An Archaeological Investigation Plan for the Central Courtyard of the New Mexico Museum of Art, LA 930, Santa Fe, New Mexico

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Office of Archaeological Studies

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MNM Project No. 41.1057
General Archaeological Permit: NM-16-027-E

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Administrative Summary

At the request of the New Mexico Museum of Art (MoA), New Mexico Department of Cultural Affairs, the Office of Archaeological Studies (OAS), also of the New Mexico Department of Cultural Affairs, is investigating a project-specific excavation permit pursuant for the central courtyard of the New Mexico Museum of Art, 107 West Palace Ave., in downtown Santa Fe, New Mexico. The Museum of Art has been designated LA 930 and is listed on both the State (SR 379) and National Registers of Historic Places (NR 75001168).

Water infiltration from the courtyard into the east basement of MoA has prompted a proposed drainage modification plan for the courtyard designed by Spears Horn Architects. The modification plan calls for the replacement of existing catchment basins, drainage pipes, and junction boxes; the possible replacement of an existing frost-free faucet; and the excavation of approximately 50 sq ft (4.6 sq m) of courtyard fill to be replaced with compacted soil that will direct subsurface moisture away from the east basement wall. Drainage system replacement will occur within 14 in (0.36 m) of the modern courtyard surface, near the limit of the zone of disturbance for the existing courtyard landscaping. Existing and replacement drainage junction boxes may extend slightly deeper (18 in or 0.46 m). The existing frost-free faucet is believed to have been installed at a depth of 48 in (1.22 m). The fill excavation will be carried out to a depth of approximately 30 in (0.76 m).

Since MoA is a subdivision of the State of New Mexico, and since the project location is within an existing archaeological site (LA 930), the project is subject to the provisions of the Cultural Properties Act of 1969 (as amended). Since some project elements occur within the footprints of the existing infrastructure, and since these elements fall close to or within the depth of landscaping disturbance, monitoring is proposed for the contractor excavation of the drainage system replacements and for the possible faucet replacement (NMAC 4.10.17 Standards for Monitoring). The area of fill replacement may or may not include intact deposits, depending on the extent of the 1917 construction disturbance within the courtyard.

In order to expedite this project, this investigation plan has been prepared assuming that intact deposits will be encountered and that excavations will be phased. An initial 1 x 2 m unit will be excavated in the drainage fill area to the proposed project depth of 30 in (0.76 m). This will be followed by the expansion of the excavation unit to the full limit of the fill area, if intact deposits are present. If intact deposits are absent, OAS will monitor the remainder of the fill removal by contractors. The scope and objectives of the project conform to the guidelines contained in Section 18-6-5 (NMSA 1978) of the Cultural Properties Act (4.10.16.13 NMAC-N, January 1, 2006).

Investigations will be initiated in late August 2016. These investigations will be completed when monitoring for drainage and re-landscaping is complete (expected by mid-November 2016). Analyses and reporting will be completed by December 2017, and artifacts will be curated with the Museum of Indian Arts and Culture at that time. The total site area for LA 930 is approximately 2,370 sq m. The courtyard area to be monitored is approximately 116 sq m (4.9 percent of the total site area), and the maximum area proposed for excavation is 4.6 sq m (0.2 percent of the total site area).

MNM Project No. 41.1057
OAS New Mexico General Archaeological Investigation Permit No. NM-16-027-E

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1 ⇓ Introduction

At the request of Mary Kershaw, Director of the New Mexico Museum of Art (MoA), the Office of Archaeological Studies (OAS) is submitting a Data Recovery Plan for investigations in the courtyard of MoA (LA 930) in Santa Fe, New Mexico (Figs. 1 and 2). The proposed undertaking consists of drainage improvements to the courtyard area in an effort to correct persistent water seepage into the east basement of the Museum of Art from the central courtyard. The proposed undertaking will consist of the replacement of existing catchment basins, drainage pipes, and junction boxes; the possible replacement of an existing frost-free faucet; and the modification of soil conditions to limit water infiltration (Fig. 3). Soil modification will take place in a triangular area of the southeast corner of the courtyard and will involve the removal of approximately 50 sq ft (4.6 square meters) of courtyard fill to a planned depth of 30 in (0.76 m). The fill will be replaced with compacted soil that will direct subsurface moisture away from the east basement wall. Existing plantings within the courtyard will be removed prior to construction activities. New landscaping will be established after construction is complete.

The nature and integrity of the cultural resources within the MoA courtyard are poorly known. A surface zone has been disturbed by a century of gardening, sculpture installation, and maintenance activities. Prior to that, the 1917 construction footprint of the MoA basement may or may not have included more than the margins of the courtyard area (Fig. 4). In preparation for the 1917 MoA construction, features of the Fort Marcy Officers' Quarters were razed to an unknown depth. These officers' quarters, in turn, were constructed in the vicinity of abandoned Spanish Colonial structures; pre-colonial Native American archaeological features underlay the Spanish structures. No formally documented excavations of this potential sequence exist from the immediate area of the courtyard, but small archaeological testing and monitoring projects have documented portions of this sequence outside of the footprint of the MoA basement.

The purpose of this study will be to determine if intact archaeological deposits are present within the proposed areas of the drainage improvements and to document the nature and extent of any such resources. This project will be the eighth in a series of separate undertakings conducted at LA 930 since MoA was first constructed in 1917. This project has the potential to further develop our understanding of the evolution of the use of space on this corner of the Santa Fe Plaza. Based on the observations from outside of the MoA footprint, the maximum depth of these drainage improvements has the potential to reveal portions of the Post of Santa Fe barracks. However, the depth is less likely to reach eighteenth century foundations that may be related to buildings depicted on Jose de Urrutia's map of Santa Fe (1766). It is also unlikely that the depth will reach horizons that might include evidence of pre-Spanish Native American settlements in the area. Although OAS will be prepared to respond to any deposits dated to the seventeenth century, or earlier, that may be encountered, the focus of this plan will be practically limited to the post-Reconquest period of Santa Fe's history.

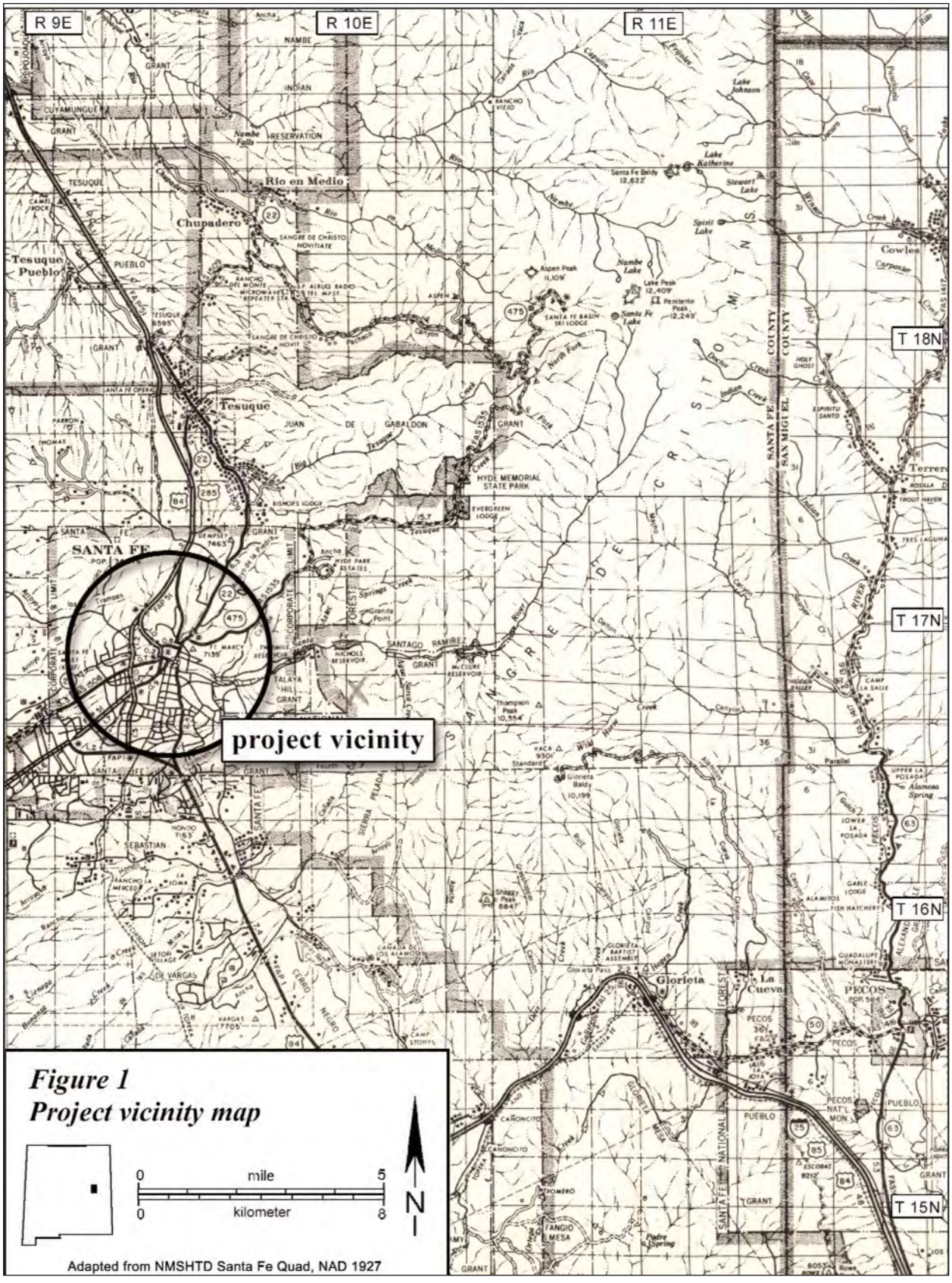

Figure 1. Project vicinity map.

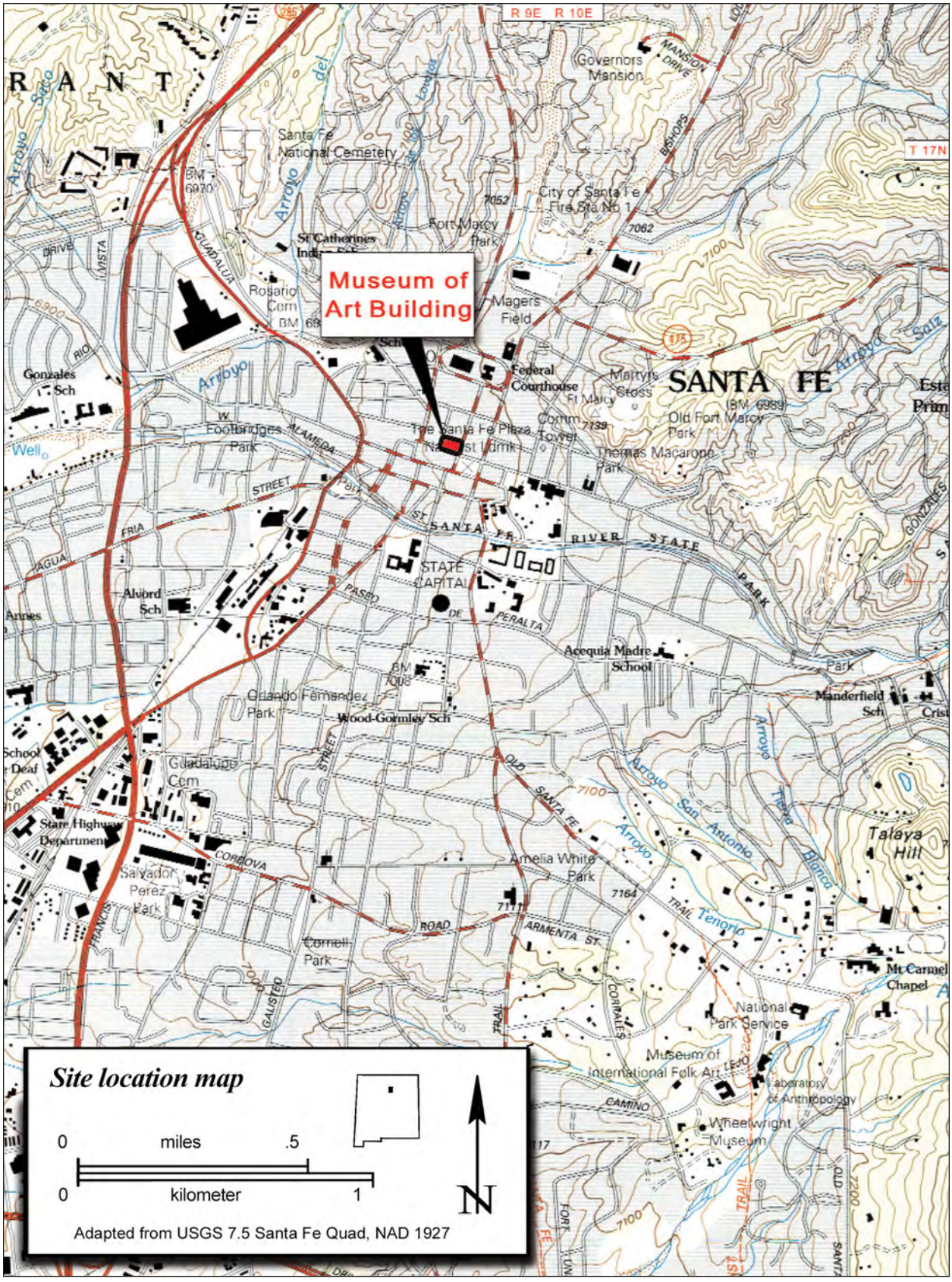

Figure 2. Location of the Museum of Art in Santa Fe, New Mexico.

