2011

Ground-Truthing Excavations at Los Adaes (16NA16) May, 2010

George Avery
Stephen F Austin State University, averyg@sfasu.edu

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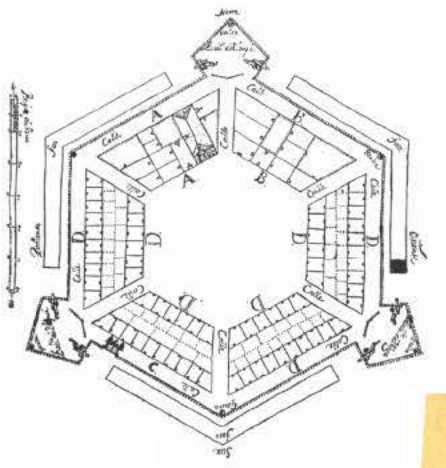

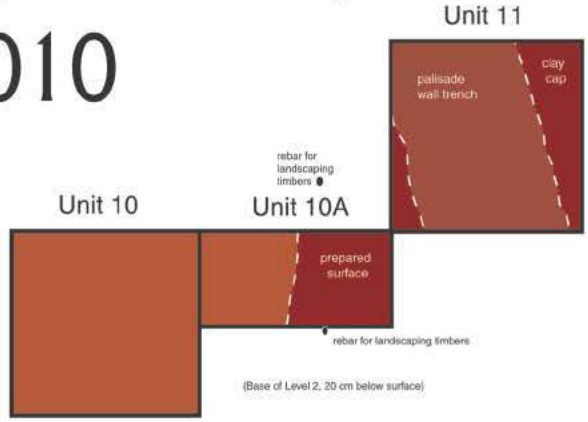

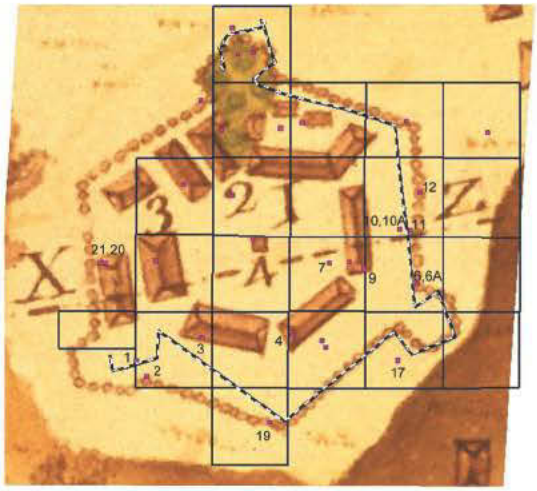

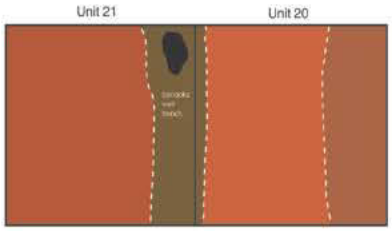

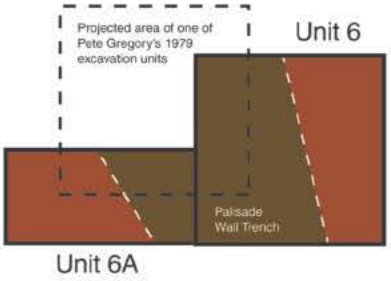

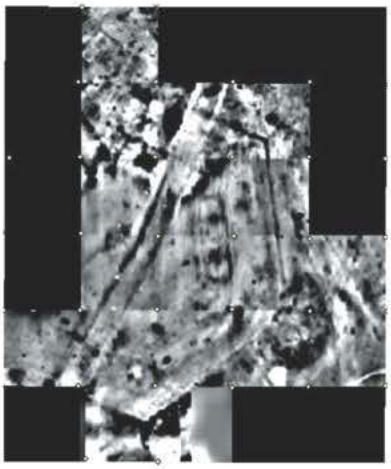

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Army Engineer Research and Development Center
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by
George Avery
Center for Regional Heritage Research
Dept. of Social and Cultural Analysis
Stephen F. Austin State University
Nacogdoches, Texas
with contributions by
LeeAnna Schniebs and **Leslie Bush**

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Abstract

In May 2010, Stephen F. Austin State University—funded by the Army Engineer Research and Development Center (ERDC) Construction Engineering Research Laboratory (CERL)—conducted excavations at Los Adaes State Historic Site (16NA16) to ground-truth the results of a geophysical survey of the presidio area of the site conducted by ERDC CERL and the University of Arkansas at Fayetteville Center for Advanced Spatial Technologies (CAST) in May 2009. The geophysical investigation was a component of a 5-year study funded by the Environmental Security Technology Certification Program (ESTCP). Los Adaes State Historic Site was that project's demonstration site. This monograph focuses solely on the results of ground-truthing excavations which included the hand excavation of fifteen square meters (fourteen 1x1 and two 0.5x1.0 m units) targeted on carefully selected geophysical anomalies. The anomalies selected for excavation represent suspected historic archaeological features or other deposits of special interest, including wall trenches and other features of the palisade wall of the presidio and structural elements related to interior buildings. For the most part, anomalies documented by the geophysical survey were verified by the field excavations. The wall trench of portions of the eastern and southern palisade were clearly identified by the excavations, and wall sections and interior features of several interior structures documented by the geophysical survey were also verified by the ground-truthing excavations. All artifacts and associated records will be curated with the Louisiana Division Archaeology.

Acknowledgements

First and foremost, Mike Hargrave and the Army Engineer Research and Development Center (ERDC) Construction Engineering Research Laboratory (CERL) are most gratefully acknowledged for initiating and funding this project. The results of the geophysical survey were truly spectacular and it was an honor for Stephen F. Austin State University (SFA) to be selected to conduct the ground-truthing excavations. The ERDC CERL funding allowed the participation of the finest excavators and analysis specialists in the area, including excavators Bo Nelson and Mark Walters, metal artifact authority Jay C. Blaine, faunal analyst LeeAnna Schniebs, and macrobotanical analyst Leslie Bush. In addition, the following SFA student workers were employed to complete the lab work: Alyssa Berard, Melanie Johnson, Meg Geddie, Jack Klug, Emily Williams, Heather Merchant, Ashley Hayward, Allison Machalek, Jenna Pierce, and Heather Wobbe.

A special note of thanks goes to Pete Gregory and Jeff Girard of Northwestern State University. Both were very generous with their time, expertise, and experience. Pete's insights from his years of excavation at Los Adaes were very helpful and Jeff did all the transit work mapping in units and also sharing his soil expertise. Jeff's daughter Chelsea volunteered for one day, helping her dad with the mapping and also water screening.

The Louisiana Office of State Parks was very accommodating throughout the entire project, and special thanks go to Justin French, Site Manager at Fort St. Jean Baptiste, for all his help with coordinating the project.

The efforts of Eileen Ernenwein, University of Arkansas at Fayetteville Center for Advanced Spatial Technologies (CAST), were truly incredible as she selected anomalies to test and generated the images and rationale for testing each anomaly. Both are included in the present report.

The participation of volunteers was essential to the successful completion of the fieldwork as the recovery of very small artifacts required the very labor intensive water screening of excavated deposits through window screen. Cynthia Sutton—Director of the Cane River Heritage Area, Chip McGimsey—Louisiana State Archaeologist, Pete Gregory—NSU Master's of Heritage Resources program, and Ray Berthelot—Chief of Interpretive Services, Louisiana Office of State Parks are appreciated for coordinating volunteers from their respective agencies and programs. It was especially impressive that Nick Neylon, Chief of Operations—Louisiana Office of State Parks came to help out with the water screening. The following organizations and individuals are gratefully acknowledged for their contribution to the water screening effort:

Cane River National Heritage Area	Robert Caldwell, student intern
NSU MAHR Program	Thomas Parrie, Marie Richards, Chaylon Woods
Los Adaes Foundation	Mitzi Roe and son Tucker
East Texas Archaeological Society	Morris Jackson
Louisiana Archaeological Society (Shreveport Chapter)	Jameel Damlouji, Mike Montgomery

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Louisiana Division of Archaeology	Kellye French, Sherry Wagener, Jessica Bush, Cheraki Williams, Dennis Jones and daughter Jenny
Louisiana Office of State Parks	Nickolas Neylon, Ray Berthelot, Daniel Stout, Tommy Adkins, Rhonda Gauthier, Jeremy McCormick

The SFA Center for Regional Heritage Research, directed by Mark Barringer, coordinated the distribution of funds for the project. The administrative assistance of Kelly Downey and April Davis of the Heritage Center is much appreciated. Thanks also go to Carrie Brown and Jennifer Hanlon of the SFA Office of Sponsored Research for all of their assistance. The support of the SFA Dept. of Social and Cultural Analysis, chaired by Jerry Williams, was crucial to the success of the lab portion of the project. Lab work was conducted at the SFA Anthropology and Archaeology Laboratory—Leslie Cecil, Director, and also at the SFA archaeology lab annex at the Mission Dolores Museum and Visitor's Center—Alfred L. Broden, Director. The volunteer efforts of Ashley Johnson at the SFA archaeology lab annex at Mission Dolores were much appreciated, and SFA archaeology lab intern Amber Cochran assisted with the labeling of artifacts.

Finally, the comments and suggestions of the following reviewers are gratefully acknowledged: Mike Hargrave, Tom Middlebrook, Morris Jackson, Jay C. Blaine, Jeff Girard, Pete Gregory, and Dennis Jones.

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May 2010

Introduction

In May 2010, Stephen F. Austin State University—funded by the Army Engineer Research and Development Center (ERDC) Construction Engineering Research Laboratory (CERL)—conducted excavations at Los Adaes State Historic Site (16NA16) to ground-truth the results of a geophysical survey of the presidio area of the site conducted by ERDC CERL and the University of Arkansas at Fayetteville Center for Advanced Spatial Technologies (CAST) in May 2009. The geophysical investigation was a component of a 5-year study funded by the Environmental Security Technology Certification Program (ESTCP). Los Adaes State Historic Site was that project's demonstration site. This monograph focuses solely on the results of ground-truthing excavations. A technical report on the results of the overall ESTCP project is presented elsewhere (Ernenwein et al. in prep).

The ground-truthing excavations included the hand excavation of fifteen square meters (fourteen 1x1 and two 0.5x1.0 m units) targeted on carefully selected geophysical anomalies. Anomalies are localized areas characterized by geophysical values that are distinct from their surroundings. The anomalies selected for excavation represent suspected historic archaeological features or other deposits of special interest. Criteria for the selection of these anomalies is specified elsewhere (Ernenwein et al. in prep). The following section on the historical and archaeological background is taken from the background section of the Los Adaes Station Archaeology program annual reports (Avery 2002-2005), which in turn was the background section in Gregory et al. 2004.

Historical and Archaeological Background

Los Adaes (16NA16) is the archaeological site of the capital of the Spanish province of Texas, although today it is located in present-day northwest Louisiana. Named after the Adaes Indians, the site of Los Adaes is defined by a *presidio*, a mission, settlers' houses, agricultural fields, and roads, and was occupied between 1721 and 1773. Much of the site is now owned by the State of Louisiana and is operated as a state historical site by the Louisiana Office of State Parks. The presidio was called *Nuestra Señora del Pilar de los Adaes*, and the mission was called *San Miguel de Cuellar de los Adaes*. Today, historians and archaeologists follow the shorthand observed in 18th century documents and refer to the fort, mission, and settlement as simply Los Adaes.

A French post among the Natchitoches Indians, another American Indian group, was only 20 miles to the east of Los Adaes. Presidio Los Adaes was hardly an exemplary military post (one inspection revealed only two operable muskets for 60 soldiers), and the mission had no living converts (the only baptisms of neophytes were *in articulo mortis*, or, at the hour of death). The French were more interested in trading than acquiring territory, and the American Indians in the

area viewed the Spanish more as a source for material goods rather than spiritual edification. As a result, Los Adaes functioned more as a trading post and settlement, than a fortification and mission. When Los Adaes was abandoned in 1773 the settlement had a population between 300 to 500 people (Gregory and McCorkle 1981; Avery 1999).

Archaeological investigations conducted at Los Adaes by H.F. "Pete" Gregory of Northwestern State University in Natchitoches, Louisiana, have yielded much information about the interaction between the Spanish, French, and American Indian peoples in northwest Louisiana (Gregory 1973, 1980, 1982, 1984, 1985). In contrast to the exploitation and domination which characterized many of the earlier examples of prolonged contact between Spanish and Native American populations, the 18th century at Los Adaes witnessed a Spanish, French, and American Indian relationship based, for the most part, on cooperation, accommodation, and mutual support. A key factor in understanding the interaction between the Spanish, French, and American Indian peoples is the military strength and diplomacy of the Caddo. The Caddo did not need the protection of either the Spanish or French, and in fact, it is very likely that the Caddo could have forcibly removed both the French and Spanish from their land. The Caddo invited the Spanish and French into their territory (Carter 1995), and as long as these European visitors behaved themselves, they were allowed to stay (Gregory and McCorkle 1981; Smith 1995; Avery 1999).

The French set the tone of the European intrusion by establishing economic and social relationships with both the Caddo and Spanish. The French practice of unrestricted trade and intermarriage with both the Caddo and Spanish, and the lack of a French missionary effort created a situation where each cultural group could freely adopt or reject traits of the other groups, without fear of reprisals. The Spanish had little choice but to follow the example set by the French, even though the Spanish would not trade firearms or alcohol to the Caddo. Pete Gregory (1973) has described the Spanish, French, and American Indian interaction as a cultural symbiosis whereby three ethnic groups were able to maintain their distinct identities while adopting certain elements of the other groups. This interrelationship is quite clear in the archaeological assemblage from Los Adaes. The large percentage of French and American Indian artifacts recovered from Los Adaes clearly indicates strong economic ties between the Spanish, French and American Indian peoples.

Historical Background

Ever since the 16th century, Spain was unable to produce all the merchandise required by her colonies, and therefore, the Spanish crown would buy goods from France and other countries, and then sell them in the Spanish colonies at a sizable profit. But the Spanish crown would not allow the French to trade directly with the Spanish colonies. The early leaders of French Louisiana tried to establish trade relations with New Spain at Vera Cruz in 1710, but were rebuffed. Father Hidalgo, a Spanish priest working near the Rio Grande, wrote two letters to the French governor of Louisiana in 1711 that offered to introduce the French to potential Spanish trading partners with the understanding that the French would support the Spanish missionary efforts in this area. The Louisiana governor instructed Louis Juchereau de St. Denis to establish a trading post among the Natchitoches Indians on the Red River, and then to go find Father Hidalgo, who was located near the northernmost presidio San Juan Bautista. In essence, The French had failed to establish trade relations with New Spain through the "front door," at Vera Cruz, and so St. Denis' task was to try the "back door," at presidio San Juan Bautista (Avery 1999).

St. Denis left his post at Natchitoches in 1714 and within the same year, encountered commandant Diego Ramón at Presidio San Juan Bautista (Figure 1). St. Denis' passport made reference to Father Hidalgo's letter, but it has also been suggested that the St. Denis and Ramón families were not complete strangers—it appears that they also had economic ties in Europe (Lemée 1998). Strangers or not, it was still against Spanish law for the French to trade directly with the Spanish colonies, and so St. Denis was placed under house arrest. He was held literally in the house of Diego Ramón, and within two years had married the step-granddaughter of Diego Ramón and was hired to guide the expedition to set up Spanish presidios and missions in response to his own trading post at Natchitoches. Diego Ramón's son, Domingo Ramón, who was the uncle of St. Denis' new wife, led the expedition (Gregory and McCorkle 1981; Lemée 1998; Avery 1999).

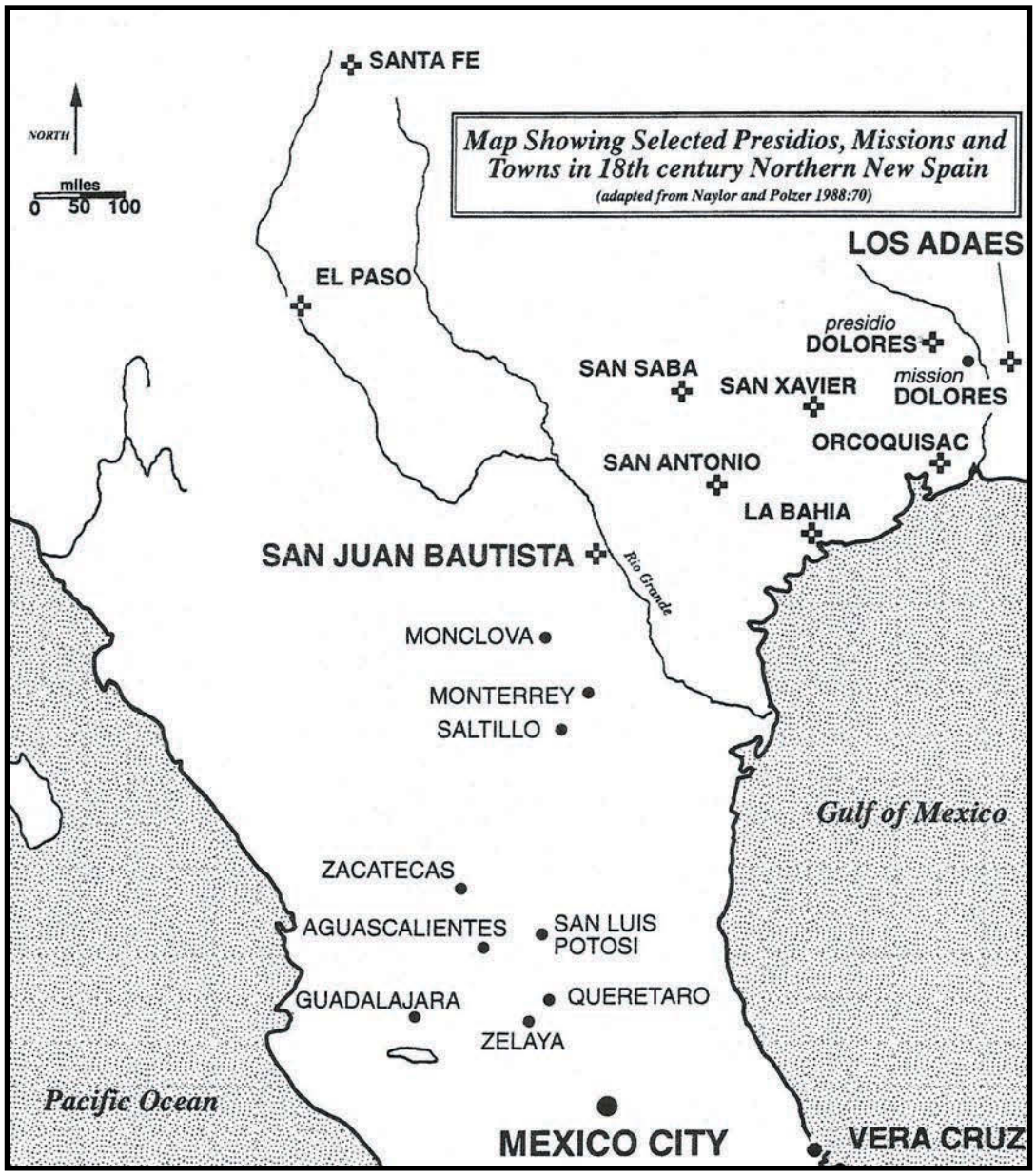


FIGURE 1. Map showing selected presidios, missions, and towns in 18th century northern New Spain.

The Ramón expedition set up one presidios and six missions, including a mission among the Adaes Indians, located near modern-day Robeline, Louisiana. St. Denis returned to his trading post among the Natchitoches, and Domingo Ramón became commandant of Presidio Dolores in modern-day northeast Texas, so at the onset, Mission Los Adaes was located between a Spanish presidio and French trading post whose leaders were related by marriage. This set of familial circumstances set the tone of Spanish-French relations for much of the 18th century (Gregory and McCorkle 1981; Avery 1999).

The only military conflict between the Spanish and French in eastern Spanish Texas came in 1719, when France and Spain were at war and the French in Louisiana attacked the Spanish on both eastern and western fronts. On the eastern front, Spanish Pensacola was attacked with upwards of 1200 men, but on the western front, six French soldiers led by Lieutenant Blondel marched out of Natchitoches and entered the Spanish mission for the Adaes. The priest and one of the soldiers were off visiting at Mission Dolores, which left a lay brother and one soldier at Mission Los Adaes. The soldier was asleep and was easily captured, but the chickens did not submit so readily to the French, and made such a racket that Lieutenant Blondel was thrown from his horse. The lay brother escaped, and the French lieutenant made prisoners of the Spanish soldier and the chickens, and returned with them to Natchitoches. Historians refer to this event as the "Chicken War" (Gregory and McCorkle 1981; Chipman 1992; Avery 1999).

In 1720, there was peace again between France and Spain, but the new governor of Spanish Texas, the Marqués de San Miguel de Aguayo, had already assembled an expedition to drive the French from east Texas. Rather than re-occupy the original mission Los Adaes, Aguayo chose to locate the new mission closer to Natchitoches, about one and a half miles east of the former location (Foster 1995). In addition, a presidio was built. The architect's 1720 plan of the presidio at Los Adaes designates the dwellings for the commandant, priests, soldiers, and officers (ACQ 1721-1729) (Figure 2). The church is clearly shown, the warehouses are designated, and the streets and the defensive ditches in front of the stockade are labeled.

Aguayo's plans for a mission and presidio at Los Adaes reflected a clear understanding of the social dynamics necessary for a successful settlement. The two short-lived east Texas missions established in 1690 (Habig 1990:152-153) caused difficulties with the local Native American groups. Part of the problem was attributed to wandering Spanish livestock (John 1975), but mostly it was viewed as a result of the "evil conduct of the soldiers" stationed at the missions (Barker 1929:28). The Spanish soldiers were unmarried men and they created problems with the American Indian women. Aguayo realized that more of a family atmosphere was needed to establish successful settlements, and he therefore focused his efforts on recruiting married men—many of whom were in jail at the time, but those who had committed less serious crimes were favored over the more serious criminals (Yoakum 1855:74-6, Buckley 1911). Of the 100 soldiers who were stationed at presidio Los Adaes by Aguayo in 1721, 31 had families (Foster 1995:155). It is estimated that by the end of the 18th century, 25% of the population of New Spain was of mixed heritage as a result of intermarriage between Spanish, Native American, and African peoples (Seed 1988:25). A document from 1731 that describes the *casta* or (roughly) ethnicity of the soldiers at Los Adaes indicates that 50% were of mixed Spanish, Native American, and African heritage (Avery 1997).

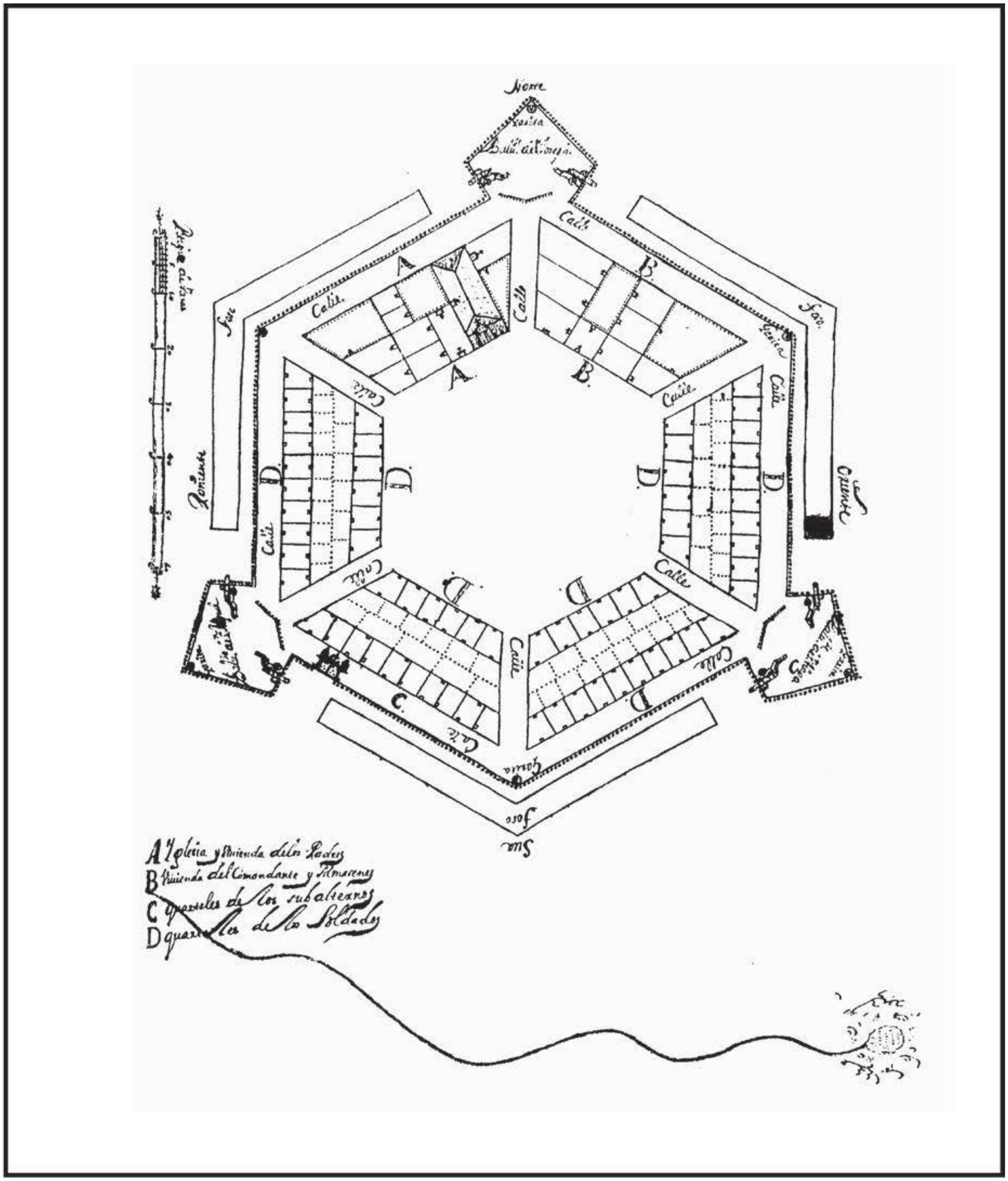


FIGURE 2. Plan of presidio Los Adaes showing stylized location of a drainage south of the presidio, fed by a spring to the east (ACQ 1721-1729).

By 1727, it was clear that the French had no intention of attacking Los Adaes, and a military inspector recommended reducing troop strength from 100 to 60. The inspector, Rivera, stated that even if there were 200 soldiers at Los Adaes, they still would not be able to defend against an attack from the French. The French at Natchitoches numbered less than 40 soldiers, but they could rely on upwards of 1000 Native American allies, while the Spanish apparently, were not counting on any Native American support. Los Adaes officially became the capital of the province of Texas in 1729, and many of the Texas governors became involved in illegal trade with the French. The historical documents tell of political, social, and spiritual interaction as well. Priests at Los Adaes would say Mass at the French post before permanent clergy were present, and troops from Los Adaes, accompanied by American Indian Indians, went to the aid of the French when Natchez Indians attacked the post at Natchitoches in 1731 (Gregory and McCorkle 1981; Weber 1992:172-177; Avery 1999).

In 1762, near the end of the French and Indian War, France ceded all its holdings west of the Mississippi River (and also including New Orleans) to Spain so that they would not fall into the hands of the British. Therefore, the French fort at Natchitoches became a Spanish fort. In 1767, an inspection of the Texas forts was conducted by Rubí to determine which forts should remain open now that the so-called French "threat" had disappeared. The Rubí inspection of Los Adaes resulted in a map of the fort, mission, associated buildings, agricultural fields, and roads. This map, drawn by Joseph Urrutia, is incredibly detailed and identifies the governor's house, chapel, guardhouse and powderhouse inside the fort as buildings 1, 2, 3, and 4, respectively (Figure 3). Profile and frontal views of these buildings are also part of the Urrutia map, and the architectural style is revealed as being more French than Spanish (Figure 3). The presidio buildings appear to represent examples of French *poteau en terre*, or post in ground construction with slats wedged between the posts and filled with *bousillage*—a mixture of mud and moss or deer hair (Gregory 1984:14). The gabled, shingled roofs show, in profile, the detail of king post construction, a Norman tradition. This is a clear contrast to the flat-roofed adobe structures found at the other Spanish presidios of Texas (see Moorhead 1975).

The inspections of Los Adaes found that there was no longer a need to maintain the fort and mission, and an order was issued in 1772 to close Los Adaes. In 1773, the fort and mission were closed and roughly 300 to 500 people left Los Adaes for San Antonio. Many of the people from Los Adaes, or Adaesaños, were not happy in San Antonio, and they left to form a settlement initially at Bucareli, and later in 1779 at Nacogdoches, Texas. Adaesaños were also returning to Louisiana, and by 1814 a village called Adaes was established within two miles of the abandoned Presidio Los Adaes (Gregory and McCorkle 1981; Gregory 1973, 1984; Pleasant and Pleasant 1990).

