you step down onto a mud floor, rafters supporting roof made of the trunks of trees, the roof itself of earth which they were told had to be carefully attended, else the rain would pour in, door openings covered with blankets, the whole giving you a prison feeling; a few chairs, handmade and painted red; a large quantity of wood which they were assured was clean and for their use; no stoves, square openings in corners where fires could be built—all those things were to constitute their future home (Segale 1948:86).

Described by Lamy as having "no architectural character," the sisters added a second story and two-story sleeping porches on all sides of the building (Fig. 6; Kimball and Smith 1977:2, 6; Sherman 1983:65; Snow 2002:26). Other improvements included pine floors in the kitchen and refectories and puncheons, or rough-hewn lumber floors, in the schoolroom (Smith 1990:272). At the same time, there is no indication the Old Seminary ever had even a partial basement dug after the fact, nor is there any indication any burials were disturbed at the time the building was constructed or later remodeled. Used as an orphanage in addition to a hospital, the Old Seminary remained standing until 1954 when it was demolished after being condemned as a firetrap (*Santa Fe New Mexican*, Sunday May 9, 1954). It should be noted that adjacent to the Old Seminary, close to Lamy's cathedral was an old adobe building that became part of the property owned by the Sisters (Kimball and Smith 1977:72, 73; Smith n.d. 400). This building, which obviously pre-dates Sister Blandina's brickyard (see below), served as the orphanage, Sister's dormitory and classroom and general all-purpose structure for decades, but when and by whom it was built remains a mystery.

Frustrated at not being able to obtain fired brick for her construction projects, in 1877, Sister Blandina started her own brickyard. After much trial and error, the brickyard became a reality in 1878 and revolutionized the face of Santa Fe architecture (Ellis 1985:3-5; Segale 1948:108-110, 114-115). In 1879, the Sisters of Charity initiated construction of an Industrial School for Girls and Sister Blandina was put in charge of raising the necessary funds for construction of the trade school. Although Sister Blandina

had no funds with which to begin construction, she asked Father Augustine Truchard, the rector of the parroquia, to request volunteers to dig the foundation (Segale 1948:108). Accordingly, 12 men appeared the next day with picks and shovels to begin work (Segale 1948:108). There are no reports in the local newspaper or in the Segale journal that human remains were encountered during the excavation for the foundations of the building, so we must assume none was uncovered. Two weeks later Sister Blandina reported in her journal, "part of the land excavated makes a natural foundation[9], so we are ready for masonry work" (Segale 1948:108). Once again, Sister Blandina requested that volunteers supply teams and wagons to haul quarried stone for the foundation and once again volunteers materialized and the foundations were laid (Segale 1948:109). One

Fig. 7. Sister Blandina Segale, Sisters of Charity.
Photo from Segale 1948.

[9] What Sister Blandina meant by a "natural foundation" is unknown.

volunteer was local businessman Antonio Ortiz y Salazar who sent a team of mules with a wagon. Another individual donated a team of horses, which was sold for $200. In a somewhat convoluted deal, Blandina paid the owner of the horses $150, donated $40 to a poor family, and retained $10 to pay for lime for mortar (Segale 1948:109). Looking to the future, Sister Blandina saw that pipes were installed for both gas and water, even though at the time there was neither gas nor waterworks in Santa Fe (Segale 1948:110).

According to her autobiography, at the same time she begged and borrowed to arrange funds and in-kind donations to build her trade school for girls, Sister Blandina was not above stealing produce from Bishop Lamy's famed gardens for the orphans and students in her charge (Segale 1948:144). Finally, Sister Blandina arranged with the Santa Fe County Commissioners—the City of Santa Fe would not be incorporated until 1891—to see that indigents who died at the Sister's hospital would be buried in a "long strip of land" in one of the cemeteries at the rear of San Miguel College at a minimal cost (Segale 1948:151-152).

Fig. 8, St. Vincent Sanatorium was originally planned to be an industrial school for girls; however, because there was a desperate need for a larger hospital in Santa Fe, the original purpose changed. The building opened in 1883 and burned to the ground in 1896. The two story porches of the Old Seminary can be seen at the right.

As construction slowly proceeded, brick by brick on the new school, Archbishop Lamy announced in 1880 the need for hospital beds had become overwhelming and with that, Sister Blandina's Industrial School for Girls became, overnight, the St. Vincent Sanatorium (Fig. 8). The new sanatorium, the "tallest building in the city, 60 feet high with a cupola on top," opened in 1883 (Fig. 8; Kimball and Smith 1977:11; Hanks 1998; Segale 1948; 189; Snow 2002:29). The new sanatorium was also the most stylish building in Santa Fe with its symmetrical Second Empire features of a Mansard roof, bracketed cornices, and quoins, and entrance via an allee, or formal walk, lined with horse chestnut trees donated by the Archbishop (Smith 1980; Snow 2002:29). By 1890 the steam heating system was operational. Ironically, aside from Sister Blandina's "natural foundation" mentioned previously, the new sanatorium does not appear to have had a basement, at least I can find no contemporary references to a basement in the building. It may be, since Blandina arranged to have the kitchen, laundry room and boilers for the steam heat in another building, no basement was necessary. These safety features aside, St. Vincent Sanatorium burned to the ground in 1896 (Smith 1980:273; Snow 2002:31). The following year Sister Eulalia Whitty had a tennis court constructed on the site of what had been the most modern building in Santa Fe (Smith 1980:282). Given these unfortunate circumstances, it is probably just as well Sister Blandina had left Santa Fe in 1894 (Segale 1948).

Seton Hall was constructed in 1886 to replace the Old Seminary as a home or convent for the Sisters of Charity (Fig. 9). It was later used for a variety of purposes including a hospital. The new building was located east of the cathedral and at right angles to the Old Seminary, and although constructed of fired brick, it is obvious the structure resembled the Sisters' former home with its two story portales or verandas. Seton Hall remained in use until 1954 when it was demolished. There is no evidence the building had a basement. Another two-story brick and stone structure was constructed east of St. Vincent Sanatorium in 1886. Although it was not connected with the sanatorium, it did share a kitchen with that building. The new hospital, essentially an annex to the sanatorium, eventually became a home for the aged until 1948 when it was demolished to make way for the construction of the new St. Vincent Hospital designed by John Gaw Meem.

A large brick and frame orphanage was also constructed in 1890 (Fig. 10). It was located on the south side of the Sisters property, and according to Kimball and Smith (1977:13); funds for the construction of the orphanage had been raised by Father Thomas

Fig. 9. Seton Hall. Photo from Kimball and Smith 1978.

A. Hayes, a Catholic priest stationed in Bernalillo. Initially planned as a home where orphaned girls aged 3 to 19 could receive a basic education through grade 6 and learn "all kinds of house work, for instance cooking, washing, ironing, cleaning and arranging rooms, sweeping, dusting...in addition to hygiene, domestic work, ballroom dancing, dramatics, tennis and gardening (Smith 1980:238). They are taught plain sewing [and] many of the girls twelve years old make their own dresses and aprons" (Smith 1980:351). The new orphanage had five dormitories for as many as 90 girls and each dormitory had an alcove for a member of the Sisters of Charity. There were also classrooms, a library and reception room; there were five showers and three indoor toilets along with six outdoor privies (Smith 1980:237-238). The new building was arranged around a large playground and the aforementioned tennis courts (Smith 1980:238). Since the orphanage

lacked an infirmary, seriously ill children were admitted to and treated in the new St. Vincent Hospital east of the new sanatorium.

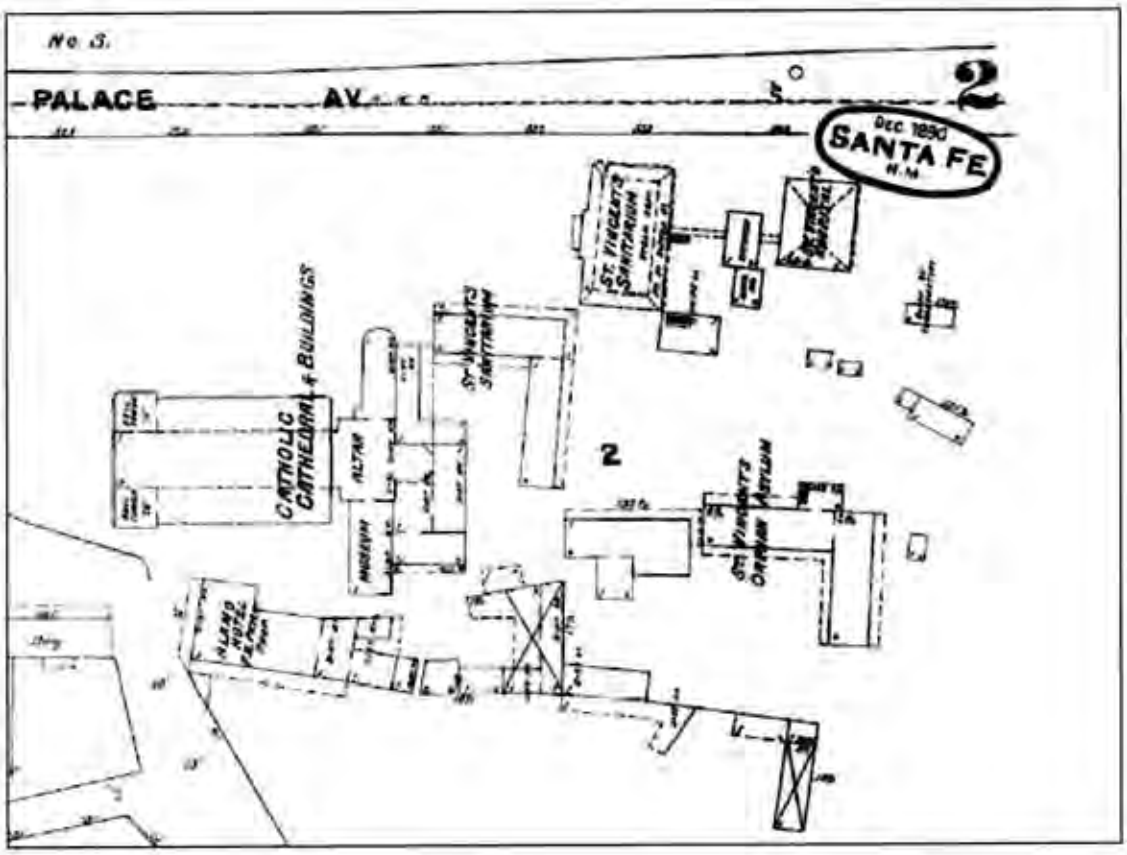


Fig. 10. 1890 Sanborn Insurance Map showing all structures built by the Sisters of Charity by that date. Clockwise from the 1883 Sanatorium, the structures are a kitchen shared with the 1886 hospital and a coalhouse. One of the small service buildings is a conservatory. The orphanage is the L-shaped building at 4:00 o'clock. An adobe schoolroom is west of the orphanage. The Old Seminary abuts Seton Hall. Both buildings are show with the title "St. Vincent's Sanatorium." The Alamo Hotel and other structures along the lower part of the map did not belong to the Sisters of Charity.

According to Dr. Marcus Smith (1980:328), during the summer of 1903, the Sisters began to raise funds to build another hospital to replace St. Vincent Sanatorium. Because they dealt with patients who had tuberculosis, the sisters realized the construction of a laundry facility was of the utmost importance (Smith 1980:228-229). As a result, a boiler room and laundry, "located near the orphanage," were under construction by May 1904 and were completed June 22 (Smith 1980:229). This

indicates the earliest construction at the present power plant south of old St. Vincent Hospital dates from 1904 instead of circa 1908-1910 as previously thought.