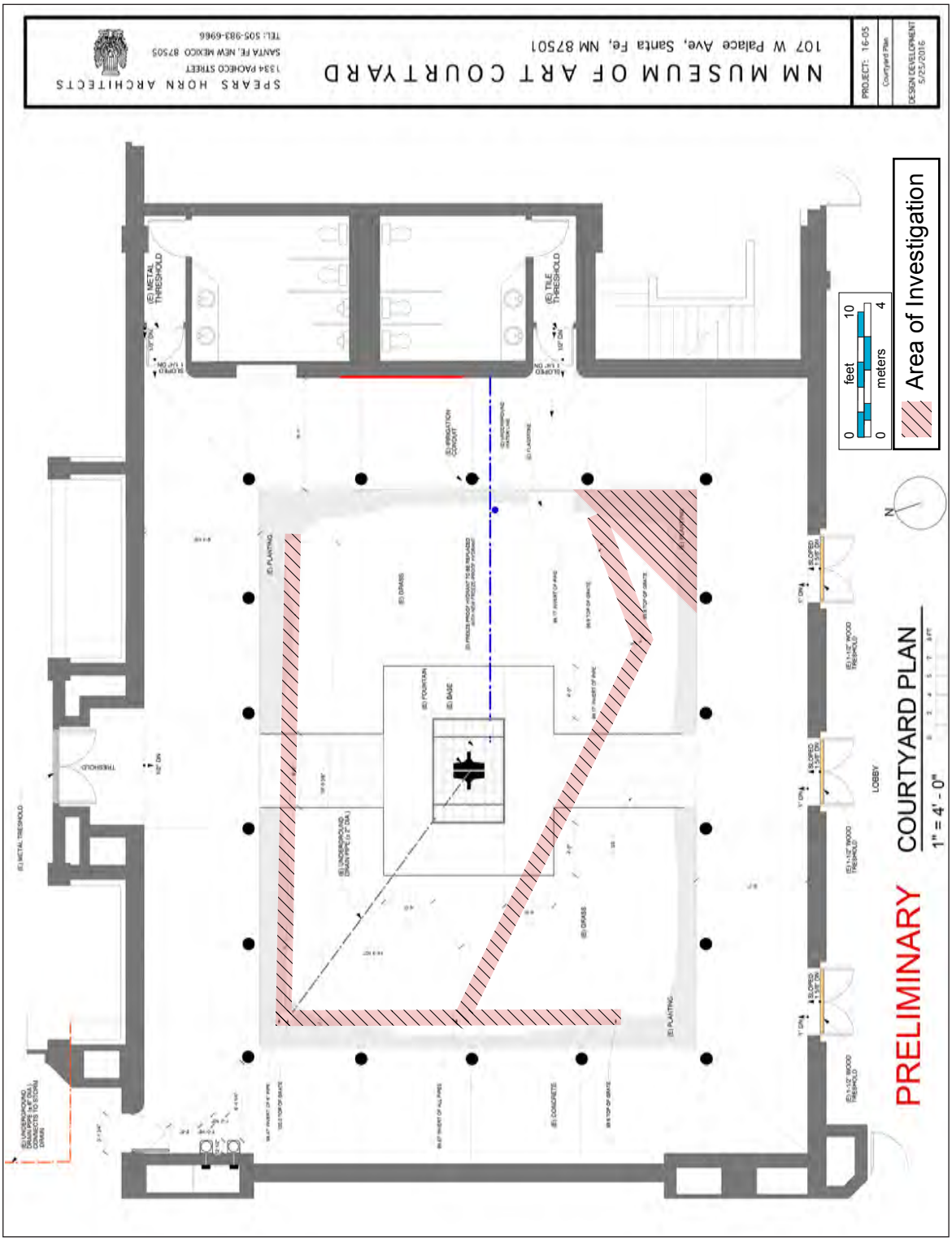

Figure 3. Proposed drainage improvements in the courtyard area of the Museum of Art.

Figure 4. View of the northwest corner of the Museum of Art courtyard during construction in 1917.

2 ⇓ Brief Historical Background

Adapted from Stephen S. Post (2013)

In August 1680, Pueblo Indians and their allies revolted against Spanish rule and the occupation of their traditional lands. The revolt was a response to 80 years of economic subjugation and social and religious oppression of the native peoples. As Spanish settlers struggled to survive, government officials coerced labor and co-opted goods from Pueblo villagers for personal gain, while missionization efforts suppressed traditional religious practices. The native peoples were displaced from their villages and homes. The Spanish settlers who survived the initial uprising collected at the *casas reales* in Santa Fe. Led by Governor Antonio de Otermin, survivors and military personnel fled south through Isleta to El Paso del Norte. Priests were killed, either at their own missions or at other missions to which sympathetic leaders had sent them (Bannon 1979:83–84; Kessell 1979:323). Descriptions of the pueblo village that incorporated and expanded the casas reales have been derived from the accounts of Don Diego de Vargas following the return of troops and settlers to Santa Fe in December 1693. De Vargas described casas reales as having been converted to a Tano-style pueblo with two plazas and kivas and believed by some to be large enough to house 1500 Indians. In 1703, Don Diego de Vargas described the pueblo complex as having "two squares and its dwellings three stories high and many of four." (Twitchell 1914).

Archaeological evidence of the Pueblo Revolt and the period immediately following is limited to the Palace of the Governors and possibly the Plaza. In 1910, Jesse Nusbaum excavated an area within the Palace in advance of a restoration and remodeling project. Nusbaum exposed room foundations and six human burials interpreted by Edgar Lee Hewett and Nusbaum as evidence of the ancestral village of Ogapogeh. It is widely accepted now that Nusbaum's finds were from the Pueblo Revolt occupation of the Palace. Unfortunately, Nusbaum's reporting is thin and further specifics are unavailable. From 1974 to 1975, C. T. Snow's excavations uncovered the foundations of four rooms, adobe floors, pueblo-style hearths, storage pits, and human burials. Based on the feature and burial superpositioning above and within seventeenth century Spanish Colonial foundations and floors, Snow surmised that these features dated to the Pueblo Revolt occupation of the Palace. Other probable Pueblo Revolt pit features were identified during the excavations preceding the construction of the New Mexico History Museum, LA 111322 (Post n.d.). Stephen C. Lentz's 2004 excavations, conducted in advance of the Plaza Stage construction, encountered a surface and artifacts that included numerous Pueblo-style projectile points and pottery interpreted as dating to the Pueblo Revolt. This is the only context outside the Palace of the Governors that might be attributed to the Pueblo Revolt. Excavations on the west side of the New Mexico Museum of Art along Sheridan Avenue yielded no features, artifacts, or deposits that could be attributed to the Pueblo Revolt (Post 2013).

With the return of the Spanish settlers, government, and religion to Santa Fe in 1693, claims to lands of former residents and their descendants were re-established. New residents were granted land within the *villa* to settle and work, and relations with Native Americans were encouraged to be less oppressive and more equitable (Kessell 2008). Houses were rebuilt. The town layout and plan were expanded, and street locations were specified, if not always honored. *Acequias*, gardens, and fields were re-dug and planted. During the eighteenth century, Santa Fe became a full-fledged city supported by a full complement of trade, agricultural activities, and economic industries that interacted with expanded settlements along the Rio Grande and in outlying communities (Bustamante 2008; Frank 2000). Santa Fe grew in all directions from the Plaza and on both sides of the Santa Fe River.

While documents are important for identifying and understanding real estate transactions, personal interactions, and town characteristics during the eighteenth century, the 1766 Jose de Urrutia map of Santa Fe is the primary source by which archaeologists and historians extrapolate and interpret Santa Fe's growth

and development (see Fig. 4). The map depicts a central core, the location of the churches and chapel, and neighborhoods defined by the side of the river they were on. For example, Barrio de Analco is shown sprawling along the south side of the river. On the north side of the river, the center of town consists of the Plaza, the *parroquia*, and the Palace of the Governors as well as military barracks and stables surrounded by small and very large homes and *placitas*, home to some of Santa Fe's wealthiest citizens (D. H. Snow, cited in Lentz and Barbour 2011). For this study, the focus will be on the area west of the Plaza and the Palace of the Governors.

The Jose de Urrutia map depicts a large placita-centered house immediately west of the Palace of the Governors, where the New Mexico Museum of Art is located today (Fig. 5). The location has been designated LA 930 based on a number of small-scale archaeological investigations of the property over the years (Post and Snow 1982; Post and Snow 1982; Hannaford 1994, 2005; Martinez 2009). Excavation and monitoring projects have revealed inconclusive architectural evidence of the eighteenth century building and a small amount of discrete deposits from this time.

Until the 1780s, the military barracks, stables, and facilities were located behind the Palace of the Governors. These buildings were in need of constant repair, maintenance, and modernizing. Presidio soldiers typically lived in homes scattered throughout town and were difficult to muster during emergencies. In order to draw the soldiers back to the Palace and presidio, a new presidio was proposed and built, in part, using funds supplied by the soldiers themselves (Moorhead 1975; Schaafsma 1982). Expansion of the presidio required that the Spanish government purchase land and four houses within the presidio's planned limits. This included the large residence described above as well as a large residence located at LA 1051, a block north of the Palace of the Governors. A map presented by Marc Simmons as a 1791 depiction of the new presidio in Santa Fe shows barracks lining the perimeter of the grounds (1990). To date, there has been no on-the-ground archaeological confirmation of the accuracy of this map. Instead, archaeology and later descriptions of the presidio describe a long, hard-to-maintain wall bounding the presidio on the east and west sides. Schaafsma's 1982 excavation for the First Interstate Building may have uncovered a partial foundation of this wall along the west side of Washington Avenue. No evidence of the wall has been found along Grant Avenue, which marks the western limit of the presidio.

Throughout the end of Spanish rule and during the 25 years of Mexican administration of Santa Fe and the surrounding region, the presidio remained a major but dilapidated fixture of the downtown core (Levine 2008). The barracks are briefly mentioned in early nineteenth century documents. Zebulon Pike, a military scout captured and returned by the Spanish mentions the wall in 1807 (Pike 1960). When the U.S. Army of the West arrived in 1846, Gen. Stephen Kearny and his troops commandeered and occupied the Palace of the Governors and presidio. Apparently, the Army of the West modified the barracks and grounds to better suit their own purposes as is indicated by a concentration of dendrochronological dates from 1846 (Post n.d.) that were recovered from a burn pit during the New Mexico History Museum excavations. There is also architectural evidence that Kearny and his troops modified the buildings behind the Palace of Governors where cobble foundations were dismantled, other foundations were subdivided, and floors in some rooms were lined with layers of cobbles (Post n.d.). While other modifications were undoubtedly carried out by the U.S. Army, archaeological evidence of those actions has not been found in other parts of the presidio.

Most germane to this study are the additions to, as well as renovation and demolition of, the presidio buildings used by the military between 1866 and 1875, when the installation's status and name changed from Fort Marcy to the Post at Santa Fe (Barbour 2011b). Major renovations and a new layout were implemented after 1866, when Lincoln Avenue was constructed at the center of Fort Marcy creating a path from the Plaza to the planned capitol building at the north end of the military reservation. Construction of the new capitol building started in 1852, but the building was not completed until 1889, by which time a capitol had been built at a different location. The 1889 capitol building was re-purposed as the Federal Courthouse. During the construction of Lincoln Avenue, the western portion of the Palace of the Governors was demolished. At the same time, the Palace's courtyard was enclosed by adobe rooms, storehouses, and water closets (Shishkin 1972). In 1870, the former presidio headquarters, located west of the Palace on the

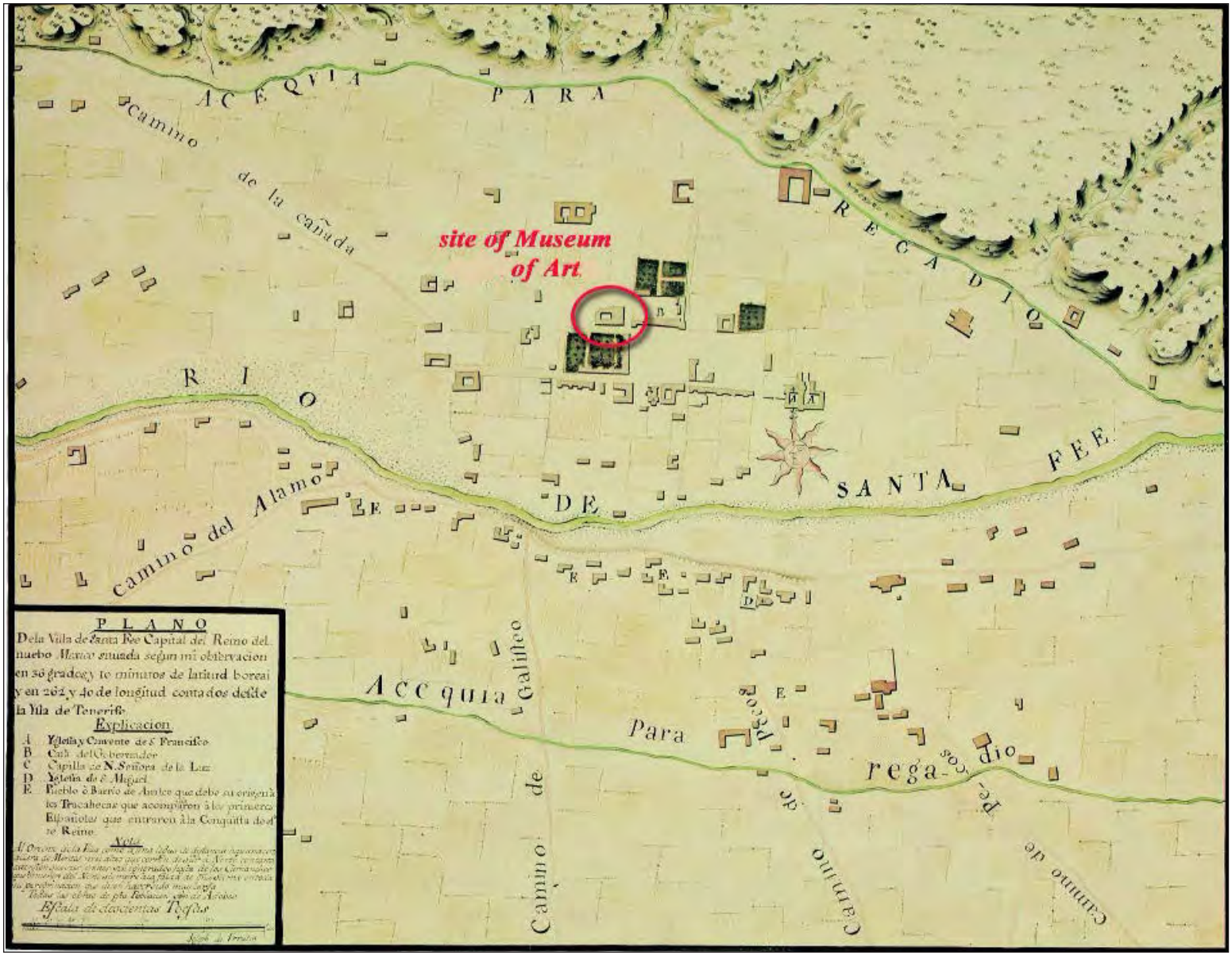

Figure 5. The 1766 Jose de Urrutia's map of Santa Fe annotated with the probable location of the Museum of Art.

modern-day site of the New Mexico Museum of Art, were demolished and construction started on the New Mexico District Headquarters Building. The presidio building is shown on Lt. Jeremy Gilmer's Plan of Santa Fe (1846–1847) (Fig. 6). This new building housed the quartermaster's office and storerooms.