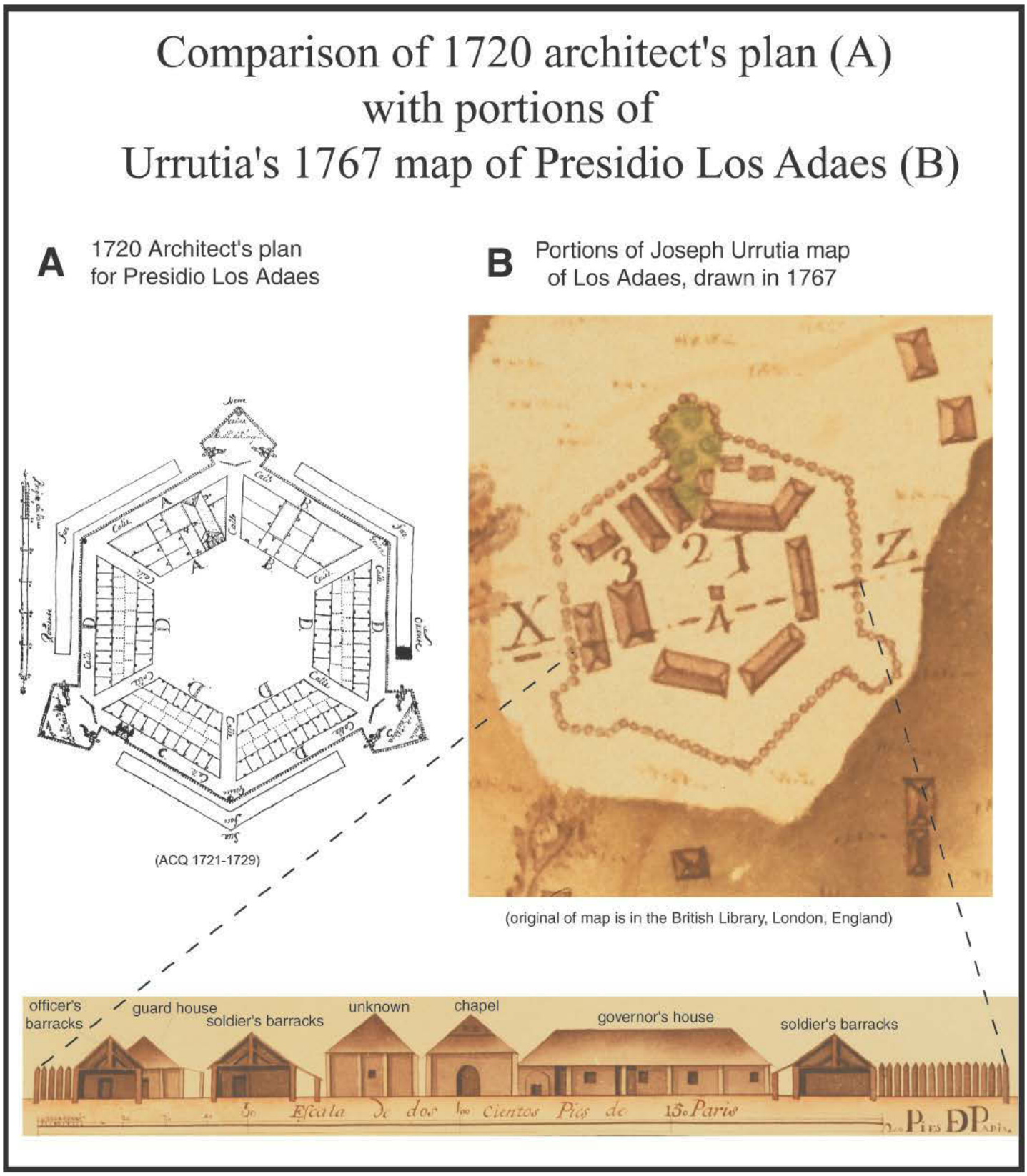


FIGURE 3. Comparison of 1720 architect's plan with portions of Urrutia's 1767 map of presidio Los Adaes.

Archaeology at Los Adaes (16NA16) Overview

The fort and mission of Los Adaes are located on hill spurs separated by an intermittent, spring-fed branch. The mission area has seen limited testing, and most of the archaeological work at Los Adaes has focused on the presidio and adjacent structures. Initial excavations at the site focused on site validation, and later excavations were conducted to determine content and extent of the site. Excavations in the area of the presidio include portions of the palisade wall and two bastions of the fort, portions of the governor's house, and three structures outside the fort (Gregory 1973, 1980, 1982, 1984, 1985) (Figure 4). Figure 5 shows the rough locations of excavated areas on the Urrutia map. Recent archaeological investigations at Los Adaes have focused on the excavation of stumps of storm-damaged trees in the area of the presidio (Avery 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002).

Variation in both status and ethnicity has been identified among the structures excavated at Los Adaes. Higher status ceramics such as Chinese porcelain, German stoneware and decorated American Indian wares are concentrated around the governor's house, and the high proportion of French faience from one structure outside the fort suggests the presence of a French trader. Several activity areas have also been identified and include a kitchen area associated with evidence for gun repair and shot production just outside the northern palisade, and a probable blacksmith area indicated by concentrations of slag in the southwest part of the fort, or possibly just outside the fort (the location of the western palisade line has not been precisely determined).

The cooperative nature of the relationship between the Spanish, French, and American Indian groups at Los Adaes is abundantly clear in the archaeological assemblage. There are roughly equal amounts of tin-enameled wares from France and Spanish colonial Puebla, located in present-day Mexico. Fragments of French wine bottles are well represented at Los Adaes, and most of the lead cloth seals are French. French trade knives, and French and British firearm fragments occur with less frequency than their Spanish counterparts. British goods, including tin-enameled sherds, salt-glazed ceramics, and pipestem fragments occur in small amounts, as do German (stoneware) and Asian (porcelain) goods. Hispanic traditions are represented by Spanish horse gear, Spanish weaponry, volcanic tuff *metates* and *manos*, Spanish holy medals, a cloth seal from the Spanish port of Cádiz, and *higas* or *ficas* to combat the *mal de ojo*, or evil eye. The most dramatic non-Spanish artifact is the overwhelming presence of Native American pottery at Los Adaes. American Indian pottery, represented by over 30,000 sherds, dominates the Los Adaes ceramic assemblage.

Faunal remains, mostly domesticates; cattle, pigs, horse, etc., represent by bulk over 60% of the Los Adaes collections. Analysis of floral remains indicates the presence of maize and beans, and a variety of hardwoods and pine, along with peach and watermelon (Dering 2001).

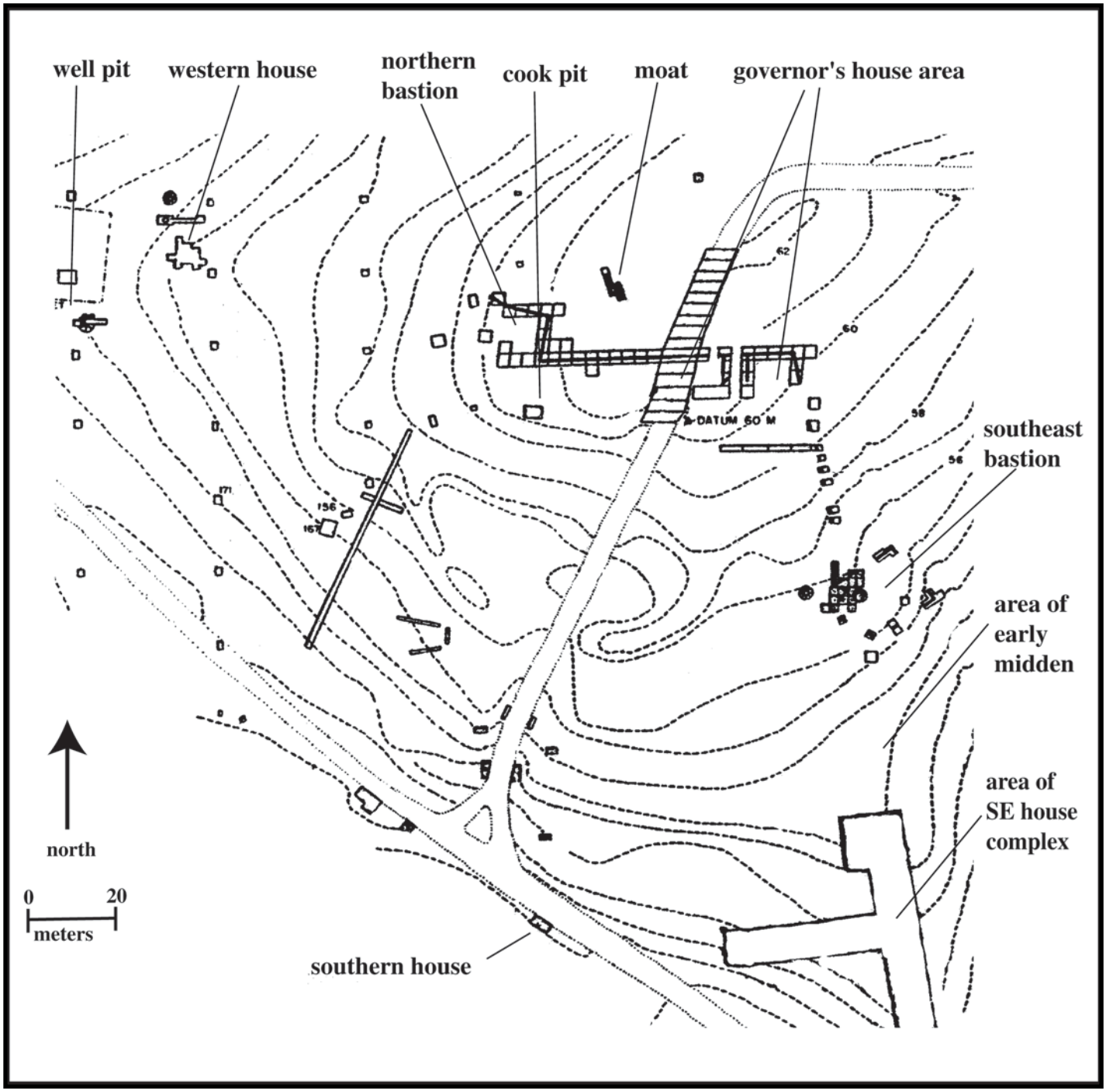


FIGURE 4. Archaeological excavations in the vicinity of presidio Los Adaes (16NA16).

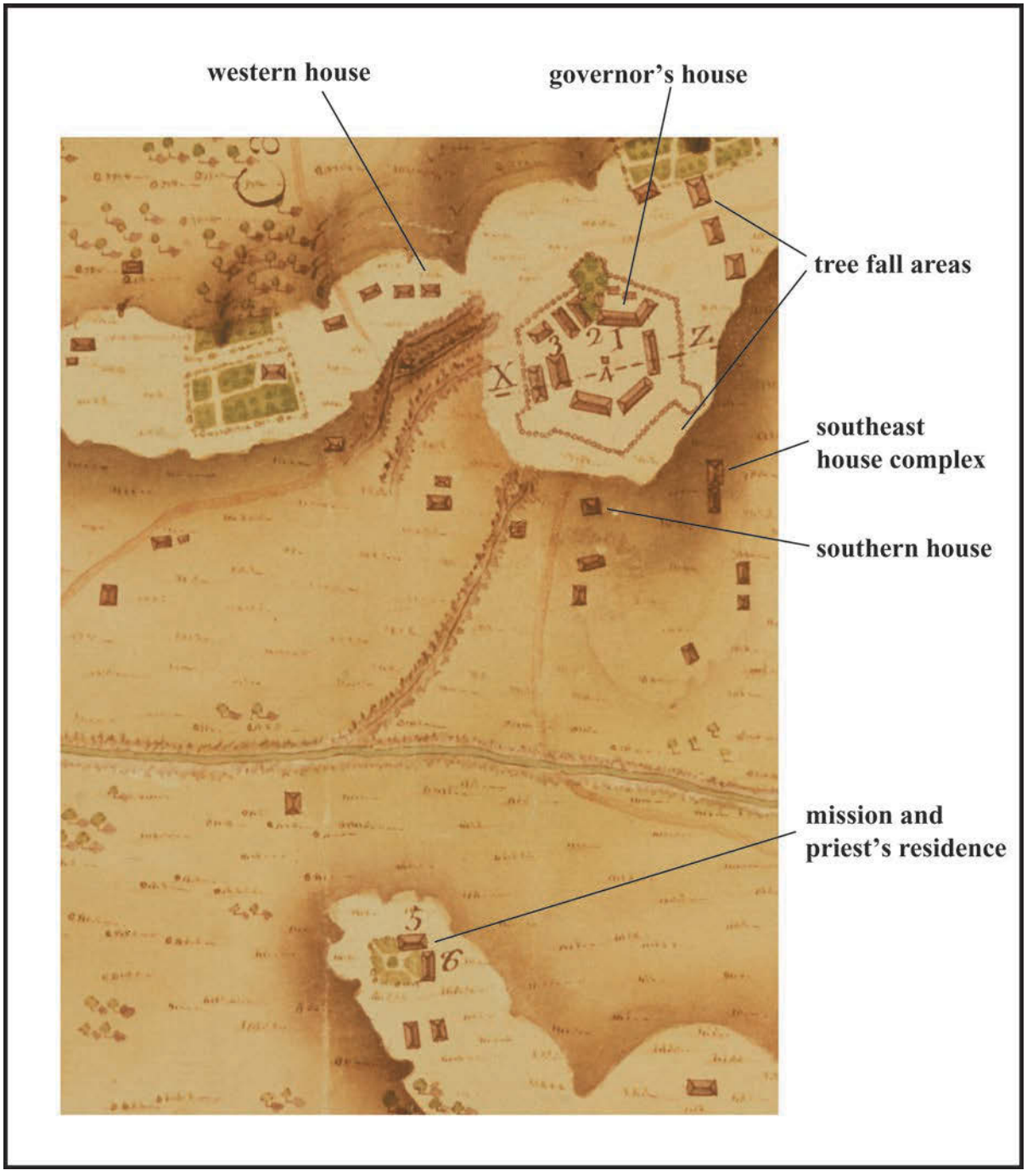


FIGURE 5. Excavation areas plotted on Joseph Urrutia's 1767 map of Los Adaes.

Archaeology of the Presidio

Comparison of the architect's plan and the 1767 inspection reveal that construction of the presidio generally followed the architect's plan (Figure 3). Two notable differences between the plan and the 1767 Urrutia map include the powder house—not shown on the plan, but depicted in the middle of the presidio on the Urrutia map—and the defensive ditch, which is shown on the plan but not depicted on the Urrutia map. Excavations of two bastions and the connecting palisade wall have verified the general accuracy of the Urrutia map, although the angle at the northeastern corner of the palisade is less than that shown on Urrutia's map (compare Figures 3 and 4).

Excavations of the palisade between the northern and southeastern bastions revealed a roughly 50 cm wide, 40 cm deep trench, with post molds spaced no closer than 20 cm. The post molds ranged from 8 to 15 cm in diameter. Test excavations failed to locate the western palisade or southwestern bastion. Excavations of the defensive ditch just north of the northern palisade (Figure 4) revealed a 6 m wide, 1.1 m deep ditch filled with cultural debris and capped with a layer of clay. It appears that the defensive ditch was indeed excavated with the initial construction of the presidio, but was subsequently filled in with refuse and capped with a layer of clay before 1767, the date of the military inspection which produced the Urrutia map. It is not yet determined if all the ditches were excavated or if only portions were completed and then capped.

Several activity areas have also been identified in association with the presidio. A possible kitchen area associated with evidence for gun repair and lead shot production was identified just outside the northern palisade, and a probable blacksmith area defined by concentrations of slag was identified in the area where the southwest bastion would have been located. A cook pit with large re-constructible portions of five Native American pots (Figure 4) was located near the governor's house and the northern bastion, and a well was excavated within the southeast bastion. Another well with a lift or *noria* was excavated outside the western palisade area. A well and a small *jacal* ("western house" on Figure 4) were excavated west of the presidio walls.

Excavations in the area of the governor's house were related to salvage along a 20th century road (1930s) that cut through the presidio (Figure 4). Architectural remains were observed, including areas of burned beams and burned clay. One interesting observation relating to the structural remains of the governor's house was the presence of clinch nails, whose function was to hold boards together (Gregory 1973:100). This reflects a Spanish architectural practice, and although Urrutia's 1767 drawing of the governor's house clearly indicates a French style *bousillage* construction (Figure 3), it is possible that these French influences came later, and that the initial construction was more similar to the Spanish pattern (Gregory 1973:100). German stoneware, decorated American Indian wares, and French polychromes were found in greater proportions at the governor's house than in other areas of the site, and suggest that these items may have been higher status goods.

The area immediately west of the presidio was tested to locate the western palisade and other cultural features (Gregory 1982). Sixty-three 1-x-1-m excavation units were excavated at 12 m intervals along north-south transects spaced 20 m apart in a 4.6 acre area including and adjacent to the hypothesized western palisade. Three trash pits and two wells were investigated,

and another two wells were observed, but not excavated. The western palisade was not located. Unfortunately, this area had been clear-cut just prior to acquisition by the Louisiana Office of State Parks, and it is possible that any remnants of the western palisade were destroyed, however it seems more likely that the excavation strategy was too limited to find this section.

Excavation of Jacal *Structures adjacent to the Presidio*

A French visitor to Los Adaes in 1768 described the structures in the area surrounding the presidio as, "about forty miserable houses, constructed with stakes driven into the ground" (Pagés 1793:54). This French visitor appears to be describing *jacal* type structures. Three structures that have been interpreted as *jacal* type structures have been excavated at Los Adaes, and are located within 50 m of the presidio (Gregory 1973, 1984, 1985).

The first structure excavated just south of the southern wall of the presidio consisted of a shallow pit with a clay cap located south of the presidio ("southern house" on Figure 4) (Gregory 1973:83-86). This shallow pit is located in the vicinity of a structure depicted south of the presidio on the Urrutia map (Figure 5). Similar pits have been observed at the Gilbert Site, an 18th century Norteño site along the Sabine River in Texas (Jelks 1966). No post molds or hearths were observed, but the predominance of Native American ceramics, and the presence of Virginia deer and freshwater mussel suggested a temporary Native American structural depression (Gregory 1973:86).

Another structure associated with pit features was excavated near the southeastern bastion of the presidio (Figure 4) (Gregory 1984). This structure appears to have two components, and it is possible that this structure may correspond to the rectangular house with an adjoining structure depicted on the 1767 Urrutia map near the bastion (see Figure 5). A high proportion of French tin-enameled sherds were recovered from an associated pit feature (Feature 2) and Indian pottery from Mexico was concentrated in this area of the site. It is suggested that this house might have been the residence of a French trader (Gregory 1984).

The third structure excavated at Los Adaes was located west of the presidio, and also appears to be depicted on the Urrutia map ("western house" on Figures 4 and 5). This structure also consists of a shallow depression surrounded by intermittent post molds, a central hearth, and contains post-1740 trash, including the French tin-enameled ware Rouen polychrome, which dates after 1770 (Gregory 1985). Archival documents state that three French traders and their wives remained at Los Adaes after the presidio was abandoned (Avery 1998), and this structure may contain material from this post-1773 occupation. This structure clearly was a small *jacal* structure, even though it may have had French occupants.

Archaeology of the Mission

Test unit excavations conducted by Pete Gregory in 1986 (see Avery 1999:87-93) revealed possible structural remains and a potential burial pit. Burial in church floors is commonly observed at colonial period Spanish missions—church records had recorded 114 deaths at Los Adaes up to 1768. The test units revealed an assemblage different from the midden assemblage from the presidio, in that there was a total absence of faunal remains from the Mission deposits. Native American ceramics predominated, but overall, their numbers (n=99 for nine test units) were much

lower compared to equivalent volumes of midden excavated in the presidio area. Spanish (n=2), French (n=5), and British/Dutch (n=1) tin-enameled wares were also represented, along with a single Asian porcelain sherd. Wrought iron nails (n=5), glass fragments (n=25), and unidentified iron fragments (n=3) round out the 18th century artifact assemblage from Mission Hill.

Research Potential

Los Adaes offers a wonderful opportunity for the study of culture contact in a borderland situation. The site is the best-preserved example of 18th century Spanish, French, and American Indian interaction in the area. Past archaeological investigations have been prudent, and although much has been learned already, there is still potential for addressing a myriad of research questions related to culture contact and the formation of new borderland societies (see Avery 1999:Appendix 1 Research Design). The story of Los Adaes does not stop with the closing of the presidio in 1773 as descendents of the people of Los Adaes still live in northwest Louisiana and northeast Texas. The park facility at Los Adaes is currently in the planning stage for future development, and part of this process has required identifying and understanding the legacy of Los Adaes. Presidio Los Adaes will not be remembered for any military prowess, but rather the legacy of Los Adaes is the new economic and social order that was created during the colonial period, and which still exists today.

Ground-Truthing Excavations

Overview and Archaeological Methods

Eileen Ernenwein (co-principal investigator for the ESTCP project) initially identified eighteen 1x1 meter units in nine areas of geophysical interest, identified as Regions A-I (Table 1). The four right-most columns in Table 1 indicate the type of data within which the anomaly was primarily identified (many anomalies appear in multiple data types). Those columns indicate magnetic gradient (Mag), magnetic susceptibility (MS), ground penetrating radar (GPR) and electrical resistance (Res). The following narrative will focus on the units excavated in each of these regions. Eleven of these initial eighteen units were excavated (Units 1, 2, 3, 4, 7, 9, 10, 11, 12, and 17) and two 0.5x1.0 meter units were excavated as additions to Units 6 and 10, and designated (respectively) as Units 6A and 10A. It was deemed important to test the southern palisade line since no previous investigations had been located there, and so Unit 19 was excavated in Region J. The Officer's Quarters—Region K—was the final region to be investigated with Units 20 and 21. This brought the total to fourteen 1x1 meter units and two 0.5x1.0 meter units, for a combined area of 15 square meters (see Figure 6). Appendix 1 is a photo documentation of the project.

Table 1. Units Selected by Eileen Ernenwein

Region	Unit	Local_East	Local_North	UTM_E	UTM_N	Mag	MS	GPR	Res
A	1	410.84	557.09	472158.765	3508101.742	x			
A	2	413.54	553.46	472161.416	3508098.048	x	x		
A	3	427.36	563.52	472175.272	3508107.980	x	x		
B	4	450.56	564.29	472198.667	3508108.814	x	x		x
B	5	458.4	562.49	472206.411	3508106.858			x	
C	6	483.27	577.53	472231.278	3508121.851	x	x		
D	7	460.36	582.92	472208.387	3508127.237	x	x		
D	8	465.63	583.24	472213.658	3508127.535	x	x		x
D	9	469.25	581.39	472217.318	3508125.679	x	x		
E	10	479.11	590.89	472227.040	3508135.036	x	x		
E	11	481.38	591.88	472229.456	3508135.904	x	x		
E	12	483.99	601.51	472231.985	3508145.606		x		
F	13	440.44	589.57	472188.574	3508133.795	x	x	x	
G	14	434.78	644.38	472183.110	3508188.273		x		
G	15	436.23	637.42	472184.608	3508181.324	x	x	x	
G	16	440.36	637.92	472188.660	3508181.914	x	x		
H	17	478.23	557.46	472226.163	3508102.109	x		x	
I	18	435.15	600.57	472183.338	3508144.824			x	

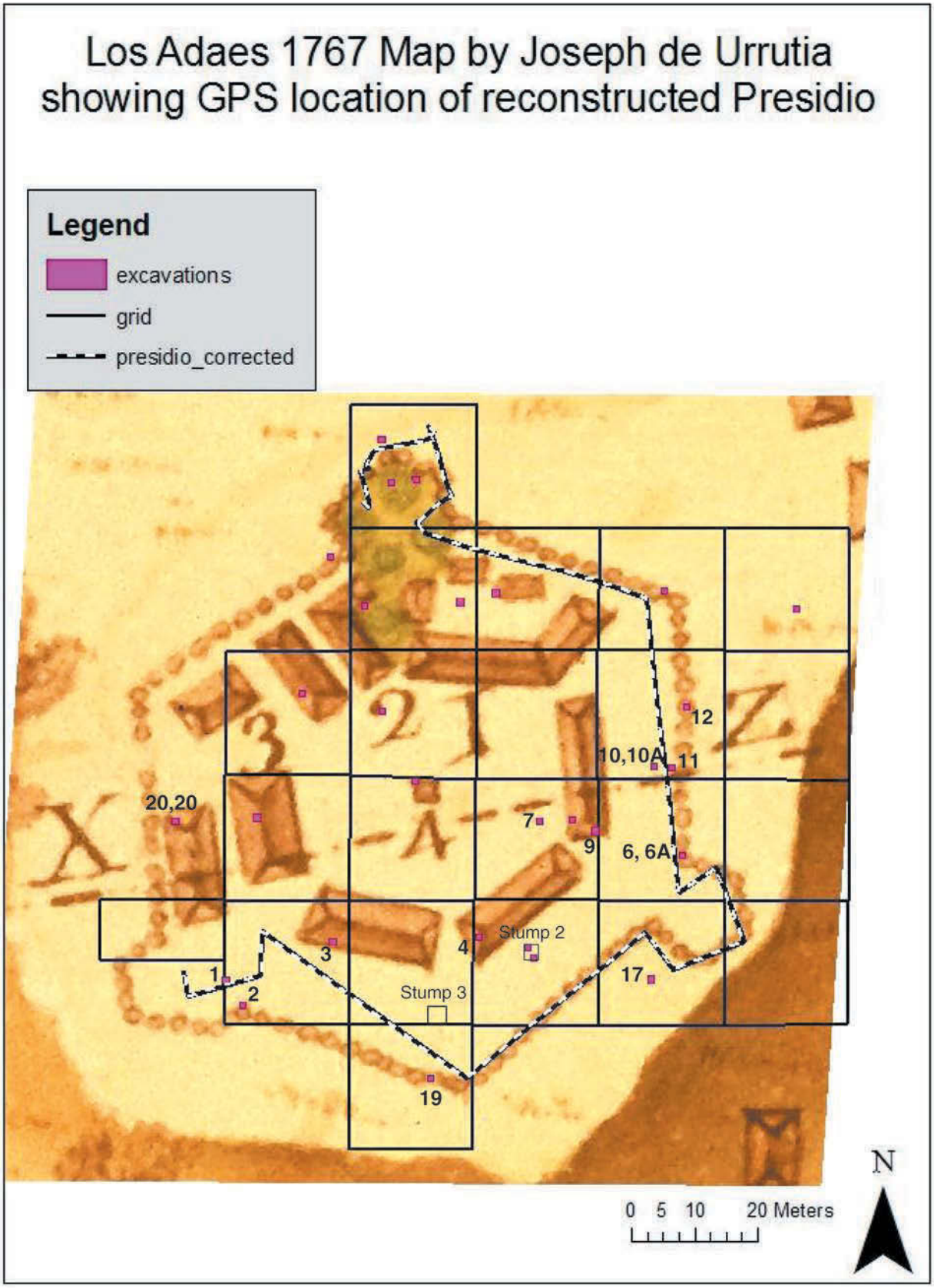


FIGURE 6. Ground-Truthing Test Units plotted on 1767 Uruttia map.

The goal of the ground-truthing project was to demonstrate the effectiveness of the geophysical survey techniques with as little impact to the site as possible. A one by one meter unit was selected as the smallest unit size that would allow for the accurate assessment of the target areas. The two 0.5x1.0 meter units were extensions of previously excavated one by one meter units. All units were excavated in ten centimeter levels. Soil probing augmented the unit excavations. Two units were excavated to 30 cm bs and one unit was only excavated to 10 centimeters BS—all other units were excavated to 20 cm bs.

All fill was water screened through 1/16 inch mesh nylon window screen in the field. In the lab, all recovered material was screened through ¼ inch hardware cloth. All material from the >¼ inch fraction—including natural rock and organics (i.e roots) was documented. Modern roots were photographed, weighed and discarded. All other material in the > ¼ inch fraction was counted and weighed. Cultural material was pulled from the < ¼ inch fraction in the lab. This included glass beads and fragments of pottery, glass, lithics, and metal. Diagnostic bone was pulled from the < ¼ inch fraction, in addition to charred seed/nut remains. The remaining < ¼ inch sample was weighed. It is possible that variation in naturally occurring material such as ironstone concretions and roots may result in variation in the geophysical signature of the various units. A detailed discussion of the material recovered from the current excavations will follow the narrative of the sixteen excavation units in the regions defined by Eileen Ernenwein. The description of each region and the rationale for choosing the particular units was written by Eileen Ernenwein and she also produced the accompanying figures showing the results of the various geophysical survey techniques.

Region A—Possible structures near SW Bastion, Units 1, 2, and 3

Region A is the area surrounding the southwest bastion, where some magnetometry and MS anomalies may be associated with structures and/or parts of the presidio (Figures 6-7). Unit 1 was located to test for a linear, roughly E-W anomaly determined by magnetometry (Figure 6). It was thought that this might be a possible structure or part of the palisade. If Unit 1 is part of the palisade, then this could mean that the map is not scaled very well in this area. Unit 2 was placed to test for a large anomaly in both magnetometry and MS in this location that was associated with a rectangular pattern (Figures 7-8). Unit 3 was placed in the area of a linear feature determined by both magnetometry and MS. This feature is associated with a structure depicted on the 1767 map and is described as a barracks building.

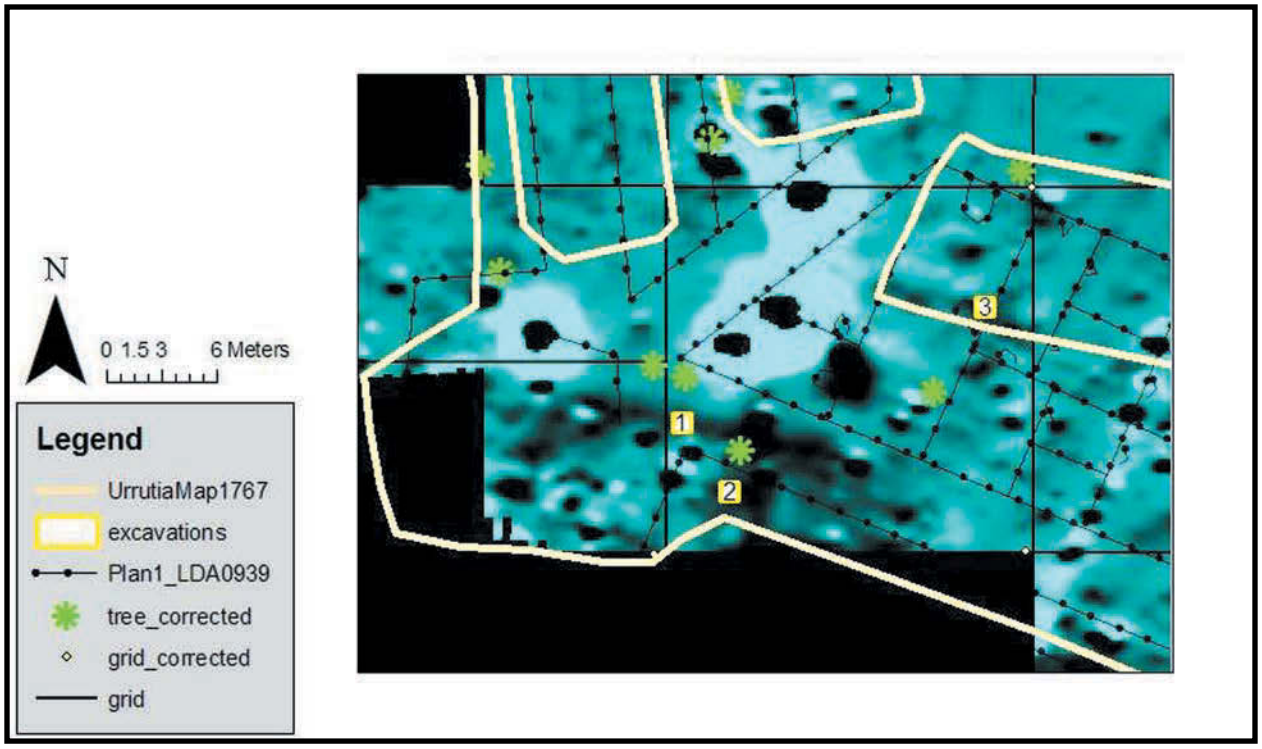


FIGURE 7. Region A, Magnetometry.