In actuality, the Sisters of Charity were not able to begin construction of a replacement for the St. Vincent Sanatorium until 1908 when work started on the building now known as Marian Hall (Fig. 11). Designed by Isaac Hamilton Rapp of the firm, Rapp and Rapp, Architects, who would later design the Fine Arts Museum on West Palace Avenue, the second St. Vincent Sanatorium encompassed not only the footprint of the ill fated earlier sanatorium, but also included a part of the circular turnabout and fountain at the east end of the former allee or entrance (Fig 11; Sheppard 1988:56; Smith 1980:365). The new sanatorium resembled in some ways the annex to St. Anthony's Sanatorium the Rapp firm designed for the Sisters of Charity in Las Vegas, New Mexico (Sheppard 1988:56). Designed to have the primary entrance on the east side of the building, the new St. Vincent Sanatorium in the only Rapp building that remains in Santa Fe that was not built in the Rapp's Santa Fe Style (Sheppard 1988:56). Unfortunately,

Fig. 11, Marian Hall looking east from Palace Avenue, ca. 1910. The two-story portales of the Old Seminary can be seen on the extreme right.

design and construction of the later John Gaw Meem St. Vincent Hospital almost completely obscured the original entrance to the sanatorium (Sheppard 1988:154).

> SISTERS OF CHARITY AIDING GROWTH AND PROSPERITY OF SANTA FE, said the New Mexican. The New and Modern Sanitarium would "absolutely surpass anything heretofore attempted in the West." Costs were expected to exceed $75,000. The Sanitarium would have 6,600 square feet, and the addition 7000 feet. Hard burned penitentiary bricks would be used except in the front of the building where unglazed vitrified dark red and brown vitrified bricks would be placed. Red tile of the latest style would adorn the roof. White tile would cover the kitchen floor and siding; corridors and bathrooms would also be tiled. Bedrooms would have hardwood floors (Smith 1980:375; Fig. 9; Fig. 10).

Additionally,

> Plans for the first floor included the lobby, a reception area, guest's waiting room, office, housekeeper's room, dining room, physician's consulting room, library, billiard room, five bedrooms for guests, a serving room, cooling room, storage room, toilet and bathrooms, and a large convenient kitchen on a concrete foundation. Beneath the [wood] range and oven, a concrete pit would receive ashes; thus employees would no longer haul ashes out of the kitchen. Three stairways would connect the three floors, and an electrical elevator would be large enough to accommodate a cot with a patient.
>
> The second floor would house the chapel and sacristy, bed chambers, two toilets and baths, large linen closets, and a diet kitchen where special food for very ill patients would be prepared.
>
> On the third floor there would be private rooms and suits, and the operating suite—a large operating room, a surgeon's room, a surgeon's dressing room with a shower bath, and separate anesthetic and sterilizing rooms. [The new sanatorium would be] Comparable to the best hospitals in the country (Smith 1980:376).

In an interesting aside, Dr. Smith noted that the Rapp's plans for the new sanatorium "included a number of shutes [sic, chutes] to run from the third floor to the kitchen, for linens and bed clothing, room sweepings and ashes from rooms with fireplaces to a pit in the cellar" (Smith 1980:376). At the same time, he also noted that, "In 1899, shutes [sic, chutes] or flues for dirty linen were condemned," although he never said by whom. Besides the ash and laundry pits, the cellar also had a large storeroom, coal bins and "other compartments" (Smith 1980:377). Aside from the basement beneath

the Meem-designed St. Vincent Hospital, the cellar beneath present Marian Hall is the only one described for any of the buildings constructed by the Sisters of Charity.

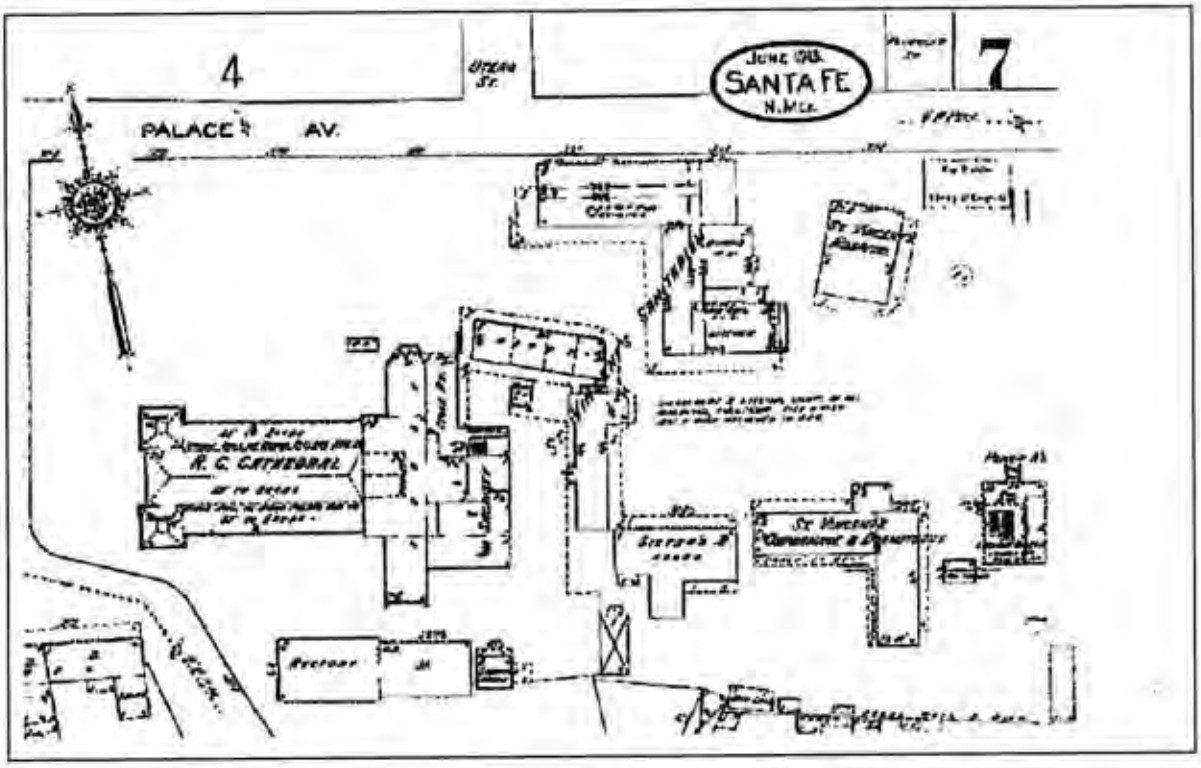


Fig. 12. Sanborn Insurance Map of 1913. The map shows the relationship of the holdings of the Sisters of Charity to St. Francis Cathedral. The Old Seminary is north and east of the cathedral, while the new sanatorium was located on the site of the former sanatorium. The hospital was located east of the new sanatorium. The Sisters' lodge, the orphanage and the powerplant were located on the south side of the property. The area due east of Seton Hall, between present Marian Hall and the orphanage has never been built upon.

Because fresh air and sunshine were considered the best cure for tuberculosis, the most noticeable architectural feature of the new sanatorium was the verandas or sunrooms that opened into the rooms of the patients. Ten-foot wide verandas were located on the south and west sides of the building, while the sunroom, encased in glass, was located in the southwest corner of the building. Fire-stairs connected the verandas to ground level. Some years later after the construction of Marian Hall, John Gaw Meem added covered ambulatories that connected his new hospital to the east façade of the Rapp-designed St. Vincent Sanatorium (Sheppard 1988:54-56; Smith 1980:377). Carl

Sheppard (1988:54) was very critical of these ambulatories saying they almost completely hid the Rapp façade.

The new St. Vincent Sanatorium opened December 13, 1910 (Smith 1980:399). The opening was celebrated with an evening of music by the military band from Fort Marcy Military Reservation, a "Spanish supper," and a bazaar (Smith 1980:399). With the opening of the new facility, the Sisters of Charity were responsible for the Old Seminary used for classrooms for nurses, Seton Hall, the orphanage, a hospital, and a boiler room and laundry (Smith 1980:400; Fig. 9; Fig. 12). All of the structures were situated around the north, west, and south sides of the property owned by the Sisters, all of which was bounded on the east by the cienega.

While the Sisters undertook no large-scale construction projects within the project area for nearly 40 years until after World War II that is not to say the Sanatorium or home for the aged were neglected: an emergency room was constructed, and numerous interior changes were made to the structures. In 1937, the driveway to the hospital was paved with concrete and a canopy placed over the main entrance (Smith 1980: 558). After WWII, however, the Sisters began first to contemplate, and then plan in earnest construction of a new, modern hospital to replace St. Vincent Sanatorium.

John Gaw Meem's architectural firm was hired to design the new St. Vincent Hospital, which would be located east of St. Vincent Sanatorium. According to Meem,

> 'In plan, this building is roughly in the shape of a cross, symbolic of the spirit of love and sacrifice of the Divine Master whom the Sisters of Charity serve in devoting their lives in hospital work.' Three elevators in the center of the cross arm would provide communication with each wing of the five floors. Most of the rooms would face south, toward the archbishop's garden. The rooms facing north would be recessed from the street, and would be protected by trees and landscaping. 'The rooms,' he said, would have soft, pleasant colors.'
>
> A public lobby, administrative areas, a gift shop, medical library, 57 medical beds, and a 14-bed psychiatric unit would occupy the ground floor. Laboratories, the X-ray department, seven operating rooms and cystoscopy room, and 57 surgical beds would fill the second floor. There would be two delivery and four labor rooms, a 39-bed maternity unit and a 17 bed pediatric nursing section on the third floor. The fourth floor would accommodate a 16-bed contagious section, a small oratory, and a sun deck. Outpatient services such as the emergency room, pharmacy, a coffee shop and cafeteria, would be located on the ground floor, and so too

> were the kitchens, central sterilizing, central supply, and storage areas, and a physical therapy department for poliomyelitis victims.
>
> Mr. Meem hoped that the building would reflect 'the technical and scientific aspects of the completely modern hospital by the simplicity and the clean functional quality of its masses... (and) recall the traditional architecture of our region of which Santa Fe is so proud. The building would harmonize with the territorial style...' The brick and reinforced concrete walls would have a pink sand finish, and the parapet would be finished with red brick (Smith 1980:655-656; Fig. 12).

According to Dr. Marcus Smith, "trees were cut down and bulldozers churned up the ground. In the process of excavation, the contractor struck the old river bed, the old cienga [sic], and in the years to follow, the basement of the future hospital was often flooded (Smith 1980:650). The cornerstone was laid July 24, 1951 (Kimball and Smith 1977:121).

Given the tenor of the times with the Korean War and the "Cold" War when the new hospital was under construction, it is not surprising the new structure included a disaster shelter with an emergency kitchen, first aid, and waste facilities (Smith 1980:656). In addition, there were a special ambulance entrance to the sub-basement; a standby electrical system with generator; and the heating system could be switched from oil to gas at a moments' notice (Smith 1980:664). Finally, the old laundry and boiler rooms were remodeled to provide for a modern facility (Smith 1980:656). The new hospital was opened in 1953 (Kimball and Smith 1977:123).

In order to provide room for the new hospital, a number of the surrounding structures used by the Sisters were razed. These buildings included the Old Seminary, described in 1954 as a firetrap (*Santa Fe New Mexican*, Sunday, May 9, 1954; Fig. 9; Fig. 10), Seton Hall, and the former hospital or Old Folks Home.[10] The orphanage was also eventually closed and razed. Subsequently ambulance bays, now maintenance buildings, were constructed south and west of the 1904 power plant.

At the same time that many of the original structures constructed under the direction of the Sisters were being demolished, the former sanatorium was remodeled

[10] According to Marcus Smith (1980: 670), local architect John McHugh salvaged the second floor railing at the "ancient hospital" and used it at his home where it is still located. McHugh also salvaged lilacs from the former Bishop's Garden, which he planted in his own garden where they are said to thrive.

into a residence and convento for the Sisters with offices and classrooms, library and chapel for the nurses (Smith 1980:670). The remodeled structure was renamed Marian Hall in honor of the Year of Mary or Marian Year of the Catholic Church (Smith 1980:671).

Fig. 12, the Meem-designed St. Vincent Hospital circa 1955. Note Marian Hall, former St. Vincent Sanatorium to the east of the west wing of the hospital.