Other improvements and changes to the area leading up to its designation as the Post at Santa Fe in 1875 included the addition of peaked roofs, wood trim, and porches to many of the buildings as well as the construction of a new hospital on the site of the modern-day Santa Fe Community Convention Center (Sze and Spears 1988:46; Barbour 2011:414). Over a 20 year period, 1875–1895, the function and role of the different buildings changed along with the size and mission of the post. Figure 7 shows the layout of the post in 1901, five years after the War Department began the process of decommissioning the post and sold the real estate at auction. This map is a momentary record of buildings and their function at the end of the post's time in Santa Fe. Building 19, a barrack constructed of adobe, was razed to facilitate the construction of the Museum of Art in 1917.

With the exit of the military, the business and civic leaders of Santa Fe scrambled to re-purpose the area north of the Plaza for public and commercial use. Evidence of this effort can be seen in the rapid construction of new buildings into the early 1920s. In 1908, the Palace of the Governors was given by the New Mexico Territorial Legislature to the Museum of New Mexico. Renovation and redesign followed between 1909 and 1913. The museum opened, heralding the nascent Spanish Pueblo Revival architectural style promoted by the city's cultural and civic leaders. In 1915, construction began on what was then known as the Fine Arts Museum. Other important buildings built at this time included the Elks Club and Theater, north of the Palace of the Governors on Lincoln Avenue in 1912 (Wilson 1997), and the Women's Board of Trade/Public Library, north of the Palace of Governors on Washington Avenue, in 1908. Through time, many other buildings and businesses filled the space between the Palace of the Governors and the federal building to the north. It might be said that these re-purposed lands became one of the testing and battle grounds for the new architectural styles and image favored by city leaders (Wilson 1997).

For the period between 1902 and 1935, the Sanborn Fire Insurance Maps prove a ready and useful guide to land-use changes in downtown Santa Fe. A review of map sheets depicting Sheridan Avenue is important to developing an understanding of changes within the current project area. The 1902 map (Fig. 8) shows the kindergarten building and the "lane" which would become Sheridan Avenue. The west side of the former barracks, west of the MoA courtyard, is marked "armory," while the southeast corner of the building is labeled "public library." The 1921 Sanborn Fire Insurance Map was updated to include the MoA (Fig. 9). When compared with the 1902 barrack plan, it becomes apparent that the MoA courtyard may overlap the north exterior wall of the former barracks.

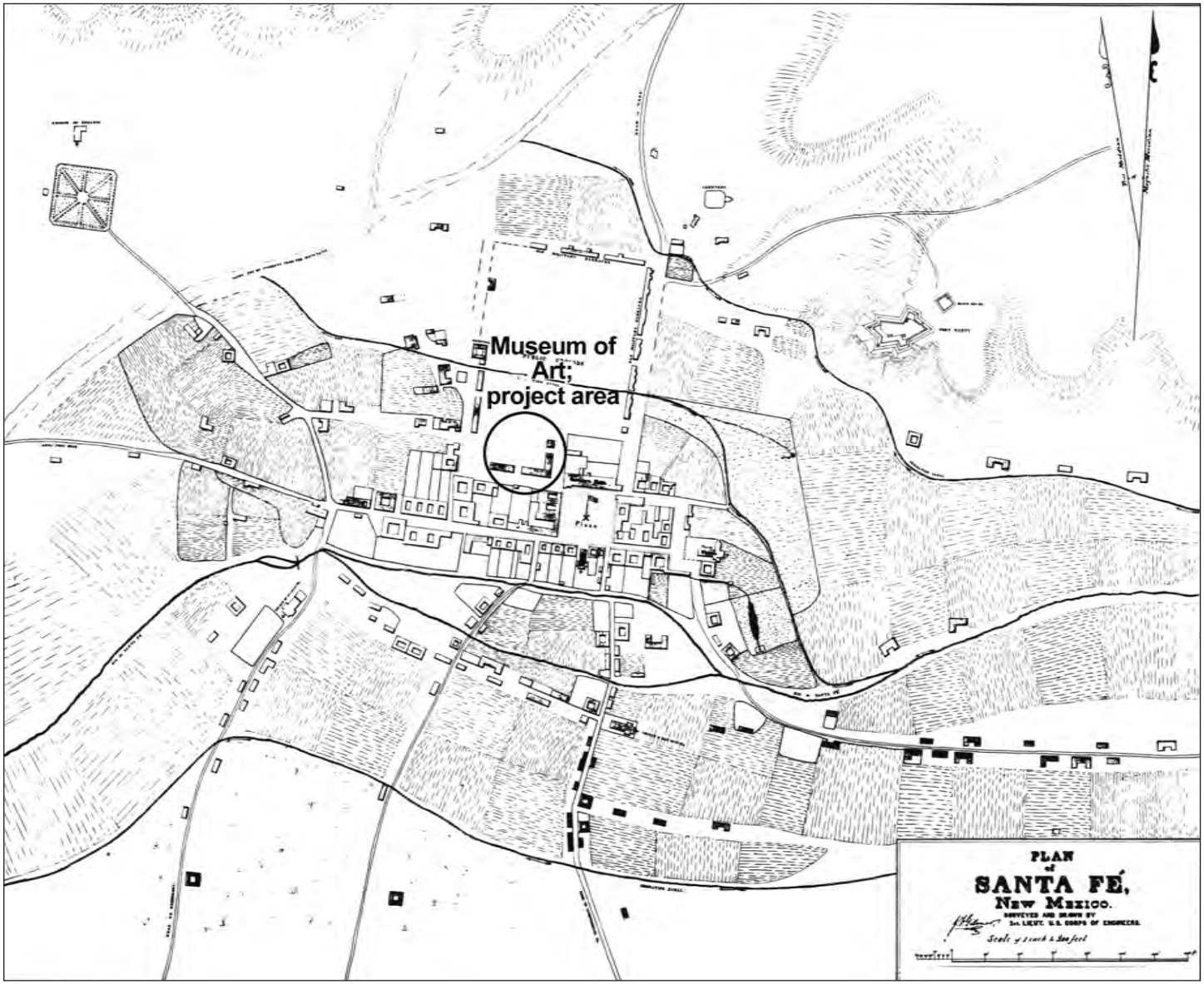

Figure 6. Lt. Jeremy F. Gilmer's Plan of Santa Fe, 1846-1847.

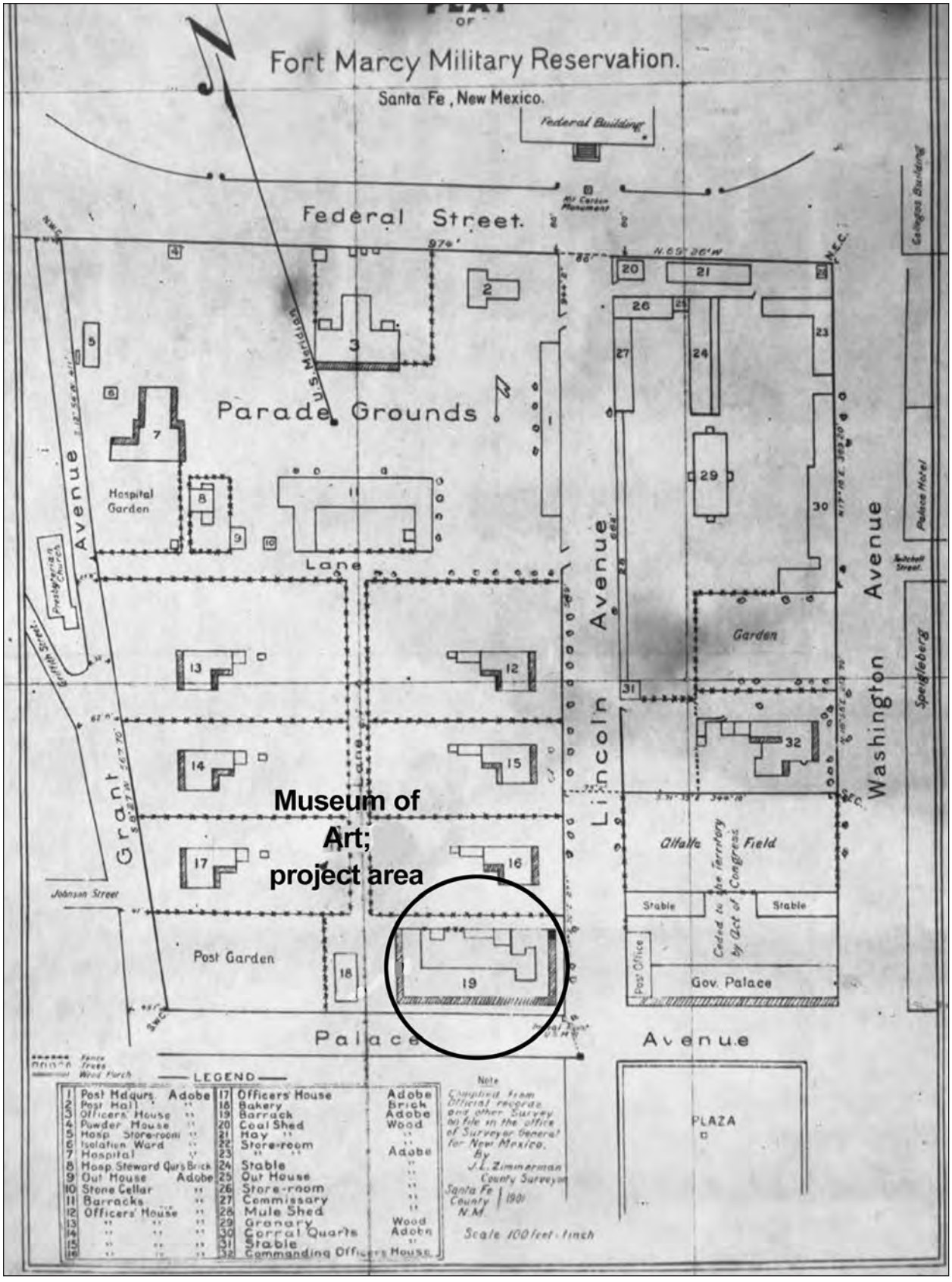

Figure 7. Plat of Fort Marcy Military Reservation.

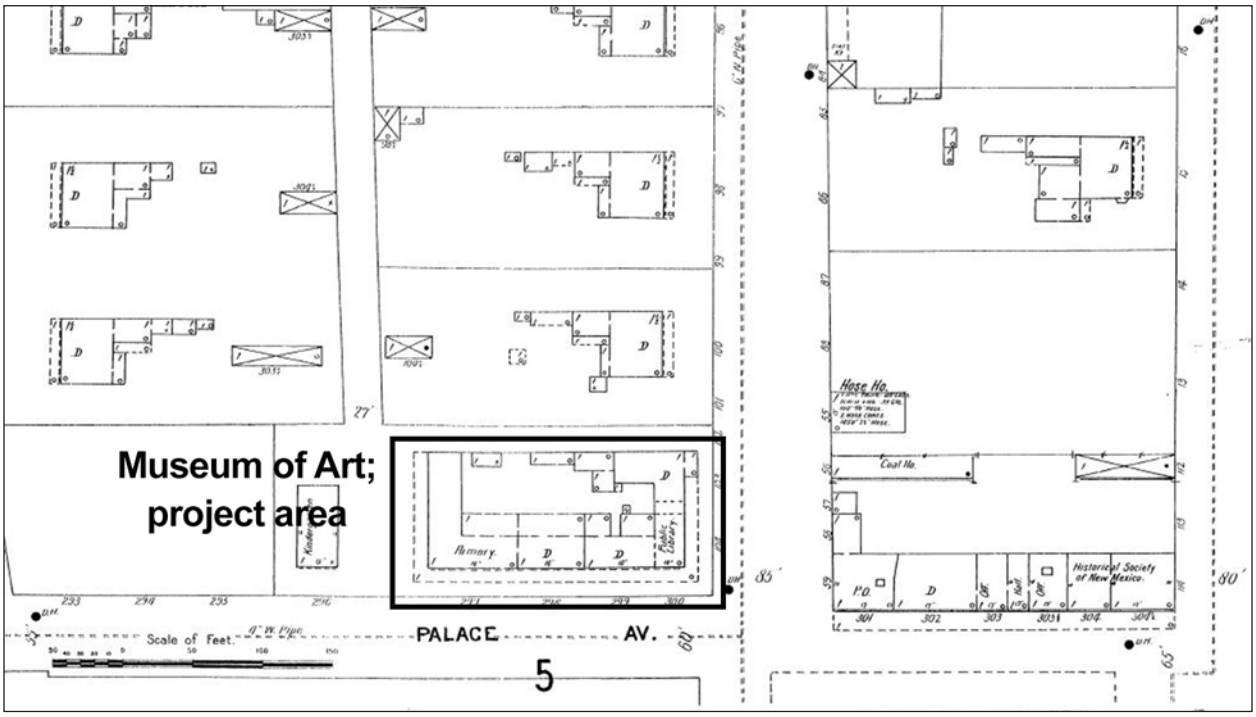

Figure 8. 1902 Sanborn Fire Insurance Map, Sheet 4.