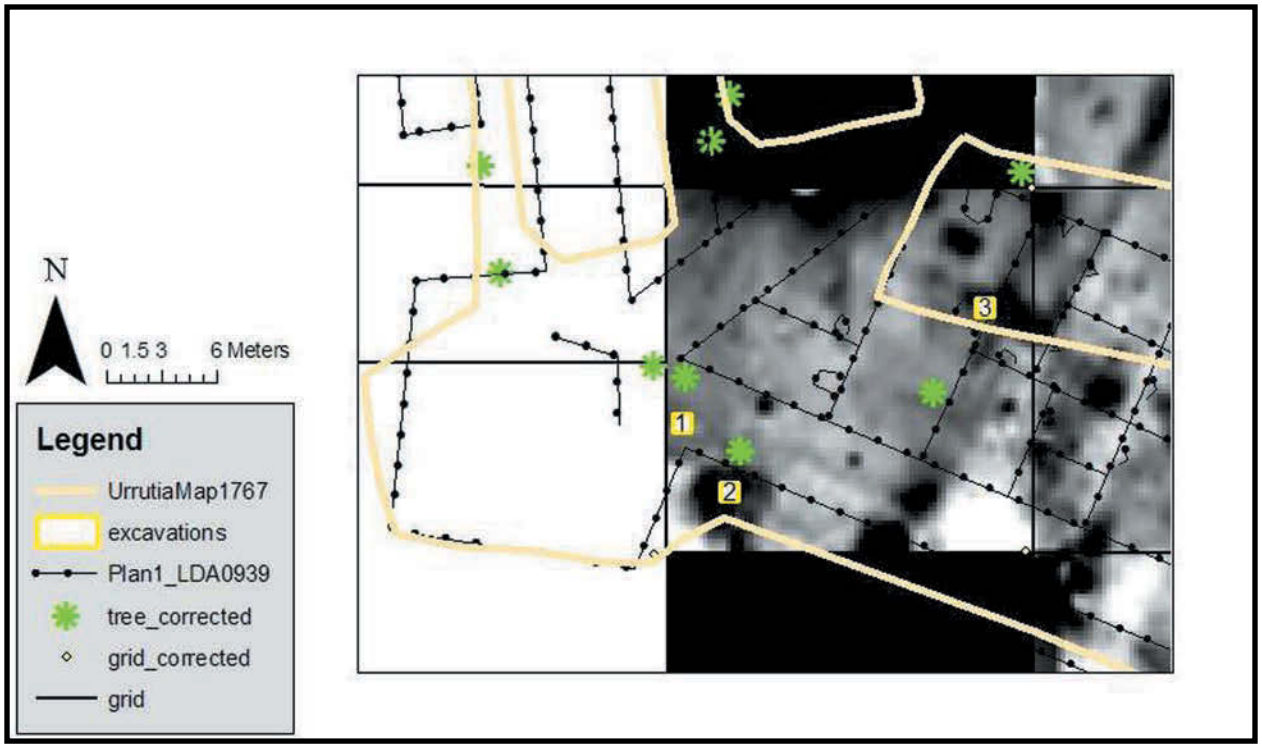


FIGURE 8. Region A, Magnetic Susceptibility.

Unit 1 was excavated to a depth of 30 cm below surface (cm bs) in three 10 cm levels. A roughly east-west anomaly was observed at 17 cm bs (Figure 9), but was no longer visible at 20 cm bs. This anomaly consisted of two dark brown linear areas, approximately 12-15 cm in width, paralleling the north and south walls of the unit. The middle portion was a clay loam that very compact and appeared to be fill (a culturally deposited sediment) as it contained a moderate to high density of artifacts (see Table 2). Level 3, 20-30 cm bs was all compact fill with a moderate artifact density. A soil probe revealed that the deposit continued to 80 cm bs, terminating at red sandy clay.

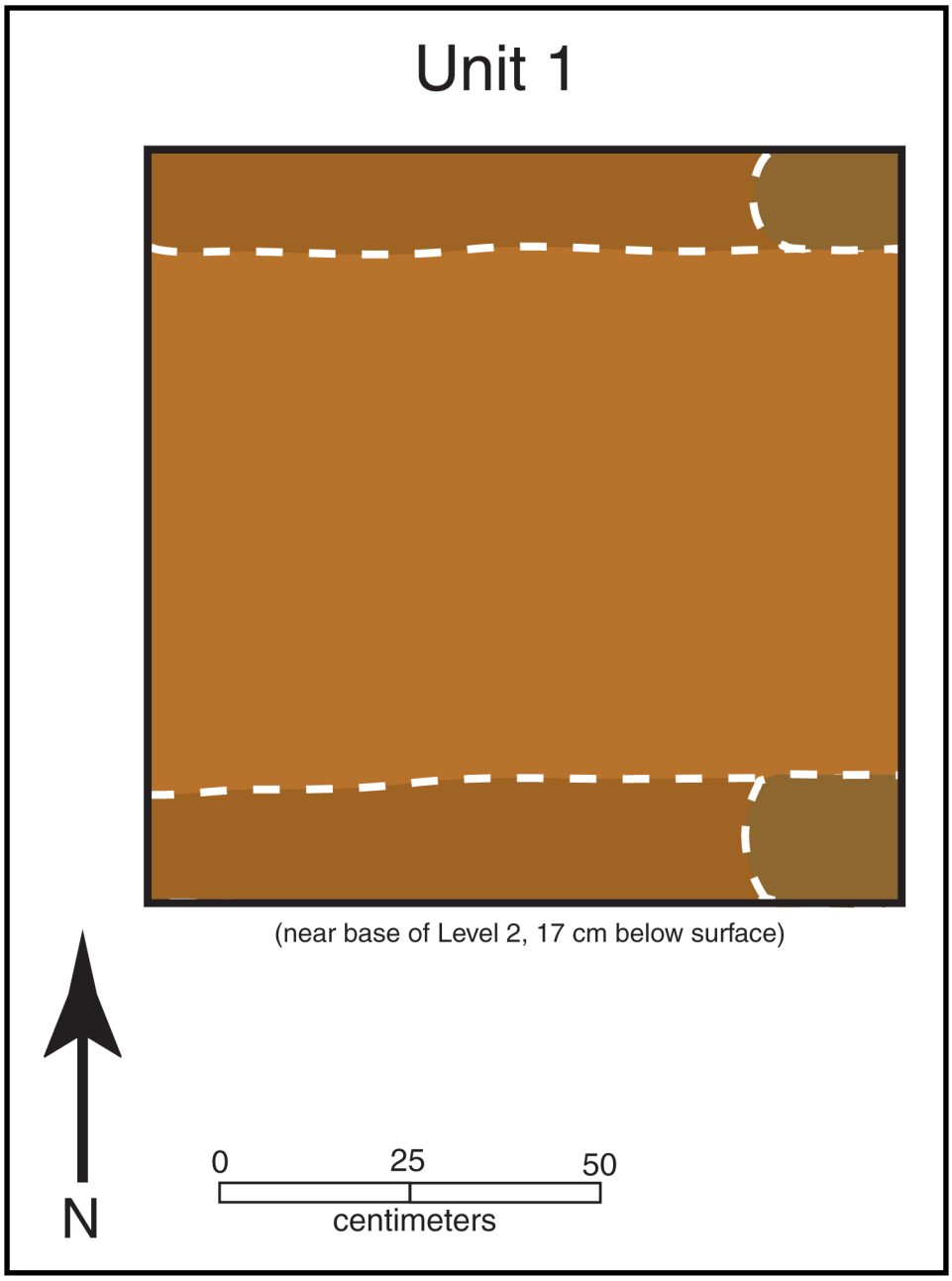


FIGURE 9. Unit 1 plan map at 17 cm below surface.

Table 2. Summary of Artifacts from Units 1-3

Unit	1	1	1	1	2	2	2	2	3	3	3
level	I	2	3	Totals	1	2	3	Totals	1	2	Totals
lot #	3191	3192	3193		3194	3195	3196		3198	3199	
Ceramics											
Historic Native American	40	156	117	**313**	140	354	79	**573**	8	140	**148**
Spanish Colonial	3			**3**		1		**1**		4	**4**
French Colonial		3		**3**	1	13		**14**		2	**2**
Italian Colonial	1			**1**							
British Colonial	1			**1**							
Asian Colonial			2	**2**						5	**5**
French, British or Dutch Colonial	5	9	19	**33**	3	15		**18**		7	**7**
UID European, Euro-American Colonial	1	3	1	**5**							
UID lead-glazed coarse earthenware	1			**1**							
Glass--Curved											
Dark green		7	9	**16**	13	38	2	**53**		12	**12**
Blue--Aquamarine	11	25	6	**42**	19	62	2	**83**	3	52	**55**
Clear	7	46	5	**58**	10	5		**15**	12	15	**27**
Frosted										9	**9**
Brown	1			**1**	4			**4**	13		**13**
White											
Glass Beads											
Large (>6mm)						1		**1**	1		**1**
Medium (4-6mm)					1	1	2	**4**			
Small (2-4mm)	3		8	**11**	15	46	8	**69**	4	17	**21**
Very Small (<2mm)		2		**2**	1	10	1	**12**			
Lithics											
Chipping debris	4	18	4	**26**	2	29	18	**49**	39	7	**46**
Gunflint fragment											
Groundstone fragment											
Iron Rock >1/4 inch	360	1384	1678	**3422**	2005	202	6329	**8536**	1210	4165	**5375**
Sandstone	2			**2**	2	6		**8**	4	47	**51**
Pebbles	5			**5**	17		242	**259**	753	36	**789**
Other rock	6			**6**	16	2	2	**20**			
Other											
Coal		1									
Slag			1								
Daub							1		1		
Burnt clay											
Mud Dauber nest fragment											
Plastic											
Weedeater string											
Metal -- 18th century											
Wrought iron nail fragments	1	1		**2**		1		**1**		1	**1**
UID ferrous fragments		1	1	**2**		6		**6**		4	**4**
Ferrous knife blade fragment (?)		1		**1**							
Ferrous coscojos										1	**1**
Ferrous chain link (?)	1			**1**							
Small lead shot	1	4		**5**			2	**2**		9	**9**
Lead splatter		1		**1**			8	**8**		5	**5**

Unit 2 was also excavated to a depth of 30 cm bs in three 10 cm levels, and although no features were observed in plan view, this unit clearly had more evidence of differential vertical deposits (Figure 10). The east wall profile shows evidence of an old A Horizon and E Horizon not observed in the west wall profile. There is a 15 cm slope over the one meter span of the east and west wall, and the depositional zones are parallel to the surface, which suggests that this is not the erosion of an old feature. A soil probe in the middle of the unit, and another just north of the unit indicated that cultural deposits continued to 35 cm bs. This suggests a pile rather a pit. There certainly would have been a piling of material in the area of the bastions of the presidio to elevate the cannon.

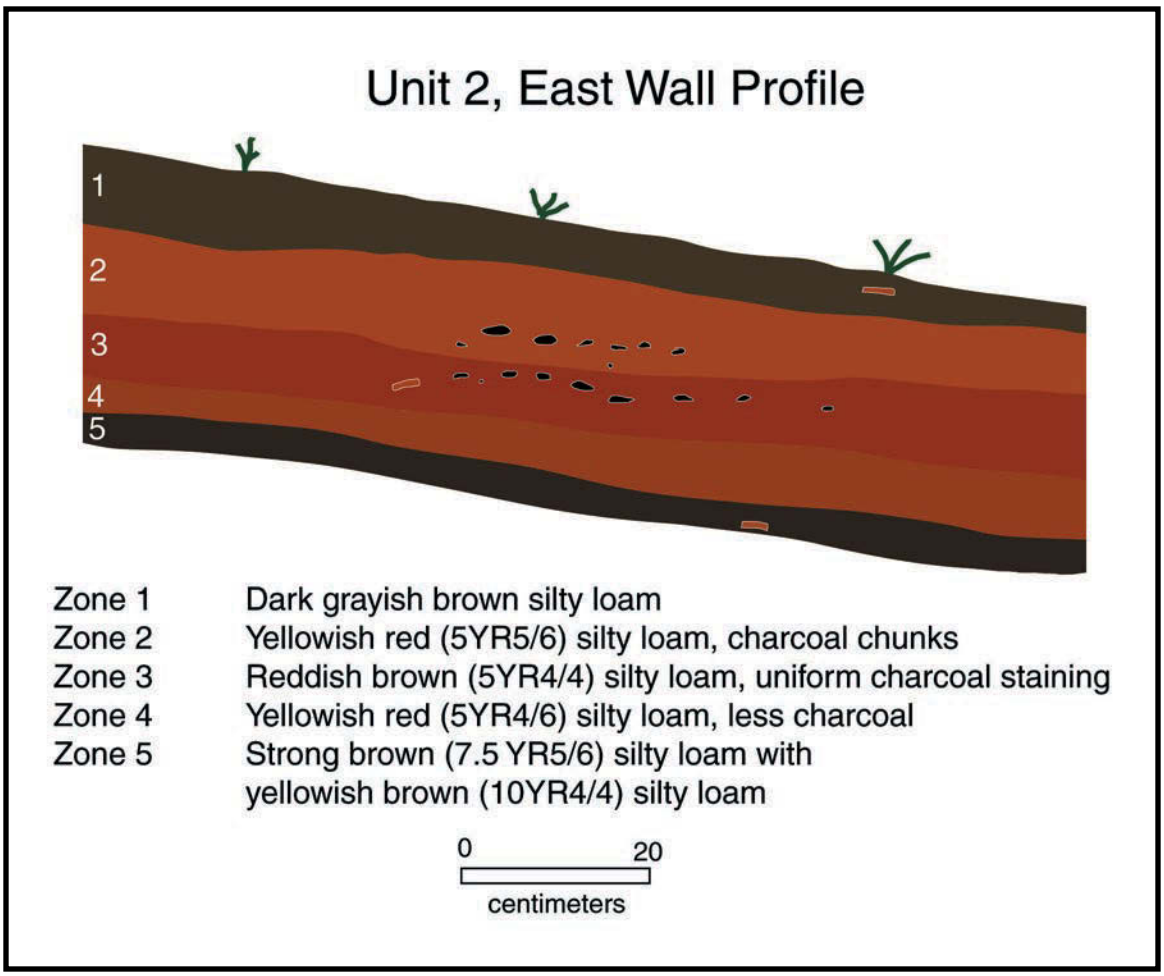


FIGURE 10. Unit 2 east wall profile.

Unit 3 clearly demonstrated that the circular anomaly was indeed a feature. Unit 2 was placed directly in the middle of a circular anomaly, but Unit 3 was placed at the edge of an anomaly, and the edge of a feature was readily apparent in the northeast portion of the unit at 18 cm bs (Figure 11). This portion of the unit was heavily burned and contained a high density of cultural material (see Table 2). A soil probe in this area indicated that the cultural deposits in this area continued to a depth of 30 cm bs. The east wall profile suggested that this feature was not a pit feature, but rather a pile with the high point located near the northeast corner of the unit.

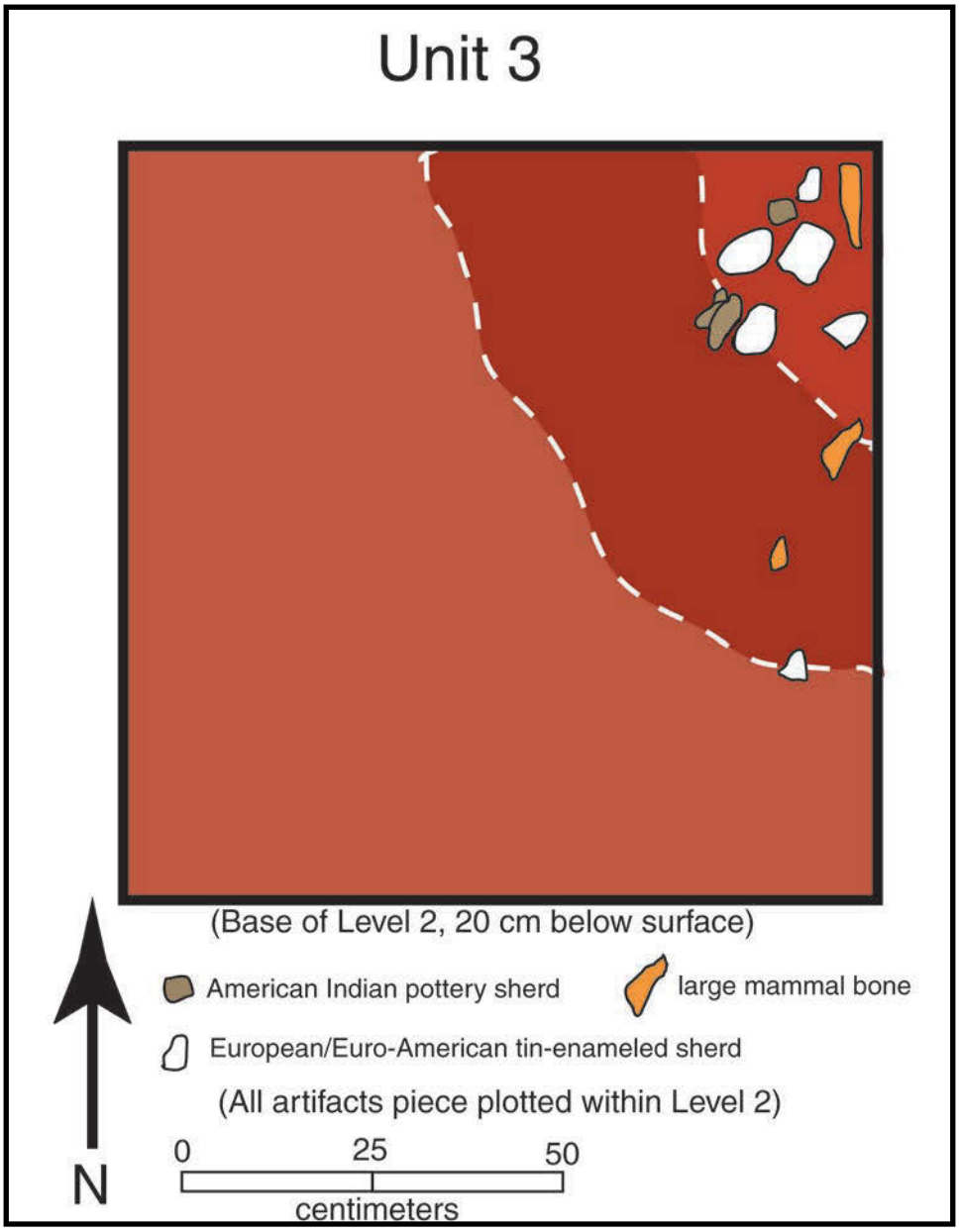


FIGURE 11. Unit 3, plan view.

Region B—Possible Structures and Associated Features in SE, Units 4 and 5

Region B includes one of the barracks depicted on the Urrutia map and the planned location for another barracks building as depicted on the 1720 architect's plan. Several anomalies in magnetometry and MS seem consistent with the presence of structures here (see Figures 11A-12). Unit 5 was of particular interest on because it tested one of the GPR anomalies. Unit 4 was located in the area of a large round-to-oval feature identified in magnetometry and MS, and also with electrical resistance (Figures 11A-13). The anomaly is centered in the west end of a structure on the 1767 map, and is also within the large planned barracks. The possibility that this could also be a tree throw was recognized. Unit 5 was placed in the area of a strong reflection in ground penetrating radar that shows in reflection profiles and slice maps (Figure 14). It was recognized that this could be a cultural feature or a natural disturbance. It appeared that the feature was buried roughly 25 cm, but the depth calculations were limited to only very shallow hyperbolas so the depth calculations had the potential to be a bit off.

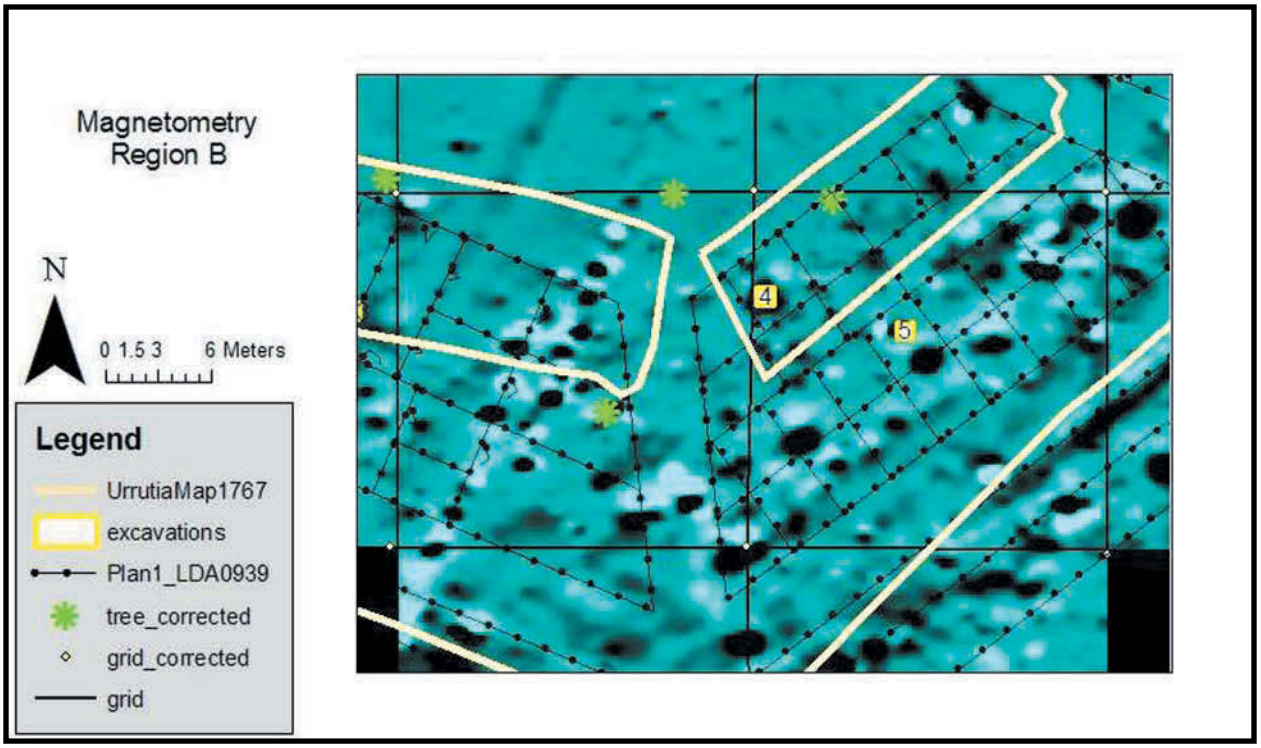


FIGURE 11A. Region B, Magnetometry.

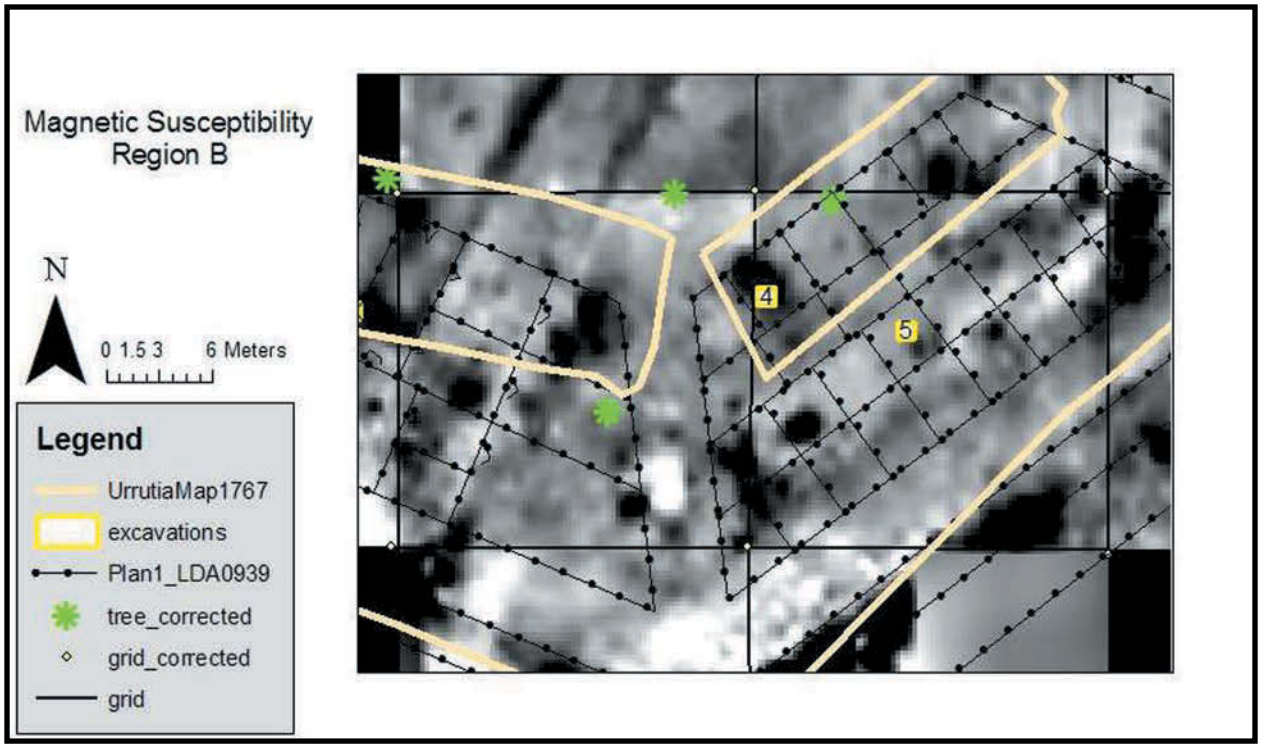


FIGURE 12. Region B, Magnetic Susceptibility.