Ironically, by the early 1960s, little more than ten years after the new hospital was opened, major renovations and improvements became necessary. In addition to wide-spread interior remodeling, significant changes were made to the exterior including an annex to the waiting area and port for two ambulances on the south side of the building. Less than 25 years after the opening of the new St. Vincent Hospital in 1953, the facility was deemed "inefficient and outmoded" (Smith 1980:767). According to staff:

> the 23-year old building was sturdy but inflexible and inefficient, and outmoded as a medical facility. Eighty percent remodeled since its opening. Related services scattered randomly. Nowhere to add new services or equipment without sacrificing patient rooms. Landlocked on a five acre site unable to expand up, or out, or down. Deplorable parking space. Located in the congested downtown area with poor access,

> especially for ambulances...at least 35,000 square feet of additional space were needed for diagnostic and service departments (Smith 1980:767).

Staff also pointed out:

> Maximal use of the downtown property could be obtained with a two-story addition south of the hospital to house several service departments and the surgical suite, and a five level nursing unit to provide additional beds. Disadvantages were the costly land, no additional parking areas, and the increasing traffic problems created by additions to the hospital (Smith 1980:768).

Santa Fe needed a new hospital. The Sisters of Charity and the trustees of the hospital decided finally to build a new hospital in a new location, well away from downtown Santa Fe (Smith 1980:768).

Construction of the new hospital on St. Michael's Drive started in 1975 and was completed in 1977 (Kimball and Smith 1977:133). During construction of the new hospital, Sister Mary Joaquin Bitler, who had been administrator of St. Vincent since 1960, resigned her position (Kimball and Smith 1977:124). With Sister Mary Joaquin's resignation, the responsibilities of administration of the hospital were assumed by a board of trustees. The Sisters of Charity relinquished all rights and title to their property east of St. Francis Cathedral that had been deeded to them more than 100 years before by Archbishop Jean Baptiste Lamy. An era had ended.

Before the hospital and Marian Hall were abandoned by the Sisters:

> most of the religious articles and relics in the Marian Hall Chapel and in a small interdenominational chapel would be sold or given away. These included many statues: St. Gerard, the patron saint of expectant mothers, a bust of St. Elizabeth Seton, Our Lady of Guadalupe, St. Vincent de Paul accompanied by a child, and St. Anthony holding a child. The 14 Stations of the Cross were for sale, and so were some of the stained glass windows—a few would be placed in the interdenominational chapel planned for the new hospital. The big altar was donated to St. Catherine's Indian School, and a tabernacle was given to a church in Albuquerque. The other tabernacle and the bust of St. Elizabeth Seton were to be placed in the new chapel [in the new hospital]... (Smith 1980:805-806).

In 1978 after the new St. Vincent Hospital opened on St. Michael's Drive, the State of New Mexico purchased both Marian Hall and "old" St. Vincent Hospital for $2,000,000 (Kimball and Smith 1977:133; *Santa Fe New Mexican* December 29, 2007). Renamed La Villa Rivera Building after remodeling, all but the east wing of old St. Vincent Hospital housed five different state agencies until 2006 when the agencies

moved and the property was purchased by Drury Hotels, a subsidiary of DSW Santa Fe LLC (*Santa Fe New Mexican,* December 26, 2007). Between 1983 and 2003, the east wing of the former hospital housed La Residencia Nursing Home that was run by Presbyterian Medical Services (*Santa Fe New Mexican*, December 26, 2007). Both Marian Hall and old St. Vincent Hospital are scheduled for restoration and renovation by DSW Santa Fe LLC as a hotel complex.

SUMMARY

We can only assume only assume the Catholic Church owned all property within the project area prior to the Pueblo Revolt of 1680. Further, while we know from available documents that by 1626 the pre-Revolt parroquia or parish church had a single-nave and was cruciform in plan, we do not know the precise location of that structure, except that it may have been located within the western third of the project area. In 1697, then governor Cubero donated land for construction of a convento to house the Franciscan priests who served the Villa de Santa Fe; however, neither the parish church nor the attached La Conquistadora Chapel were completed until 1717. Subsequently, although the original plan of the parroquia was retained, more or less, the church was remodeled on numerous occasions until the 1880s when Archbishop Jean Baptiste Lamy demolished it. Prior to demolition of the 1717 church, Lamy's architects and builders used the fabric of the earlier church as a scaffold around which they constructed the new cathedral. Upon completion of the cathedral, the early church was demolished and the material used for construction hauled out the front door of the new church where it used to fill in low spots along present Alameda Street.

In 1865, the Sisters of Charity, a Catholic healing organization were brought to Santa Fe from Cincinnati by Lamy. Shortly after the arrival of the Sisters, Lamy deeded the project area to the order for construction of a series of sanatoria, hospitals, and orphanages, in addition to residences for themselves. The property between and around the various buildings was used by the Sisters and Lamy as gardens and playgrounds, and later for parking. After World War II, the Sisters of Charity began to plan their biggest hospital in Santa Fe that would be designed by noted local architect, John Gaw Meem. The Meem-designed St. Vincent Hospital opened in 1953; however, by the mid-1960s major renovation and improvements were needed to serve the community. By the early

1970s, plans were made to build a new hospital away from the downtown area of Santa Fe. Shortly thereafter, Sister Mary Joaquin resigned and a board of directors took control of the hospital. At that point, the Sisters of Charity relinquished their control of the Meem-designed "old" St. Vincent hospital and the project area. In 1978, the old hospital and adjacent Marian Hall were purchased by the State of New Mexico for use as offices by several state agencies. In 2006, the property was sold to Drury SW for development as a hotel complex.

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Appendix 2: Report of Technical Findings: Archaeogeophysical Survey at the La Villa Rivera/ Marian Hall Complex, Santa Fe, New Mexico

Chester P. Walker

«Organization»

Report of Technical Findings

Archaeogeophysical Survey at the Villa Rivera/Marian Hall Complex, Santa Fe, New Mexico

AGA Report 2008-17

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November 10, 2008

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Management Summary

Archaeo-Geophysical Associates, LLC (AGA) completed a geophysical survey for Drury Southwest Inc. of La Villa Rivera/Marion Hall Complex in downtown Santa Fe, New Mexico. The geophysical survey was conducted to identify geophysical anomalies that could be identified as archaeological features. Geophysical survey investigations were done employing a fluxgate gradiometer, magnetic susceptibility and conductivity meters, and a ground penetrating radar (GPR). The geophysical results identified a number of anomalies, several which are archaeological in nature, including possible building foundations.

Introduction

Geophysical survey investigations have become an important part of the pursuit of North American archaeology (Kvamme 2008). Several techniques have been derived from geophysical prospecting and adopted for archaeological investigations (Kvamme 2003). Techniques used mostly for archaeological research include soil resistivity, soil conductivity, magnetic susceptibility, magnetometry, and ground penetrating radar (Clark 1990; Kvamme 2003). All produce different results and require different equipment. The different geophysical techniques that have been used in archaeology have been discussed in a number of seminal publications, books, and journal articles (Bevan 1998; Carr 1982; Clark 1990; Conyers 2004; Conyers and Goodman 1997; Gaffney 2008; Gaffney and Gater 2003; Kvamme 2006a, 2008; Scollar 1990; Weymouth 1986; Witten 2006).

Magnetic prospecting has proven to be one of the more useful geophysical technologies for locating buried architectural remains on archaeological sites (Dabas and Tabbagh 2000:335-339). Magnetic prospecting is capable of measuring the magnetic properties of soils to the 0.1 nano Tesla (nT), which makes it possible to isolate subtle changes caused by earth movements or low heat firing (even when they occurred hundreds of years ago). These factors make magnetic prospecting a valuable tool to employ on sites with an abundance of thermally altered features such as fire hearths or burned houses as well as sites with features that extend through organic rich soils into more mature sub-soils. These examples, however, are also the major constraint of magnetic prospecting in archaeological investigations, because if there are no magnetic contrasts between the archaeological deposits and features and the surrounding sediments, then magnetometers lose their prospecting utility.

Similar to remote sensing of the natural environment, archaeological prospecting is not meant to function as a solitary means of investigation. Without a detailed understanding of the site-specific characteristics of archaeological deposits, geophysical data are difficult to interpret and use in a meaningful way. This has been demonstrated by numerous case studies (e.g., Clark 1990; Kvamme 2003; Weymouth 1986). This is not to say that it is not useful as a primary means of data acquisition when combined with extensive available data from manual subsurface archaeological investigations. A

growing body of literature addresses the use of geophysical prospecting as a primary means of archaeological data collection when coupled with other data from previous and/or current excavations: this has been described by Kvamme (2003, 2008) as the future of archaeological geophysics.

In this report, we discuss the geophysical survey conducted by AGA at La Villa Rivera/Marian Hall Complex located in downtown Santa Fe, New Mexico. This work, done from October 6-10, 2008, was conducted at the request of James L. Moore, Project Director at the Office of Archaeological Studies (OAS), Museum of New Mexico, primarily to precisely locate and define geophysical anomalies on the site that may represent possible archaeological features or archaeological deposits of interest (Moore 2008). During the course of the geophysical survey at La Villa Rivera/Marian Hall Complex, a number of different areas were surveyed for both magnetometry, magnetic susceptibility, magnetic conductivity, and GPR. These areas encompassed the estimated extent of the archaeological site, based on information provided by OAS archaeologists at the beginning of the geophysical survey, as well as later information provided on the location and extent of cultural features.

Geophysical Methods

Archaeogeophysics employs a range of techniques for the non-destructive prospecting of archaeological deposits (Gaffney and Gater 2003). These techniques have been developed for a range of applications, mostly geological in nature, but have been adapted for specific use in archaeological research through rigorous field collection techniques and unique data processing programs specifically developed for the study of the archaeogeophysical record. In general, all geophysical techniques map, record, or sense different variables or properties of the soil and the objects contained within the soil. The geophysical instruments are differentially affected by variables such as moisture, metal trash or debris, and transmission of signals such as cell phones and transmission lines. Data collection is also impacted differently for each of the geophysical instruments by physical impediments such as trees, pavement, fences, and vegetation.

To address the complex matrix of variables that characterize the soil and the surroundings at a specific archaeological site, it is important to come to the field prepared to collect data with several different instruments. The "multiple-technique" approach not only increases the likelihood of success in the ability to detect archaeological features and archaeological deposits of interest, but can often enhance the visibility of the archaeological targets that may be present and preserved at archaeological sites (Kvamme et al. 2006:251; Kvamme 2006a:57-58). Archaeogeophysical data has a long history of success in helping to focus archaeological excavations to specific targeted locations within sites to answer specific archaeological questions, and under the right conditions can be used as a primary and stand-alone source of archaeological data (Kvamme 2003).

Magnetometer and Gradiometer

Magnetometer and gradiometer surveys are non-invasive and passive techniques and measure slight variations in the magnetic properties of soil. Magnetometers and gradiometers have become the primary tool for archaeogeophysicists due in part to the fact that data can be collected and processed rapidly and efficiently, and when conditions are right due to the properties of specific soils, magnetometers and gradiometers have proven useful in locating negative relief features such as pits and post holes as well as thermally-altered features such as fire hearths and burned structures (Gaffney et al. 2000; Kvamme 2006b).

Magnetometers and gradiometers record the minute fluctuations that sediments and objects have on the earth's magnetic field. This is known as induced magnetism because the object does not maintain its own magnetic field. If the effects of this induced magnetism are strong enough compared to the magnetism of the surrounding soil matrix, even small pit features or post holes can be identified or resolved in the geophysical data along with the larger-sized features (i.e., structures). A second type of magnetism called remnant magnetism is created when an object maintains its own magnetic field. In prehistoric archaeological examples, this occurs when objects are thermally altered, thus creating a magnetic state called thermoremanent magnetism (Kvamme 2006b:207). The properties of the specific magnetometer used in the current study—a Bartington 601-2 Fluxgate Gradiometer—is discussed in detail by Bartington and Chapman (2004).

Electromagnetic Induction

Conductivity surveys measure the ability to conduct an electric current (Clay 2006:79). This measurement is the theoretical inverse to resistivity; however, measuring conductivity entails a much more complex set of procedures than does resistivity (Bevan 1998:51; Clay 2006:79). Conductivity instruments differ greatly from resistivity instruments in that no probes are inserted into the earth. The conductivity has a set of wire coils, one transmitting a low frequency signal and one receiving the signal. The conductivity meter is simply carried above the earth surface and data are logged automatically, making conductivity surveys time and labor efficient (although not as efficient as the magnetometer for geophysical surveys).