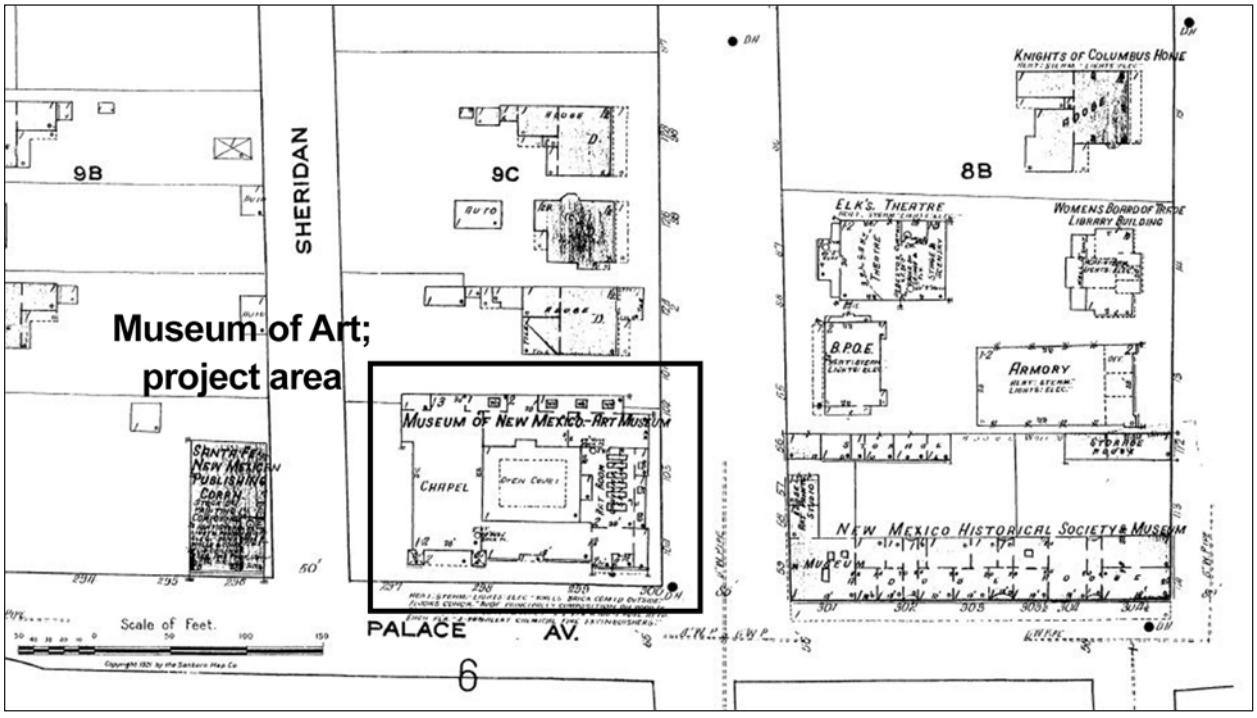

Figure 9. Detail from 1921 Sanborn Fire Insurance Map, Sheet 3.

3 ⸸ Previously Recorded Resouces

Guadalupe A. Martinez and Jessica A. Badner

The New Mexico Museum of Art project location is in the proximity of several previously documented cultural resources listed in Table 1. A list and map of properties within 500 m of the monitoring area is provided in Appendix 2. These cultural resources range from prehistoric to historic sites. Current monitoring activity is located within the bounds of LA 930, the excavation history of which is summarized below.

Since its construction in 1917, the discovery of archaeological deposits and features have been periodically reported at the New Mexico Museum of Art, formerly the Fort Marcy Officers Quarters and Ogapoge Pueblo (LA 930). One archaeological survey, by Seifert in 1979; one modern excavation, by Post and Snow in 1982; and four monitoring projects, by Hannaford in 1994 and 2005 and by Martinez in 1994 and 2009, have all been conducted in and around the museum. Jesse Nusbaum briefly reported on archaeological deposits observed during the initial stages of construction.

Between 1915 and 1917, Jesse Nusbaum began and completed the demolition and removal of the dilapidated Fort Marcy barracks, which had been repurposed for civic uses. Cultural deposits were encountered to 3 m below street level along the south side of the building. The deposits were not documented in a formal report and are only mentioned by Nusbaum in a progress report to Edgar Lee Hewett.

In 1979 and 1980, the Museum of New Mexico's Research Section (now the Office of Archaeological Studies) conducted survey and excavations in advance of the West Sculpture Gallery addition and expansion of main gallery space at the northwest corner of the museum (Seifert 1979; Post and Snow 1982). Excavation in the West Sculpture Gallery (Fig. 10) identified masonry and lime mortar foundations from the Fort Marcy quartermaster's office, an eighteenth century occupation level, and a possible seventeenth century foundation remnant. These latter features occurred between 1.15 and 1.25 m below the modern ground surface. The quartermaster's office foundation retained a portion of the interior plaster colored with blue calcimine. The demolition fill contained abundant red brick, glass shards, wood fragments, and clods of lime plaster. The upper Spanish Colonial component was associated with Powhoge and Ogapoge Polychrome pottery types. The lower component deposit had Tewa Polychrome and Puebla Polychrome majolica, suggesting a seventeenth century occupation. These deposits, below the planned construction depth, were not investigated further, and the excavation was backfilled. Excavation to the west of the museum building encountered disturbed cultural deposits to 1.20 m below the modern ground surface. Below the 1.20 m depth, excavation revealed a homogeneous sandy loam containing animal bone and seventeenth and eighteenth century pottery types. These types reflect long-term Spanish Colonial residential use of the museum property.

In 1990 and 1991, OAS staff monitored storm drain and drainage pipe installation on the building's east side, across Lincoln Avenue between the Palace of the Governors, and the Museum of Art, and around the Hewett House (Fig. 11) (Martinez 1994). Trench profiles contained evidence of Territorial and Spanish Colonial architecture and artifacts from both periods. In the process of nonsystematic artifact collection, 425 pieces of Pueblo and Euroamerican pottery, 518 animal bones (primarily domestic cow and sheep/goat), and 64 miscellaneous artifacts (including mica sheets, a strike-a-light flint, and a charred corncob) were recovered. Clearly, the trenches cut through a midden deposit that appeared homogeneous but contained considerable deposits of seventeenth century refuse. Also exposed were the remains of a disarticulated foundation constructed of river cobbles at a depth between 85 and 100 cm below the street level of Lincoln Avenue.

Subsurface deposits at the northeast corner of MoA were monitored in 1994 (Hannaford 1994) to expose

Table 1. Previously recorded archaeological sites and historic properties in the project vicinity.

Site Number	Site Type and Temporal Affiliation	NRHP/SRCP Eligibility
SR 18/LA 4451/ LA 113222	Palace of the Governors NHL	National and State Register listed SR 18
SR 58	Filipe Delgado House (124 West Palace Avenue)	State Register listed SR 58
SR 355	AM Bergere House (135 Grant Avenue)	State Register listed SR 355
SR 379	Ft. Marcy officers' residence (116 Lincoln Ave./Edgar Lee Hewett house)	SR 379
LA 609	Fort Marcy, in the vicinity of the New Mexico Museum of Arts	Not listed; no formal determination
LA 930	Prehistoric/ Pueblo (Ogapoge)	See also SRCP 379; NRHP 73001152; SRCP 244
LA 1051	Prehistoric Pueblo (Ogapoge) and El Presidio de Santa Fe	NRHP 73001152; SRCP 244
LA 4451	Palace of the Governors	National and State Register listed; SRCP 17
LA 35100	Presidio site; First Interstate Bank underground parking lot	NRHP 73001152; SRCP 244
LA 46174	Big Jo Site: Spanish Colonial Period residence	Undetermined
LA 71605	Spanish Contact/Spanish Colonial 1539-1680; Anglo 1846-1912	Undetermined
LA 80000	Santa Fe Plaza National Historic Landmark	National and State Register listed; SRCP 27
LA 109088	Hispanic, U.S. Territorial – U.S. Statehood; diagnostic artifacts	Undetermined
LA 114232 (LA 4450, Locality 29)	Lensic Theater	Undetermined
LA 114247	Coalition to Classic Period Artifact Scatter	Undetermined
LA 155456	Undescribed historic site	Undetermined

the basement wall for needed repairs. Cultural deposits of temporally mixed artifacts were encountered to a depth of 1.15 m. No structural remains or features were observed.

In 2005, OAS monitored drainage lines on the south side of the building near the main entrance and along the east side of the museum building. At depths ranging between 0.70 and 1.20 m below the modern ground surface, archaeologists examined and documented Spanish Colonial foundations, surfaces, and artifact laden deposits. These features and deposits were interpreted as being associated with the middle eighteenth century building shown on the 1766–1768 Jose de Urrutia map of Santa Fe (Hannaford 2005:27). Territorial period deposits and features were encountered on both sides of the building as well. Cobble foundations from the Fort Marcy Headquarters were encountered between 10 and 80 cm below the modern ground surface. Test Pit 2, along the east side of the building, exposed the top of a cobble wall with a lime mortar foundation 80 cm below ground surface. The wall was encountered 10 cm below the surface, just beneath the garden horizon. Pits 3 and 4, near the south entrance, exposed intact adobe wall stubs and cobble foundations directly beneath gardening disturbances at .25 m below surface.

In 2006, OAS returned to the west side of the museum building—designated the West Sculpture Garden—to monitor remodeling efforts in advance of sculpture installation. Guadalupe A. Martinez monitored a series of hand excavations for sculpture base foundations, pipe and utility trenches, window-well improvements, and tree removal. Work exposed three features (Fig. 12), two of which were limestone block foundation segments associated with the quartermaster's office and recorded by Post and Snow in 1980 (Martinez 2009; Post and Snow 1982). The third feature was a limestone block. A trench later excavated along the foundations of the St. Francis Auditorium (Badner and Montoya 2013) documented a series of deposits associated with museum construction and leveling. Remnants of a brick utility tunnel suggest intact deposits associated with the museum's construction approximately 50 cm below the surface. Evidence of

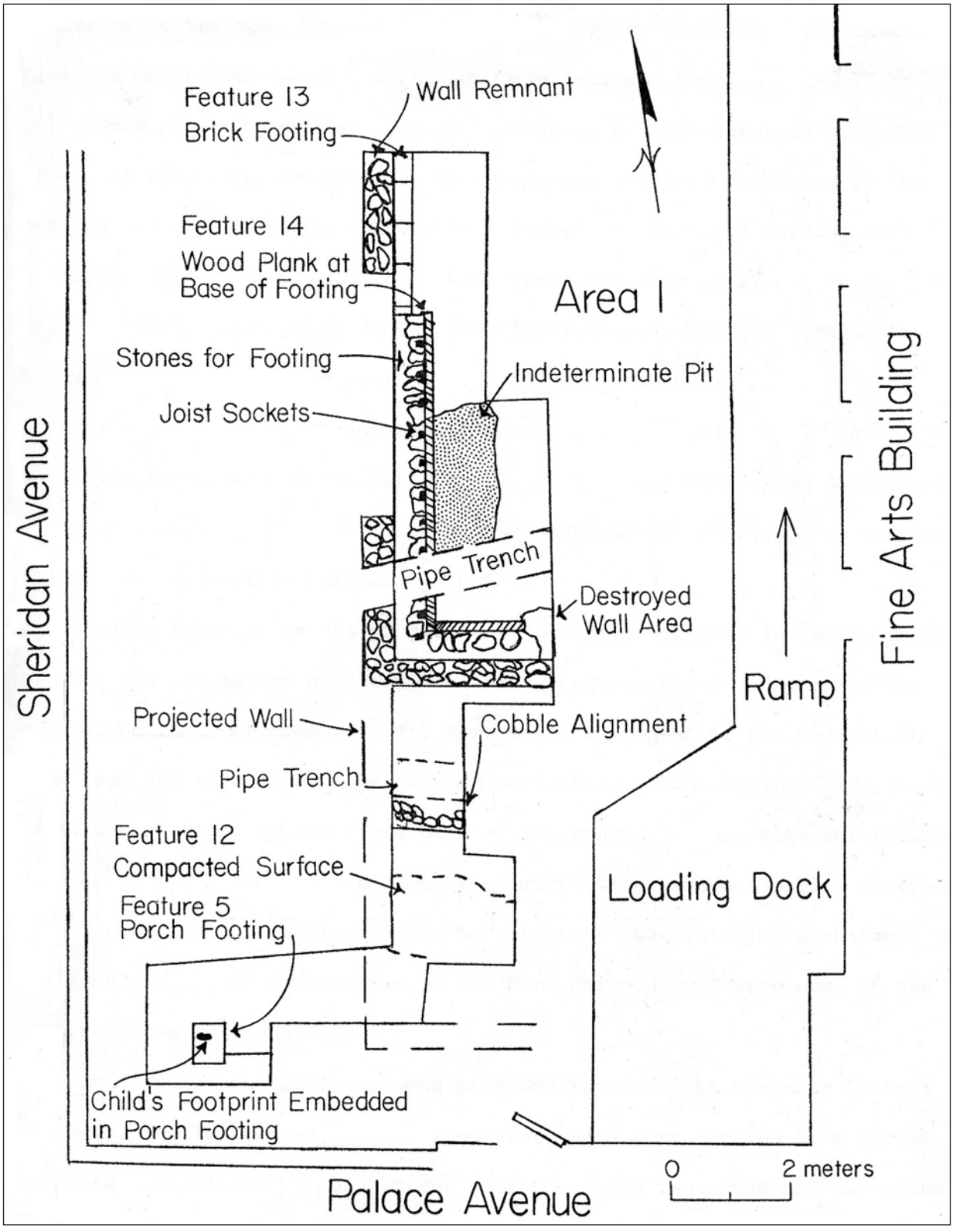

Figure 10. Features encountered during investigations of the West Sculpture Gallery.