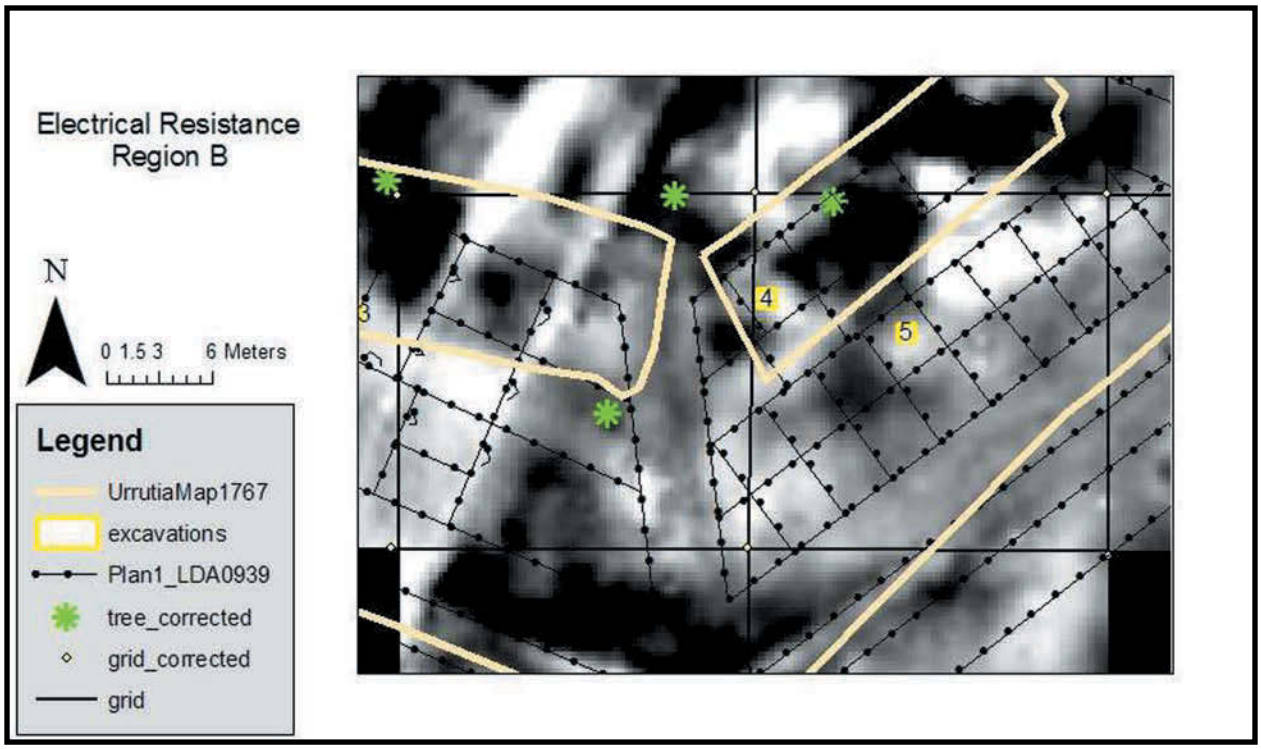
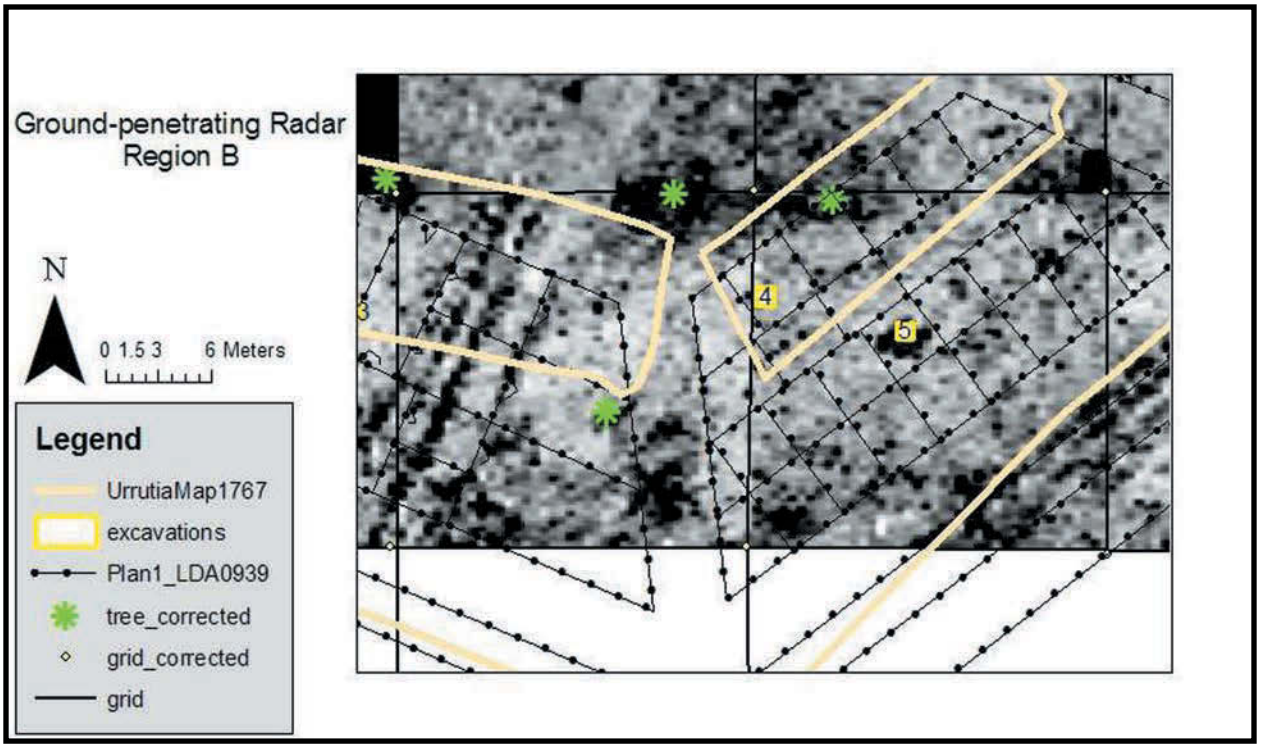


FIGURE 13. Region B, Electrical Resistance.



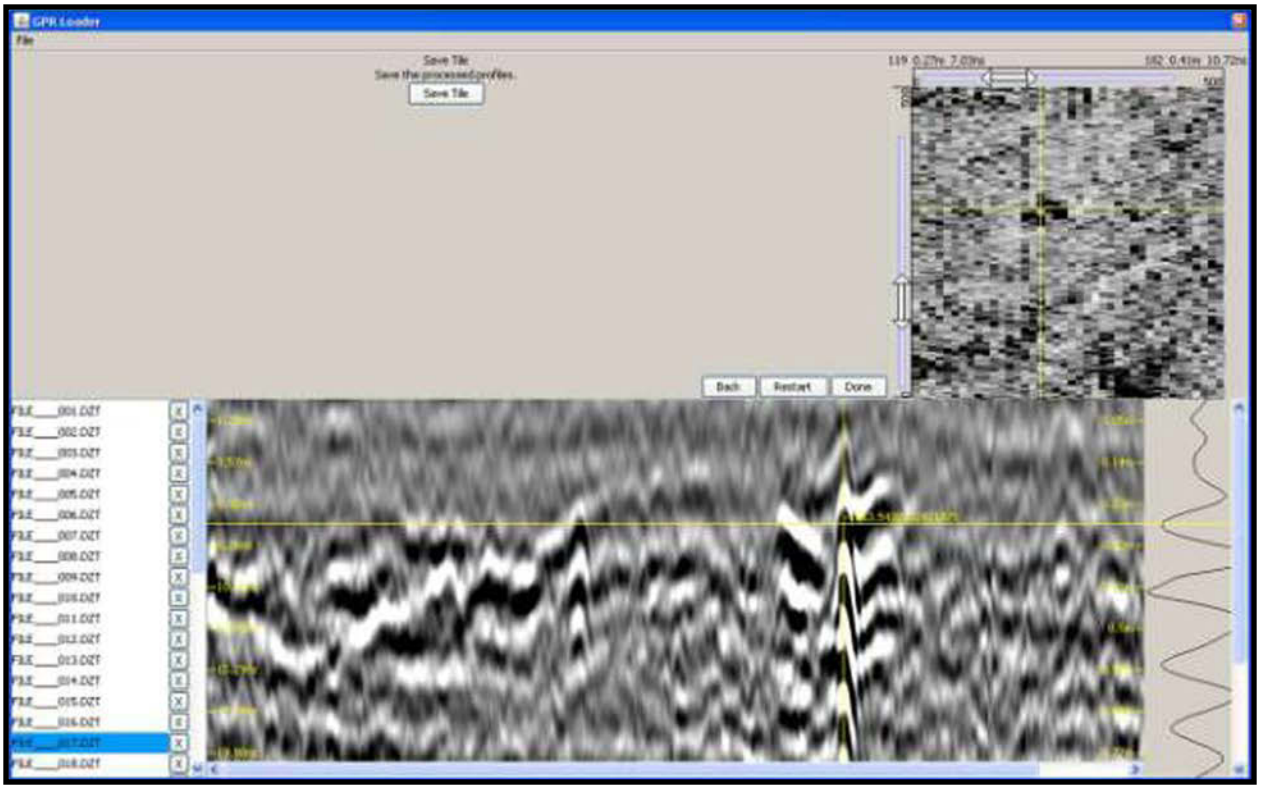


FIGURE 14. Region B, Ground Penetrating Radar.

Unit 4 revealed cultural deposits like no other unit excavated during the current project. Large quantities of burnt clay were recovered, some of it with smoothed surfaces, and all of it with fibrous inclusions. Charcoal was scattered through the two level excavation levels—the unit was excavated to 20 cm bs. There were two areas of charcoal concentrations. Several large wrought iron nails were recovered, and a concentration of tabular sandstone was thought to represent a boundary of some sort (Figure 15). Soil probing along the eastern side of the unit revealed that cultural deposits ended at 25 cm bs. Additional probing to the east of the unit did not identify a continuation of the burned soils and high density of burnt clay. It appears that the anomaly observed in the Unit 4 area might be a collapsed earth oven of some sort. An earth oven can be observed in front of the governor's house on the Urrutia profile (see Figure 3). Another interpretation is that this is a prepared hearth area. Heating in the barracks was not through fire places with chimneys, but rather from braziers—large metal containers—sitting on a prepared clay surface.

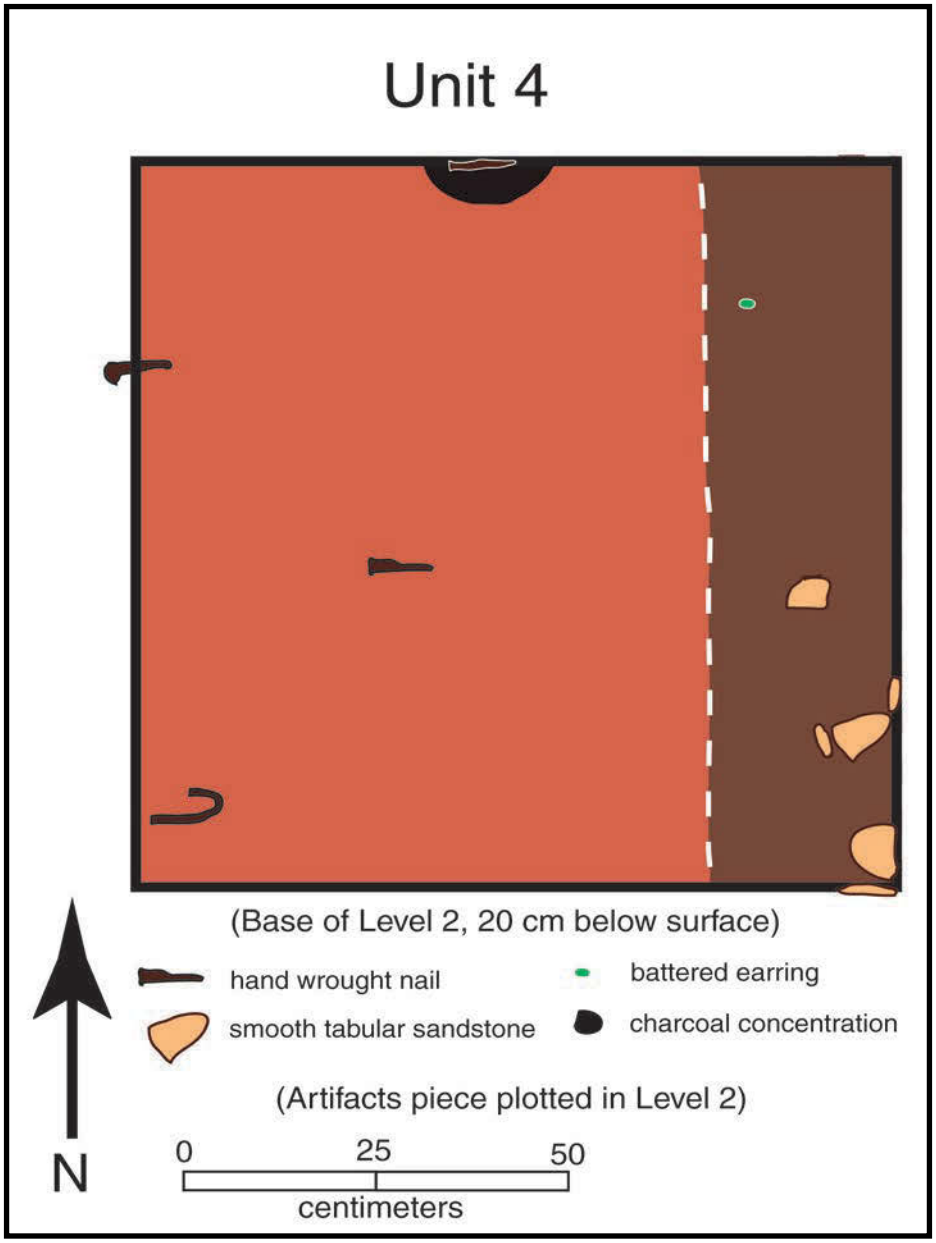


FIGURE 15. Unit 4, plan map.

Table 3. Summary of Artifacts from Unit 4

Unit	4	4	4
level	1	2	**Totals**
lot #	3201	3202	
Ceramic			
Historic Native American	11	7	**18**
Spanish Colonial			
French Colonial			
Italian Colonial			
British Colonial			
German Colonial			
Asian Colonial			
French, British or Dutch Colonial	1		**1**
Glass--Curved			
Dark green			
Blue--Aquamarine	3	1	**4**
Clear		3	**3**
Frosted		2	**2**
Brown	1		**1**
White			
Glass Beads			
Large (>6mm)			
Medium (4-6mm)			
Small (2-4mm)	4	3	**7**
Very Small (<2mm)	2		**2**
Lithics			
Chipping debris	1	7	**8**
Gunflint fragment			
Groundstone fragment			
Iron Rock >1/4 inch (weight g)	890	1255	
Sandstone		3	**3**
Other			
Coal			
Slag			
Daub			
Burnt clay (weight g)	1440	5915	
Mud Dauber nest fragment		1	**1**
Plastic			
Weedeater string			
Metal -- 18th century			
Wrought iron nail fragments	1	4	**5**
Cupreous earring with paste set		1	**1**
Small lead shot	5	1	**6**

Unit 5, it turned out, was an old excavation unit associated with the excavation of Stump 2 (Avery 2002:24-30) (see Figure 4). The projected 25 cm depth was very close as the four 1x1 meter units in the Stump 2 area were excavated to a depth of 20 cm bs.

Region C—Possible Entryway north of SE Bastion, Unit 6

Region C is located the along the presidio wall or palisade just north of the SE bastion, where one of the architect's plan maps shows an entryway into the fort. Unit 6 was located in an area where the magnetometry data showed a very distinct gap in the palisade in this area (the wall almost completely disappears, but there is a very subtle linear anomaly that remains), and it roughly matches the architect's plan (Figure 16). Magnetic susceptibility data also show a fainter line here, but no distinct gap (Figure 17). Ernenwein recommended that, if this unit showed part of the presidio wall, but no indications of a gap or entryway, the unit could be extended north. There is a possibility that this gap was created by an excavation since this is in the area of Pete Gregory's excavations when he was investigating the eastern palisade.

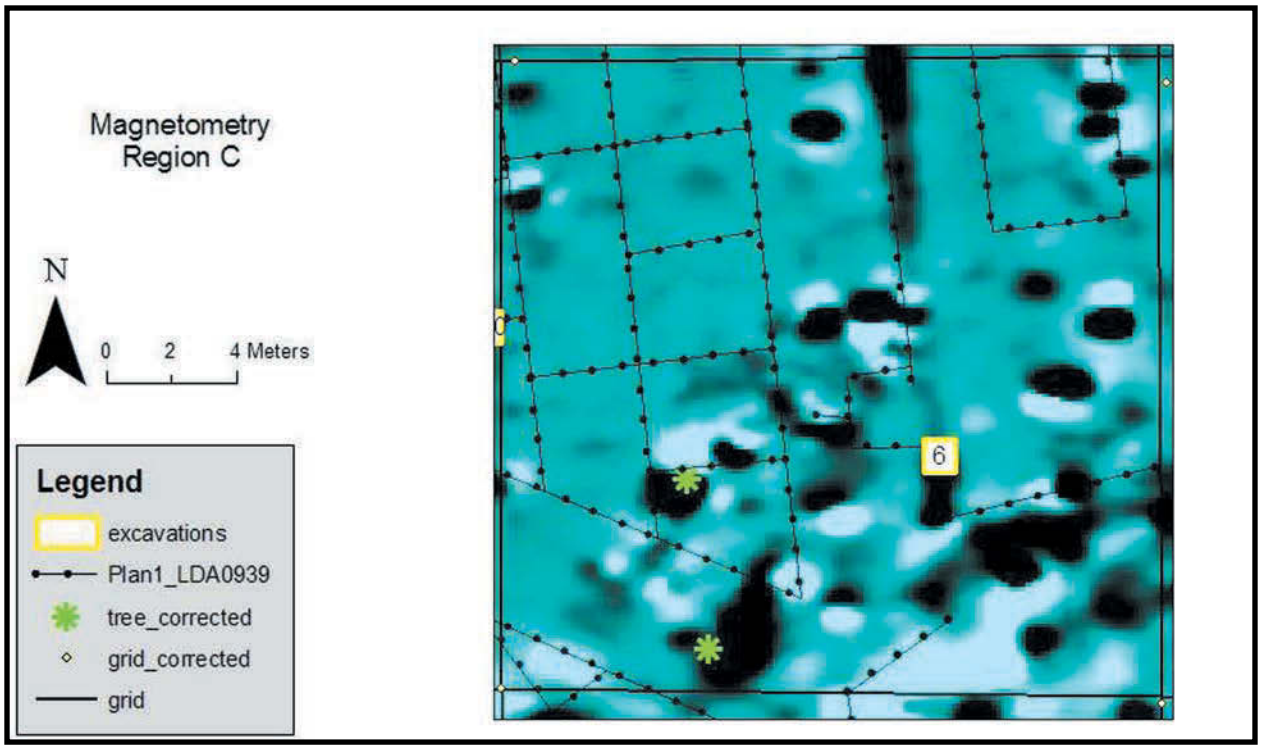


FIGURE 16. Region C, Magnetometry.

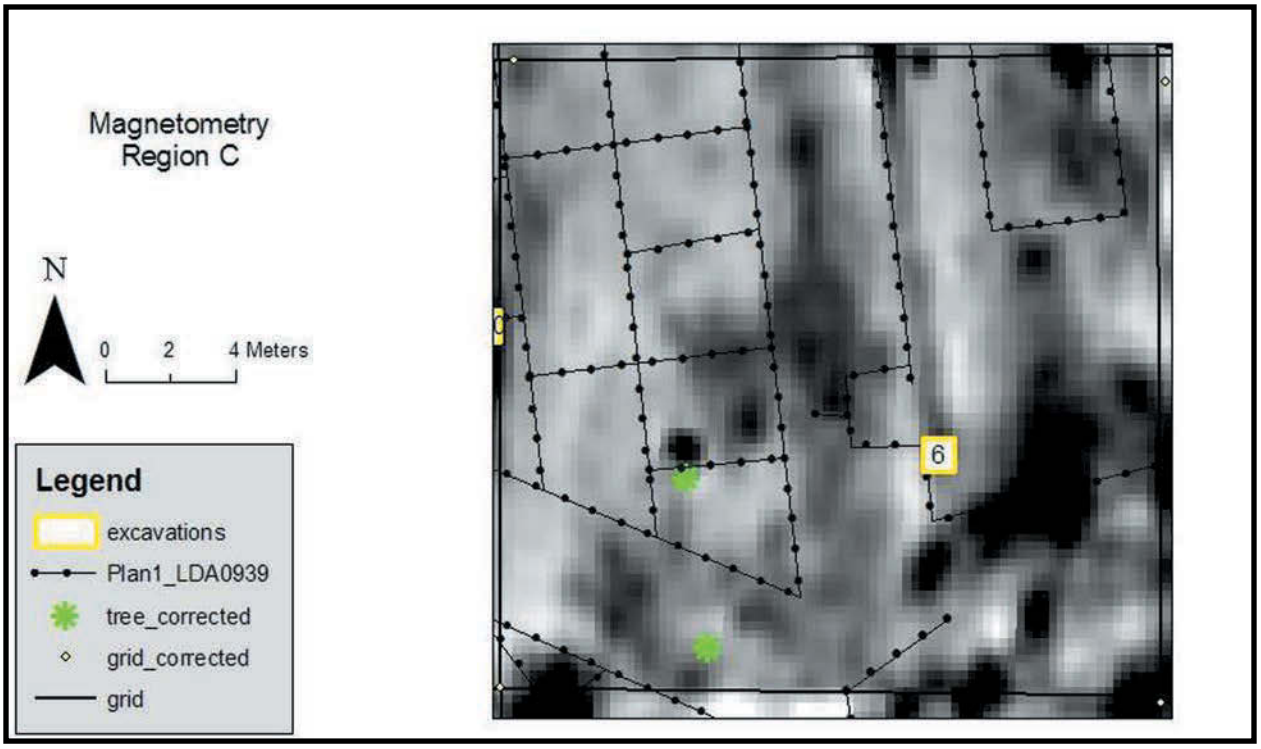


FIGURE 17. Region C, Magnetic Susceptibility.

The first two levels of Unit 6 revealed what appeared to the wall trench for the palisade, and so Unit 6A was excavated adjacent to Unit 6 in order to more fully define the width of the wall trench (Figure 18). Soft, sterile soil was encountered in the northwest portion of Level 1 in Unit 6 and in the northern of Unit 6A, suggesting that portions of an old excavation unit had been exposed (Figure 18). Flagging tape was also recovered in this area in both Units 6 and 6A. At 20 cm bs, the wall trench was clearly defined in both units (Figure 18). A soil probe in the middle of the wall trench area near the south wall of Unit 6 indicated that the wall trench fill continued to a depth of 95 cm. Cultural deposits on either side of the wall trench continued to depths of 32 cm bs in Unit 6A and 42 cm bs in Unit 6.

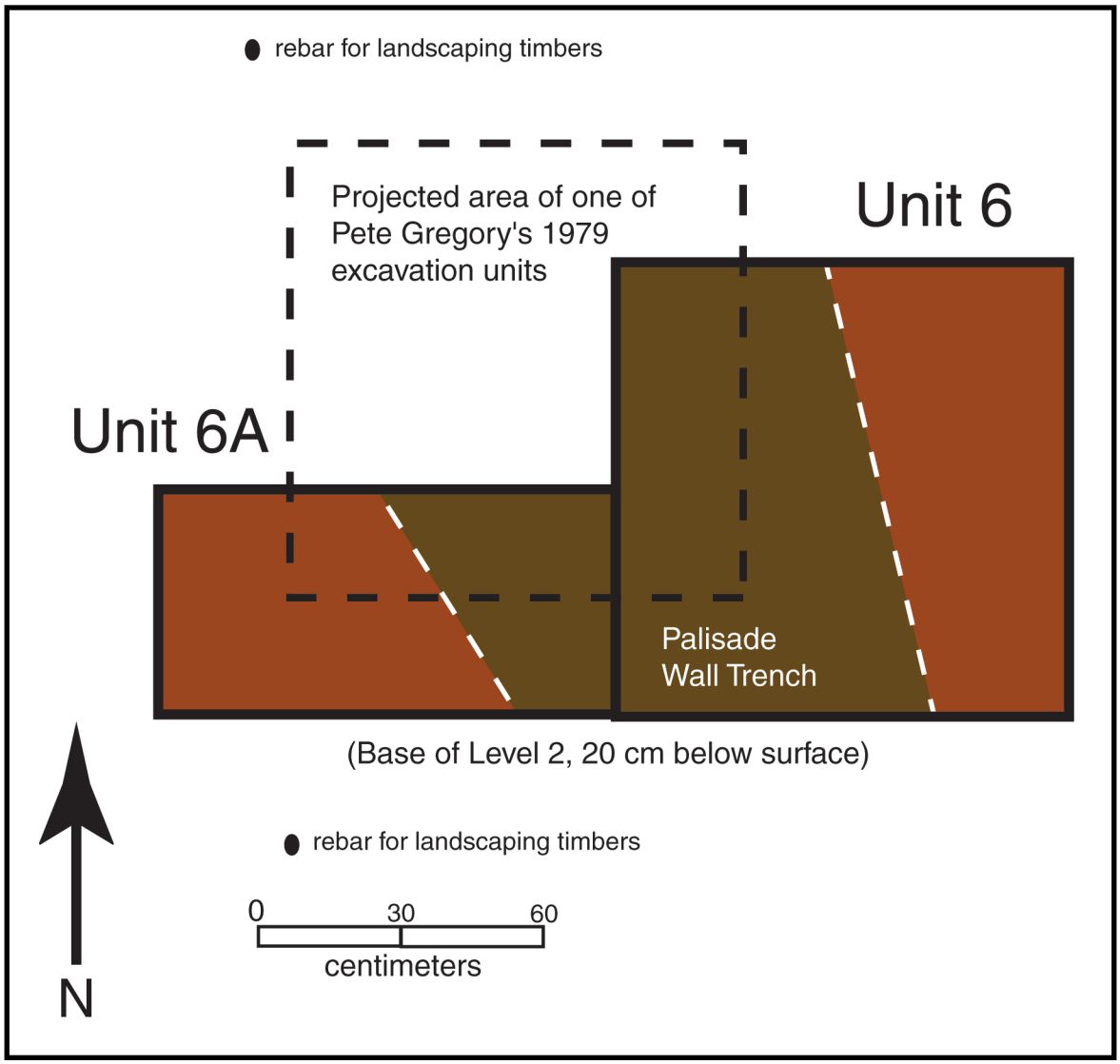


FIGURE 18. Units 6 and 6A plan map.

Table 4. Summary of Artifacts from Units 6 and 6A

Unit	6	6	6	6A	6A	6
level	1	2	**Totals**	1	2	**Totals**
lot #	3204	3205		3207	3208	
Ceramics						
Historic Native American	170	514	**684**	81	287	**368**
Spanish Colonial	5	3	**8**	1	6	**7**
French Colonial	3	8	**11**		1	**1**
Italian Colonial						
British Colonial		1	**1**		2	**2**
German Colonial						
Asian Colonial		2	**2**		3	**3**
French, British or Dutch Colonial	11	1	**12**			
UID European, Euro-American Colonial	2	13	**15**		2	**2**
Glass--Curved						
Dark green	7	49	**56**	2	17	**19**
Blue--Aquamarine	23	59	**82**	10	56	**66**
Clear	25	20	**45**	14	42	**56**
Frosted						
Brown		1	**1**	3		**3**
Glass Beads						
Large (>6mm)						
Medium (4-6mm)						
Small (2-4mm)	10	18	**28**	6	10	**16**
Very Small (<2mm)	2		**2**	1	3	**4**
Lithics						
Chipping debris	3	6	**9**	2	22	**24**
Iron Rock >1/4 inch	948	4112	**5060**	397	1293	**1690**
Sandstone	4	3	**7**		5	**5**
Pebbles	2	2	**4**	3	4	**7**
Other rock	2	15	**17**	1	9	**10**
Other						
Coal		1	**1**			
Slag						
Daub						
Burnt clay						
Mud Dauber nest fragment						
Plastic	2		**2**			
Weedeater string				1		**1**
Metal -- 18th century						
Wrought iron nail fragments		2	**2**	1	5	**6**
UID ferrous fragments		4	**4**			
Small lead shot	4	3	**7**	3	3	**6**
Lead splatter	1	7	**8**		10	**10**
Cupreous sheet fragment					2	**2**

Region D—Soldier's Barracks, Units 7, 8, and 9

Region D includes a variety of anomalies generally associated with a structure on the 1767 map and the architect's plan. It is unclear whether the anomalies are more closely aligned with one map or the other, but MS and magnetometry show a strong correspondence to both, either by geophysical feature shape (trapezoidal on the architect's plan versus more rectangular on the 1767 map), or location (Figures 19-21).

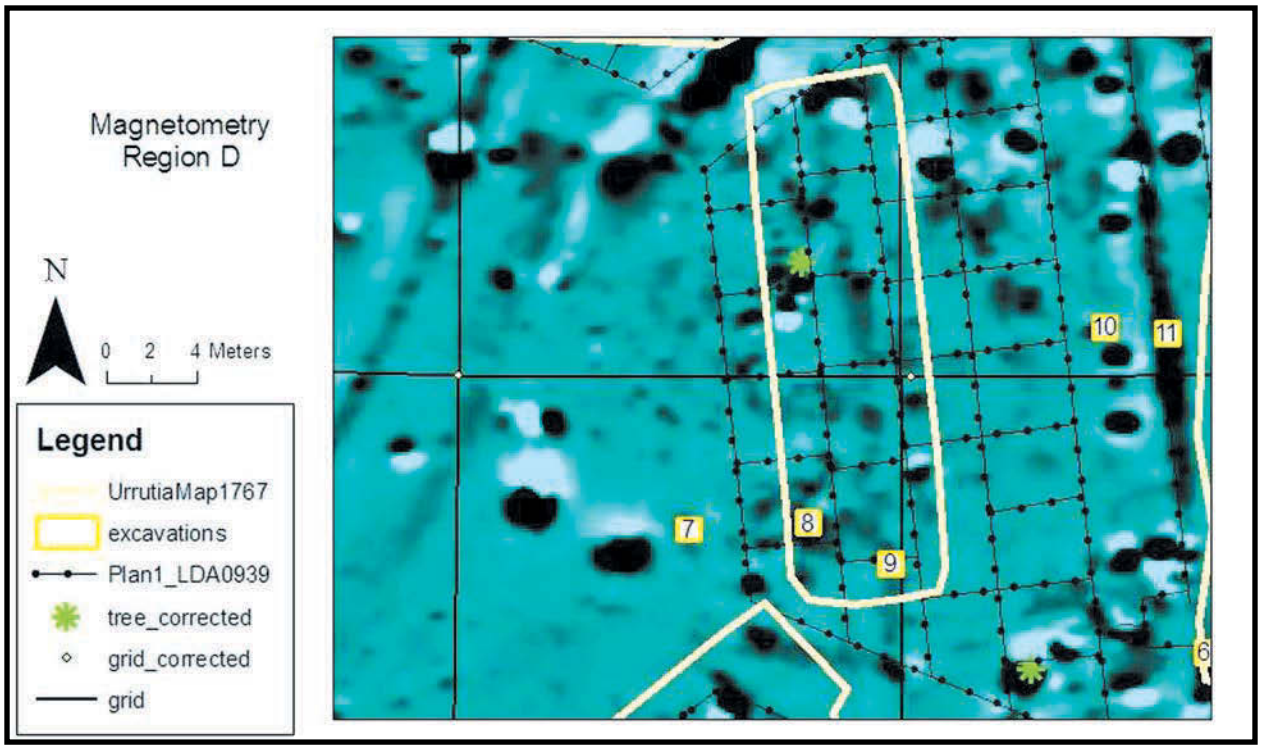


FIGURE 19. Region D, Magnetometry.

Unit 7 was placed to test a subtle linear anomaly in MS data, which runs parallel to much stronger linear features to the east. This could be the edge of a covered walkway or porch extending toward the center of the compound as depicted in de Urrutia's cross sectional drawing. Unit 8 is located in the area of a robust anomaly in MS and magnetometry, and a void in resistivity. The Unit 4 anomaly is very much like the Unit 8 anomaly. The soldier's barracks to the southwest of this one also has several of these types of anomalies. Unit 9 was located in the possible eastern wall of the soldier's barracks, as depicted on de Urrutia's map (1767). This is a very strong MS linear anomaly.