Conductivity meters can resolve data at different depths by changing the separation of the transmission and receiving coil and by transmitting its signal at different frequencies. Some instruments allow for these variables to be changed and others, like the Geonics EM38—the most widespread conductivity meter used in American archaeology—are not adjustable. The Geonics EM38B was employed for both the magnetic conductivity and magnetic susceptibility (see below) geophysical survey at the La Villa Rivera/Marian Hall Complex property. The EM38B will measure conductivity to approximately 1.5 m below the surface when set in the vertical dipole mode (Ernenwein 2008:133).

Conductivity has proven to be a useful tool at different scales in landscape archaeology. Berle Clay's (2006) work at the Hollywood site in Northern Mississippi

demonstrates conductivity's ability to obtain detailed information about prehistoric Native American architecture by producing results that appear similar to those produced by magnetometer surveys. Conyers et al (2008) have demonstrated a much more broad scale use for conductivity by mapping large tracts of land for geomorphological features (i.e., old channels, buried point bar and levee deposits, etc.) and revealing relict meander scars in major river floodplains.

Magnetic Susceptibility

Magnetic susceptibility is a measurement of a material's ability to be magnetized (Dalan 2006:161). Changes or contrasts in the magnetic susceptibility of sediments are the results of a conversion of weakly magnetic oxides and hydroxides to more strongly magnetic forms (Dalan 2006:162). The magnetic enhancement of anthropogenic soils can be caused by burning episodes (both natural and human-caused) as well as organic and inorganic pedogenic processes (Dalan 2006:162-163).

Magnetic susceptibility instruments differ from magnetometers in that they only measure fields resulting from induced magnetism, as compared to a magnetometer that records the net effect of induced and remnant magnetism (Dalan 2006:162; Kvamme 2006b:207-210). The differences between these two instruments produce data sets that are both complementary and unique. They are complementary in that magnetic susceptibility data can aid in the interpretation of magnetometer data (Dalan 2006:162-163), and magnetic susceptibility data is unique in that it can be used to address entirely different research questions, such as tracking broad magnetic changes across the landscape (David 1995:20).

Magnetic susceptibility has the potential to, like magnetic conductivity, produce archaeogeophysical results that are quite similar in appearance and information content to that obtained by magnetometer surveys. One of the best examples of this is from the Tom Jones site (3HE40), a 14^{th}-15^{th} century Caddo mound center in southwestern Arkansas (Dalan 2006:182 and Figure 8.9). Dalan has repeatedly demonstrated magnetic susceptibility's utility in both soil characterization and site formation issues (Dalan and Banerjee 1998; Dalan 2006, 2008).

Ground Penetrating Radar (GPR)

GPR is an active, non-invasive technique that uses a shielded surface antenna to transmit pulses of radar energy, generally high-frequency electromagnetic (EM) waves, that reflect off of buried objects, features, or geological bedding contacts and are detected using a receiving antenna (Conyers 2004a:23-28). The waves detected by the receiving antenna are recorded in nano seconds (ns), which reflect the two-way travel time of the radar energy. Fairly accurate approximations of depth of recorded anomalies can be determined through velocity analysis (Conyers and Lucius 1996).

While GPR is one of the more widely used techniques in archaeological geophysics, its success, like that of the other archaeological geophysics techniques, is largely based on such site conditions as soil type, sediment mineralogy, and moisture content (Conyers 2004a; Kvamme 2003). For example, ideal soil types for GPR include dry homogenous soils with minimal clay. On the other extreme, radar energy will become attenuated more quickly in more conductive mediums such as clay and poorly drained soils, or in mediums with high magnetic permeability (Conyers 2004a).

Field Methods

Field methods for archaeological geophysics vary in detail from technique to technique, but there are several factors that are consistent with all techniques. The density of the dataset is controlled by two factors: (1) traverse interval—the distance between the passes the instrument makes as it is passed back and forth across the collection area; and (2) sample interval—the distance between readings the instrument records as it passes along each traverse. There are standard starting points for these settings, but ultimately this depends on many factors, including the size and depth of the archaeological targets, the nature of the sediment matrix, land use of the collection area, duration of the survey, as well as the investigative scope of the overall project research design. Table 1 lists the specific settings that were used for each geophysical instrument in La Villa Rivera/Marian Hall Complex survey.

TABLE 1. EQUIPMENT USED IN THE LA VILLA RIVERA/MARIAN HALL COMPLEX GEOPHYSICAL SURVEY

Instrument	Sample Density	Area Surveyed
Bartington 601-2 Fluxgate Gradiometer	0.5 m Traverse Interval:00.125 m Sample Interval	2,650 m²
Geonics EM38B – In Phase (Magnetic Susceptibility)	1m Traverse Interval:00.25 m Sample Interval	4,070 m²
Geonics EM38B – Quadrature Phase (Conductivity)	1m Traverse Interval:00.25 m Sample Interval	4,070 m²
GSSI Sir 3000 GPR with a 400 MHz Antenna	0.5m Traverse Interval0	2,725 m²

The survey was broken up into five collection areas that were in turn broken into sub-collection areas (Figure 1 and Table 2). During the time of geophysical data collection, most of the area to be surveyed was in parking lots that were in use. The survey was divided into these separate collection areas by the Drury Southwest Inc. staff due to scheduling issues regarding the building tenant's access to the parking areas. The parking areas directly adjacent to the area being collected remained in use throughout the duration of the geophysical data collection.

Instrument selection for each survey area was based on a number of factors. The primary concern was based on the targeted archaeological features. The project scope of work (Moore 2008) called for a large area magnetometer survey with a follow-up focused GPR survey to target areas of potential interest identified during the magnetometer survey. Due to noise caused by typical urban interference (such as buried pipes, electric lines, and ferrous objects), magnetometers are often hindered from recording subtle signatures such as those that are often associated with buried archaeological features. Due to this possibility, AGA added the use of an Electromagnetic Induction Meter (EM) as a backup technology in case the magnetometer data was not sufficient to fulfill the project's research objectives. EM produces two datasets: conductivity and magnetic susceptibility, and as previously mentioned, both have been used with great success in locating buried archaeological deposits and features.

The specific instrument selections for each area were based on using the magnetometer or the EM (or both) with the intent of locating areas of potential archaeological interest. When this was accomplished, a GPR survey was then performed. The one exception to this was area 3B (see Figure 1). Area 3B was collected only with GPR due to the high potential of archaeological deposits associated with those detected in Area 3 (discussed below), as well as the over-abundance of buried metal adjacent to the collection area (reinforced concrete, parking pylons, metal drains, and parked cars).

A 10 x 10 m grid was established in each collection area using a Sokkia Set 6E Total Data Station. "T" marks were painted onto the asphalt using florescent orange paint and small blazes were marked every 2 m along the north and south sides of the grids. During geophysical data collection, plastic cones were placed on the 2 m marks to guide the survey.

TABLE 2. SURVEY AREAS.

Survey Area	Size	Data Collected
Area 1A	800 m^2	Magnetometer
Area 1B	520 m^2	Magnetic Susceptibility Conductivity
Area 2	900 m^2	Magnetometer Magnetic Susceptibility Conductivity Ground Penetrating Radar

Survey Area	Size	Data Collected
Area 3	0.5m Traverse Interval __m^2	Magnetic Susceptibility Conductivity Ground Penetrating Radar
Area 3B	425 m^2	Ground Penetrating Radar
Area 4	900 $m^2$0	Magnetic Susceptibility Conductivity
Area 5A	100 m^2	Magnetometer Magnetic Susceptibility Conductivity
Area 5B	450 m^2	
Area 5C	400 m^2	

Figure 1. Collection Areas at La Villa Rivera/Marian Hall Complex.

Survey Markers

Survey markers (nails) were placed at five locations (Table 3) in the areas where buried archaeological features were located (Areas 2 and 3). An RTK GPS base station was placed on the Office of Archaeological Studies field survey marker #5. An accurate location could not be established using the UTM data provided. The point was established by using the WGS84 Datum Zone 13N and averaging 400 WAAS-enabled (sub-meter) GPS positions. All survey areas were then mapped using the RTK GPS from this base position.

Table 3. Survey Markers.

Location	Easting	Northing
Southwest Corner of Survey Area 2	415367.639	3949544.4474

Location	Easting	Northing
Northwest Corner of Survey Area 2. The same line extends across the north side of Survey Area 3	415376.2036	3949573.1031
Southwest Corner of Survey Area 3	415333.0607	3949533.8339
Southeast Corner of Survey Area 3	415352.2352	3949528.1717
10 m East of the Northeast Corner of Survey Area 3. The same line extends across the north side of Survey Area 2	415347.4247	3949581.6271

Data Processing

The data collection techniques that were used in the Villa Rivera/Marian Hall Complex geophysical survey have dramatically different workflows for the post-collection data processing. All of the geophysical data must be processed and filtered to remove extraneous false readings (spikes and drop-outs). Processing also levels the datasets so adjacent collection grids can be combined into a single image with no "grid lines." Datasets also need to be processed to enhance the visibility of any target features through statistical manipulation of the recorded data as well as through image processing of the image file output.

The general goal of the data processing is to lessen the effects of background "noise" and to enhance the quality of the "signal" or "target" in the geophysical data. In field geophysics in general, and archaeogeophysics in particular, the term noise is used to discuss any return that is not a direct result of the object under investigation, this being referred to as the "target" or "signal." Hence, in some cases what is discussed as noise can in another case become the signal or target (Milsom 2005:13-14). The general approach to data processing follows Kvamme (2006c:236), namely to computer process the geophysical data to identify regular and culturally interpretable patterns using pattern recognition principles: "In general, anomalies exhibiting regular geometric shapes (lines, circles, squares, rectangles) tend to be of human origin" (Kvamme 2006c:236). After each processing step, the results should be closely compared to their previous processed state to assure that data manipulation is not in fact decreasing the clarity and quality of the data, and thus avoiding the creation of processed images that are primarily products of the data processing itself.

EM and Magnetometer Data Processing

The EM and Magnetometer data sets collected at La Villa Rivera/Marian Hall did not require intense 2D filtering. The only consistent processing step that was conducted was clipping. Clipping replaces all values outside a specified minimum and maximum range. These minimum and maximum values are specified in either absolute values or ± Standard Deviations (SD). This process is used to remove extreme data point values and aids in normalizing the histogram of the data. Archaeological details are subtle, and having a normal distribution of data allows the fine detail to show through with clarity. The EM data sets were collected at four readings per m with 1 m traverses (0.25 x 1.0 m). This data was interpolated along both the x and y axis resulting in 8 readings per m and 50 cm traverses (0.125 x 0.5 m) (Table 4).

TABLE 4. EM AND MAGNETOMETER DATA PROCESSING.