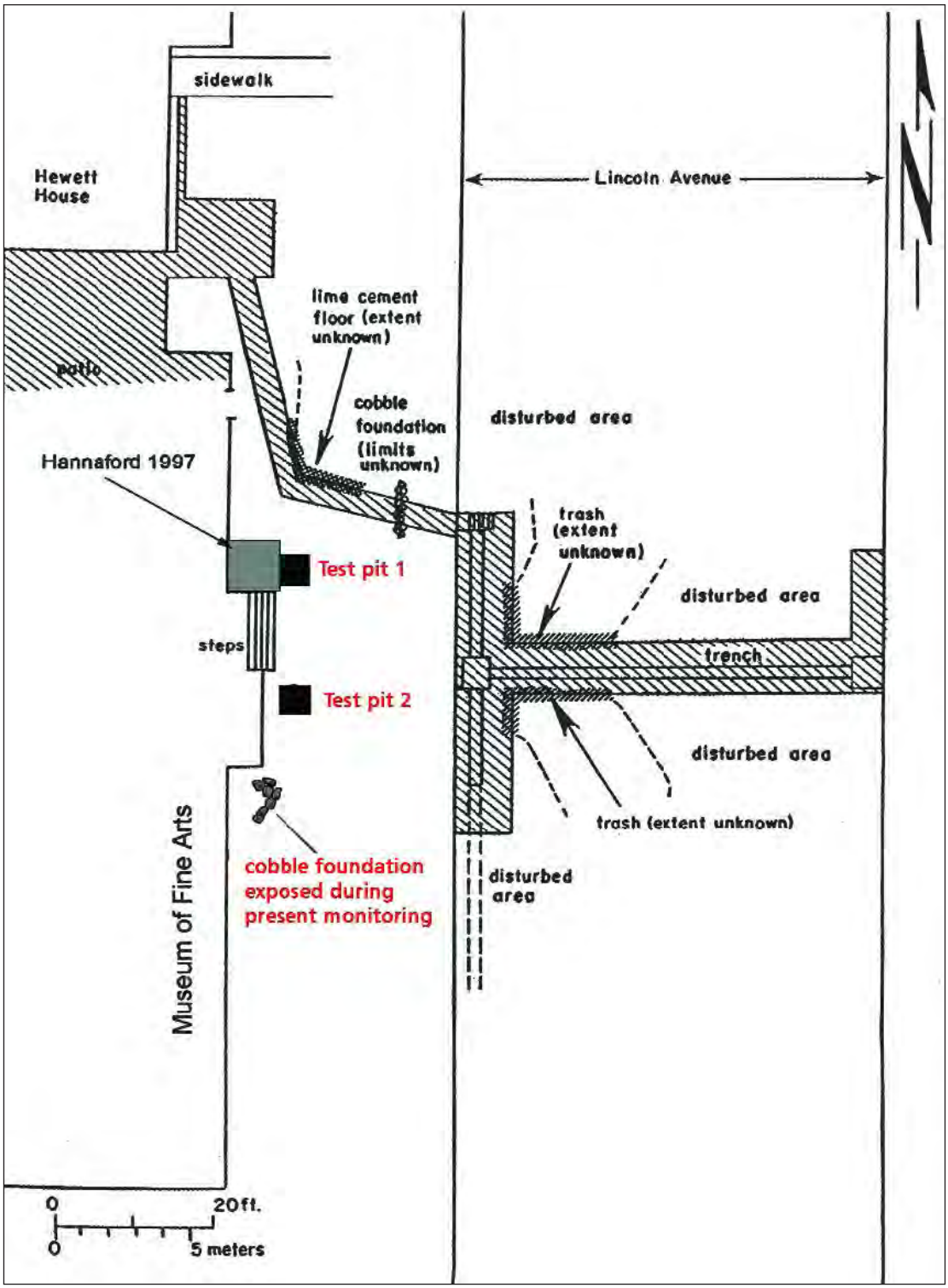

Figure 11. Composite of 1990-1994 observations to the northeast and east of the Museum of Art.

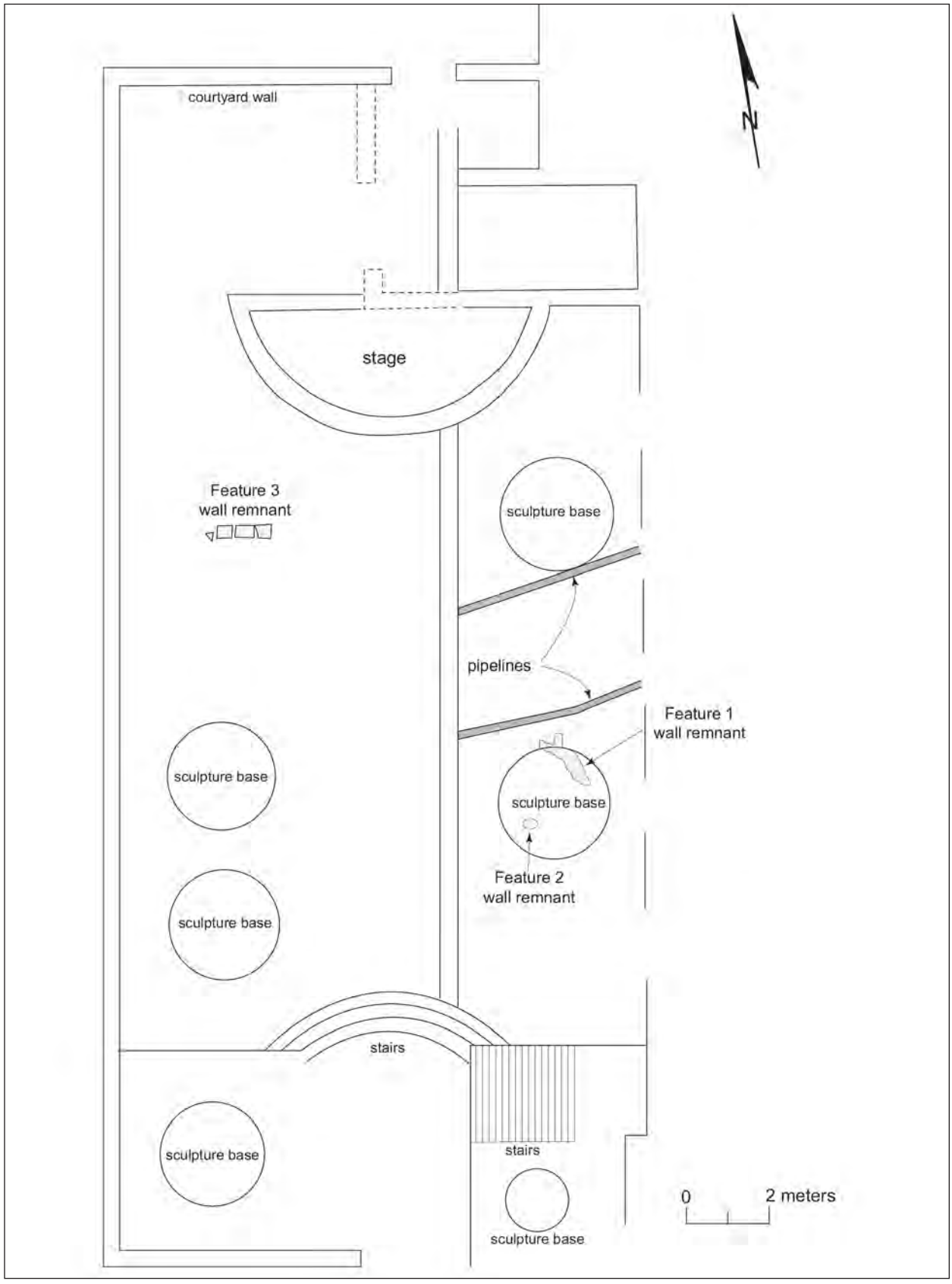

Figure 12. Features encountered during the 2006 investigation of the West Sculpture Gallery.

Figure 13. Profile of the west basement wall exposed during the 2013 investigation in the West Sculpture Garden.

the building's foundation trench demonstrates the close proximity of the west basement wall. The building's footing was surrounded by a construction debris halo of 30 cm or less (Fig. 13).

The results of these eight projects indicate that intact cultural deposits and foundation remnants are present in areas undisturbed by museum construction and modification. From the ground surface in the sculpture garden and sidewalks surrounding the museum, upper deposits have the greatest potential for disturbed cultural deposits lacking in integrity and data potential. Within the upper 0.70 m of the deposit, Fort Marcy artifacts, building debris, and foundations may be encountered. Spanish Colonial deposits and features below 0.70 m were recorded by Hannaford in 2005. Results of previous monitoring projects appear to confirm construction elevations drafted by Rapp (Figs. 14 and 15) that depict natural grade and fill within the building perimeter.

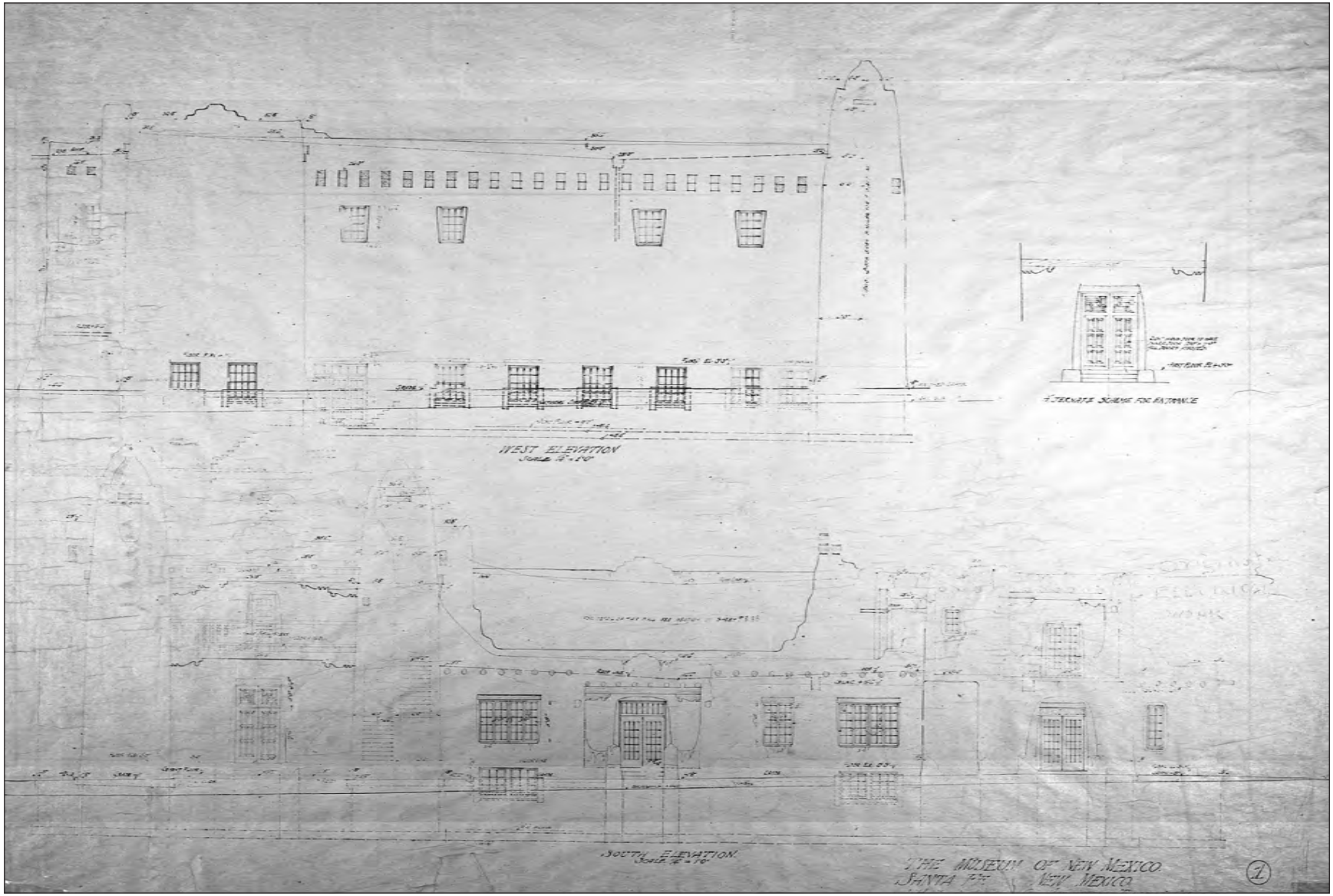

Figure 14. Architect's west and south elevations of the Museum of Art construction plans.

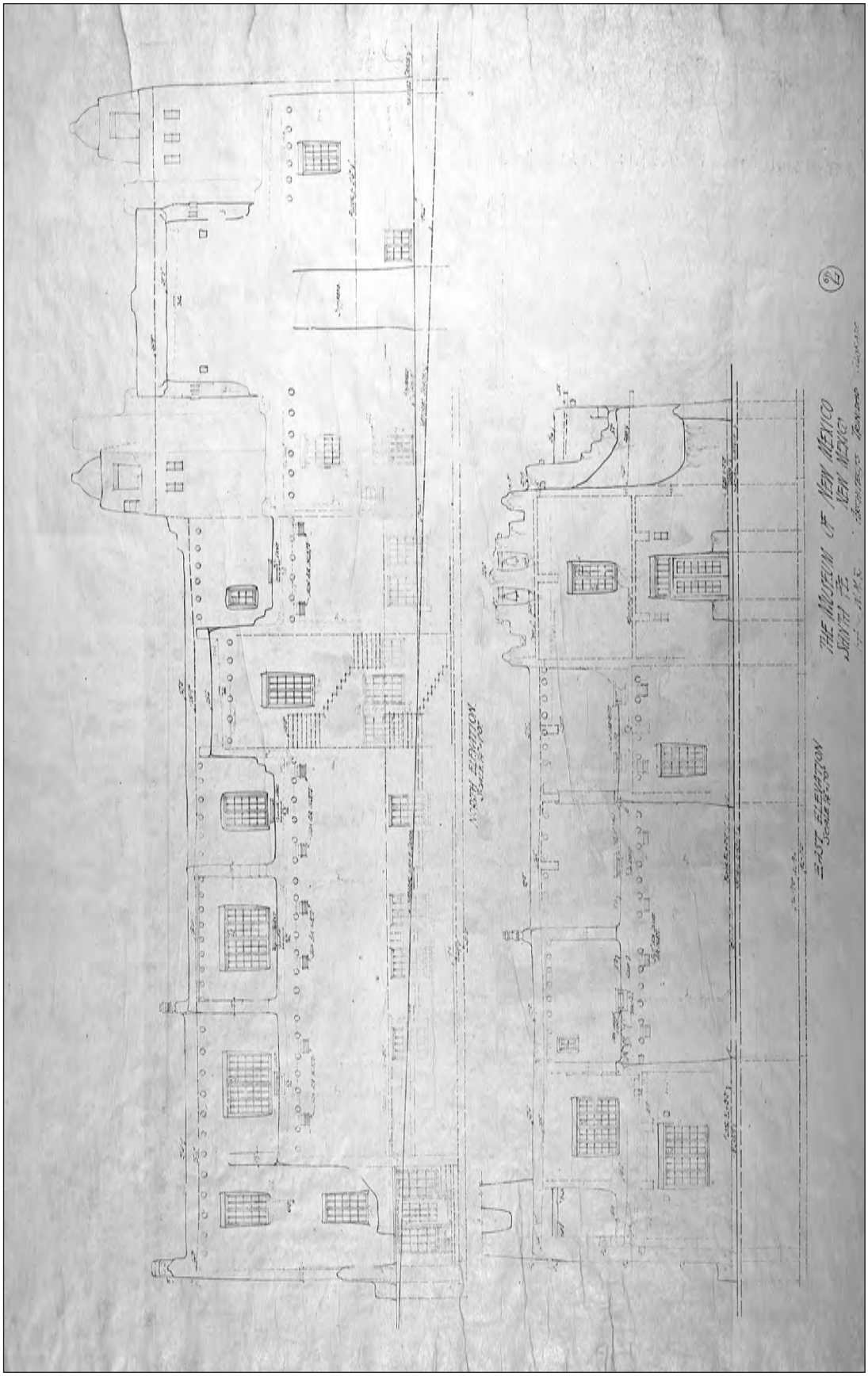

Figure 15. Architect's north and east elevations of the Museum of Art construction plans.