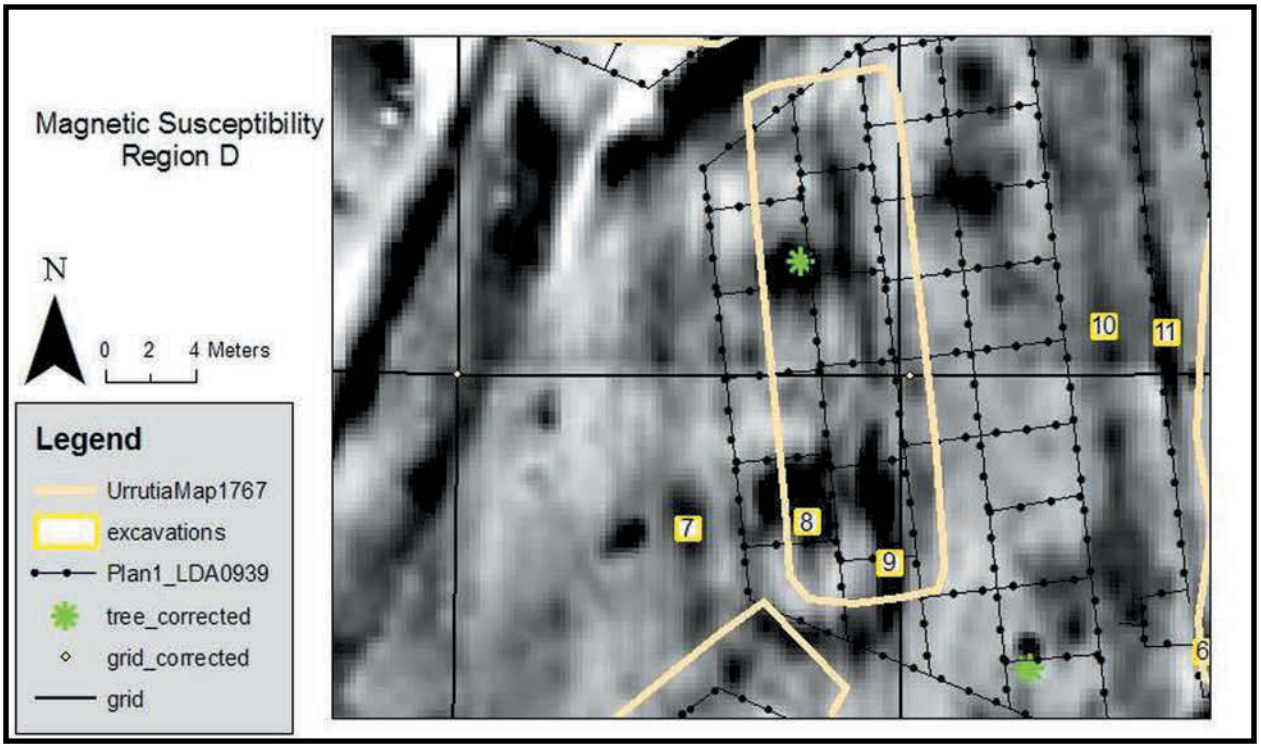


FIGURE 20. Region D, Magnetic Susceptibility.

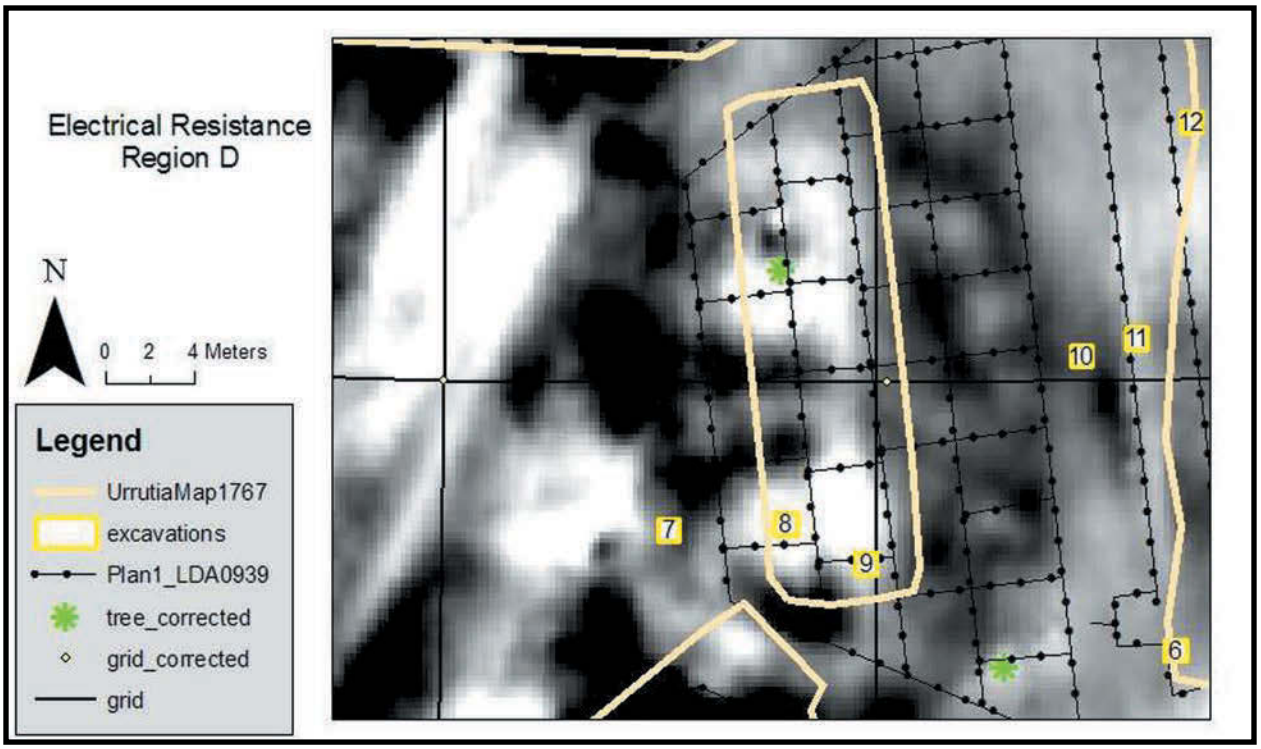


FIGURE 21. Region D, Electrical Resistance.

Unit 7 was excavated to a depth of 20 cm bs in two ten cm levels (Table 5). Unfortunately, no linear features were observed. A lens of dark grayish brown loam with small charcoal chunks was located in Level 2 (see Figure 22) and probing indicated that the deposit continued another 5 cm. At 20 cm bs, the compact nature of the southern half of the unit indicated perhaps the presence of a prepared surface. An unusually large proportion of American Indian sherds were recovered as 98% of the 416 sherds were American Indian (Table 5). Evidence for gunflint maintenance was strong with 47 fragments of chipping debris. Glass beads (n=34) and glass containers were also well represented (Table 5).

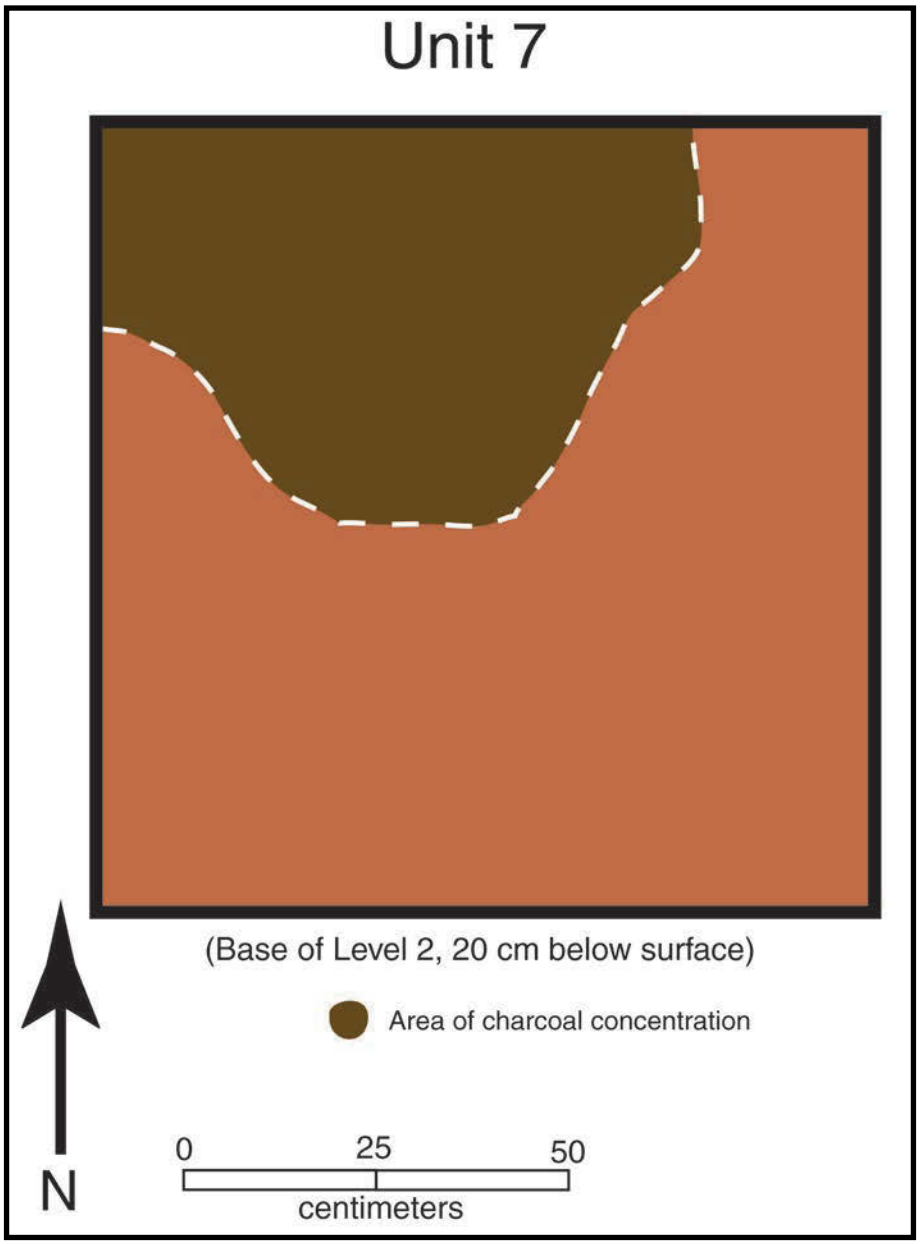


FIGURE 22. Unit 7, plan map.

Table 5. Summary of Artifacts from Units 7 and 9

Unit	7	7	7	9	9	9
level	1	2	Totals	1	2	Totals
lot #	3210	3211		3213	3214	
Ceramics						
Historic Native American Pottery	87	322	**409**	264	335	**599**
Spanish Colonial Pottery		1	**1**	5	9	**14**
French Colonial Pottery		2	**2**		4	**4**
Italian Colonial Pottery						
British Colonial Pottery				2	8	**10**
German Colonial Pottery						
Asian Colonial Pottery				1		**1**
French, British or Dutch Colonial	1	3	**4**	7	58	**65**
Glass--Curved						
Dark green	6	13	**19**	26	33	**59**
Blue--Aquamarine	11	6	**17**	54	52	**106**
Clear	4	9	**13**	24	50	**74**
Brown	2		**2**	1	1	**2**
White					1	**1**
Glass Beads						
Small (2-4mm)	5	25	**30**	25	29	**54**
Very Small (<2mm)	2	2	**4**		2	**2**
Lithics						
Chipping debris	12	35	**47**	18	28	**46**
Iron Rock >1/4 inch	1961	5200	**7161**	2329	3334	**5663**
Sandstone				29	31	**60**
Pebbles	21		**21**	3	10	**13**
Other rock	14		**14**		1	**1**
Metal -- 18th century						
Wrought iron nail fragments	6	2	**8**	2	5	**7**
UID ferrous fragments	1	1	**2**	2	3	**5**
Cupreous gunstock applique					1	**1**
Cupreous side plate fragment	1		**1**			
Cipreous key sabore	1		**1**			
Ferrous knife blade fragment (?)					1	**1**
Ferrous buckle fragment	1		**1**		2	**2**
Ferrous *higa*					1	**1**
Ferrous light snipe hinge				1		**1**
Lead ball shot, .55 caliber					1	**1**
Small lead shot	1	3	**4**	10	11	**21**
Lead cube					1	**1**
Lead splatter	3	20	**23**	1	5	**6**
UID lead fragment					1	**1**
Wire seed beads					1	**1**
UID pewter fragments					2	**2**
Pewter button (?)					1	**1**
Metal -- 19th/20th century						
Machine-cut nail		2	**2**			

Since Unit 4 had clearly indicated that the geophysical anomaly was a cultural feature, and Unit 8 was a similar anomaly, Unit 8 was not excavated. Rather, a soil probe was placed in the area of Unit 8, indicating cultural deposits to roughly 28 cm bs, and natural deposits below that. This information came as a surprise. Unit 8 is on a noticeable linear rise, and it has been suspected for years that this rise was a cultural construct. Rather, it appears, that this linear rise may be a natural feature that was incorporated into the design of the presidio buildings.

Unit 9 was also excavated to a depth of 20 cm bs in two ten cm levels, but this time a linear feature was observed (Figure 23). This linear feature may represent the wall trench for the barracks—an area of charcoal concentration may indicate a postmold (Figure 23). This postmold was observed near the base of Level 1. The large number of sandstone fragments supports the presence of a structure. Pete Gregory has maintained that these small, tabular sandstone fragments were used as chinking in the walls of the structures. The sandstone does not occur naturally in the immediate locale of the presidio, but there is a sandstone outcrop located within 2 miles to the southwest near highway 21, just east of the town of Robeline. The cultural material associated with Unit 9 was similar to that of Unit 7 (see Table 5), with large amounts of all classes of artifacts. Burnt mussel shell was recovered from Unit 9, but not in any of the other units. Unit 9 had the greatest diversity of metal artifacts recovered during this project, as hand wrought nails, gun parts, horse gear, and lead shot were present.

Region E—Eastern Palisade and Possible Moat, Units 10, 11 and 12

Region E includes a strong MS and magnetometry anomaly associated with the presidio wall, which is likely the real thing since the reconstructed palisade (marked by horizontal wood beams held in place by rebar) runs parallel about one meter to the west (Figures 24, 25). There is also a weaker, parallel feature in MS data about 3 meters to the west, which could be related to the presidio, or associated with the soldier's barracks as depicted in the architect's plan. There is also a faint, parallel MS lineation about 4 m to the east, which again could be associated with the presidio directly, or might also be related to the planned moat.

Unit 10 is located where a subtle MS lineation runs parallel to the probable presidio wall anomaly, about 3 meters to the west. In this area there are also some magnetometry anomalies. The MS linear anomaly could be related to the soldier's barracks depicted on the architect's plan, or to the presidio wall directly. Unit 11 tested an area with strong linear anomalies in MS and magnetometry that may very likely also represent the presidio wall. Unit 12 is located at a very subtle linear anomaly in MS only that runs parallel to the presidio wall anomaly about four meters to the east. This could be associated with the presidio wall directly, or with the planned moat or ditch. The presidio wall depicted on the 1767 Urrutia map also coincides with this, so it could be a later period, and perhaps a less substantial palisade.

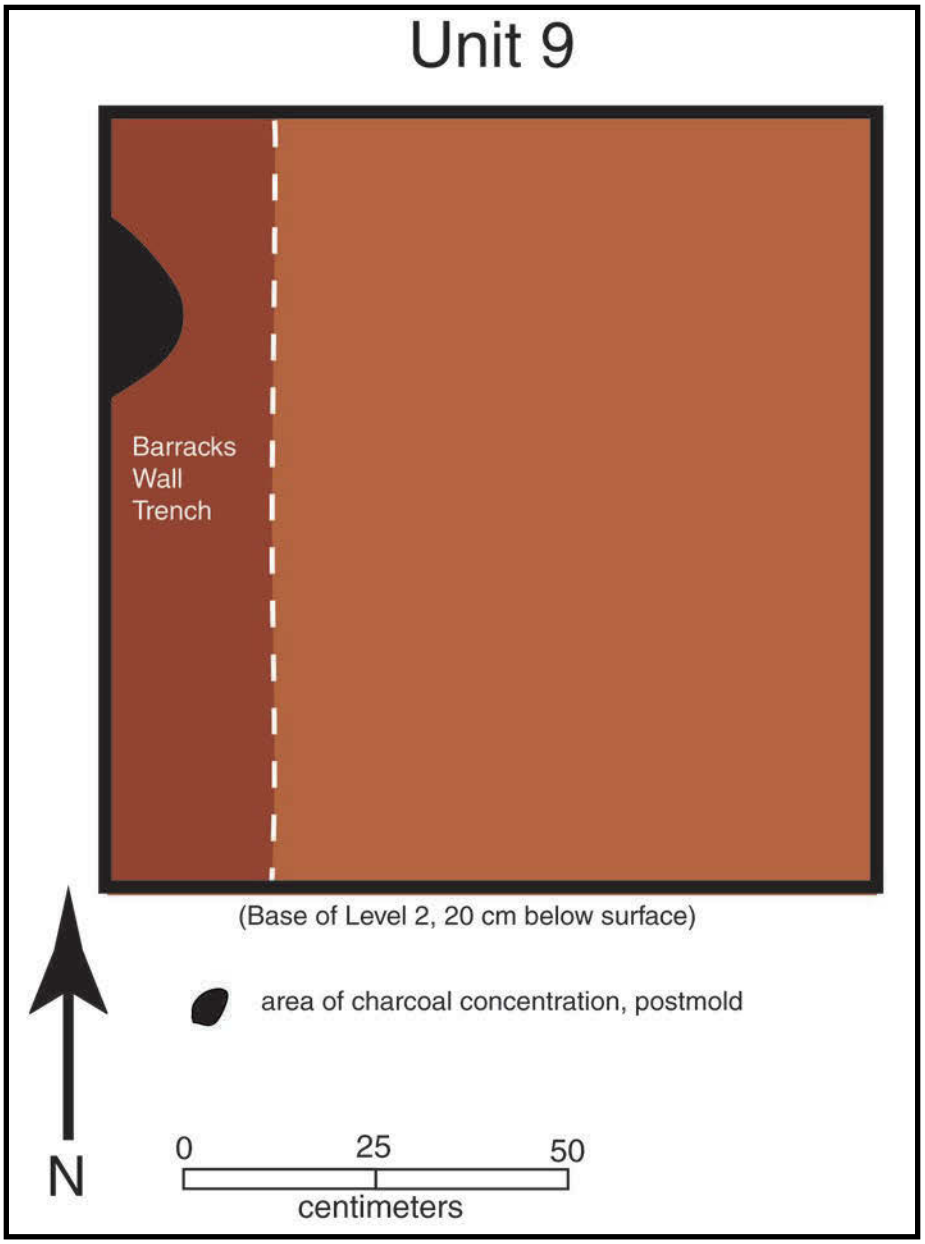


FIGURE 23. Unit 9, plan map.

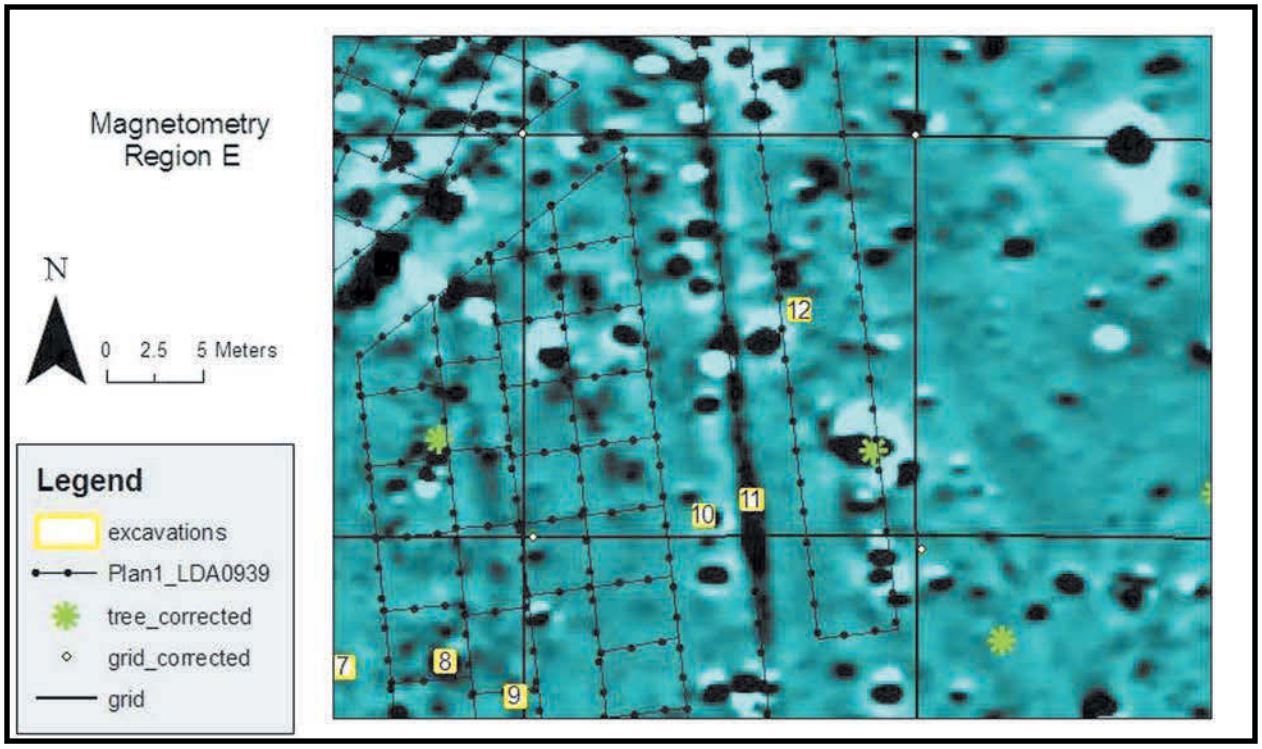


FIGURE 24. Region E, Magnetometry.

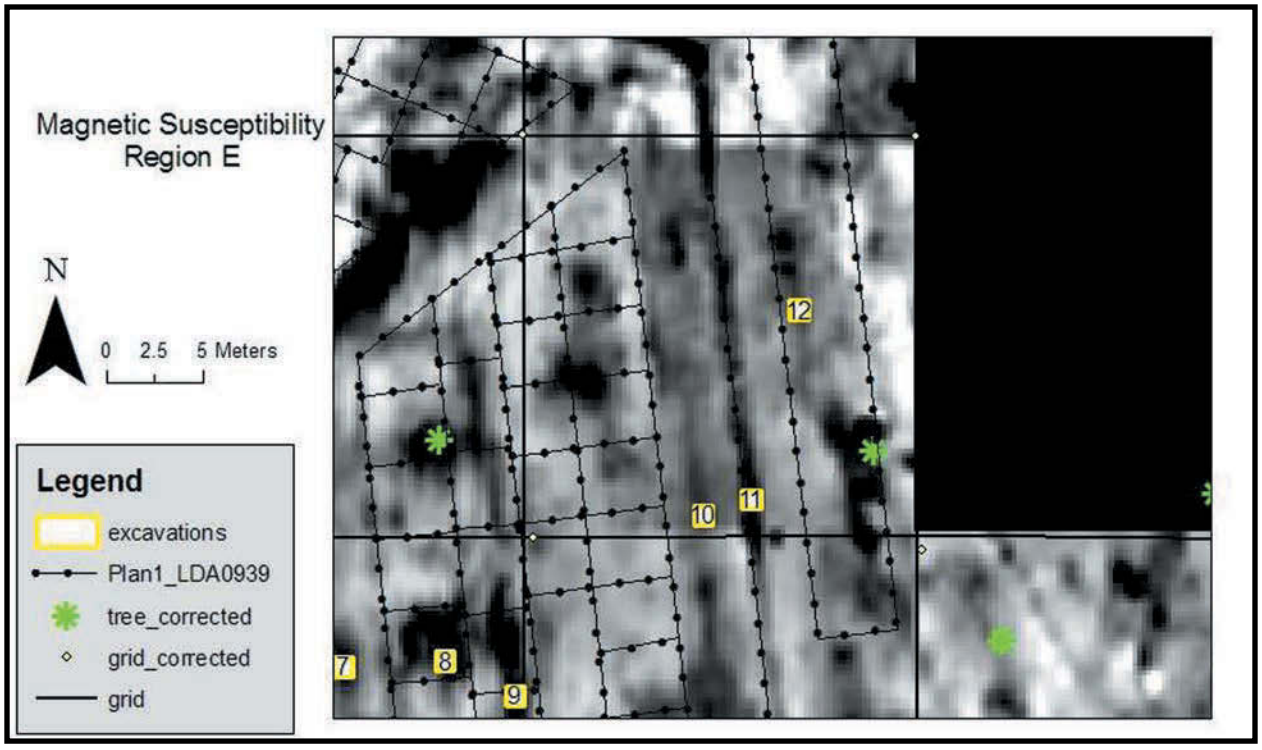


FIGURE 25. Region E, Magnetic Susceptibility.

Units 10 and 11 were placed on either side of the landscaping timbers which mark the approximate location of the historic presidio wall. Since the units were so different, Unit 10A was excavated to connect Units 10 and 11 (Figure 26). The three units revealed the presidio wall trench, and prepared clay surfaces on either side of the wall trench. Fully preserved, unburned wood fragments were found at 18 cm bs, within the prepared clay surface in Unit 10A. A soil probe in the area of the wall trench revealed that the feature continued to a depth of 86 cm bs. This is clearly the wall trench for the presidio wall. Moderate amounts of a wide range of artifacts were recovered in Units 10, 10A, and 11 (Table 6).

Unit 12 excavations and soil probing suggest that a cultural feature is clearly present, possibly the defensive ditch that is indicated on the architect's plan, but not on the 1767 Urrutia map. Unit 12 was only excavated to 10 cm bs in one ten cm level. The soil was compact red clay with inclusions of loamy soils. Artifact density was high (Table 6). Soil probes demonstrated that the feature continued to a depth of 75 cm bs, with what appeared to be a gley soil at 55 to 65 cm bs, indicating that water had stood there and evaporated. It was thought that this might be the area of the defensive ditch or moat, so a series of soil probes were placed to the east of the unit. At 2.5 meters east of the unit, there was evidence of what appeared to be gley soil deposits at 45cm bs, and at 4.5 meters east of the unit, there were no more indications of gley soil deposits.

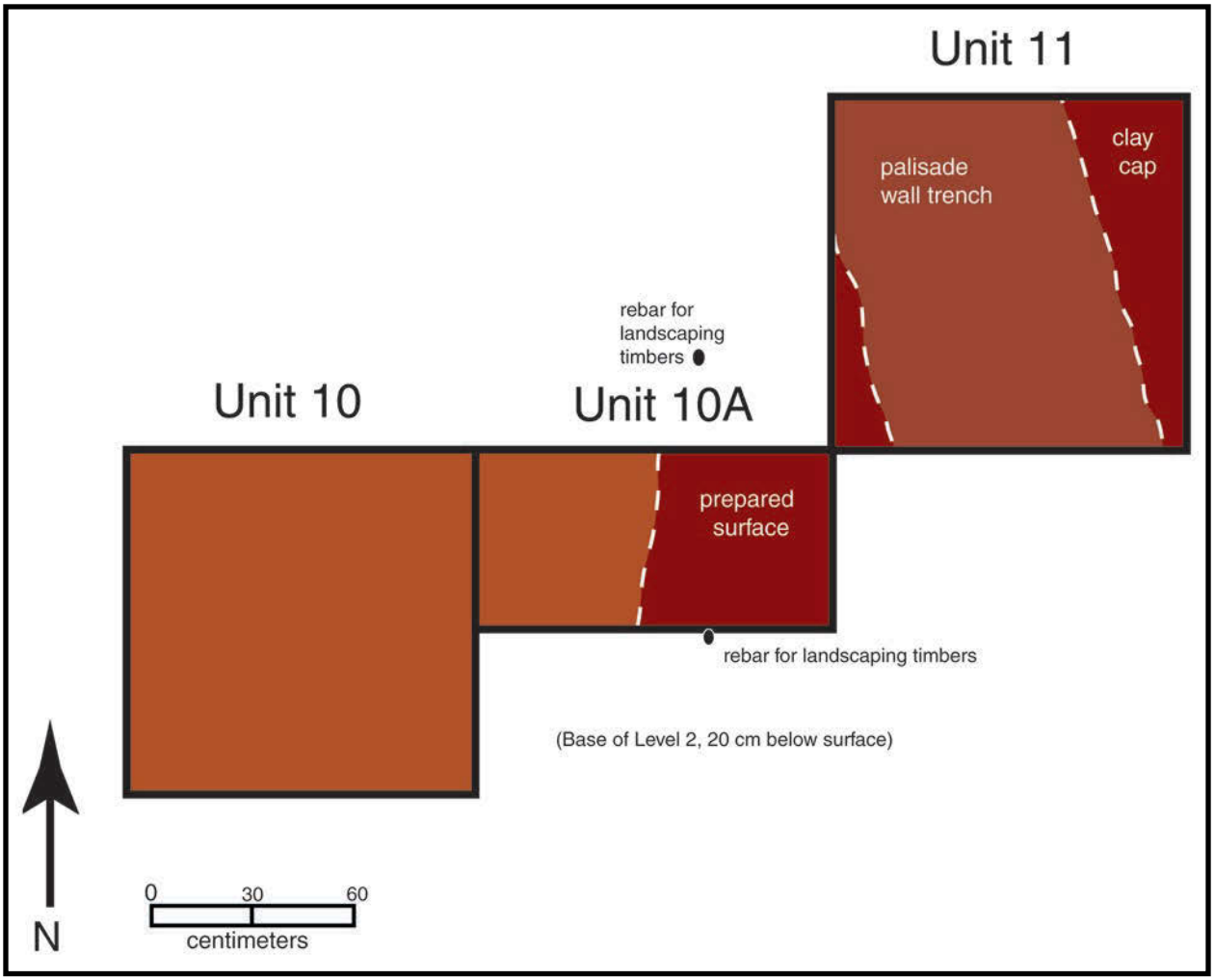


FIGURE 26. Units 10, 10A, and 11, plan map.