Technique	Processing Step	Values Used
Area 1A - Magnetometer	Clip Clip	1 Standard Deviation (SD) 1 SD
Area 1B - Conductivity	Interpolate Clip	0.125 x 0.5 m 2 SD
Area 1B - Magnetic Susceptibility	Interpolate Clip	0.125 x 0.5 m 1 SD
Area 2 - Magnetometer	Clip Clip	1 SD 1 SD
Area 2 - Conductivity	Interpolate	0.125 x 0.5 m
Area 2 - Magnetic Susceptibility	Interpolate	0.125 x 0.5 m
Area 3 - Conductivity	Interpolate Clip	0.125 x 0.5 m 2 SD
Area 3 - Magnetic Susceptibility	Interpolate Clip	0.125 x 0.5 m 3 SD
Area 4 - Conductivity	Interpolate Clip	0.125 x 0.5 m 1 SD
Area 4 - Magnetic Susceptibility	Interpolate Clip	0.125 x 0.5 m 1 SD

Technique	Processing Step	Values Used
Area 5A - Magnetometer	Clip	2 SD
	Clip	2 SD
Area 5A - Conductivity	Interpolate	0.125 x 0.5 m
	Clip	2 SD
Area 5A - Magnetic Susceptibility	Interpolate	0.125 x 0.5 m
	Clip	1 SD
Area 5B - Magnetometer	Clip	1 SD
	Clip	1 SD
	Clip	2 SD
Area 5B - Conductivity	Interpolate	0.125 x 0.5 m
	Clip	2 SD
	Clip	2 SD
Area 5B - Magnetic Susceptibility	Interpolate	0.125 x 0.5 m
	Clip	2 SD
	Clip	2 SD
Area 5C - Magnetometer	Clip	1 SD
	Clip	1 SD
	Clip	1 SD
Area 5C - Conductivity	Interpolate	0.125 x 0.5 m
	Clip	1 SD
Area 5C - Magnetic Susceptibility	Interpolate	0.125 x 0.5 m
	Clip	2 SD

GPR Data Processing

The initial data processing for the GPR data involved the generation of amplitude slice-maps (Conyers 2004a). Amplitude slice-maps are a three-dimensional tool for viewing differences in reflected amplitudes across a given surface at various depths. Reflected radar amplitudes are of archaeological interest because they measure the degree of physical and chemical differences in the buried materials. Strong, or high amplitude, reflections often indicate denser buried materials, such as building foundations. Amplitude slice-maps are generated through the comparison of reflected amplitudes between raw vertical profiles. In this method, amplitude variations recorded as digital values are analyzed at each location in a grid where there is a reflection recorded. The amplitudes of all traces are compared to the amplitudes of all nearby traces along that profile. This database can then be "sliced" horizontally and displayed to show the variation

in reflection amplitudes at a sequence of depths in the ground. The produced result is a map that shows amplitudes in map view, but also with depth. Often when this is done, changes in the soil related to disturbances such as burials or buried features become apparent, making them visible to the human eye.

From the original .dzt files (raw data), a series of image files were created for cross-referencing to the produced amplitude slice-maps. Two-dimensional reflection profiles are analyzed to determine the validity of the features identified on the amplitude slice-maps. The reflection profiles show the geometry of the reflections, which can provide insights into whether the radar energy is reflecting from a flat layer (seen as a distinct band on profile) versus a single object (seen as a hyperbola in profile). Using these profiles can confirm or refute ideas about the nature of buried materials seen in the three-dimensional slice maps.

Archaeo-Surveyor 2.3.4.0 was used for all 2D filtering for the magnetometer and EM data sets. GPR data was processed using GPR Slice 5.0. Image files were exported from both ArchaeoSurveyor and GPR Slice and imported into ArcGIS 9.2 for geo-referencing. Vector polygon shape files of data interpretations were created in ArcGIS9.2. All data was exported into Google Earth format (kmz) using Arc2Earth 2.0. All images overlaid onto Google Earth air photos have an unknown absolute accuracy. For locating geophysical anomalies on the ground field crews should use the grid markers placed in the field by AGA (see Table 3).

Geophysical Data Interpretation

The geophysical survey at La Villa Rivera/Marian Hall Complex was successful in locating several anomalies of archaeological significance as well as several that are the results of buried utilities (Figure 2). These anomalies, as well as the instruments or groups of instruments that was used to locate and map them, are discussed in more detail below.

Figure 2. Anomalies Recorded at La Villa Rivera/Marian Hall Complex.

Magnetometry

The magnetometer was used in Areas 1, 2, and 5A-C (Figures 3-6). The magnetometer data from La Villa Rivera/Marian Hall was considerably hindered by the presence of both above ground and below ground large ferrous materials. The gradiometer was set to its less sensitive setting (1000 nT setting) in order to accommodate the larger readings from these ferrous materials. In each collection area were located unknown types of underground utilities.

One area of possible archaeological interest was located in collection Area 5C (Figure 5 and 6). in the middle of the eastern portion of this collection area there is a oval-shaped high magnetic anomaly estimated at approximately 10 m^2 in size. This area should be targeted during the excavation program that will be conducted by OAS in this area to determine the origin of this anomaly. Given the presence of buried utilities in this

general vicinity, it is quite possible that this anomaly is not archaeological in nature and is instead caused by the presence of buried utilities or previous land use practices.

Figure 3. Magnetometer Data from La Villa Rivera/Marian Hall Complex.

Figure 4. Magnetometer Data from La Villa Rivera/Marian Hall Complex

Figure 5. Magnetometer Data of Area 5C from La Villa Rivera/Marian Hall Complex.

Figure 6. Interpretation of the Magnetometer Data of Area 5C from La Villa Rivera/Marian Hall Complex.

Conductivity and Magnetic Susceptibility

Conductivity (Figures 7 and 8) and magnetic susceptibility (Figures 9 and 10) were conducted in Areas1B, 2, 3, 4, and 5A-C. These two data sets, along with the magnetometer, were useful in recording the locations of several different and unknown types of buried utilities (Figure 11 and 12). The collection areas currently covered by asphalt parking lots all contained utilities that produced signatures of varying amplitudes; they probably range from buried electric lines to buried gas lines. The grass-covered areas (5A-C) all contained buried sprinkler systems as well as other unknown types of utilities.

Both conductivity and magnetic susceptibility were successful, however, in locating the possible buried foundation in the northwest corner of collection Area 3. This foundation, which is much more legible in the GPR data and hence is discussed in more detail below, was the primary target of the geophysical survey and the subsequent

excavations that will be conducted by the OAS. The anomaly appears as a loose cluster of small circular high conductive anomalies in the conductivity dataset (Figure 8) and as a group of larger circular magnetically high anomalies in the magnetic susceptibility data (Figure 10). In the magnetic susceptibility data this area also has a slightly magnetic enhanced halo surrounding the grouping of circular magnetic high anomalies.

Figure 7. Conductivity Data from La Villa Rivera/Marian Hall Complex.

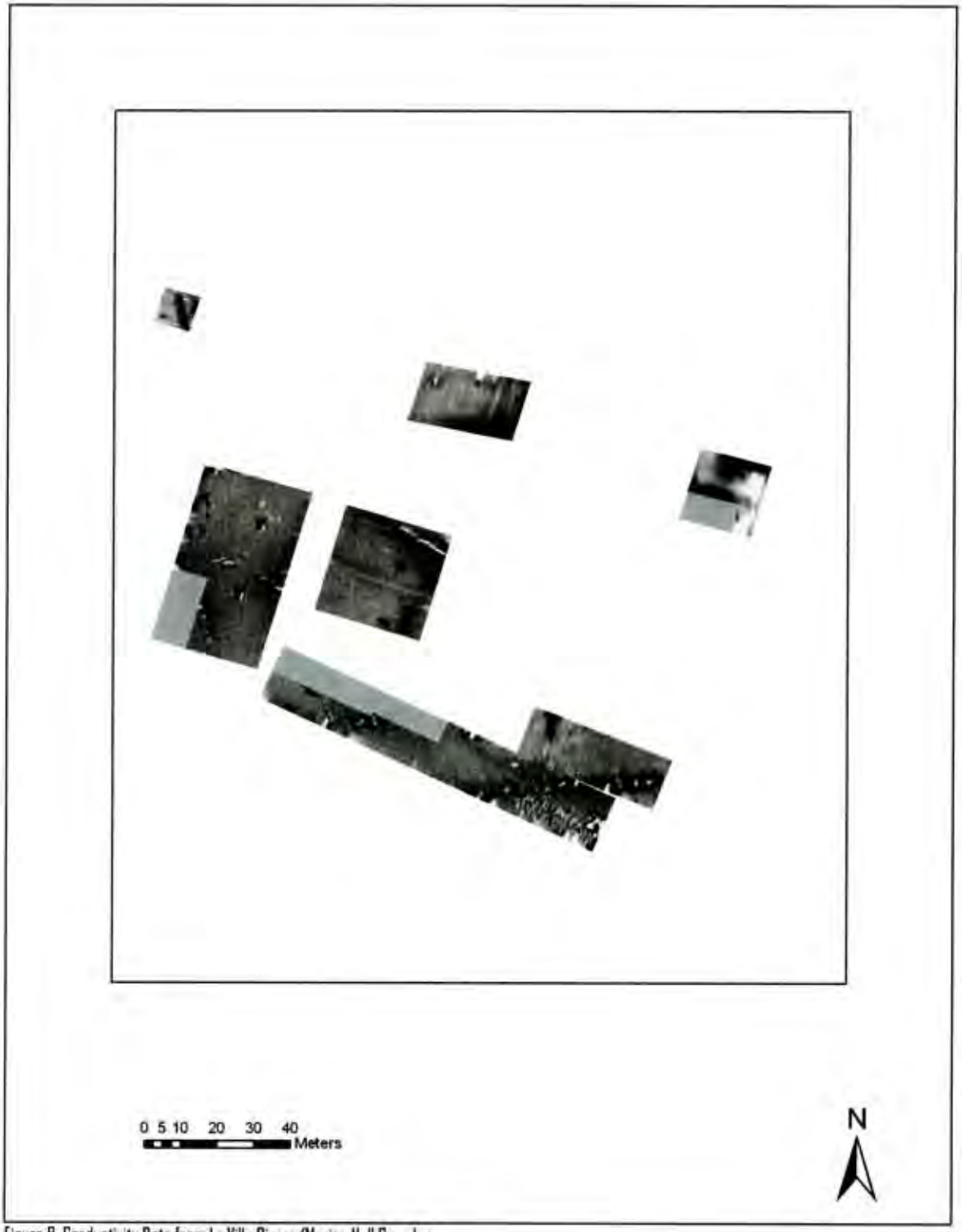

Figure 8. Conductivity Data from La Villa Rivera/Marian Hall Complex.

Figure 9. Magnetic Susceptibility Data from La Villa Rivera/Marian Hall Complex.

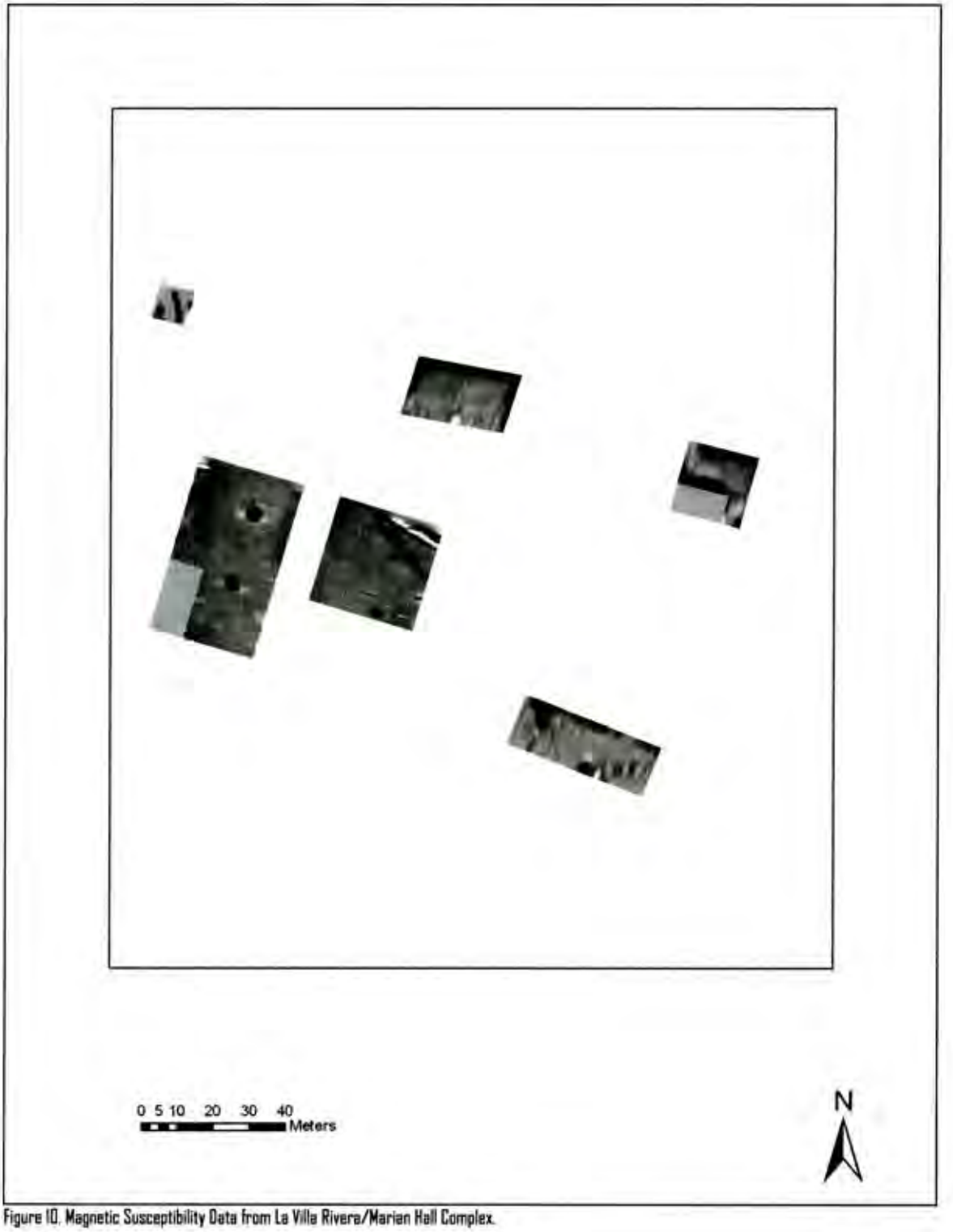

Figure 10. Magnetic Susceptibility Data from La Villa Rivera/Marian Hall Complex.