4 ⇓ Research Questions

Research questions that can be addressed by this undertaking are necessarily limited in scope and descriptive in nature. Nonetheless these limited questions are important in light of numerous and varied monitoring activities conducted and reported over a 100 year timespan at LA 930. Small excavation area and sample sizes are the bane of productive research at this site, but basic questions regarding prospective resources nature and extent in relationship to previous monitoring activities can be posed—and are likely to be successfully answered—even within the limited excavation area. Contact with earlier deposits may broaden the scope of inquiry to encompass comparisons between Spanish Colonial remnants in the immediate downtown area, most notably at the Palace of the Governors, the Santa Fe Plaza, and La Canstrense and the Santa Fe Civic Center and Lensic Theater. Due to such proximity and contemporaneity, the following research questions have been aligned within the broad research context proposed for excavations at the New Mexico History Museum (LA 111322). Such context remains pertinent in the historic downtown area, especially for Spanish Colonial and Early Territorial contexts (Post 2002:8). These include: the examination of the temporal and spatial dimensions of changing land-use patterns through the location and excavation of architectural features and recovery of temporally diagnostic and functionally specific artifacts and samples; the examination of changing economic strategies and technological organization as reflected in the material culture and subsistence data; and the development of a holistic consideration of the building and its relationship to surrounding architectural and land use patterns through the production of composited maps based on excavation and archival data.

Specific research questions pertinent to the current excavation include:

1) Construction elevations drafted by Rapp show construction fill augmenting the existing land surface at the time of MoA construction. Is this accurate? How much fill was deposited in the courtyard? Does its artifact content provide any clues as to its origins? Can this fill, if identifiable, be contrasted with the fill that formed the ground surface at the time construction was initiated? Is this deposit similar in artifact content or consistency to any deposits excavated during previous monitoring projects at LA 930? Fill was likely deposited around 1917. Will artifact content reflect this assumed deposition date?

2) Did the foundation of the Fort Marcy Officer's quarters or any other pre-existing structure survive MoA construction in the courtyard area? If so, can the architecture be associated with other architecture discovered at LA 930 during previous excavations? Are artifact assemblages comparable to those from similar components at the Palace of the Governors or at excavations at the Santa Fe Civic Center?

3) Are primary Spanish Colonial deposits present beneath the courtyard? If so, can we date them using chronometric techniques or artifact serration? Are these deposits contemporary with features depicted on Jose de Urrutia's map of Santa Fe or on later maps? Are artifact assemblages comparable to those from similar components at Palace of the Governors or excavations at the Santa Fe Civic Center?

Data sources

All of the data recovery questions above necessitate artifact recovery from stratified deposits and would benefit from artifact analysis comparable in methodology to the previous work conducted by OAS at LA 930. Because many of the previous excavations were conducted as monitoring, artifact assemblages were recovered from variably controlled contexts, and chronometric and other sampling techniques may have been limited. Controlled excavation was conducted by Charles A. Hannaford in 2005. These assemblages should provide a good basis for comparison. Analysis data from the artifact assemblage recovered and an-

alyzed from excavations along the west wall, though uncontrolled, may also provide a useful comparative assemblage.

During excavation it will be necessary to draw detailed soil profiles and precisely map resources in relationship to the existing Museum of Art building. Elevational data will be particularly important in order to determine the potential relationship of architecture in the courtyard to that encountered south and east of the building's exterior. Though elevations are not expected to necessarily match, in view of continued interventions to support the building's fabric, OAS believes that detailed instrument mapping with a total station is a simple step to encourage a holistic approach to recordation of subsurface archaeological deposits.

5 ⇓ Excavation Plan

Excavation and monitoring in the Museum of Art central courtyard will be determined by drainage construction plans provided by Spears Horn Architects (see Fig. 3). The area of potential effect is located in the 116 sq m courtyard, with limited construction features within that space. Spears and Horn has proposed the installation of six new drains and the excavation of an additional 30 sq foot area in the courtyard's southeast corner. Other construction work will include removal of concrete surrounding the central fountain.

Construction will commence with the removal of all existing planting by the Santa Fe Garden Club. Spears and Horn anticipates that plant removal will not necessitate excavations below 14 in by garden club members. OAS anticipates that deposits above this depth within the bed have been churned by routine gardening activities, and plant removal will not further compromise the stratigraphic integrity of the deposits. Any plant removal that necessitates digging below the 14 inch depth will be monitored by OAS.

Drains (functioning as catch basins and junction boxes) will be excavated in 14 x 14 in grids to a depth of 14 in. These drains will be connected by a pipe installed at a depth of 14 in or less. The effluent will tie in to an existing drainage pipe that exits the courtyard to the northwest, 20.5 in below edge of the courtyard portal paving.

In order to reduce water penetration into the MoA west basement, a triangular area of 30 sq ft (see Fig. 3) will be excavated to a depth of 30 inches in the south east corner of the courtyard. This excavation will be located in a planting bed. OAS proposes to initiate investigation of the area with the excavation of two 1 x 1 m test units adjacent to each other and within the bounds of the triangular area. OAS will excavate the entire area unless no intact cultural deposits are present, in which case OAS will monitor contractor excavation of the area outside the 1 x 1 m test units.

A freeze-proof faucet may need to be replaced to the north of the triangular area. The faucet had been previously replaced in 1995 or 1996 in an un-monitored maintenance excavation project prompted by water infiltration into the MoA west basement. There is no documentation, but anecdotal remembrances are that the repair hole was at least 5 ft deep and at most 5 ft diameter. The repair hole surrounded the faucet, undercutting the portal cement by 1 ft and extending 4 ft west toward the fountain. Maintenance workers do not remember encountering any rock or artifacts or construction debris during excavation of the repair hole.

Excavation

After bedding plants are removed, OAS will excavate two 1 x 1 m hand test units (Fig. 16). The units will be located in an area proven to have the greatest likelihood of encountering intact deposits within the drainage area (away from the 1917 basement construction excavation). Bedding soil will be removed in a single stratigraphic stratum not to exceed 14 in (36 cm) in depth. If stratigraphic breaks are encountered before 36 cm depth is reached, stratigraphy will determine the lower boundary of the provenience. Artifact content will be collected by screening through 1/4 in mesh from one of the excavation units in order to provide a comparative baseline of the upper courtyard fill. Artifacts will be collected opportunistically from the other excavation unit. OAS will commence excavation in 10 cm arbitrary levels broken by stratum at the base of the garden disturbance or 16 in (36 cm) below grade, whichever is closest to the surface. Deposits from the first excavation units will be screened through 1/4 inch wire mesh. If artifact content is moderate to high, deposits from the second unit will be screened with 1/8 in mesh. If deposits in the first

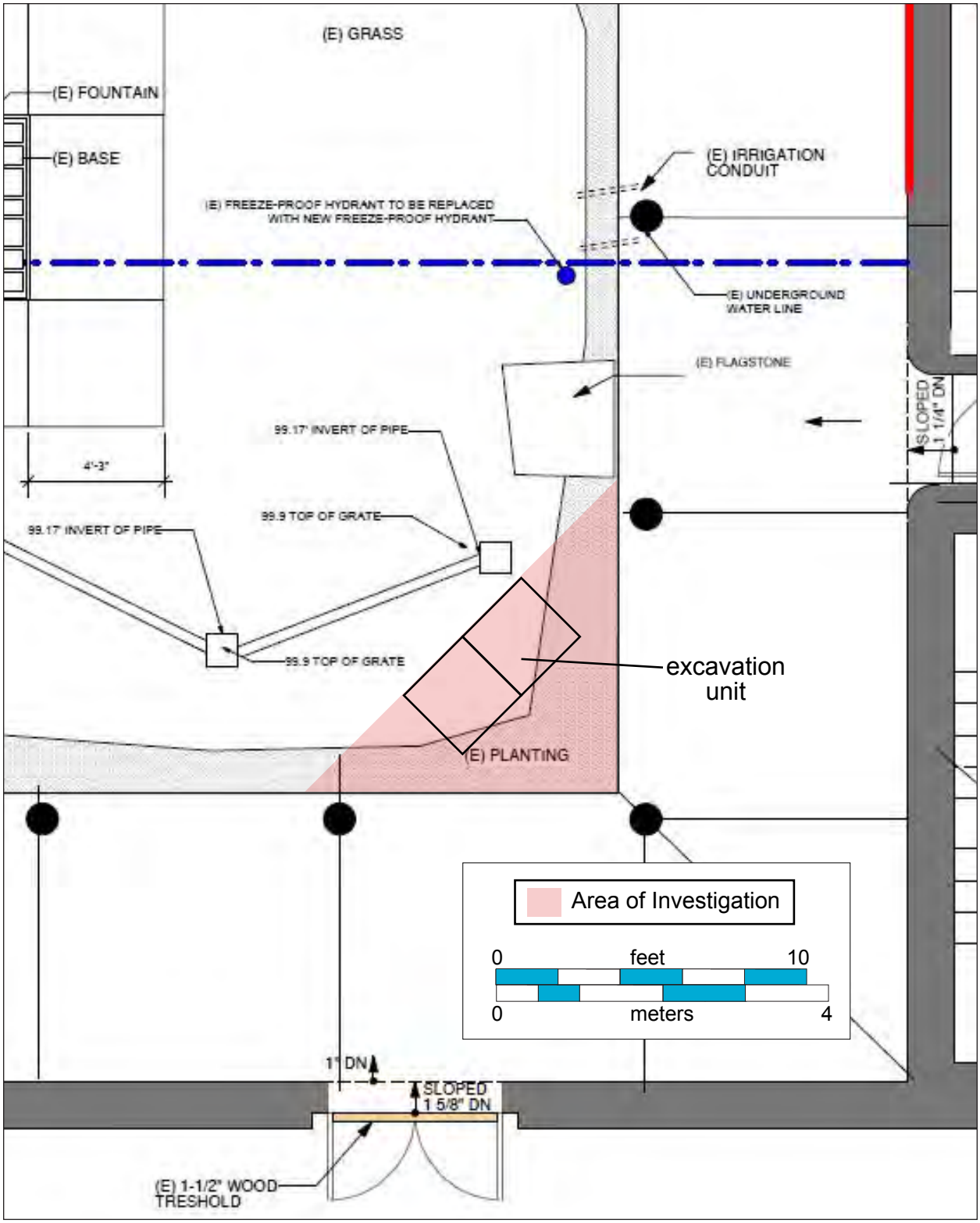

Figure 16. Location of excavation units within the drainage area.

unit are sterile or contain few artifacts, archaeologists will continue to screen soil with the larger 1/4 inch mesh. If, during excavation, archaeologists determine that the extent of the repair pit for the freeze-proof faucet mentioned above overlaps excavation units, pit deposits may be excavated in a single stratigraphic unit and screened with 1/4 in wire mesh.

If no intact cultural deposits are encountered within the two excavation units to the full depth needed for the drainage improvements, the remainder of the triangular area will be excavated by the contractor. Excavation will be monitored by OAS archaeologists. If intact cultural deposits are encountered within the two excavation units, hand excavations will be expanded to the full limits of the triangular area.

Information to be recorded from all excavation units includes sediment description, using a Munsell Soil Color Chart and standard descriptions of sediment texture and composition; notes on artifact variety and frequency; evidence of disturbance; horizontal and vertical locations and associations; excavation techniques; and temporal associations. All field recording will be conducted on standard OAS feature and excavation forms and representative unit profiles will be documented. Any features (including structures) will be distinguished with separate proveniences and will be recorded in the form of scaled drawings and photographs. All photographs will include metric scale, north arrow, and sign board with project number, date and provenience. Artifacts and samples will be designated by grid unit, level, and stratum. Coordinates, dates, and project numbers will be recorded on standard excavation forms and artifact bags and will be cross referenced in a field specimen log. Excavation unit depth will be a minimum of 30 in (77 cm) and may continue to a maximum depth of 5 ft should OAS encounter intact cultural deposits, in which case the excavation will be expanded to the limit of construction disturbance.

Monitoring

OAS archaeologists will monitor excavations and opportunistically collect artifacts from back fill as the contractor excavates for drains and piping. As with controlled excavations, archaeologists will describe exposed sediments using standard geomorphological descriptions. Each exposure unit will be documented with representative profiles to develop a model of the extent of gardening disturbance. If features are encountered within drain pit limits, archaeologists will halt construction work and the monitoring location will be expanded to a standard 1 x 1 m test unit. Loose and remnant fill will be removed, and controlled excavation will commence according to the procedures outlined in this report.

If the freeze-proof faucet is replaced, the excavation will be carried out by the contractor and will be monitored by OAS archaeologists. After the faucet replacement is complete, the side walls of the pit will be probed to determine if any of the original (1980s) pit walls are close by. If any of the original pit walls are proximate and accessible, a vertical portion of the fill will be removed and a section of the pit wall will be exposed and profiled.

Features

OAS anticipates that intact cultural features may be present below courtyard fill, which was likely deposited in 1917. If intact cultural features exist, they are most likely architectural features or large refuse pits. Architecture may be associated with Fort Marcy or with earlier buildings depicted in Figures 5, 6, 7, and 8. Refuse pits are typically Territorial but may contain earlier deposits. All features will be numbered, mapped, and recorded using standard OAS feature forms. Features will be photographed with a digital camera with scale, sign board and north arrow and will be drawn in both plan view and in profile. Samples will be collected as appropriate for economic or chronometric interpretation.

Architecture. If architectural features are identified in the 1 x 2 m area, excavation at the discovery horizon will halt. Archaeologists will extend the grid structure established by the existing test units and proceed to excavate down to the elevation of the discovery in 10 cm levels. Consultation with MoA administration and HPD staff will be initiated concerning any decision to expand the excavation area. Overburden will be screened through 1/4 inch mesh unless archaeologists identify a floor or surface, in which

case soil 10 cm above the surface will be screened with 1/8 in mesh. The feature will be systematically excavated within 1 x 1 m grid units. Bisection will ideally be established perpendicular to intact foundations and walls and may be achieved by profiling either test unit or excavation boundaries. Once architectural features are exposed and recorded, they will be bisected again and systematically disassembled and recorded. Depending on the configuration of the resources encountered, 0.50 x 0.50 m test units may be employed to excavate exposures adjacent to or beneath foundations. Feature fill will be screened through 1/8 in mesh.