Table 6. Summary of Artifacts from Units 10, 10A, 11, and 12

Unit	10	10	**10**	10A	10A	**10A**	11	11	**11**	12
level	1	2	**Totals**	1	2	**Totals**	1	2	**Totals**	1
lot #	3216	3217		3219	3220		3222	3223		3225
Ceramics										
Historic Native American	112	146	**258**	80	16	**96**	111	221	**332**	612
Spanish Colonial				2		**2**		10	**10**	11
French Colonial	2	1	**3**				2	1	**3**	1
Italian Colonial										
British Colonial		2	**2**					3	**3**	
German Colonial										
Asian Colonial	1		**1**				2		**2**	1
French, British or Dutch Colonial	6		**6**	2	1	**3**	3	5	**8**	4
UID European Colonial	7	1	**8**	1	1	**2**	1	2	**3**	4
Glass--Curved										
Dark green	25	53	**78**	6	17	**23**	18	82	**100**	30
Blue--Aquamarine	41	30	**71**	7	12	**19**	18	20	**38**	13
Clear	30	15	**45**	1	18	**19**	37	22	**59**	14
Brown	1	2	**3**				1	2	**3**	3
Glass Beads										
Large (>6mm)				1		**1**				
Medium (4-6mm)										1
Small (2-4mm)	7	7	**14**	1	2	**3**	3	8	**11**	15
Very Small (<2mm)										
Lithics										
Chipping debris	24	13	**37**	1	23	**24**	3	8	**11**	21
Groundstone fragment							1		**1**	
Iron Rock >1/4 inch	1047	1536	**2583**	1264	592	**1856**	1217	2745	**3962**	3259
Sandstone	12	7	**19**				2	7	**9**	3
Pebbles	7		**7**	2	7	**9**	2	2	**4**	3
Other rock	5	1	**6**	3	1	**4**	2		**2**	4
Other										
Coal		15	**15**							
Metal -- 18th century										
Wrought iron nail fragments	1		**1**	1		**1**		2	**2**	1
UID ferrous fragments		3	**3**							1
Cupreous tack head										1
Ferrous knife blade fragment (?)										1
Lead cloth seal										1
Small lead shot	6	2	**8**	1	10	**11**	5	2	**7**	1
Lead splatter	6	11	**17**					2	**2**	1
Metal -- 19th/20th century										
Common wire nail	1		**1**							
Small screwdirver				1		**1**				

Region H—Small Feature south of SE Bastion, Unit 17

Region H encompasses the small area directly south of the SE bastion. Unit 17 was placed so that its center point marked the apex of a reflection hyperbola in GPR profile 17 (grid # 4), about 10 cm deep (Figure 27). It was recommended that excavations be taken below 10 cm bs because depth was calculated with only a few very shallow hyperbolas so it could be way off. This area also has a magnetic anomaly (Figure 28).

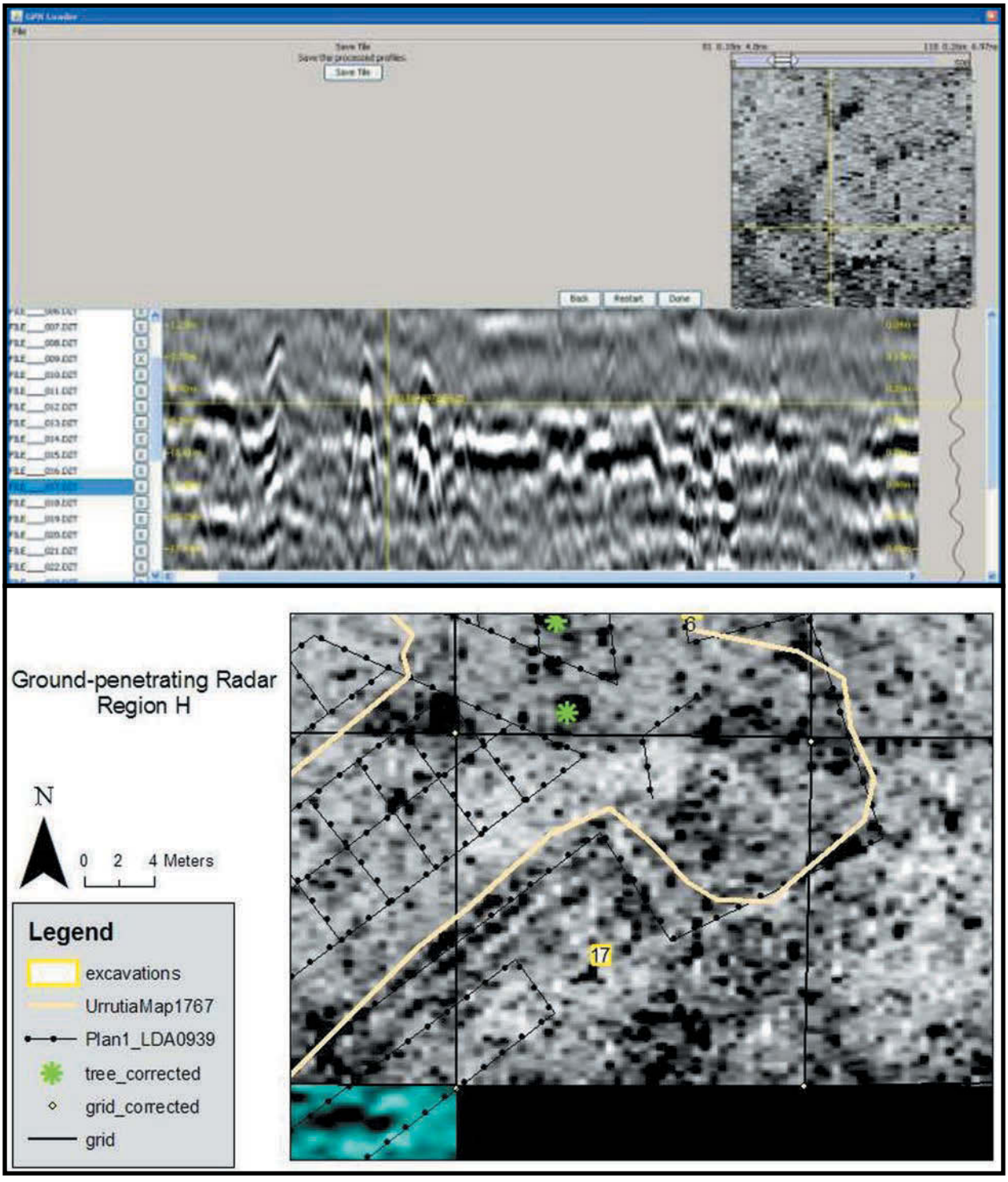


FIGURE 27. Region H, Ground Penetrating Radar.

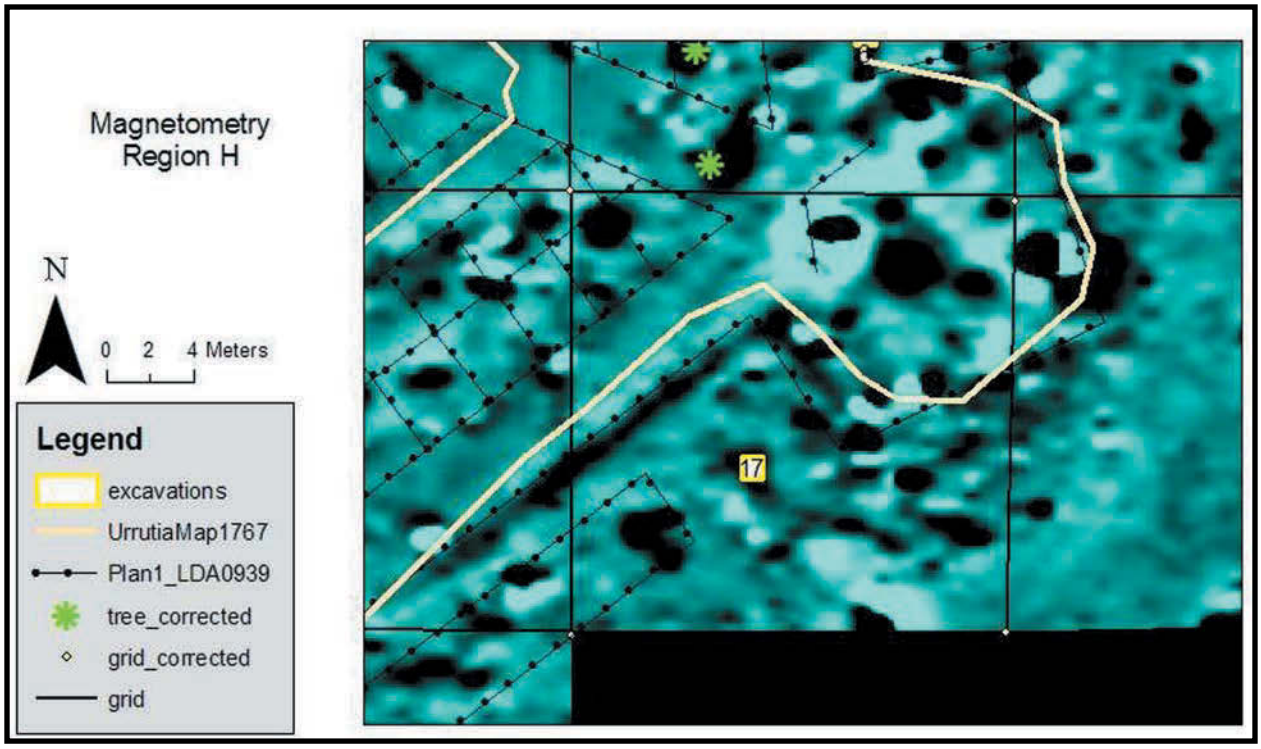


FIGURE 28. Region H, Magnetometry.

Unit 17 was excavated to 20cm bs in two ten cm levels. The deposits indicate that this area was a dumping area as large amounts of all artifact categories were recovered, and animal bone, in particular was present in large quantities (Figure 29, Table 7). Ceramics were particularly numerous with 97% being of American Indian origin—very similar to the percentage for Unit 9 associated with the outside of a barracks building. The average for the rest of the site is around 90%. While much of the animal bone in the other units was very fragmentary, whole elements were recovered in Unit 17. The soil color clearly indicated midden deposits—10YR3/2, very dark grayish brown—not observed for any other unit in this project. Unfortunately, no other features were visible, other than a concentration of large mammal bones in Level 2 (see Figure 29).

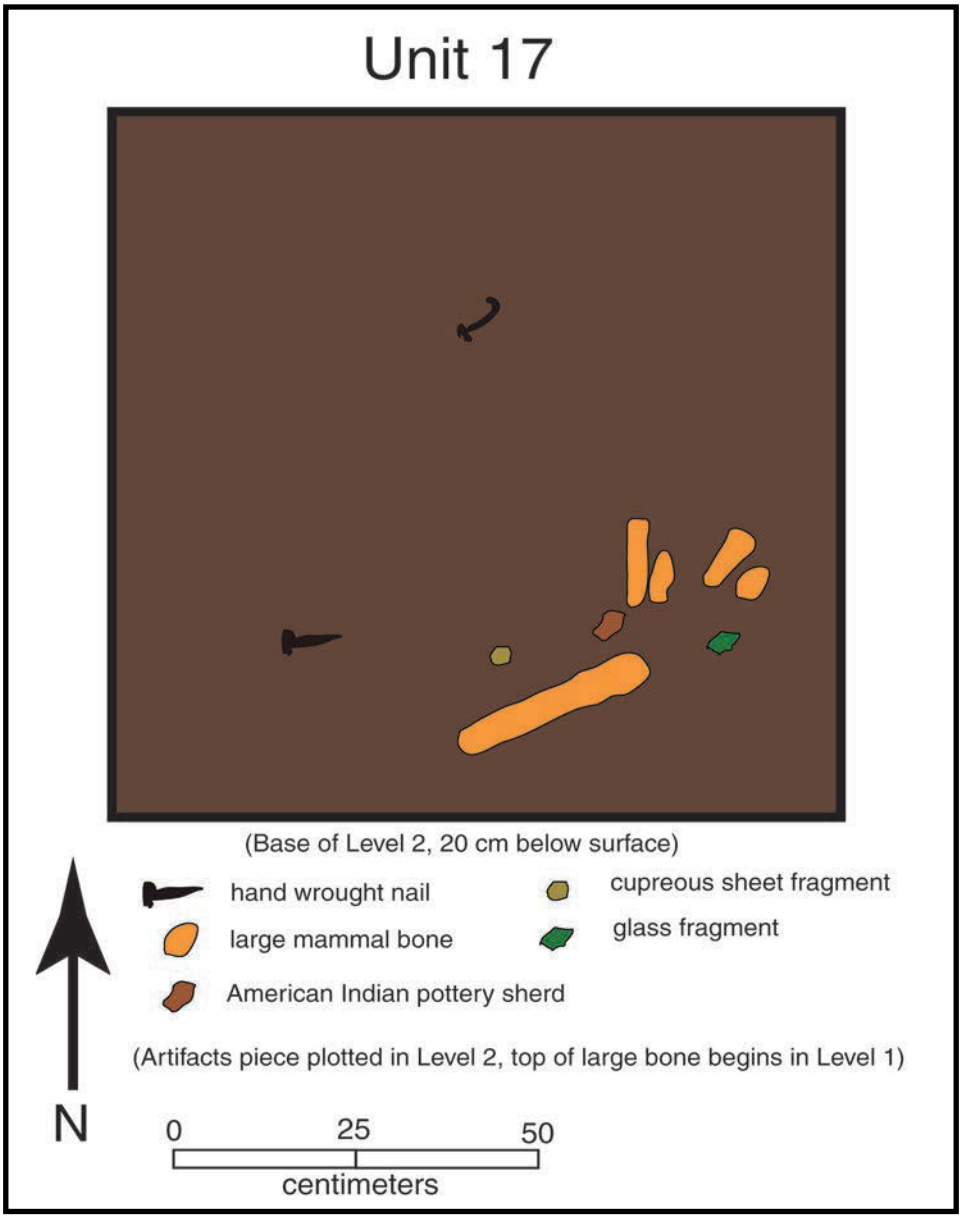


FIGURE 29. Unit 17, plan map.

Table 7. Summary of Artifacts from Unit 17

Unit	17	17	17
level	1	2	Totals
lot #	3227	3228	
Ceramics			
Historic Native American	438	724	**1162**
Spanish Colonial Pottery	17	4	**21**
French Colonial	4	2	**6**
Italian Colonial			
British Colonial	1	1	**2**
German Colonial			
Asian Colonial	1		**1**
French, British or Dutch Colonial	1	8	**9**
UID Colonial	2		**2**
Glass--Curved			
Dark green	90	207	**297**
Blue--Aquamarine	36	84	**120**
Clear	65	38	**103**
Brown	3		**3**

Unit	17	17	17
level	1	2	Totals
lot #	3227	3228	
Glass Beads			
Large (>6mm)		1	**1**
Medium (4-6mm)		2	**2**
Small (2-4mm)	25	15	**40**
Very Small (<2mm)	3		**3**
Lithics			
Chipping debris	35	17	**52**
Iron Rock >1/4 inch	1729	2576	**4305**
Sandstone	10	16	**26**
Pebbles	104	3	**107**
Other rock	9	4	**13**
Metal -- 18th century			
Wrought iron nail fragments	3	3	**6**
UID ferrous fragments	1	3	**4**
Small lead shot	5	7	**12**
Lead splatter	20	13	**33**
Cupreous sheet fragment		1	**1**

Region I—Southern Palisade of Presidio, Unit 19

One of the more dramatic results of the geophysical survey was the delineation of the southern palisade of the presidio. This wall was clearly defined by magnetometry, MS, and electrical resistance (Figure 30). There had been no previous archaeological investigations in this area, and the location of the landscaping timbers marking the southern wall, was to a point, conjectural. Pete Gregory had used his excavations of the southeast bastion as a guide for marking the eastern portion of the southern palisade with landscaping timbers, and according to the results of the geophysical survey, he was right on the mark—including the location of the start of the western portion of the southern palisade. However, the landscaping timbers clearly diverge from the palisade line as indicated by the geophysical survey (Figure 31), and Unit 19 was placed in such a location to verify the presence of the western portion of the southern palisade, just west of the junction with the eastern portion (Figure 31).

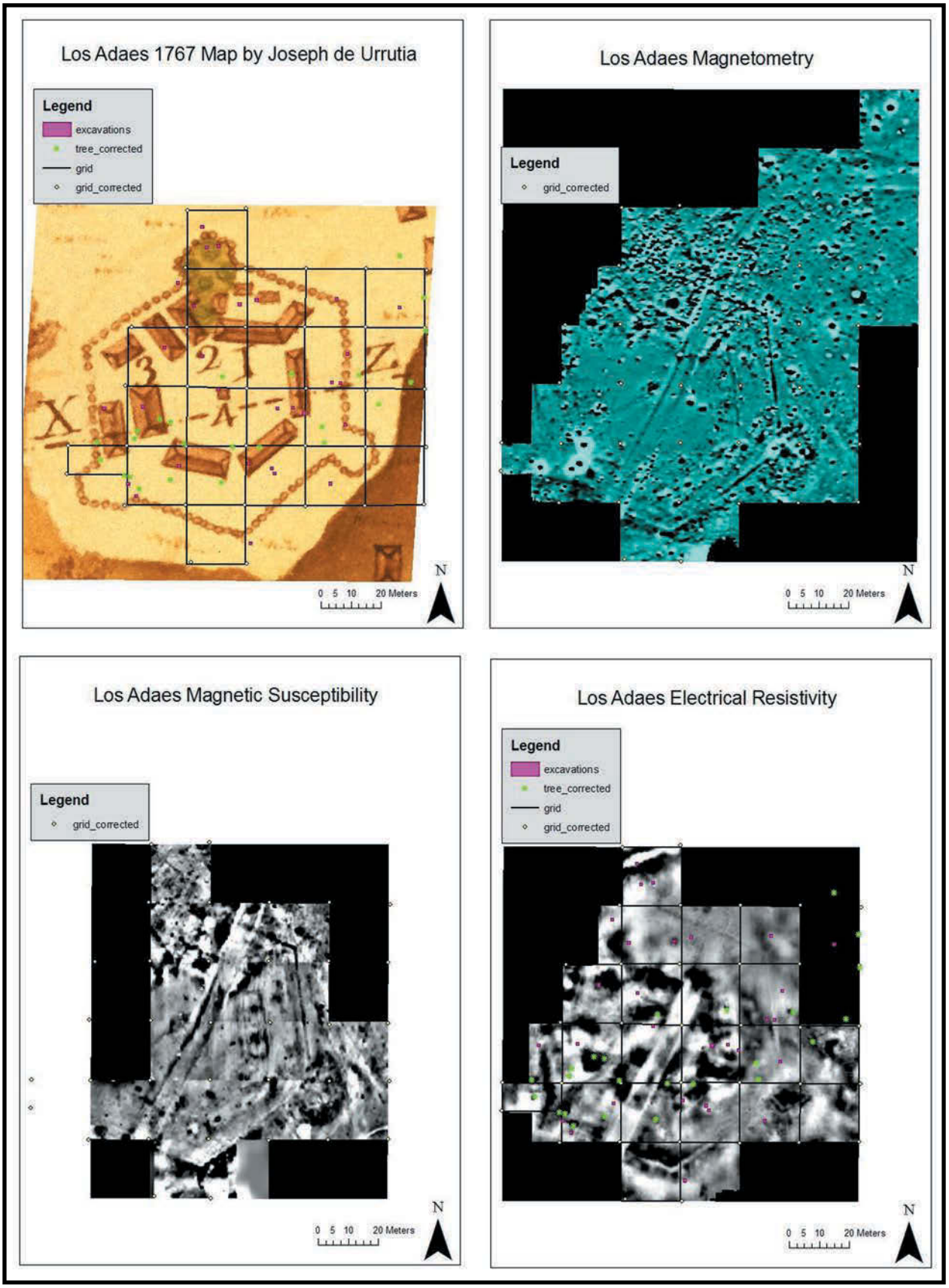


FIGURE 30. Geophysical survey of the south palisade area.

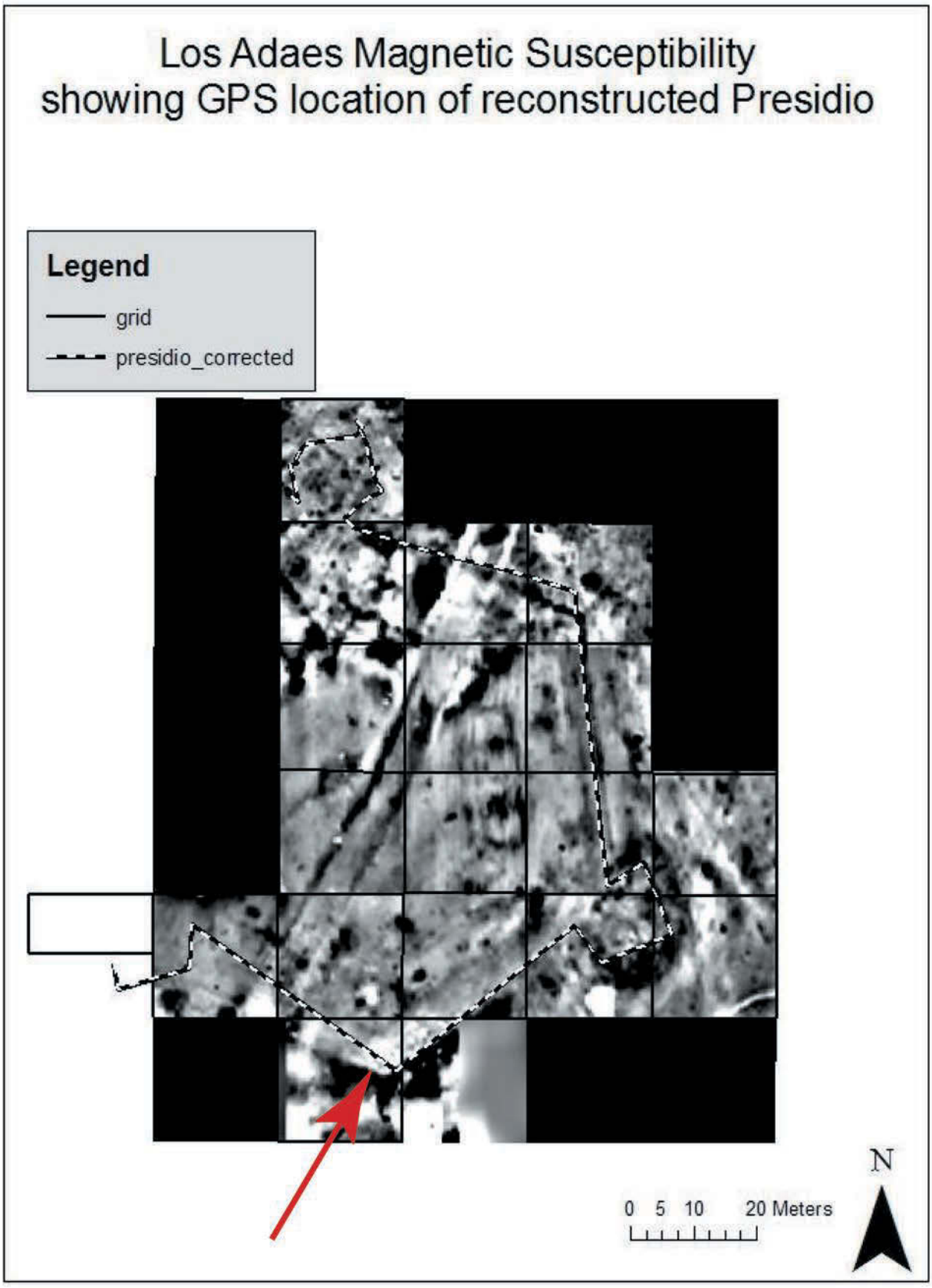


FIGURE 31. Unit 19, location.

Unit 19 was excavated to 20 cm bs in two 10 cm levels. At 20 cm bs, a faint outline of darker deposits was visible extending from the northwest corner to the southeast corner. Rather than excavate another level, a series of soil probes were placed from the northeast corner of the unit to one meter southwest of the southwestern corner of the unit. The presence of a wall trench was clearly visible in the profile drawn from the soil probe information (Figure 33). The maximum depth of the cultural deposits was 125 cm bs. Artifact density was moderate to high in Unit 19 (Table 8), reflecting generalized dumping.

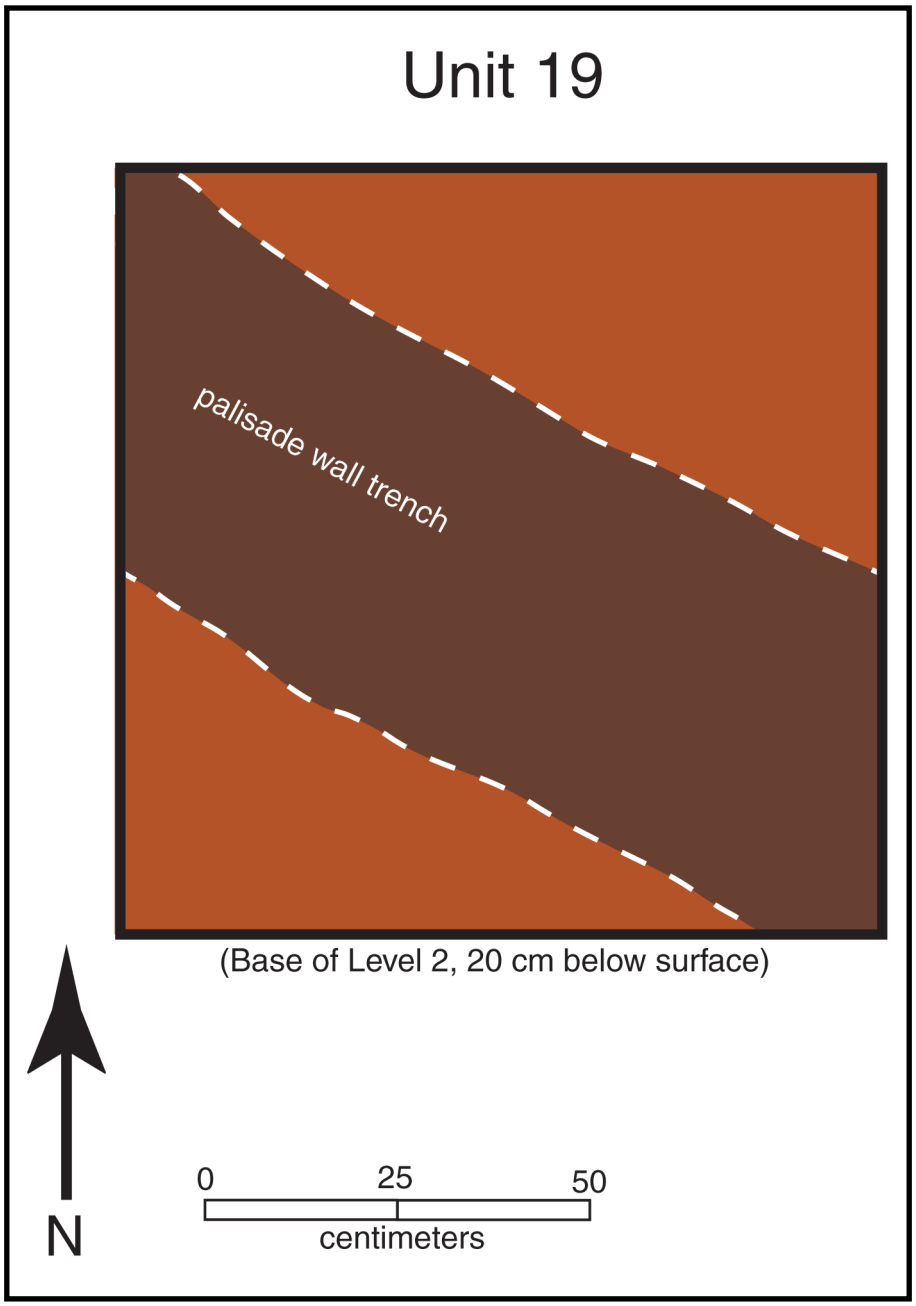


FIGURE 32. Unit 19, plan map.

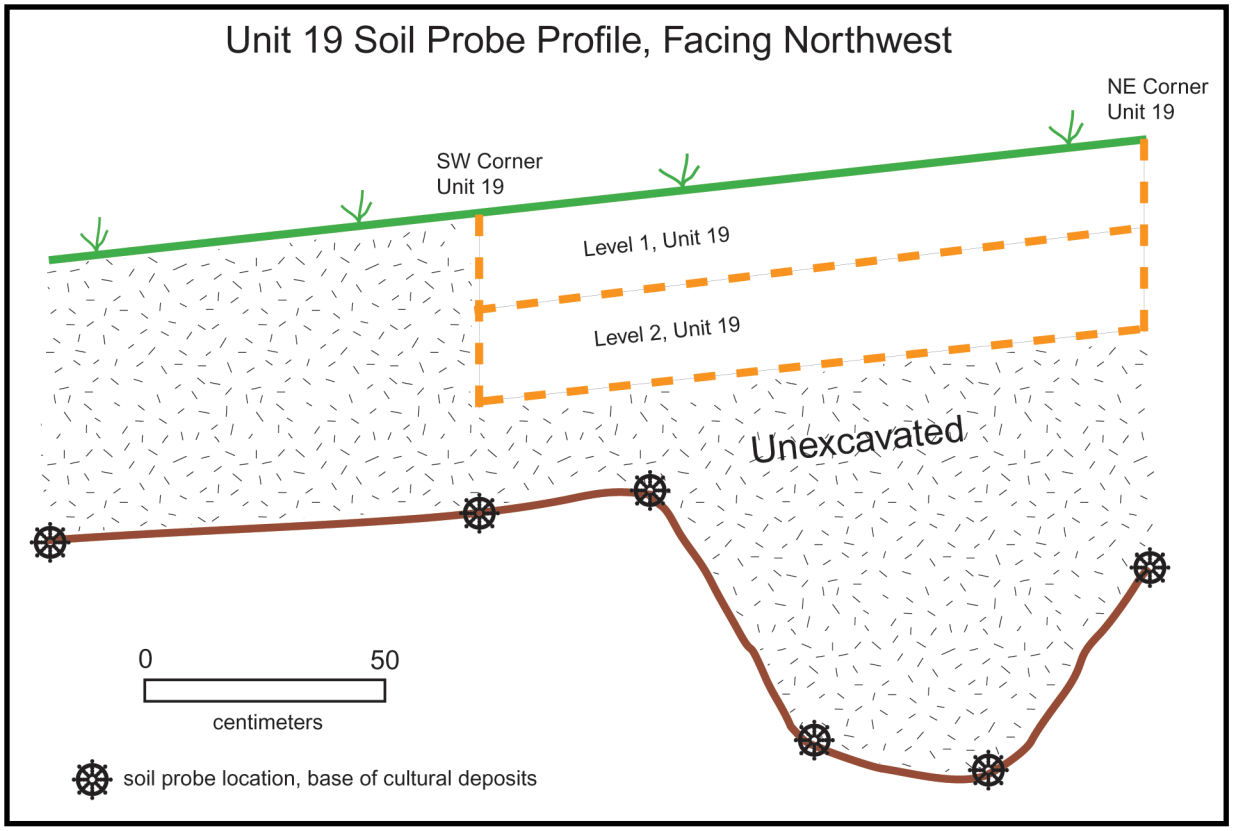


FIGURE 33. Unit 19, soil probe profile.