Figure II. Interpretations of the Magnetometer, Conductivity, and Magnetic Susceptibility Data from La Villa Rivera/Marian Hall Complex.

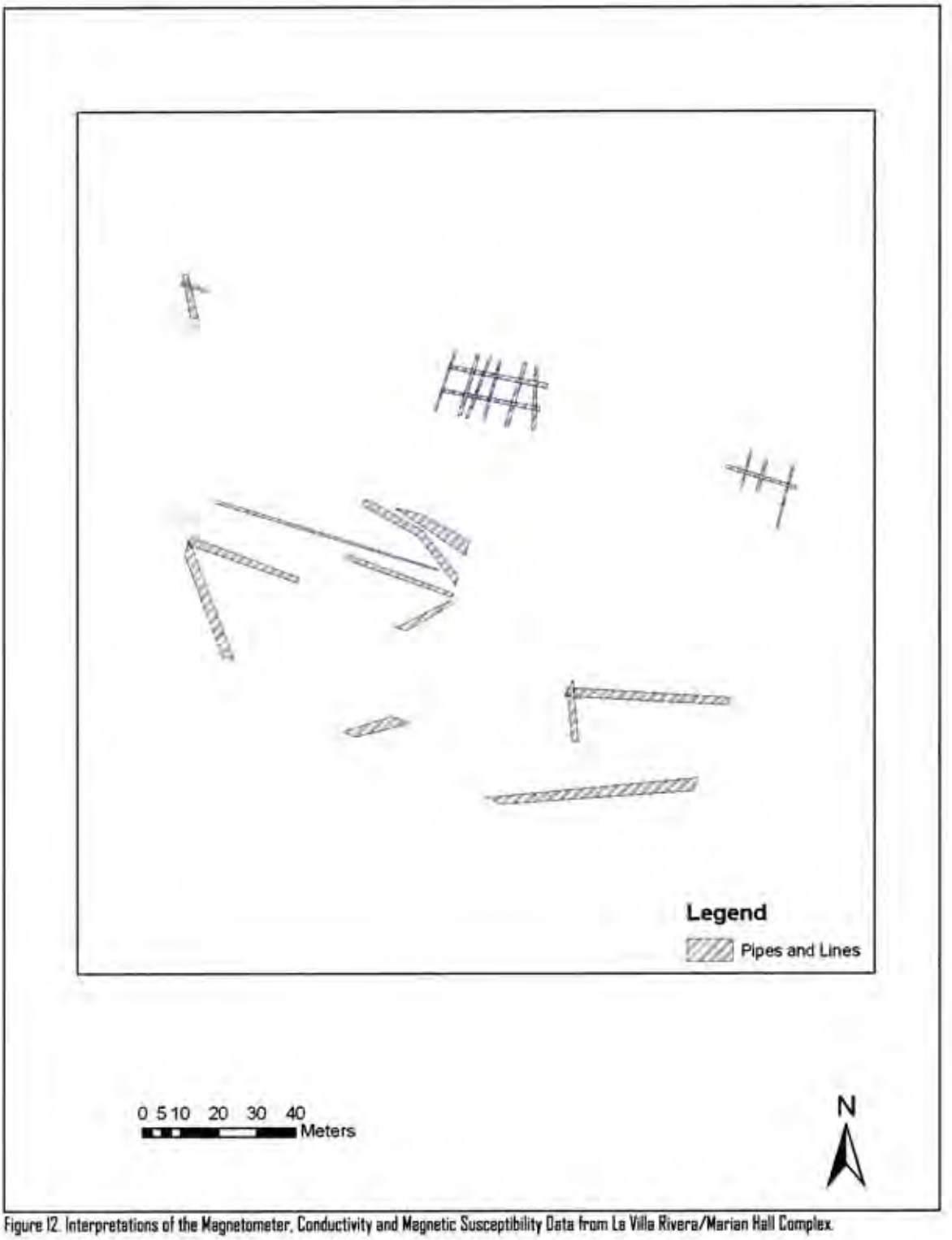

Figure 12. Interpretations of the Magnetometer, Conductivity and Magnetic Susceptibility Data from La Villa Rivera/Marian Hall Complex.

Ground Penetrating Radar

GPR was used in Areas 2, 3, and 3B (Figures 13-16). As previously noted (Conyers 2004b:4), GPR survey was quite successful in locating the remnants of several different buried foundations. Collection areas 2 and 3 both contained buried structural remains. Collection area 3 contained an additional linear anomaly that is of an unknown origin.

In the southwestern corner of collection Area 2 is the corner of a series of wall bases. These walls start around approximately 40 cm bs and extend to approximately 95 cm bs. It appears that collection Area 2 only recorded the northeast corner of this building and that it extends to the south and west of the collection area (see Figure 15).

In the southeastern corner of collection Area 3 are a series of several wall bases. These start at approximately 30 cm bs and extend to approximately 97 cm bs. The linear anomaly in the southwestern corner appears to extend beyond the GPR collection areas in both the west and southern directions (see Figure 15). These areas were not collected due to standing buildings or modern urban disturbances; however, if possible, the OAS excavation crews should investigate them.

The northwestern corner of collection Area 3 (see Figures 15 and 16) contains a solid high amplitude rectangular anomaly that starts at approximately 35 cm bs and extends to approximately 115 cm bs. This feature is in the appropriate location, depth, and geophysical signature to represent a semi-intact portion of a stone foundation.

Figure 13. GPR Data from La Villa Rivera/Marian Hall Complex.

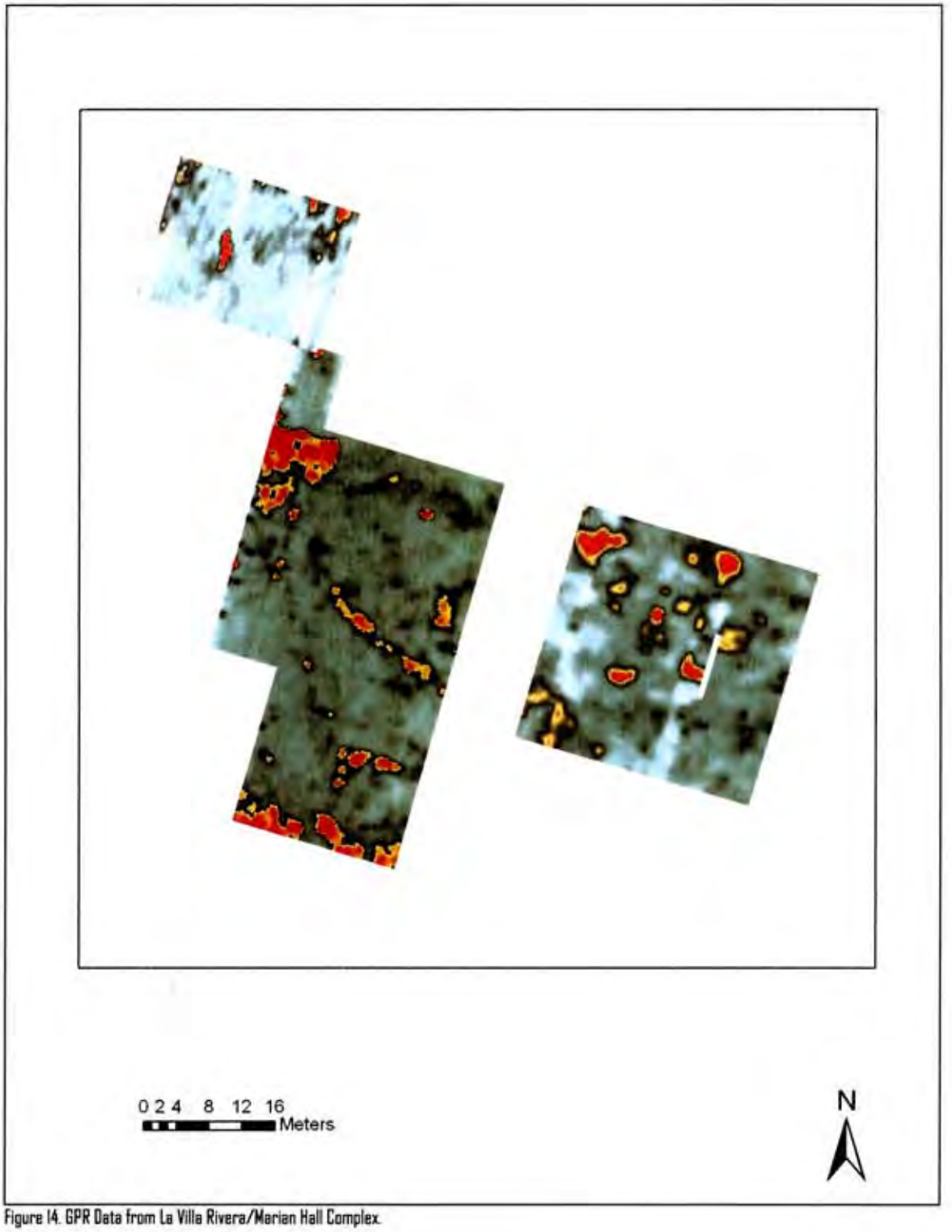

Figure 14. GPR Data from La Villa Rivera/Marian Hall Complex.