Large refuse pits. Large refuse pits are also common in downtown Santa Fe. They are often deep and exceed 5 m in diameter. Refuse pits can be hard to identify until they are exposed in profile. If OAS encounters a large refuse pit, excavation units will be considered sampling units. Both will be excavated to maximum allowable OSHA depth of 4 ft (1.22 m in a 1 x 2 m trench) in 10 cm levels as described above. Below that level, auger tests and a single .50 x .50 m shovel test unit may be employed to determine the feature's vertical extent. If burned or charred deposits are encountered, chronometric and flotation samples will be collected to help date and characterize the nature of the deposit. Flotation samples will be collected in a 1-3 liters quantity and brought to the laboratory for fine screen or flotation processing and archaeobotanical analysis.

Other features. Small features will be bisected. Half of the small features will be excavated in 10 cm levels. The other half will be excavated by stratum. All feature fill will be screened with 1/8 in wire mesh. All charred fill from thermal features less than 50 cm in diameter and 20 cm deep will be collected for laboratory analysis. Should very large thermal features be encountered, archaeologists will collect samples as the collection of large volumes of feature fill, no matter how rich, is counterproductive and likely to impede good recording. A minimum of 2 liters of fill from each charred stratum will be collected for fine screen or flotation processing and archaeobotanical analysis. The remainder will be screened in the field using 1/4 inch wire mesh. Should archaeologists encounter features larger than 2 m in diameter or features that exceeded the excavation area limit, excavation unit side walls may be used to record the feature in profile in lieu of bisection.

Mapping

Excavation in the Museum of Art courtyard will be mapped with a total station and will likely use an arbitrary grid oriented along the courtyard axis. Although OAS procedure typically incorporates UTM coordinates into standard site mapping, the Museum of Art courtyard is small and constricted. This makes the use of a GPS unit to establish a main datum unreliable and likely inaccurate. The main datum will be established at a point using taped measurements from permanent building architecture such as window edges and corners. Excavation and monitoring unit limits will be recorded on this coordinate system although the units themselves will not correspond to even numbers on the Cartesian grid. The grid will be tied to previous excavations by recording the elevation of the wooden threshold at the courtyard's south entry or a point inside the lobby. If possible, the base of the steps at the main entrance in relation to current excavations will be used.

Unexpected Discoveries

Recent monitoring activities at LA 930 have not exposed human remains in either articulated or disarticulated forms. OAS does not anticipate this type of discovery given the relatively recent dates of the expected deposits. If human remains are discovered during excavation, OAS will halt all mechanical excavation within 50 ft of the discovery and notify the City of Santa Fe Police and HPD. If it is not a crime scene, consultation with HPD, MoA, and the architects will endeavor to find a way that human remains can be left in place. If they cannot be left in place, OAS will activate its burial permit and remains will be excavated in accordance with the provisions of permit methods on file with HPD. The excavation methods used will include definition of the burial pit, use of hand tools to expose skeletal materials, mapping and photo-

graphing of the position of the skeleton and any grave goods, and retrieval of soil for micro and macrofloral analysis. Field and laboratory treatment of human remains and other sensitive cultural discoveries will be based on the Museum of New Mexico draft collections policy that will be considered by the Museum of New Mexico Board of Regents on July 21, 2016. Data recovery related photographs of sensitive materials will not be released to the media or general public.

6 ⸸ Artifact Analyses

Euroamerican Artifact Analysis

Matthew J. Barbour and Eric Blinman

Euroamerican artifacts represent objects that were not available in the American Southwest prior to the establishment of a European presence in the sixteenth century. Assemblages typically include a variety of artifact types such as bottle glass, can or metal fragments, and wheel-thrown ceramics reflecting domestic, commercial, agrarian, and industrial activities and behaviors. Euroamerican artifact content should be abundant in both U.S Territorial and Spanish Colonial contexts within the MoA investigations.

The OAS Euroamerican analysis format and procedures were developed over the last 20 years and incorporate the range of variability found in sites dating from the sixteenth to the twentieth century throughout New Mexico (Boyer et al. 1994). These methods are loosely based on South's (1977) Carolina and Frontier artifact patterns and the function-based analytical framework described by Hull-Walski and Ayres (1989) for dam construction camps in central Arizona. This detailed recording format allows for the examination of particular temporal and spatial contexts and for direct comparisons with contemporaneous assemblages from other parts of New Mexico and the greater Southwest. Recorded attributes were entered into an electronic database (Statistical Package for the Social Sciences, or SPSS) for analysis and comparison with similar databases on file at OAS.

Functional in nature, the Euroamerican artifact analysis focuses on quantifying the utility of various objects. One benefit to this type of analysis is that "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 analytic pitfalls associated with frameworks focused on categorizing artifacts strictly by material type (e.g., glass, metal, ceramic, mineral, etc.).

One weakness of material type-based analyses is that only a limited number of functional categories are represented in a single material class. For instance, metal, while beneficial for examining construction and maintenance materials such as nails and wire, does not incorporate patent medicines or other bottled goods into the same analysis. In addition, variables such as finish, often chosen to analyze glass artifacts, are appropriate for glass containers, but not for flat glass, decorative glass, or other glass items like light bulbs, which can serve different roles within a single spatial and temporal context. The OAS analytic framework was designed to be flexible, documenting not only the qualities of each material type, but also the functional role of particular items.

In functional analyses, each artifact is assigned a hierarchical series of attributes that classify an object by assumed functional category, artifact type, and its specific role, or function, within that matrix. These attributes are closely related and provide the foundation for additional variables that, with increasingly more detail, specify an artifact's particular function. Each category encompasses a series of material types whose specific functions may be different but related. For example, a pickle jar and a meat tin are both assumed to have initially contained food. Both items would be included in the functional category for food, but each container is made from a different material type, and the contents had different functions.

In essence, function-based analysis is based on an inventory of different artifact attributes where variables are recorded hierarchically to amplify the functional categories and provide a detailed description of each artifact, when possible. Attributes that commonly provide detailed information about individual artifacts and, in turn, functional categories include material type, date and location of manufacture, and artifact form and portion.

Chronometric data are derived from a variety of descriptive and manufacturing attributes, especially the latter. If an artifact retains enough information to derive beginning or ending dates, those variables are recorded

under the date attribute. Manufacturer records the name of the company that produced a particular object. Together these data can be used to assign specific date ranges to an artifact based on known manufacture periods or the dates of operation for manufacturing companies. A related attribute is brand name. Many brand names also have known production periods that can provide temporal information. The manufacturer or brand name is listed as labeling/lettering; it is used to advertise the product and describe its contents and suggested use.

When evident, manufacture technique, such as "wheel-thrown" or "forged," is also recorded. Since some manufacturing techniques have changed over time, this attribute can often provide a general period of manufacture. A related attribute is seams, which record how sections of an artifact, particularly cans and bottles, were joined together during manufacturing. Through time, these processes were altered and are reflected in the types of seams used to construct various containers. The type of finish/seal is recorded to describe the opening of a container prior to adding the contents and the means of sealing it closed. Like seams, many finish/seal types have known manufacturing periods offering general temporal information. In addition, opening/closure records the mechanism used for extracting the contents of a container.

For some artifacts, attributes such as color, ware, and dimensions can also provide information on the period of manufacture. The current color of an artifact was recorded if determined to have diagnostic value. A good example is glass, where the relative frequency of various colors in an assemblage can provide some temporal information, since the manufacture and preservative processes have changed over time. Ware refers to china artifacts and categorizes the specific type of ceramic represented, when known. Because temporal information exists for most major ware types, this attribute provides relatively more refined dating information compared to seams and color. Dimensions of complete artifacts can also provide chronometric data, especially artifacts like nails or window-pane glass, where thickness or length of the object can be temporally sensitive.

In addition to temporal information, the manufacturing process of particular objects can be used to support functional inferences. Material records the type material(s) from which an object was manufactured (e.g., glass, metal, paper, clay). Paste describes the texture of the clay used to manufacture ceramic objects and is further defined by porosity, hardness, vitrification, and opacity. Decoration and design describe the type of technique used to apply distinctive decorative motifs to an object, such as china or glassware.

Several others attributes are used to quantify an object's condition and use-life. For each item the fragment/part variable describes what portion of a particular form is represented. Fragments of objects that refit to complete or partial objects recovered from a single excavation context are recorded together as a minimum number of vessels (mnv) of one, and the number of specimens present represented by count.

Cultural alteration of an item to extend its use-life is recorded as reuse. This variable describes any evidence of a secondary function, and the condition/modification variable monitors any physical modifications associated with that secondary use. If environmental conditions have altered the surface of an artifact through either glass patination or metal corrosion, it is recorded as aging.

The appearance of an artifact is monitored as shape. This variable is generally used to describe the physical contours of complete objects. Finally, quantitative data recorded for most Euroamerican artifacts includes length/ height, width/diameter, and thickness. For this particular study, artifacts may not be weighed.

Euroamerican artifact analysis data will contribute sensitive age information for historic components leading up to the construction of MoA in 1917. Artifact data may also contribute to assessments of potential sources of fill deposits, depending on whether functional variation is expressed among different assemblages. Functional variation in the evolution of social and economic networks around the plaza may also be addressed if sufficient samples can be recovered from intact structure or feature deposits.

Native American Pottery

C. Dean Wilson and Eric Blinman

Analysis of Native American pottery is concerned only with locally produced artifacts and does not include wares of Euroamerican technologies. "Native pottery" refers to types made or inspired by the ceramic resources and technologies long associated with Pueblo groups in the Northern Rio Grande. 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 and time period may also include forms that were inspired by Pueblo pottery traditions but were made by Jicarilla Apache, Navajo, Genízaro, or Hispanic potters residing in the region.

Detailed documentation of various attributes is needed to contribute to inferences of the timing and nature of the occupations reflected in MoA courtyard deposits. Ceramic studies contribute information related to age, 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 that will be recorded for sherds include temper type, paint type, surface manipulation, modification, and vessel form. Other studies 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 analysis. Studies of the distributions of these descriptive attributes will be used to examine various issues discussed below.

"Ceramic types," as used here, refers to groupings identified by combinations of paste and surface characteristics with known temporal, spatial, and functional significance. Sherds are initially assigned to regional traditions based on probable geographic 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 Tewa types have been used to examine historic archaeological assemblages (Dick 1968; Lang 1997b; 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 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 non-local 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. Other attributes that will be recorded during analysis include temper type, pigment type, surface manipulation, vessel form, and vessel modification.

The Native pottery analysis will contribute to the characterization of the age and origins of stratigraphic fill units. To the extent that collections can be linked with structures and features, the data will be useful for addressing the social and economic networks that were participated in by the family or com-

munity. The results of the Native pottery analysis will be particularly useful for identifying and characterizing the sources of mixed or contaminating deposits due to the strong contrasts between the time periods expected within the history of the MoA location.

Chipped Stone Artifacts

James L. Moore

We expect to recover only a limited chipped stone artifact assemblage from the MoA courtyard investigations. Chipped stone artifacts can be fairly common in Spanish Colonial sites, present in significant numbers as late as the Railroad period (Moore 2004). Rather than evidence for intrusive prehistoric materials, archaeological as well as documentary sources indicate that chipped stone artifacts were extensively used by Spanish settlers as a substitute for more expensive metal tools and as integral components in firemaking kits (Moore 1992, 2001, 2004; Rebolledo and Márquez 2000).

Chipped stone artifacts recovered during the investigations at MoA will be examined using a standardized analysis format (OAS 1994a). This format includes a series of mandatory attributes that describe material type and quality, 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 originated. By studying the reduction strategy employed at a site we can 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 Euroamerican artifacts.

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 digital goniometer; other dimensions will be measured with digital calipers and scale. 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 include material type and quality, artifact morphology and function, amount of surface covered by cortex, cortex type, portion, evidence of thermal alteration, dimensions (length, width, thickness, and weight), dorsal scar orientation, platform angle, bulb of percussion, curvature, waisting, and distal termination. Wear patterns and utilized/modified edge angles will be examined on all tools.

Materials are coded by gross category unless specific sources or distinct varieties are recognized. Codes are arranged so that major material groups fall into specific sequences of numbers, progressing from general material groups to specific varieties that can be linked to specific sources by visual inspection.

Material texture and quality provides information on the basic flaking quality of materials. Texture subjectively measures grain size within rather than across material types and is scaled from fine to coarse for most materials, with fine textures exhibiting the smallest grains and coarse the largest. Obsidian is classified as glassy by default, and this category is applied to no other material. Quality records the presence of flaws that could affect flaking and includes crystalline inclusions, fossils, visible cracks, and voids. Inclusions that will not affect flaking are not considered flaws. Material texture and quality are recorded together.

Artifact morphology is one of two attributes that provides information on artifact form and use. Artifact morphology categorizes artifacts by their general form such as core flake or early stage biface.

Artifact function is the second attribute that provides information on artifact form and use, and categorizes specimens by inferred use (or lack of use) such as end scraper or non-utilized flake.

Cortex, the amount of cortical coverage, is estimated and recorded in 10 percent increments for each artifact—the percentage of dorsal surface covered by cortex is estimated for flakes, while for all other artifact classes the percentage of the total surface area covered by cortex is estimated, since other artifact classes lack definable dorsal surfaces.

Cortex type on an artifact can be a clue to its origin. Waterworn cortex indicates that a nodule was transported by water and that its source was probably a gravel deposit. Non-waterworn cortex suggests that a material was obtained where it outcrops naturally. Cortex type is identified for artifacts on which it occurs; when identification is not possible cortex type is coded as indeterminate.

Portion is recorded for flakes and formal tools. Angular debris and cores are considered whole by default, because it is usually impossible to determine whether these categories were broken during or after reduction.

Platform type records the shape of and any modifications to the striking platform on whole flakes and proximal flake fragments.

Platform lipping records the presence or absence of a lip at the ventral edge of a flake platform, and is coded as either present or absent.

Platform angle is defined as the intersection of the dorsal surface of a flake and its striking platform and is recorded as either greater than 45 degrees or less than 45 degrees.

Bulb of percussion is only recorded for flakes and is either pronounced or diffuse.

Flake curvature records whether or not the ventral surface of flakes are distinctly curved.

Waisting describes the presence of a waist between the platform and main body of a flake. This feature can be the result of soft hammer percussion or pressure flaking and is often present on biface flakes.