Table 8. Summary of Artifacts from Unit 19

Unit	19	19	19
level	1	2	Totals
lot #	3230	3231	
Ceramics			
Historic Native American Pottery	150	292	**442**
Spanish Colonial Pottery	3	4	**7**
French Colonial Pottery			
Italian Colonial Pottery			
British Colonial Pottery			
German Colonial Pottery			
Asian Colonial Pottery		1	**1**
French, British or Dutch Colonial	3	8	**11**
UID Colonial Pottery	2	5	**7**
Glass--Curved			
Dark green	74	34	**108**
Blue--Aquamarine	16	30	**46**
Clear	16	26	**42**
Brown	2	1	**3**
Glass Beads			
Large (>6mm)			
Medium (4-6mm)			
Small (2-4mm)	14	27	**41**
Very Small (<2mm)	2		**2**
Lithics			
Chipping debris	17	24	**41**
Iron Rock >1/4 inch	620	2270	**2890**
Sandstone	7	12	**19**
Pebbles	25	7	**32**
Other rock	15	2	**17**
Other			
Tar	101	6	**107**
Metal -- 18th century			
Wrought iron nail fragments	1	2	**3**
Small lead shot	3		**3**
Lead splatter	2		**2**
Metal -- 19th/20th century			
Common wire nail	1		**1**

Region J—Subaltern's Quarters, Units 20 and 21

The architect's plan designates the barracks building closest to the gate as the *quarteles de subalternos*, or subaltern's quarters (ACQ 1721-1729). A subaltern is any rank lower than a captain, and since the only ranks present at Los Adaes below the governor were lieutenant, sergeant, and corporal, it is likely that the barracks building closest to the gate may have housed some or all of these individuals. The architect's plan shows the gate on the southern wall, but the Urrutia map shows the gate on the western wall of the presidio. It is suggested that since the intent of the architect's plan was to place the residence of the subalterns next to the gate, the barracks building closest to the gate on the Urrutia may be the quarters of the subalterns (Figure 34). A faint linear anomaly was determined by magnetometry, which may either be a wall of the subaltern's quarters or the wall of the presidio. Unit 20 was placed in the area of this linear anomaly (Figure 35).

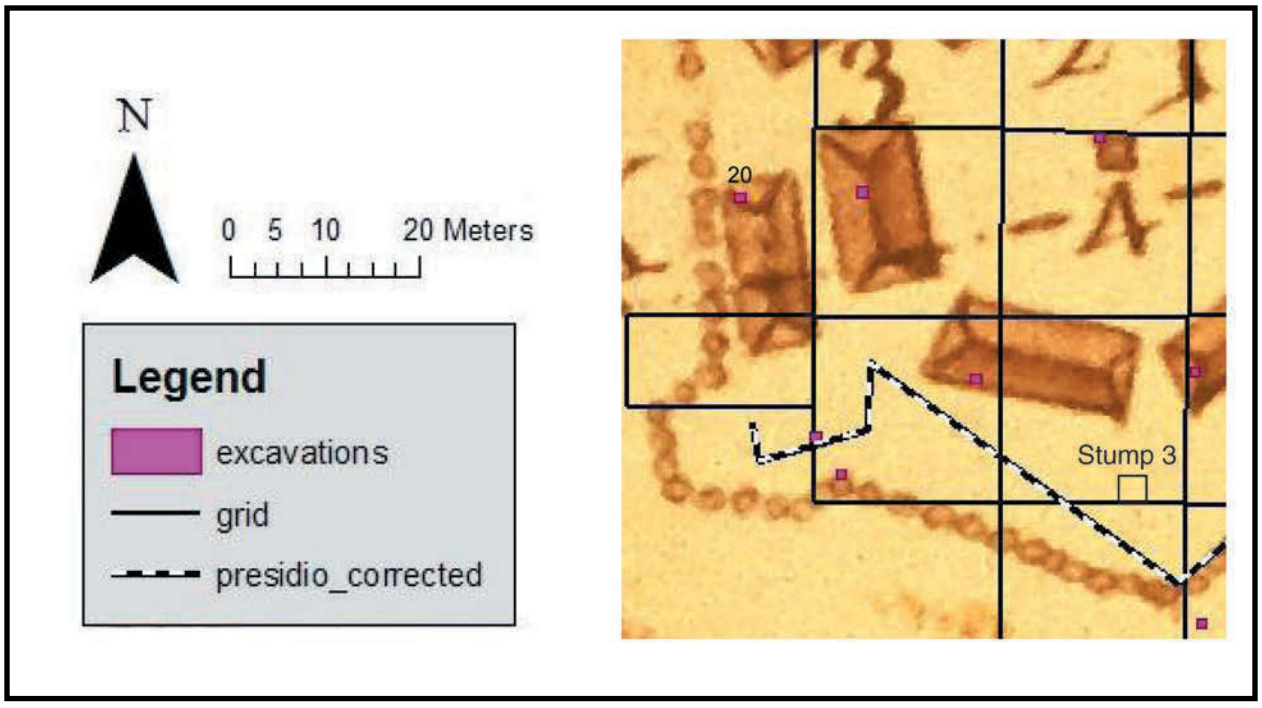


FIGURE 34. Unit 20, location on Urrutia map.

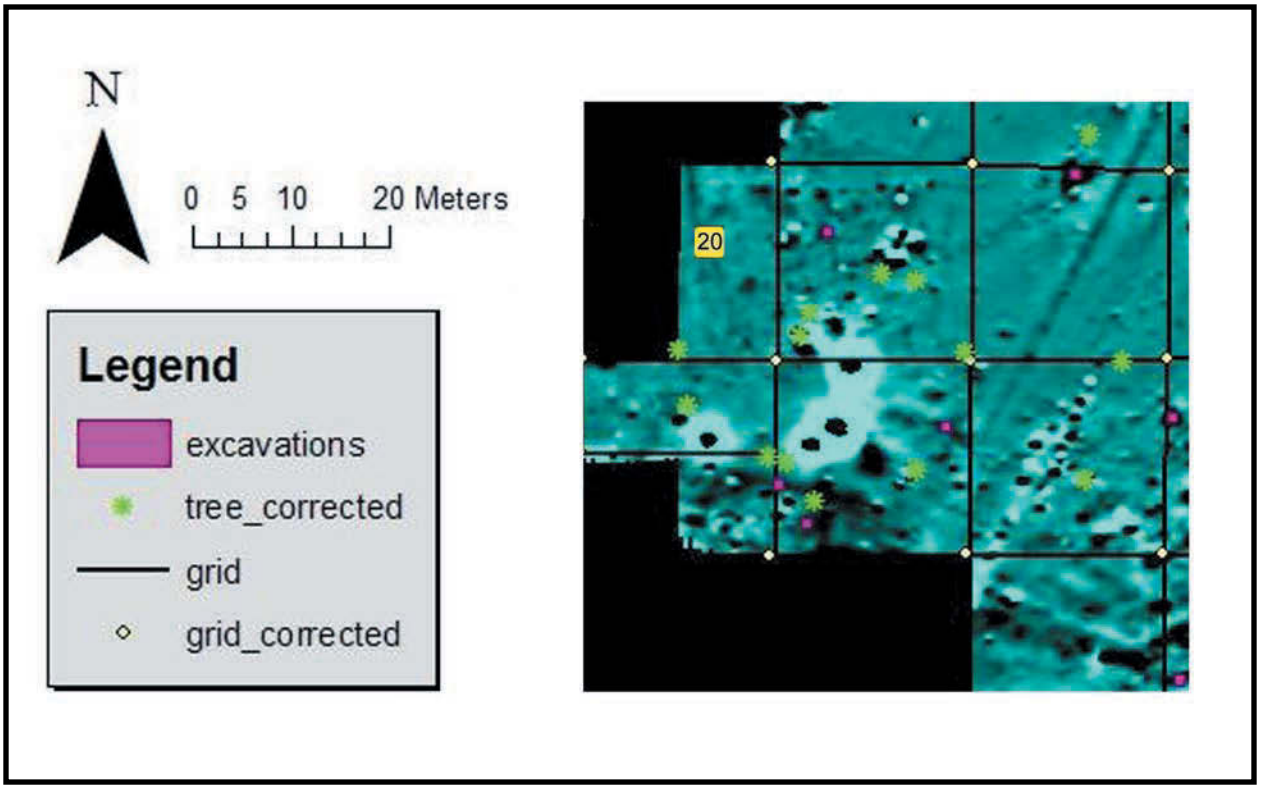


FIGURE 35. Unit 20, Magnetometry.

Unit 20 was excavated to a depth of 20 cm in two ten cm levels. A north-south linear band of darker soil was observed along the west wall at 20 cm bs, and it was decided to excavate another unit to the west—Unit 21 (Figure 36). A linear feature was clearly visible in Unit 21 at 10 cm bs, and was excavated separately as trench fill in Level 2. The linear feature was no longer visible at 20 cm bs in the south part of Unit 21, but soil probes indicated that the trench continued to 25 cm bs in the north part of Unit 21. The soil in Unit 20 outside the trench was compacted sandy clay. The soil in Unit 20, Level 2 outside the trench feature was compacted clay that, when excavated, came out in clods—unlike a natural clay deposit. The clay in Unit 20, Level 2 contained very few artifacts (Table 10), and very little ironstone concretions. This area was interpreted as clay that was brought in as packing for outer wall support.

The linear trench observed in Units 20 and 21 is much too shallow to be the trench for the western palisade wall of the presidio. It is more likely that this small trench is related to the barracks depicted on the Urrutia map that is closest to the gate, and it may be a wall trench feature, although no post holes or post molds were observed. Soil probes near the eastern walls of Units 20 and 21 detected white silt/silty loam—a natural soil horizon—at 20 and 25 cm bs, respectively. A soil probe 2 meters west of Unit 21 revealed the white silt/silty loam horizon at 25 cm bs. No indications of the western palisade wall trench were identified with soil probes.

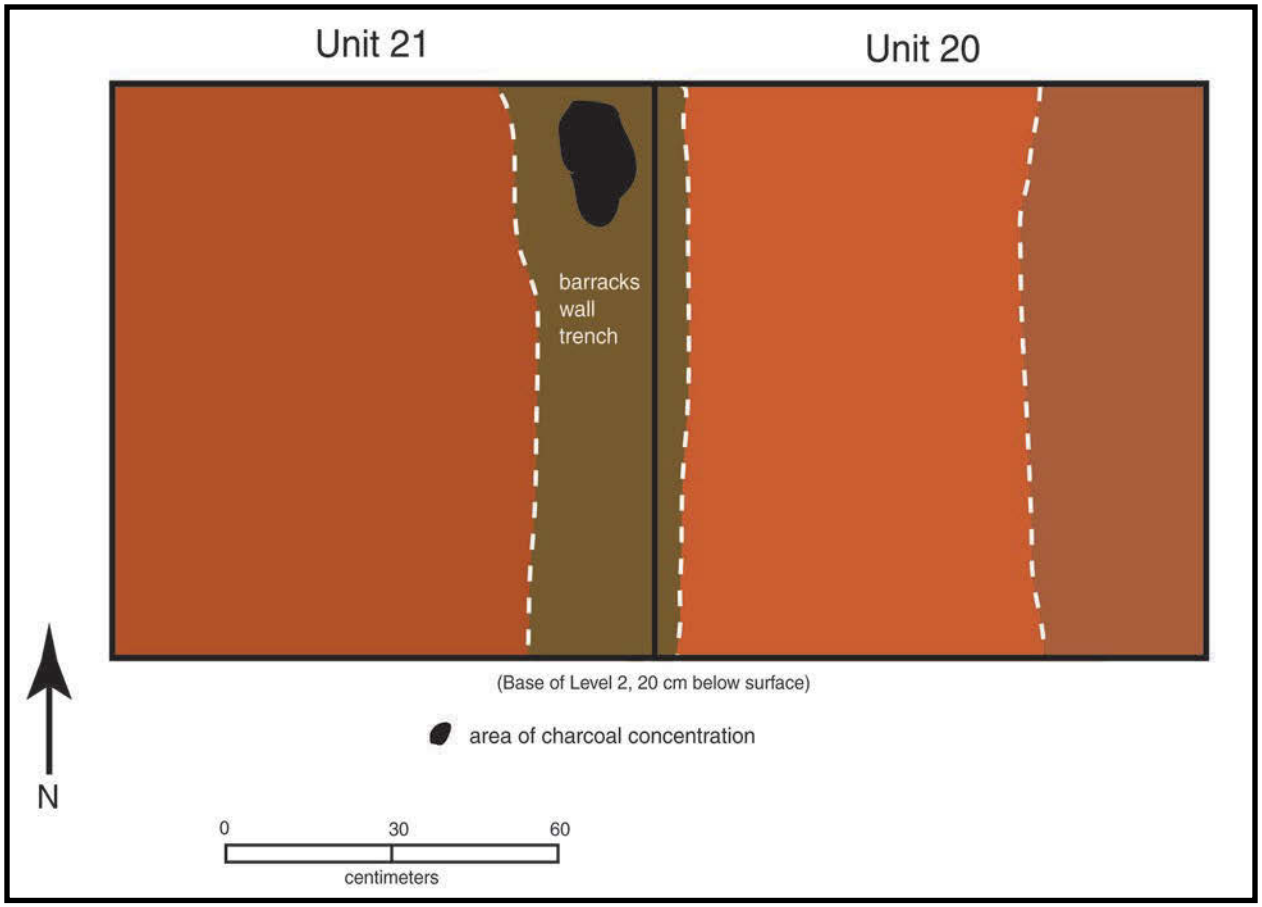


FIGURE 36. Units 20 and 21, plan map.

Table 9. Summary of Artifacts from Units 20 and 21

Unit	20	20	**20**	21	21	21	**21**	21
level	1	2	**Totals**	1	1 mixed*	2	**Totals**	Trench
lot #	3233	3234		3236	3239	3237		3238
Ceramics								
Historic Native American	88	157	**245**	48	40		**88**	44
Spanish Colonial		2	**2**		1		**1**	
French Colonial		1	**1**		1		**1**	2
Italian Colonial		1	**1**					
British Colonial		1	**1**					
German Colonial				1			**1**	
Asian Colonial								2
French, British or Dutch Colonial		6	**6**	9	6	3	**18**	7
UID European/Euro-American Colonial	3	1	**4**			1	**1**	1
19th/20th Century					1		**1**	
Glass--Curved								
Dark green	46	54	**100**	48	32	2	**82**	31
Blue--Aquamarine	40	129	**169**	33	35	10	**78**	23
Clear	27	36	**63**	67	39	13	**119**	8
Amethyst				7	4		**11**	
Brown	4		**4**	5	2		**7**	
Glass Beads								
Large (>6mm)								
Medium (4-6mm)	1	1	**2**					1
Small (2-4mm)	8	28	**36**	7	7	2	**16**	8
Very Small (<2mm)	1	1	**2**	1	1	1	**3**	
Lithics								
Chipping debris	73	128	**201**	71	51	13	**135**	38
Gunflint fragment					3		**3**	
Iron Rock >1/4 inch	1700	3246	**4946**	1180	1258	382	**2820**	915
Iron Rock <1/4 inch					2345		**2345**	
Sandstone	5		**5**	7			**7**	
Pebbles	9		**9**	15	16	2	**33**	2
Other rock		1	**1**	8	1	3	**12**	9
Other								
Slag	1		**1**					
Metal -- 18th century								
Wrought iron nail fragments	2		**2**					
UID ferrous fragments	2		**2**					
Cupreous finger ring fragment	1		**1**					
Lead ball shot, .55 caliber						1	**1**	
Small lead shot	2		**2**	3	6		**9**	2
Lead cube	1		**1**					1
Lead splatter	1		**1**	1		2	**3**	1
Metal -- century unknown								
Lead shot	4		**4**					
* one bucket of Unit 20, Level 1 was mixed with Unit 21, Level 1								

Discussion of Artifacts

Overview

Tables 10, 11, and 12 show an inventory of artifacts recovered during the ground-truthing project. The faunal and botanical remains are discussed separately in Appendices 2 and 3. Artifact counts are quite substantial. A total of 6,862 pottery sherds was recovered—6,391 or 93% were of American Indian origin, and 470, or 7% were mostly European and Euro-American in origin, with a very small number (n=18) of Asian porcelain. Only one sherd was post-colonial—a lead-glazed ironstone sherd, probably dating to the late 19th/early 20th century. The predominance of American Indian pottery is typical of the rest of the Los Adaes assemblage. Metal artifacts are far less common than ceramics. Jay C. Blaine examined and described all metal artifacts. Fragments of wrought iron nails, small lead shot, and lead splatter from making lead shot were found in all units. Units 7 and 9 in the eastern barracks area had the highest diversity of metal artifacts, including horse gear, gun parts, and a possible knife blade fragment. Glass fragments occur in all units. All glass was documented for this project, including the <1/4 inch fragments. Glass beads were also ubiquitous—a total of 472 were recovered. Beads were abundant in Units 7 and 9 and Unit 20—both barracks areas, and the dump areas of Unit 17 and 19, but they were especially abundant in Level 2 of Unit 2 with a total of 46. This latter area also appears to have been piled deposits of debris. Lithic artifacts consist mostly of chipping debris related to gunflint maintenance, and while chipping debris occurs in all units, it is especially abundant in Unit 20—the possible location of the subaltern's barracks. The relatively low frequency of natural stone—the ironstone concretions, or iron concretions—in Unit 4 and in Level 2 of Units 2 and 21 suggest deposits that are specialized in some way. The remainder of this section will consist of more detailed discussions of ceramic, metal, glass, lithic, faunal, and botanical artifacts.

Table 10. Pottery Artifact Counts, Los Adaes (16NA16) Ground-Truthing Project

Unit	1	1	1	2	2	2	3	3	4	4	6	6	6A	6A	7	7	9	9
level	I	2	3	1	2	3	1	2	1	2	1	2	1	2	1	2	1	2
lot #	3191	3192	3193	3194	3195	3196	3198	3199	3201	3202	3204	3205	3207	3208	3210	3211	3213	3214
Historic Native American Pottery																		
Plain	37	147	111	136	333	74	3	39	7	3	164	500	79	267	39	92	250	288
Plain black-slipped									1									
Incised	3	9	6	3	18	4			1		6	13	2	17	4		12	20
Engraved								5	1							6		
Engraved red-filled																3		
Engraved white-filled																		
Punctated					2	1				1				3			2	2
Handle fragment				1								1						
Glazed					1													
Eroded							5	96	1	3					44	221		25
Sherdlets, <1/4 inch																		
Spanish Colonial Pottery																		
Puebla Polychrome								2										1
San Agustín Blue on White																		
Puebla Blue on White																		
Abo/Aranama Polychrome	2											1						
UID blue on white					1			2			2	1	1	2			1	3
Guadalajara Polychrome														1				
Plain majolica	1										3			3		1	4	5
Olive Jar												1						
French Colonial Pottery																		
Saintonge Plain					6						1					2		
Provence Blue on White				1										1				3
Provence Polychrome		1																
Brittany Blue on White																		
La Rochelle Polychrome		1																
Normandy Blue on White					1													
Rouen																		
UID faience blue on white					6			1				7						
Lead-glazed coarse earthenware		1						1			2	1						1
Italian Colonial Pottery																		
Albisola lead-glazed coarse earthenware	1																	
British Colonial Pottery																		
UID delft blue on white												1		2			2	7
UID Delft polychrome																		
Salt glazed stoneware	1																	1
German Colonial Pottery																		
Westerwald stoneware																		
Asian Colonial Pottery																		
Porcelain			2					5				2		3			1	
UID Colonial Pottery																		
UID tin-enameled, plain, > 1/4 inch		3	1								2	13						
Faience or Delft tin-enameled, plain	5	9	19	3	14			7			10			10	1	3	7	58
Faience or Delft tin-enameled,polychrome												1						
Faience or Delft unglazed coarse earthenware					1													
Faience or Delft tin-enameled, blue on white									1		1							
UID lead-glazed coarse earthenware	1													2				
19th/20th Century																		
Lead-glazed ironstone, blue, molded																		
Totals	**51**	**171**	**139**	**144**	**383**	**79**	**8**	**158**	**12**	**7**	**191**	**542**	**82**	**311**	**88**	**328**	**279**	**414**

Table 10. Pottery Artifact Counts, Los Adaes (16NA16) Ground-Truthing Project

Unit	10	10	10A	10A	11	11	12	17	17	19	19	20	20	21	21	21	21	
level	1	2	1	2	1	2	1	1	2	1	2	1	2	1	mixed	2	trench	
lot #	3216	3217	3219	3220	3222	3223	3225	3227	3228	3230	3231	3233	3234	3236	3239	3237	3238	
Historic Native American Pottery																		**Totals**
Plain	105	141	74	16	103	211	157	418	674	64	110	87	148	48	39		43	**5007**
Plain black-slipped																		**1**
Incised	7	5	5		8	8	18	19	46		8	1	9		1		1	**254**
Engraved							2				1							**15**
Engraved red-filled																		**3**
Engraved white-filled																		
Punctated			1			2	1		4		2							**21**
Handle fragment								1										**3**
Glazed																		**1**
Eroded							434			86	171							**1086**
Sherdlets, <1/4 inch																		
Spanish Colonial Pottery																		
Puebla Polychrome							2	2					2					**9**
San Agustín Blue on White								2			3							**5**
Puebla Blue on White																		
Abo/Aranama Polychrome						1												**4**
UID blue on white			2			3	2	8	3	2	1							**34**
Guadalajara Polychrome																		**1**
Plain majolica						6	8	5	1	1								**38**
Olive Jar							1											**2**
French Colonial Pottery																		
Saintonge Plain		1						1									1	**12**
Provence Blue on White													1		1			**7**
Provence Polychrome																	1	**2**
Brittany Blue on White							1											**1**
La Rochelle Polychrome																		**1**
Normandy Blue on White																		**1**
Rouen					1													**1**
UID faience blue on white	2				1	1		2										**20**
Lead-glazed coarse earthenware								1	2									**9**
Italian Colonial Pottery																		
Albisola lead-glazed coarse earthenware													1					**2**
British Colonial Pottery																		
UID delft blue on white						1		1										**14**
UID Delft polychrome						2			1									**3**
Salt glazed stoneware		2											1					**5**
German Colonial Pottery																		
Westerwald stoneware														1				**1**
Asian Colonial Pottery					2						1							**3**
Porcelain	1						1	1									2	**18**
UID Colonial Pottery																		
UID tin-enameled, plain, > 1/4 inch						1	3				3	1	1					**28**
Faience or Delft tin-enameled, plain	6		2	1	3	5	4	1	8	1	7		4	6	6	3	5	**208**
Faience or Delft tin-enameled,polychrome										1				1				**3**
Faience or Delft unglazed coarse earthenware																		**1**
Faience or Delft tin-enameled, blue on white							1			1	1		2	2			2	**11**
UID lead-glazed coarse earthenware	7	1	1	1	1	1	1	2		2	2	2				1	1	**26**
19th/20th Century																		
Lead-glazed ironstone, blue, molded															1			**1**
Totals	**128**	**150**	**85**	**18**	**119**	**242**	**636**	**464**	**739**	**158**	**310**	**91**	**169**	**58**	**48**	**4**	**56**	**6862**

Table 11. Metal Artifact Counts, Los Adaes (16NA16) Ground-Truthing Project

Unit	1	1	1	2	2	2	3	3	4	4	6	6	6A	6A	7	7	9	9
level	I	2	3	1	2	3	1	2	1	2	1	2	1	2	1	2	1	2
lot #	3191	3192	3193	3194	3195	3196	3198	3199	3201	3202	3204	3205	3207	3208	3210	3211	3213	3214
Metal -- 18th century																		
Wrought iron nail fragments	1	1			1			1	1	4		2	1	5	6	2	2	5
UID ferrous fragments		1	1		6			4				4			1	1	2	3
Cupreous tack head																		
Cupreous finger ring fragment																		
Cupreous gunstock applique																		1
Cupreous side plate fragment															1			
Cipreous key sabore															1			
Cupreous earring with paste set										1								
Ferrous knife blade fragment (?)		1																1
Ferrous buckle fragment															1			2
Ferrous coscojos								1										
Ferrous higa																		
Ferrous chain link (?)	1																	
Ferrous light snipe hinge																	1	
Lead cloth seal																		
Lead ball shot, .55 caliber																		1
Small lead shot	1	4				2		9	5	1	4	3	3	3	1	3	10	11
Lead cube																		1
Lead splatter		1				8		5			1	7		10	3	20	1	5
UID lead fragment																		1
Wire seed beads																		1
Cupreous sheet fragment														2				
UID pewter fragments																		2
Pewter button (?)																		1
Metal -- 19th/20th century																		
Common wire nail																		
Machine-cut nail																2		
Sanitary can fragments																		
Metal -- century unknown																		
Non-ferrous braid																		
Cast iron fragment																		
UID square nail fragments																		
UID ferrous fragments														8				
UID cupreous fragments																		
UID lead fragment																		
Lead shot									5	1					1			
Small screwdirver																		
Totals	**3**	**8**	**1**		**7**	**10**		**20**	**11**	**7**	**5**	**16**	**4**	**28**	**15**	**28**	**16**	**35**

Table 11. Metal Artifact Counts, Los Adaes (16NA16) Ground-Truthing Project

Unit	10	10	10A	10A	11	11	12	17	17	19	19	20	20	21	21	21	21	
level	1	2	1	2	1	2	1	1	2	1	2	1	2	1	1 mixed	2	trench	
lot #	3216	3217	3219	3220	3222	3223	3225	3227	3228	3230	3231	3233	3234	3236	3239	3237	3238	**Totals**
Metal -- 18th century																		
Wrought iron nail fragments	1		1			2	1	3	3	1	2	2						**48**
UID ferrous fragments		3					1	1	3			2						**33**
Cupreous tack head							1											**1**
Cupreous finger ring fragment												1						**1**
Cupreous gunstock applique																		**1**
Cupreous side plate fragment																		**1**
Cipreous key sabore																		**1**
Cupreous earring with paste set																		**1**
Ferrous knife blade fragment (?)							1											**3**
Ferrous buckle fragment																		**3**
Ferrous coscojos																		**1**
Ferrous higa																		
Ferrous chain link (?)																		**1**
Ferrous light snipe hinge																		**1**
Lead cloth seal							1											**1**
Lead ball shot, .55 caliber																1		**2**
Small lead shot	6	2	1	10	5	2	1	5	7	3		2		3	6		2	**115**
Lead cube												1					1	**3**
Lead splatter	6	11				2	1	20	13	2		1		1		2	1	**121**
UID lead fragment																		**1**
Wire seed beads																		**1**
Cupreous sheet fragment									1									**3**
UID pewter fragments																		**2**
Pewter button (?)																		**1**
Metal -- 19th/20th century																		
Common wire nail	1									1		1						**3**
Machine-cut nail																		**2**
Sanitary can fragments																		
Metal -- century unknown																		
Non-ferrous braid																		
Cast iron fragment																		
UID square nail fragments																		
UID ferrous fragments																		**8**
UID cupreous fragments																		
UID lead fragment																		
Lead shot						1						4						**12**
Small screwdirver			1															**1**
	14	**16**	**3**	**10**	**5**	**7**	**7**	**29**	**27**	**7**	**2**	**14**		**4**	**6**	**3**	**4**	**372**

Table 12. All Other Artifact Counts, Los Adaes (16NA16) Ground-Truthing Project

Unit	1	1	1	2	2	2	3	3	4	4	6	6	6A	6A	7	7	9	9	10	10
level	I	2	3	1	2	3	1	2	1	2	1	2	1	2	1	2	1	2	1	2
lot #	3191	3192	3193	3194	3195	3196	3198	3199	3201	3202	3204	3205	3207	3208	3210	3211	3213	3214	3216	3217
Glass--Curved																				
Dark green		7	9	13	38	2		12			7	49	2	17	6	13	26	33	25	53
Blue--Aquamarine	11	25	6	19	62	2	3	52	3	1	23	59	10	56	11	6	54	52	41	30
Clear	7	46	5	10	5		12	15		3	25	20	14	42	4	9	24	50	30	15
Frosted								9		2										
Amethyst																				
Brown	1			4			13		1			1	3		2		1	1	1	2
White																		1		
Totals	**19**	**78**	**20**	**46**	**105**	**4**	**28**	**88**	**4**	**6**	**55**	**129**	**29**	**115**	**23**	**28**	**105**	**137**	**97**	**100**
Glass Beads																				
Large (>6mm)					1		1													
Medium (4-6mm)				1	1	2														
Small (2-4mm)	3		8	15	46	8	4	17	4	3	10	18	6	10	5	25	25	29	7	7
Very Small (<2mm)		2		1	10	1			2		2		1	3	2	2		2		
Totals	**3**	**2**	**8**	**17**	**58**	**11**	**5**	**17**	**6**	**3**	**12**	**18**	**7**	**13**	**7**	**27**	**25**	**31**	**7**	**7**
Lithics																				
Chipping debris	4	18	4	2	29	18	39	7	1	7	3	6	2	22	12	35	18	28	24	13
Gunflint fragment																				
Groundstone fragment																				
Iron Rock >1/4 inch	360	1384	1678	2005	202	6329	1210	4165			948	4112	397	1293	1961	5200	2329	3334	1047	1536
Iron Rock <1/4 inch																				
Sandstone	2			2	6		4	47		3	4	3		5			29	31	12	7
Pebbles	5			17		242	753	36			2	2	3	4	21		3	10	7	
Other rock	6			16	2	2					2	15	1	9	14			1	5	1
Totals	**377**	**1402**	**1682**	**2042**	**239**	**6591**	**2006**	**4255**	**1**	**10**	**959**	**4138**	**403**	**1333**	**2008**	**5235**	**2379**	**3404**	**1095**	**1557**
Other																				
Coal		1										1								15
Slag			1																	
Daub						1	1													
Burnt clay																				
Mud Dauber nest fragment										1										
Plastic											2									
Weedeater string													1							
Tar																				

Table 12. All Other Artifact Counts, Los Adaes (16NA16) Ground-Truthing Project

Unit	10A	10A	11	11	12	17	17	19	19	20	20	21	21	21	21	
level	1	2	1	2	1	1	2	1	2	1	2	1	1 mixed	2	trench	
lot #	3219	3220	3222	3223	3225	3227	3228	3230	3231	3233	3234	3236		3237	3238	**Totals**
Glass--Curved																
Dark green	6	17	18	82	30	90	207	74	34	46	54	48	32	2	31	**1083**
Blue--Aquamarine	7	12	18	20	13	36	84	16	30	40	129	33	35	10	23	**1032**
Clear	1	18	37	22	14	65	38	16	26	27	36	67	39	13	8	**763**
Frosted																**11**
Amethyst												7	4			**11**
Brown			1	2	3	3		2	1	4		5	2			**53**
White																**1**
	14	**47**	**74**	**126**	**60**	**194**	**329**	**108**	**91**	**117**	**219**	**160**	**112**	**25**	**62**	**2954**
Glass Beads																
Large (>6mm)	1						1									**4**
Medium (4-6mm)					1		2			1	1				1	**10**
Small (2-4mm)	1	2	3	8	15	25	15	14	27	8	28	7	7	2	8	**420**
Very Small (<2mm)						3		2		1	1	1	1	1		**38**
	2	**2**	**3**	**8**	**16**	**28**	**18**	**16**	**27**	**10**	**30**	**8**	**8**	**3**	**9**	**472**
Lithics																
Chipping debris	1	23	3	8	21	35	17	17	24	73	128	71	51	13	38	**815**
Gunflint fragment													3			**3**
Groundstone fragment			1													**1**
Iron Rock >1/4 inch	1264	592	1217	2745	3259	1729	2576	620	2270	1700	3246	1180	1258	382	915	**64443**
Iron Rock <1/4 inch													2345			**2345**
Sandstone			2	7	3	10	16	7	12	5		7				**224**
Pebbles	2	7	2	2	3	104	3	25	7	9		15	16	2	2	**1304**
Other rock	3	1	2		4	9	4	15	2		1	8	1	3	9	**136**
	1270	**623**	**1227**	**2762**	**3290**	**1887**	**2616**	**684**	**2315**	**1787**	**3375**	**1281**	**3674**	**400**	**964**	**69271**
Other																
Coal																**17**
Slag										1						**2**
Daub																**2**
Burnt clay																
Mud Dauber nest fragment																**1**
Plastic																**2**
Weedeater string		1														**2**
Tar								101	6							**107**

American Indian Ceramics

American Indian ceramics were sorted into the following categories: incised, punctated, engraved, and plain (Figures 37-40). Basal sherds and handle sherds were also identified (Figures 41-42). The American Indian ceramics recovered during this project were very fragmentary. Of the 6391 sherds that were greater than one quarter inch, 3320 were either too eroded or were lacking two intact surfaces, and therefore were not included in the surface treatment/temper analysis (Tables 13). Most of the sherds in the surface treatment/temper analysis (2782 of 3068, or 90.7 %) had plain surface treatment. Incised sherds comprised 8.2% of the collection, followed by 0.7 % punctated, and 0.4% engraved (Table 13).