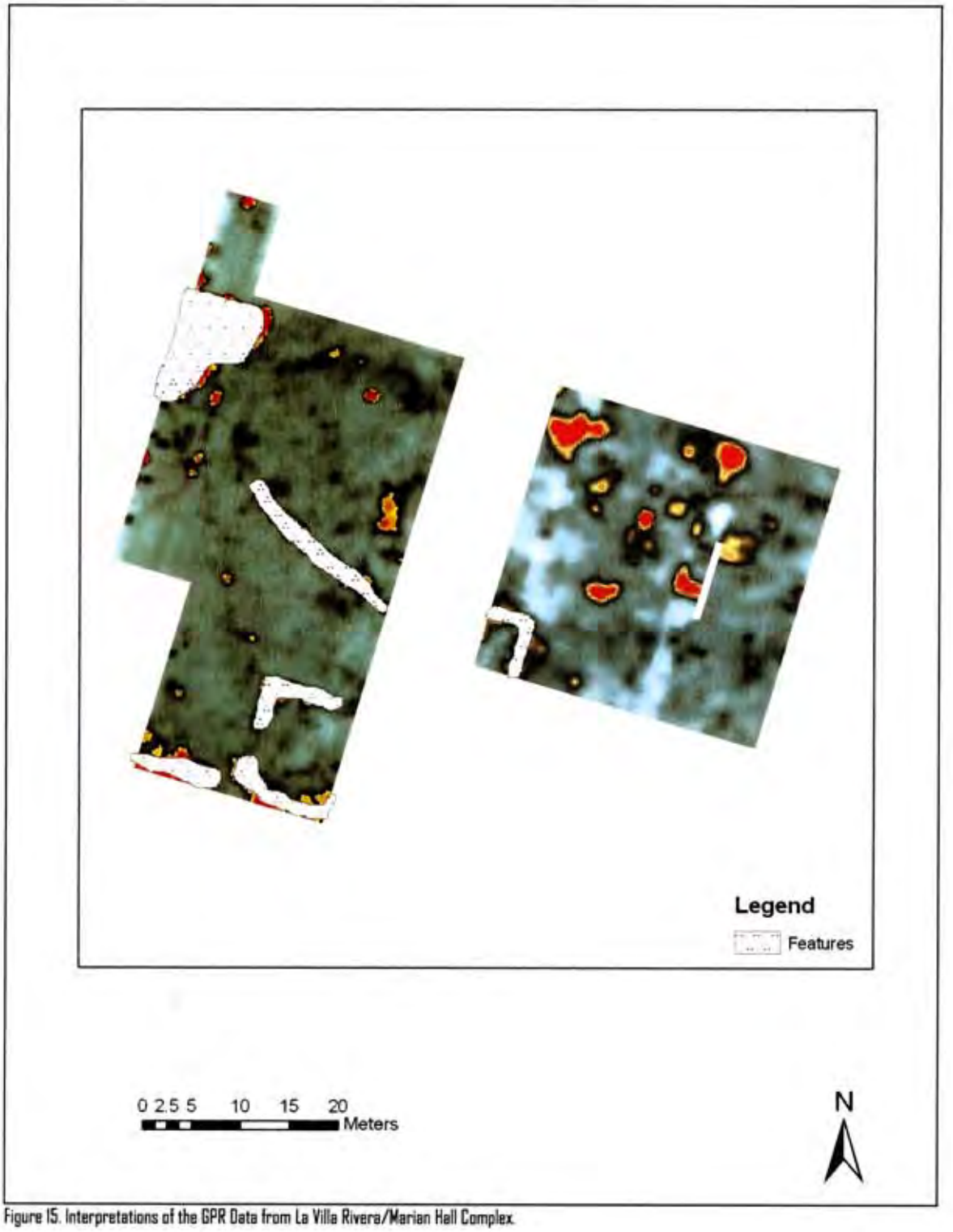

Figure 15. Interpretations of the GPR Data from La Villa Rivera/Marian Hall Complex.

Figure 16. Interpretations of the GPR Data from La Villa Rivera/Marian Hall Complex

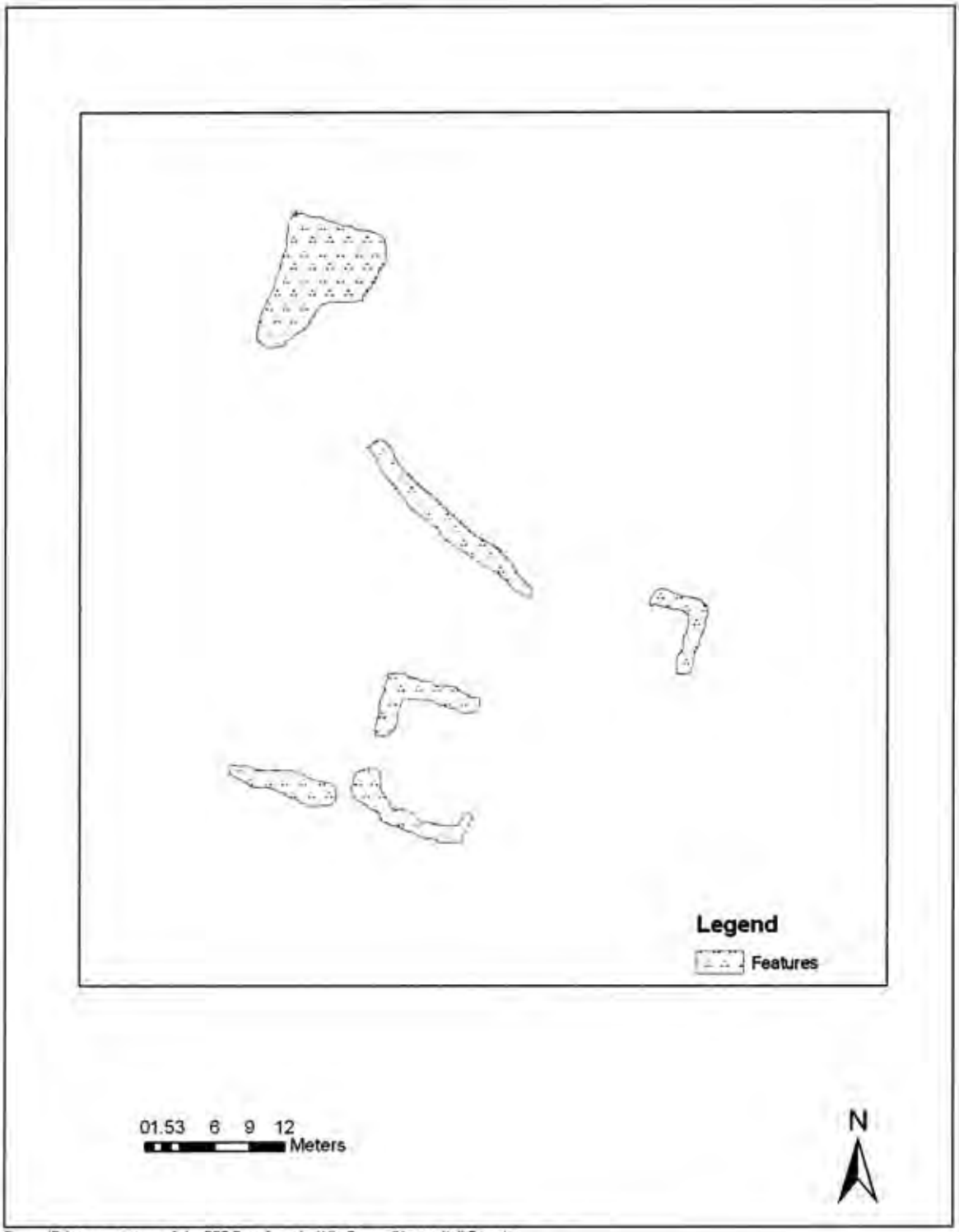

Figure 17. Interpretations of the GPR Data from La Villa Rivera/Marian Hall Complex.

Conclusions and Recommendations

Geophysical surveys with multiple instruments were successful in recording several different anomalies with both modern and historic archaeological significance in the La Villa Rivera/Marian Hall Complex project areas. The anomalies recorded with the GPR in collection Area 2 and 3 represent the most significant findings of this survey. Anomalies in this area should all be excavated by the OAS archaeological crew. The anomalies noted in these areas extend outside of the areas collected with the GPR, hence excavations in these areas should not necessarily be limited to the areas collected with GPR since these likely archaeological features are not confined to the geophysical survey areas. The magnetic anomaly noted in collection Area 5C is possibly a result of modern urban disturbance, however, this anomaly should be tested with excavations to establish its function and archaeological context. Figures 18 and 19 record the locations and interrelationships of all the geophysical anomalies recorded during this survey that are being interpreted as having archaeological significance.

The buried utilities that have been mapped in this survey have been done as a secondary objective; a utility locating specialist should verify all results pertaining to their locations. Figure 20 shows the locations and interrelationships of all the geophysical anomalies recorded during the current survey that represent either archaeological features or buried utilities.

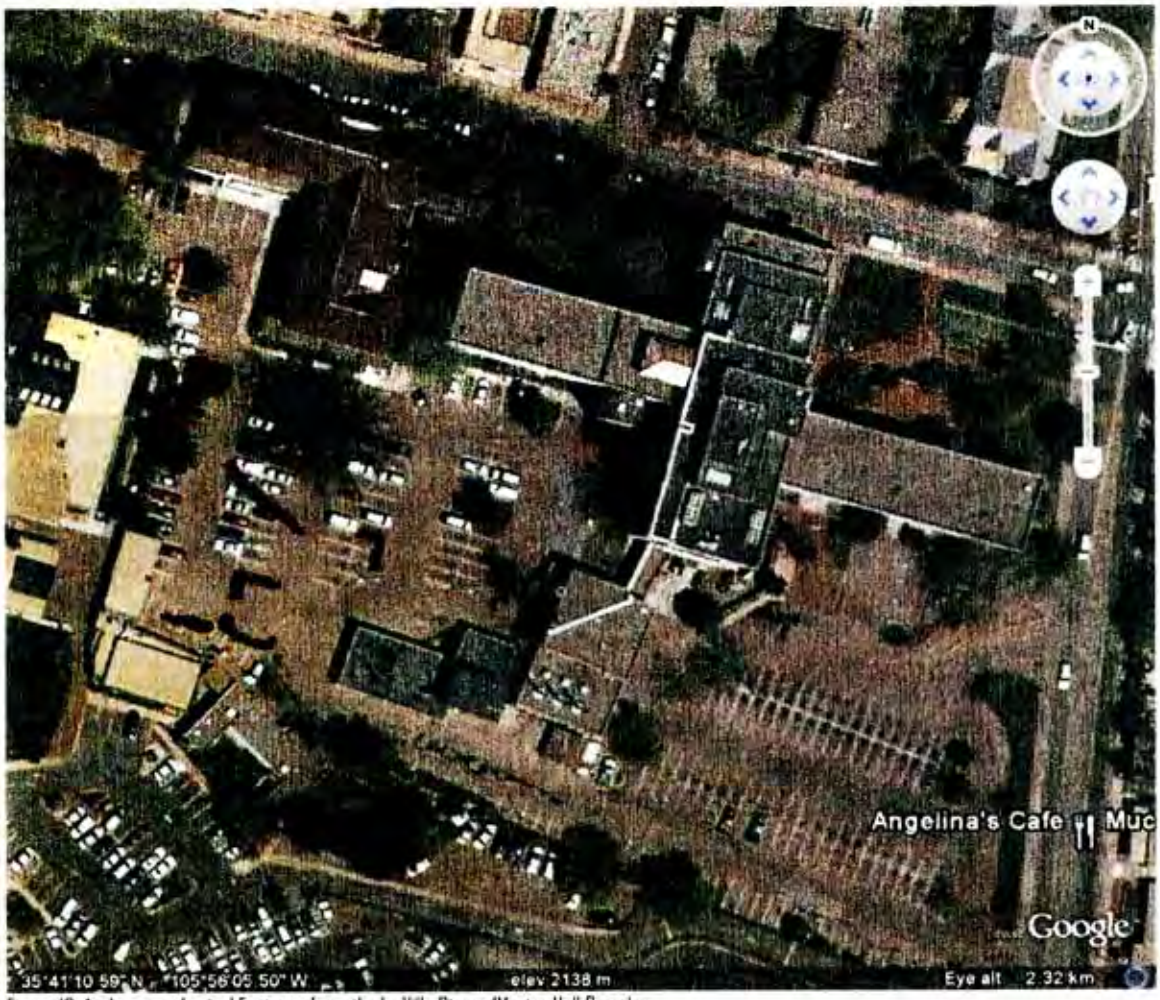

Figure 18. Archaeogeophysical Features from the La Villa Rivera/Marian Hall Complex.