Thermal alteration, when present, documents whether an artifact was purposely or incidentally heated.

Wear patterns, attrition patterns, can result when debitage or cores were used as formal or informal tools.

Edge angles can be correlated with edge strength and function, and the angles of all utilized or intentionally modified edges on tools are recorded.

Length, width, and thickness are measured in millimeters for all artifacts. On angular debris and cores, length is the largest measurement, width is the longest dimension perpendicular to the length, and thickness is perpendicular to the width and is the smallest measurement. On flakes and formal tools, length is the distance between proximal and distal ends, width is the distance between edges paralleling the length, and thickness is the distance between dorsal and ventral surfaces.

Weight is recorded to the nearest tenth of a gram.

Data provided by chipped stone analysis will contribute to the temporal and potentially ethnic associations of fill deposits. Unless they are recovered from structure or feature contexts, functional and social or economic network interpretations will be limited. Fill assemblages will be analyzed for patterns in material selection, reduction techniques, and tool use that may help in differentiating between the sources of the fill deposits.

Ground Stone Artifacts

James L. Moore

Ground stone artifacts will be examined using a standardized methodology developed by the OAS, which provides information on material selection, manufacturing technology, and tool use. Artifacts will mainly be examined macroscopically, with microscopic analysis being used to examine wear patterns. Analytic results will be entered into a computerized data base for analysis and interpretation. Several attributes are recorded for each ground stone artifact, while others are only recorded for certain tool types. Attributes recorded for all ground stone artifacts include material type, texture and induration, function, portion, preform morphology, production input, plan view outline, transverse and longitudinal cross-

section shapes, shaping methods, number of uses, number of wear surfaces/edges, evidence of heating, presence of residues, artifact dimensions and weight. Edges and surfaces that exhibit evidence of use are recorded separately, and the attributes that are recorded for each utilized edge or surface include dimensions, texture, sharpening, transverse and longitudinal contour shape, and microscopic wear patterns. The angles of all modified or utilized edges will be measured to provide information potentially useful in determining function. The type of stroke used to manipulate a mano and the type of base companion stone that was used can be determined by examining wear patterns and contour attributes (Adams 2002:100–114).

The range of activities in which ground stone tools were used can be defined by an examination of functions represented in an assemblage. However, ground stone tools may be used for a number of different purposes during their use-lives because they tend to be large and durable, even after being broken. Attributes that are designed to provide information on the life history of ground stone tools include dimensions, evidence of heating, portion, ground-surface sharpening, wear patterns, alterations, and the presence of adhesions. These attributes can be used to identify post-manufacturing changes in shape and function, and also make it possible to describe the remaining value of an assemblage by identifying the amount of wear or use. This type of information is useful in examining abandonment processes, both for an individual artifact and an entire assemblage. Attributes such as material type, material texture, production input, preform morphology, and plan view outline form provide information on the choice of raw materials for manufacture into finished ground stone tools and the labor cost of producing those tools.

If ground stone artifacts are recovered in situations suggesting that pollen washes could recover useful economic data, that procedure will be conducted in the laboratory, necessitating certain precautions. Ground stone tools from trash deposits or intact features 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.

The first step in laboratory processing will be to brush the entire surface of a tool to remove soil before samples are collected. Grinding surfaces will be scrubbed to collect embedded materials, using distilled water and a toothbrush. The size of the area that is 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.

In general, the analysis of ground stone tools should yield both direct and indirect information about subsistence patterns, and may help determine some of the types of foods that were consumed by site occupants. This analysis should provide information useful in examining Research Questions 2–4. Pollen washes on suitable specimens can provide information on plant food use, and whether those foods were part of a traditional New Mexican diet (Research Question 3). Ground stone tools represent locally manufactured items rather than imports, and will be useful in assessing the economic model for the Spanish Colonial period (Research Question 3) as well as the Santa Fe Trail to early Railroad period economy, and evidence of acculturation to local customs by Anglo-American immigrants (Research Question 4). 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 have the correct shape for grinding foods will be examined for residues to help define their function. The presence of such tools can help provide subsidiary economic information. Were site occupants 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 obtained. In particular, were ground stone tools salvaged 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 abandoned sites in the region. If they differ significantly, it is likely that they were manufactured for Spanish use.

Fauna

Nancy J. Akins

Bone from the investigations at the MoA courtyard will be identified using the Office of Archaeological Studies comparative collection following the established OAS computer coded format. This format identifies the animal and skeletal element, how and if the animal and part was processed for consumption, and how taphonomic and environmental conditions have affected the specimen. The following describes and defines the variables.

Provenience and stratigraphic information are linked to the data file through the Field Specimen (FS) number. Within each FS, lot numbers identify a specimen or group of specimens that share attribute values.

Specimen counts indicate how many specimens are described in a line of data. A bone broken into a number of pieces during excavation or cleaning is counted as a single specimen. Use of mechanical equipment and picks to excavate the hard clayey soil, and the often friable condition of the bone can result in a great many shattered elements. Considerable effort will be taken to reassociate these elements in order to provide a greater level of identification and to keep from inflating the counts of unidentifiable specimens.

Taxonomic identifications are made to the most specific level possible. Identifications that are less than certain are flagged in the certainty variable. Specimens that cannot be identified to the species, family, or order are 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. Identifying these as precisely as possible supplements the information gained from the identified taxa.

The skeletal element (e.g., cranium, mandible, humerus) is identified and then described by side, age, and the portion recovered. Side is recorded for the element itself or for the portion recovered when it is axial, such as the left transverse process of a lumbar vertebra. Another variable identifies the commercial cut for that particular body part. When modern butchering cuts are observed for domestic ungulates (cattle, sheep/goat, and pig) these specimens are assigned to cuts based on a butchering chart found in Schulz and Gust (1983:48). The cuts used include the head, tongue, neck, chuck, rib, short loin, sirloin, rump, round, hind shank, tail, short rib, short plate, brisket, arm, fore shank, and feet. When an individual specimen can be assigned to more than one cut, the one that held the larger portion is used.

Age is estimated at a general level as: fetal or neonate, immature (up to two-thirds mature size), young adult (near or full size with unfused epiphysis or young-textured bone), and apparently mature. The criteria used to assign the age is also recorded, generally, the size, dental development or wear, epiphysis closure, or whether the texture of the bone is compact as in mature animals or porous as in less than mature animals. Aging based on texture alone is not absolute since most growth in mammals takes place near the articular ends, diaphyseal bone can be compact and dense while the bone near an end retains a roughened or trabecular structure (Reitz and Wing 1999:73). As a result, fragments from the same bone can be coded as different ages and juvenile bone is probably under numerated. This is particularly true of the bone from the Executive Office project (Akins 2014b) where most was exfoliated or checked so that mature was recorded unless there was explicit evidence that the animal was young. When a part could be aged by epiphyseal fusion or dental wear, the age estimates are recorded in the comment variable.

The portion of the skeletal element represented by a specimen is recorded in detail to aid in discerning patterns related to processing. Indeterminate fragments are generally recorded as either long bone shaft or end fragments or as flat bones (small pieces that are probably cranial, vertebra, pelvis, carpals, or tarsals).

Completeness refers to how much of the skeletal element is represented by the specimen (analytically complete, more than 75 percent complete but not analytically complete, between 50 and 75 percent complete, between 10 and 50 percent, or less than 10 percent complete). Completeness provides information on whether a species was intrusive and on the degree of processing, environmental deterioration, animal activity, and thermal fragmentation.

Taphonomy, or the study of preservation processes and how these effect the information obtained, has the goal of identifying and evaluating some of the non-human processes effecting the condition and frequencies found in a faunal assemblage (Lyman 1994:1). Taphonomic processes monitored include those

caused by the environment and animals. Environmental alteration includes pitting or corrosion from soil conditions, sun bleaching from extended exposure, checking or exfoliation from exposure or soil conditions, root etching from the acids excreted by roots, polish or rounding from sediment movement, a fresh or greasy look, and damage caused by the soil or minerals

Animal alteration is recorded by source or probable source. Choices include carnivore (gnawing, punctures, and/or crushing), probable scat, rodent gnawing, carnivore, and rodent, and altered but the agent is uncertain. Bones recorded as probable scat have rounding on edges and portions of the inner and outer tables can be partially dissolved.

Burning can occur as part of the cooking process, part of the disposal process when bone is used as fuel or discarded into a fire, or after it is buried. Burn color is a gauge of burn intensity. A light brown, reddish, or yellow color or scorch occurs when bones are lightly heated, while charred or blackened bone becomes black as the collagen is carbonized, and when the carbon is oxidized, it becomes white or calcined (Lyman 1994:384–388). Burns can be graded, reflecting the thickness of the flesh protecting portions of the bone, or dry, light on the surface and black at the core, or blackened on only the exterior or interior, indicating the burn occurred after disposal when the bone was dry. Graded or partial burns can indicate a particular cooking process, generally roasting, while complete charring or calcined bone does not. Uniform degrees of burning are possible only after the flesh has been removed (Lyman 1994:387) and generally indicates a disposal practice. While a wide range of colors and intensities occur, this information is summarized in the burn type variable, which identifies the intent rather than a detailed visual description of the specimen. Complete and some graded burns represent discard processes and are recorded as discard. Patterns that suggest the part was roasted (e.g. graded burns that are scorched where the flesh is thick and burned black at the end where there is little or no flesh) are recorded as roasted. In other cases, the burn appears accidental or intentional (e.g. dry burns or a burned tip) and is recorded as such. Potential boiling is recorded as boiled (color change, waxy, rounded edges) or boiled(?) when it is less clear.

Evidence of butchering and processing is recorded as a combination of morphology, tool type, and intent. Variables identify substantial cuts, chops, fine cuts (defleshing), impact breaks, spiral breaks, marrow breaks, snaps, and saw cuts. The location of these on the element is also recorded. A conservative approach is taken to the recording of marks and fractures that could be indicative of processing animals for food, tools, or hides since many natural processes result in similar marks and fractures. Spiral fractures were recorded based on morphology, while recognizing there are other causes and that these can occur well after discard. Impacts require some indication of an impact, generally flake scars or evidence of percussion. These were not recorded when they were ambiguous or accompanied by carnivore gnawing.

A comment section is used to flag specimens with verbal comments. For example, when a more specific age can be assigned it would be recorded as a comment.

While value and yield information are best suited to modern commercial butchering practices, they can still provide information on assemblages dating to the Spanish Colonial and Territorial periods. The cuts may not have been as standardized but certain parts would still have greater yields and some would be higher valued. How parts were distributed among and within households could provide information on the sources of the trash deposits—individual households or more institutional settings.

Value is based on Schultz and Gusts' values (1983:48) that were ranked following contemporary beef prices. Values were added for the head, tongue, and tail resulting in 10 values, with 1 representing the lowest value cuts. For analysis, these were reduced to 5 values (lowest, low, moderate, high, highest). Yield is a slightly different system of ranking proposed by Lyman (1987:61–65) and is based on cost efficiency rather than economic value. In theory, the upper economic class would be less concerned with yield and more likely to purchase high- and medium-yield cuts regardless of cost while those at the lower end of the economic spectrum would chose high-yield medium-cost cuts. Again, the yields were divided into five units based on Lyman (1987:62), with a yield of 1 producing the least amount of edible meat. Yields were rated very low, low, moderate, high, and highest.

Once the data are entered and checked, the provenience, provenience groups, and chronological information will be added. Data will be tabulated and analyzed using SPSS (pc version 11 and 22).

The sample of fauna recovered during the MoA courtyard investigations is expected to be small. The primary research contributions for the faunal analysis will be identifying and comparing the taxonomic, value, and butchery patterns of the assemblages with those of adjacent projects in the downtown Santa Fe area.

The choice of animals used, the cuts and body parts represented, and the methods used to butcher animals all provide information that can be used to confirm or amend interpretations of the origins and dating of fill deposits. If intact structures or features are encountered, the range of interpretation will be broadened.

Archaeobotanical Analysis

Pamela McBride

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 useful in the examination of economic changes between the Spanish Colonial and Territorial period components.

Botanical studies will include flotation separation of plant materials from soil samples and species identification and (where appropriate) morphometric measurement of macrobotanical specimens. 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. Heavier particles to settle out after a short interval, the suspension is poured through a screen lined with fabric (approximately 0.35 mm mesh). The floating and suspended materials are dried indoors and are 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 post-occupational 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 post-discard effects.

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, me-

dicinals, 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? In addition to subsistence information, botanical analysis data will contribute to the questions of dating and origins of the courtyard deposits.

7 ⇓ Summary and Conclusions

Investigations described in this plan are driven by a narrowly defined area of subsurface disturbance in the MoA courtyard. Most of the area to be disturbed by drain and pipe installation will be monitored, since the infrastructure will be installed predominantly within the previously disturbed gardening zone and will be installed in place of existing drainage features. In one area, a deep excavation is required for the drainage modifications; that area may or may not include intact cultural deposits. If intact cultural deposits are found in the two adjacent 1 x 1 m test units, the drainage area will be excavated and documented as part of a detailed characterization of the construction setting of MoA. If no intact deposits are encountered in the test units within the depth of the drainage improvements, the remainder of the area needed for the drainage improvements will be removed by construction contractors. OAS will monitor the removal.

If present, and within the relatively shallow depth of the proposed construction excavation, archaeological investigations may encounter construction fill that was placed preliminary to MoA construction. This could be underlain by demolition debris from structures originally built as part of Fort Marcy. In turn, there may be intact architectural elements of these structures, with surfaces and functions as they were repurposed in the early twentieth century from military to civic use. Traces of Spanish Colonial structures have been found during archaeological investigations immediately outside of the MoA footprint, but it is unlikely that the courtyard investigations will penetrate to those depths.

It is fitting that, as we approach the 100th anniversary of the MoA, this project may be able to contribute some small amount of tangible information about the details of demolition and construction that resulted in its designation as a State and National Register Property and as the rich cultural institution that we enjoy today.

Investigations will be initiated in late August 2016 and will be completed when monitoring for drainage and re-landscaping is complete (expected by mid-November 2016). Analyses and reporting will be completed by December 2017, and artifacts will be curated with the Museum of Indian Arts and Culture at that time. The total site area for LA 930 is approximately 2370 square meters. The courtyard area to be monitored is approximately 116 sq m (4.9 percent of the total site area), and the maximum area proposed for hand excavation is 4.6 sq m (0.2 percent of the total site area). The minimum area for hand excavation will be 2.0 sq m, assuming that no intact deposits are encountered, or 0.1 percent of the site area.

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