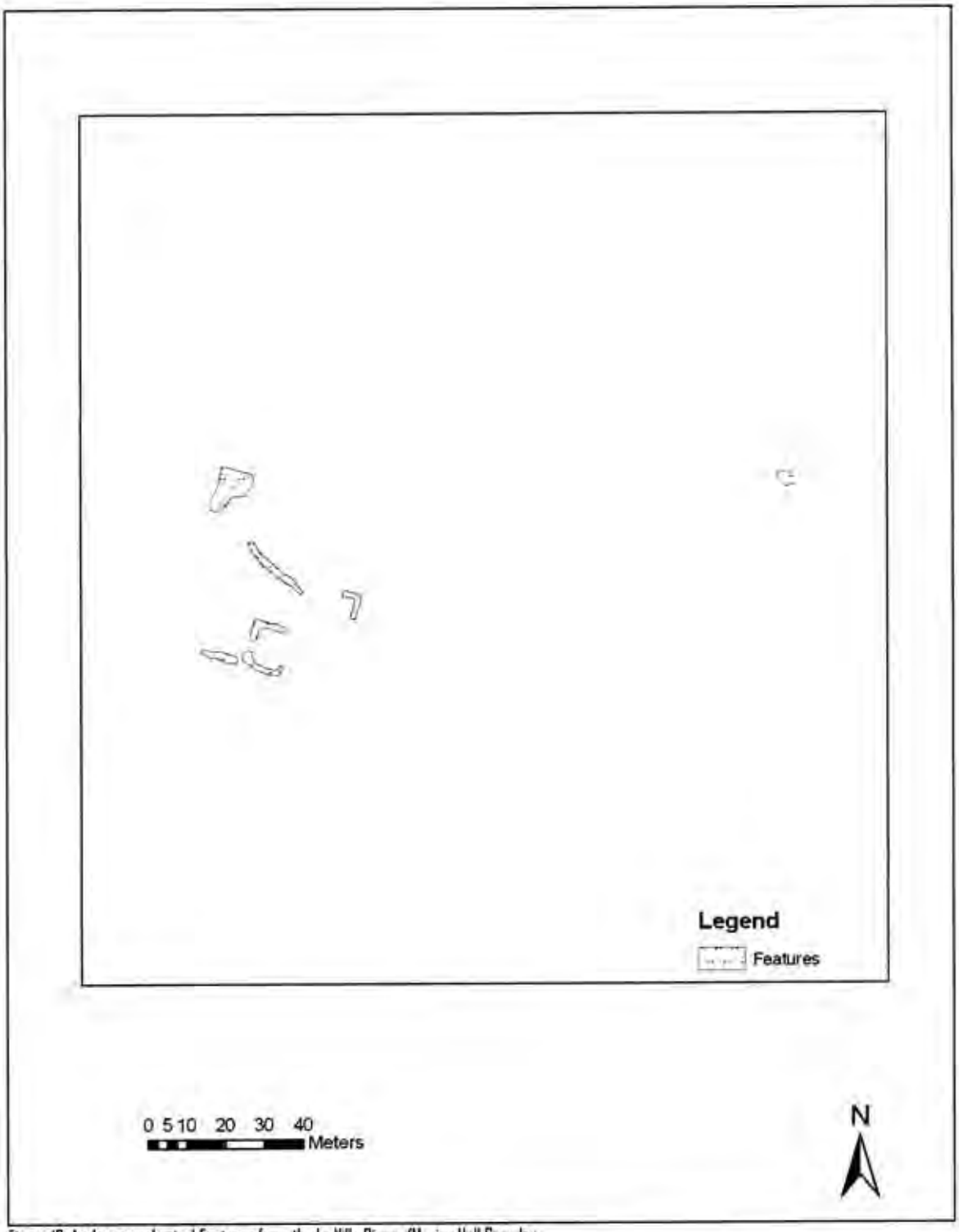

Figure 19. Archaeogeophysical Features from the La Villa Rivera/Marian Hall Complex.

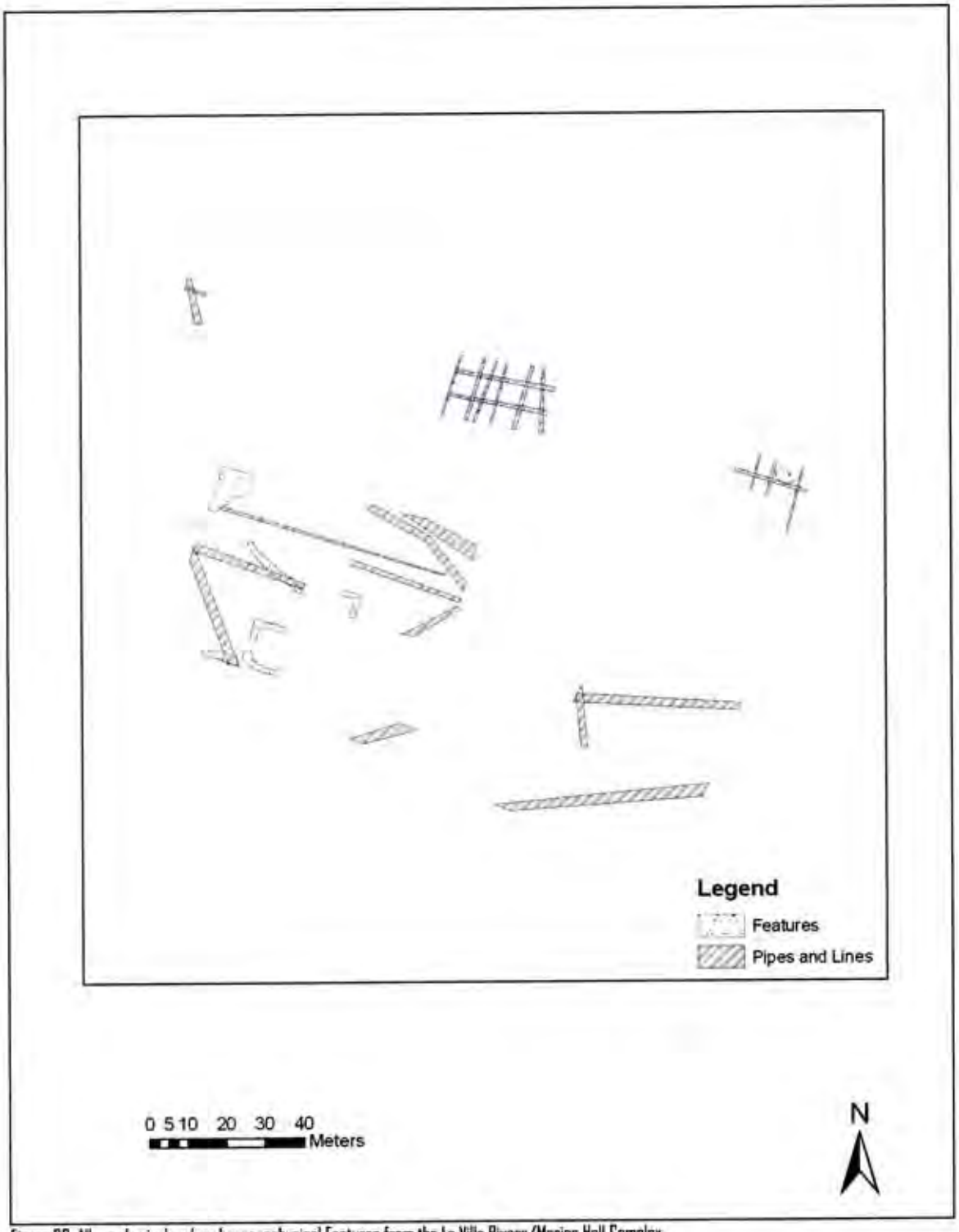

Figure 20. All geophysical and archaeogeophysical Features from the La Villa Rivera/Marian Hall Complex.

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Appendix 3: Consultation Procedures

Nancy J. Akins

On state and private land, state law (NMSA 18-6-11.2, 1989 and HPD Rule 4 NMAC 10.11) requires a permit for excavation of unmarked burials. Human remains on state or private land will be excavated under the year 2009 annual burial permit issued to the Office of Archaeological Studies. Following the permit provisions, the intent to use the annual permit, including a legal description of the location of the burial, the written authorization to remove the burial from the landowner, a description of the procedures to be implemented to identify and notify living relatives of the burials, certification that the law enforcement agency having jurisdiction in the area has been notified, a list of personnel supervising and conducting excavations of the human burial, and the NMCRIS LA Project/Activity Number for the permitted excavation will be submitted in writing to the State Historic Preservation Officer (SHPO) before excavation of the burials begins. The local law enforcement agency with jurisdiction over the area will be notified to contact the state medical investigator who will determine if the burial is of mediolegal significance. Within 45 days of completing the permitted excavation, recommendations for the disposition of human remains and funerary objects will be made to the SHPO. These recommendations will take into consideration the comments of living persons who may be related to the burial and the wishes of the landowner. The plan will provide a proposed location for reburial or approved curatorial facilities and an inventory of funerary objects and other artifacts found in association or collected in the course of excavation. The SHPO, after consulting with the State Office of Indian Affairs, will determine the appropriate disposition of the human remains and associated funerary objects. If a final report cannot be completed with a year of the completion of fieldwork, an interim report will be submitted along with an estimated completion date for a final report.

Excavation Procedures

Excavation of human burials will be consistent with current professional archaeological standards. This generally includes the identification of a burial pit and careful removal of fill within the pit. When possible, half the fill will be removed to provide a profile of the fill in relation to the pit and the burial. The pit, pit fill, burial goods, and burial will be examined and recorded in detail on an OAS burial form with special attention paid to any disturbance that may have taken place. Plans and profiles and photographs will further document the burial and associated objects. Flotation and pollen samples will be taken from all burials. Disarticulated or scattered remains will be located horizontally and vertically and photographed. Any association materials and the potential cause of disturbance or evidence of deliberate placement will be recorded in detail.

Analysis Methods

The human analysis will follow the procedures set out in *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1994). This comprehensive system collects the maximum amount of comparable information by recording the same attributes using the same standards. A series of 29 attachments and documentation on how these should be recorded include the following information.

1. An inventory sheet codes each element that makes up a skeleton. Diagrams of infant, child, and adult skeletons and anatomical parts allow for the location of observations concerning these parts. Another form codes commingled or incomplete remains.

2. Adult sex is determined by examining aspects of the pelvis and cranium. Age changes are documented on the pubic symphysis using two sets of standards: on the auricular surface of

the ilium, and through cranial suture closure.

3. For immature remains, the age-at-death is determined by scoring epiphyseal union, union of primary ossification centers, and measurements of elements.

4. Recording of dental information includes an inventory, pathologies, and cultural modifications. Each tooth is coded and visually indicated for presence and whether it is in place, unobservable, damaged, congenitally absent, or lost premortem or postmortem. Tooth development is assessed, occlusal surface wear is scored, caries are located and described, abscesses are located, and dental hypoplasias and opacities are described and located with respect to the cemento-enamel junction. Any premortem modifications are described and located.

5. The secondary dentition is measured and dental morphology scored for a number of traits.

6. Measurements are recorded for the cranium (n'35), clavicle, scapula, humerus, radius, ulna, sacrum, innominate, femur, tibia, , fibula, and calcaneus (n'46 postcranial measurements).

7. Nonmetric traits are recorded for the cranium (n'21), atlas vertebra, seventh cervical vertebra, and humerus.

8. Postmortem changes or taphonomy are recorded when appropriate. These include color, surface changes, rodent and carnivore damage, and cultural modification.

9. The paleopathology section groups observations into nine categories: abnormalities of shape, abnormalities of size, bone loss, abnormal bone formation, fractures and dislocations, porotic hyperostosis/cribra orbitalia, vertebral pathology, arthritis, and miscellaneous conditions. The element, location, and other pertinent information is recorded under each category.

10. Cultural modifications such as trepanation and artificial cranial deformation are recorded in another set of forms.

Standards (1994:174) recommends curating the following samples for future analysis on burials that will be repatriated. The middle portion of a femur midshaft (at least 100 g) that can be used for radiocarbon dating, trace element analysis (diet), stable isotope ratios (climate and diet), strontium (population movement), bone geometry (activity patterns), histomorphometry (age and health), and aspartic acid analysis (age and health). Several teeth (the upper central incisor, lower canines and premolars, and lower second molar) for histomorphometric analysis, cementum annulation (root), aspartic acid (dentin), isotope studies (enamel), and future studies of linear hypoplasias and enamel microwear patterning. Five grams of trabecular bone for DNA extraction, the middle third of a clavicle and rib six for age-at-death, health studies, and morphological age assessments. Finally, two sections of the right femur and one section each of the humerus or CT scans of both to assess the level and type of behavior. No samples will be collected without the express permission of the SHPO and landowner.

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