The fragmentary nature of the ceramic assemblage makes the identification of types difficult, but the majority of the incised sherds appear to represent Emory Punctated Incised. This type, first described as Emory Punctated by R.K. Harris et al. (1965:299), consists of vessels with constricted necks where a series of punctates have been applied almost like a necklace around the neck of the vessel (see Figure 38c,e, and i). The area between the neck and rim lip is plain, and the body can either be plain or incised with parallel curvilinear lines [see Figure 37A(m,n,q,w,x,y,aa,cc); Figure 37B(f,h,i,o,q,bb,cc,ee,ff); Figure 37C(j,l,m,u,v,w)]. Emory Punctated Incised is the dominant ceramic type at Los Adaes (Gregory 2005:6).

While most of the punctated and incised sherds appear to be Emory Punctated (Figure 38 b,c,d,e,f,g,h,i,k), the remaining incised sherds displayed in Figures 37 cannot readily be assigned to a ceramic type. One incised rim sherd [Figure 37A(k)] is incised on the interior—this is quite unusual.

Most of the engraved sherds appear to be Natchitoches Engraved (Figure 39b,c,e,g,o,p,r), with two sherds representing Patton Engraved (Figure 39d,q). The Natchitoches Engraved sherds have shallow engraved lines, while the Patton Engraved sherds have deep engraved lines. A red slip is barely visible on several Natchitoches Engraved sherds (Figure 39b,c,e).

Vessel shapes represented include mostly flaring rim vessels (Figure 40) which are either simple bowls with flaring rims or constricted neck vessels. Both occur commonly at Los Adaes, but since most of the rims broke at or above the neck of the vessel, it is not possible to say which form of vessel is represented in the project assemblage. Bottle forms with long cylindrical necks and spherical bodies, along with carinated bowls have not been recovered from Los Adaes, and are not represented in the project assemblage. Most of the vessel forms identified at Los Adaes have rounded bottoms. Basal sherds are difficult to identify if the sherd size is small—which was the case for the assemblage recovered for the current project. Two larger basal sherds indicated vessels with both rounded (Figure 41a) and flat bottoms (Figure 41b). The flat basal sherd in Figure 41b has a most unusual paste composition.

FIGURE 37A. American Indian ceramics, incised.

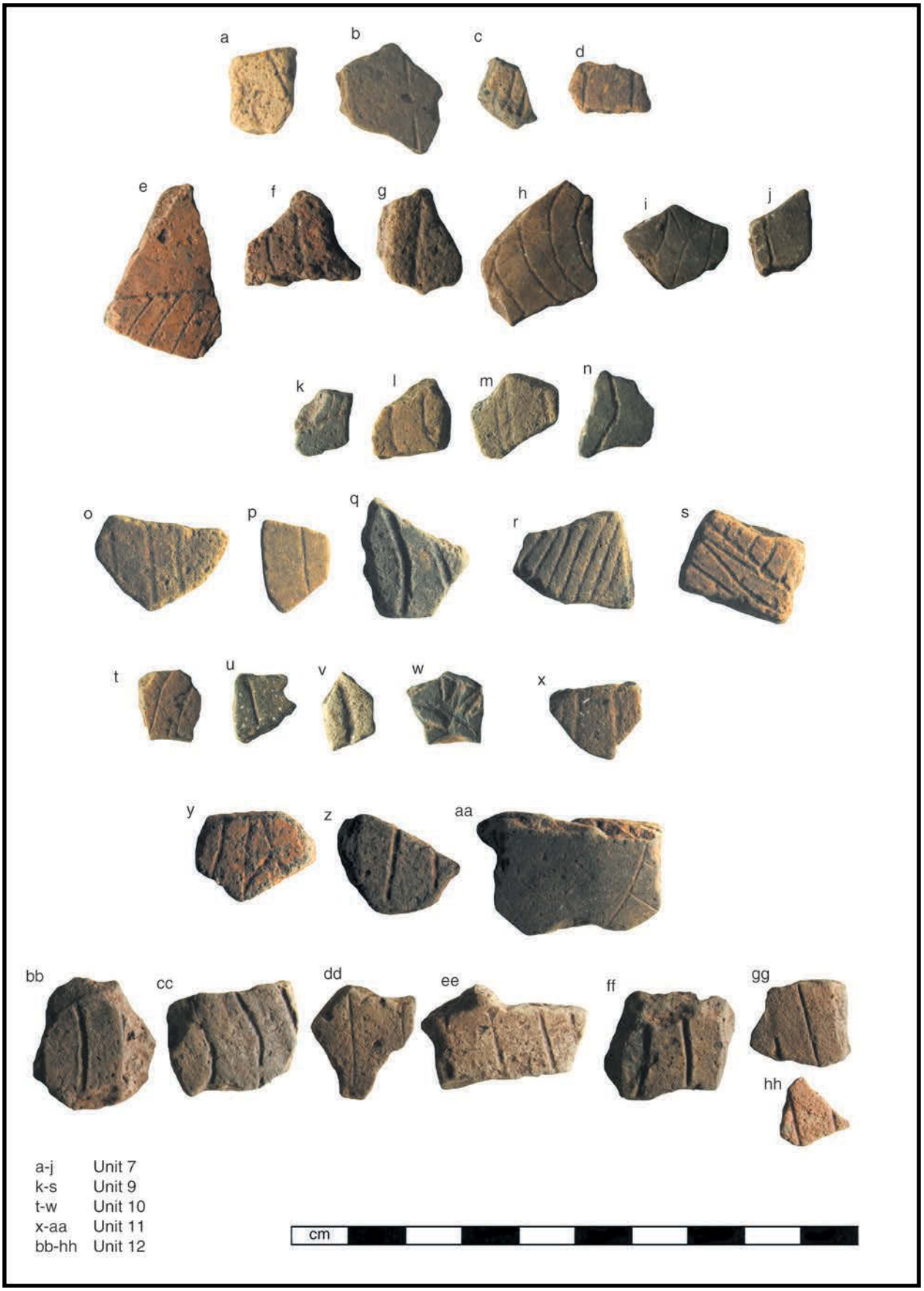


FIGURE 37B. American Indian ceramics, incised.

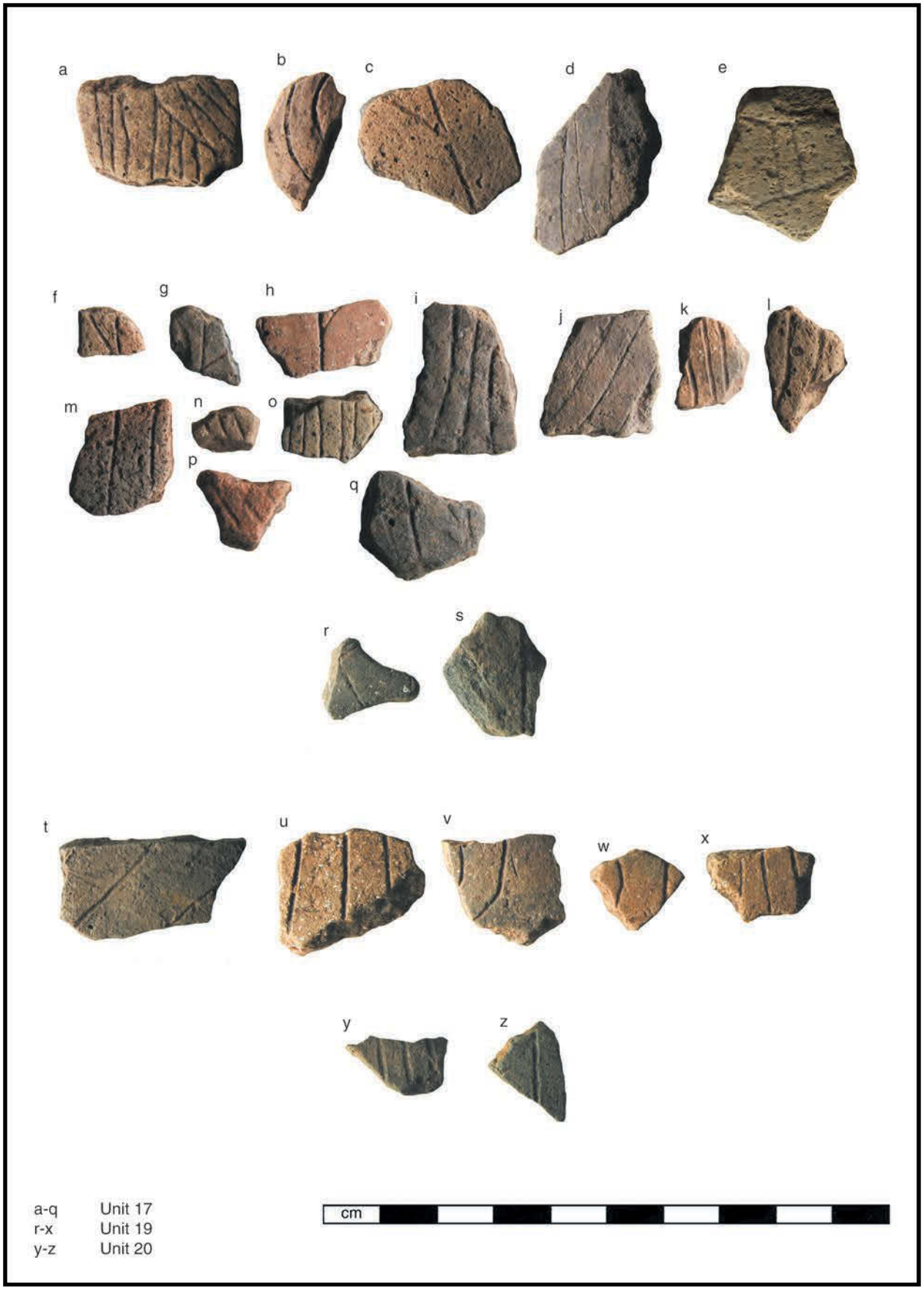


FIGURE 37C. American Indian ceramics, incised.

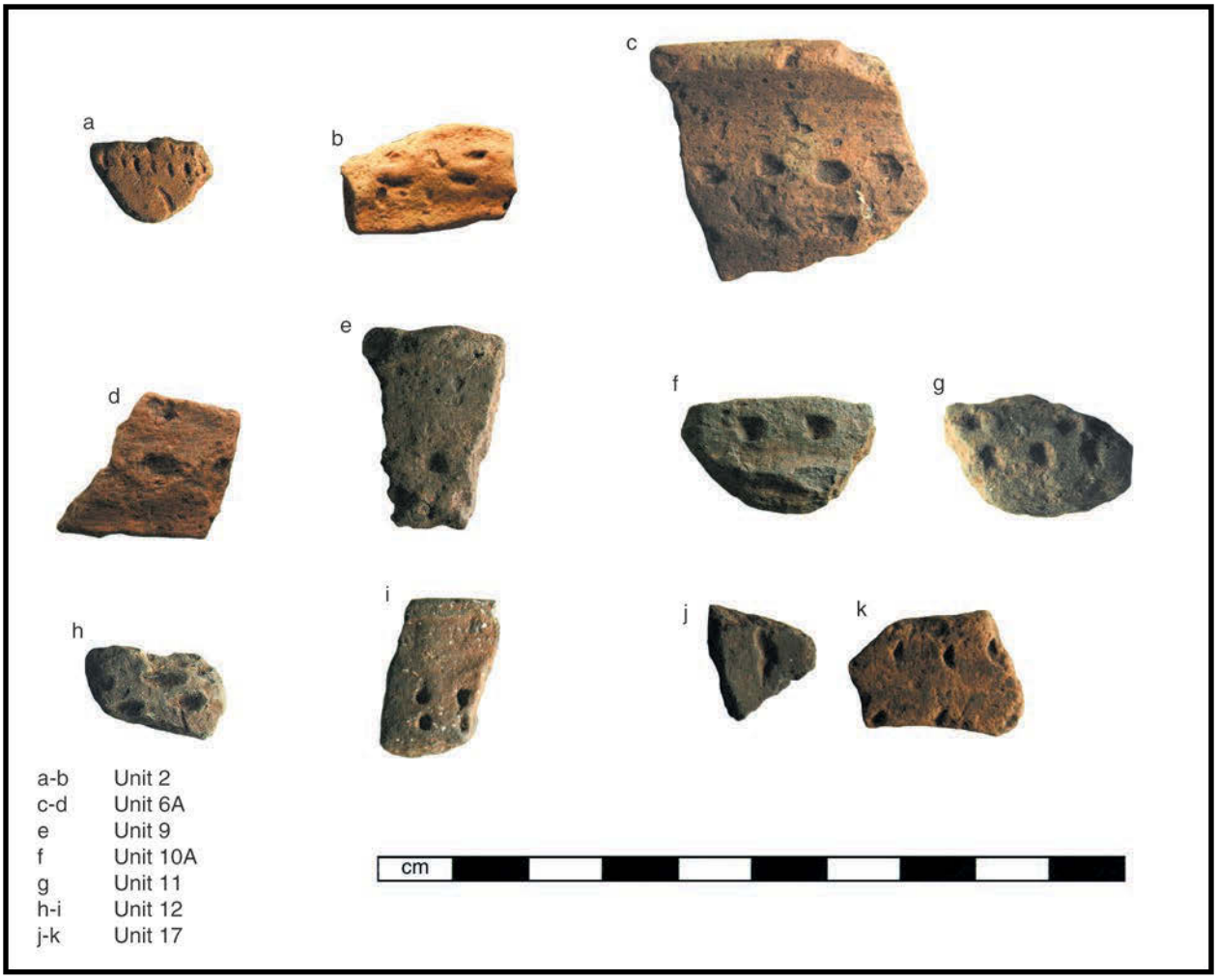


FIGURE 38. American Indian ceramics, punctated.

FIGURE 39. American Indian ceramics, engraved.

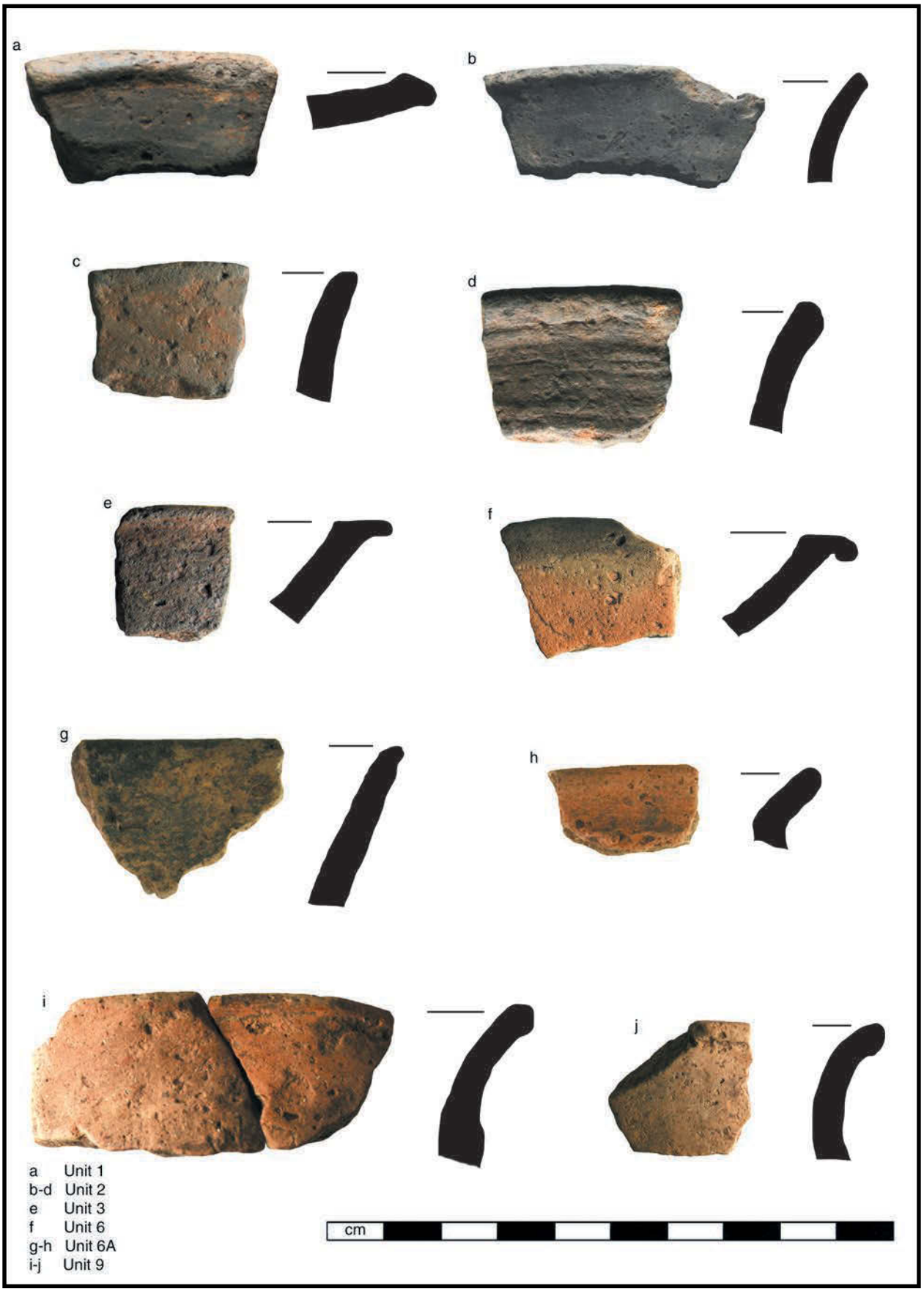


FIGURE 40A. American Indian ceramics, plain rim sherds.

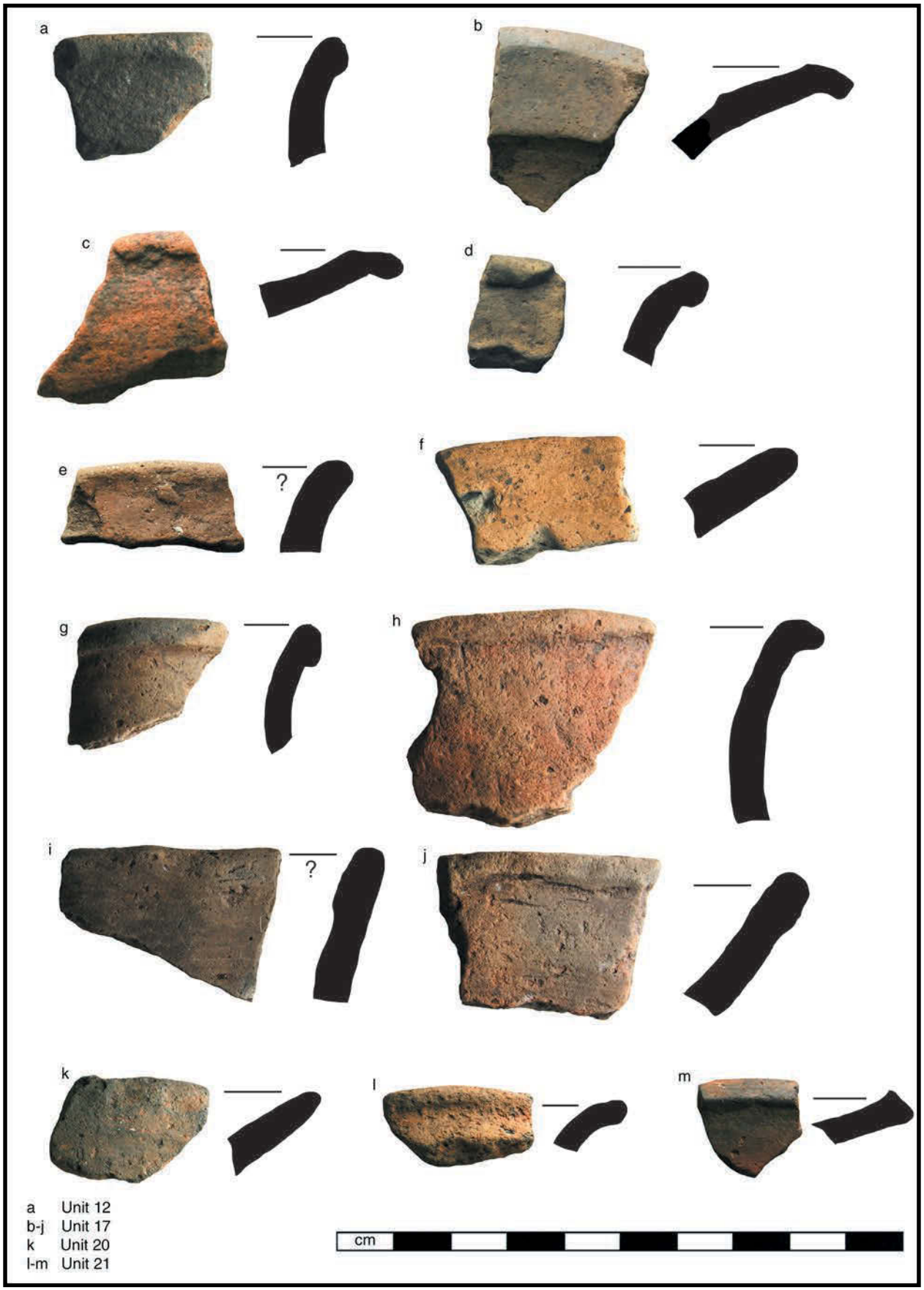


FIGURE 40B. American Indian ceramics, plain rim sherds.

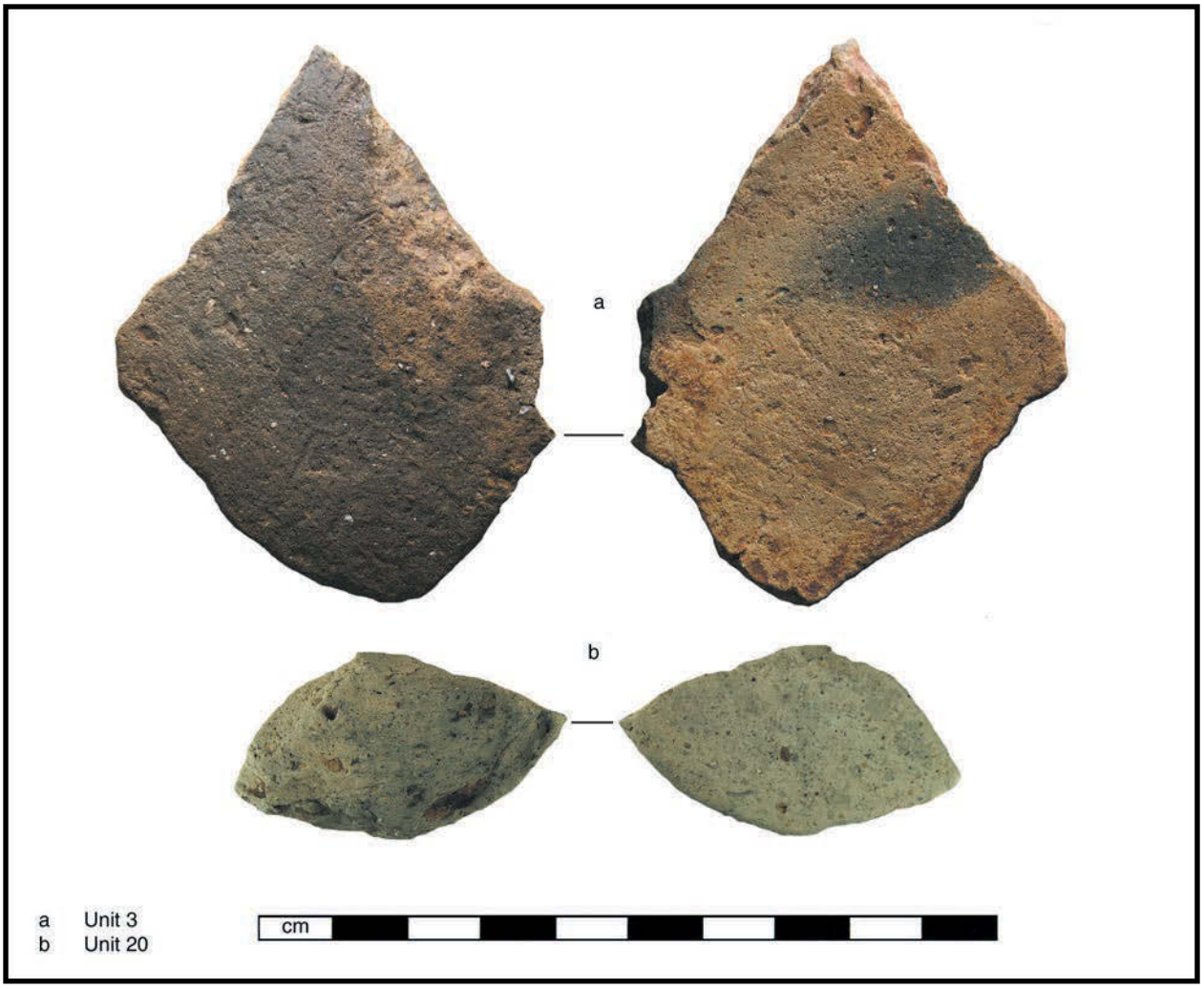


FIGURE 41. American Indian ceramics, basal sherds.

FIGURE 42. American Indian ceramics, handle sherds (a-c), possible coil fragment (d).

Table 13. Surface Treatment and Temper Analysis, Counts (upper) and Percentages (lower)

Unit	Plain	Incised	Engraved	Punctated	Totals
1	140	13	1	0	**154**
2	258	17	0	3	**278**
3	55	4	3	0	**62**
4	12	1	1	1	**15**
6	340	18	0	0	**358**
6A	185	19	0	3	**207**
7	129	16	1	0	**146**
9	276	32	0	2	**310**
10	146	10	0	1	**157**
10A	42	5	0	0	**47**
11	153	14	0	2	**169**
12	172	20	3	3	**198**
17	565	59	4	4	**632**
19	170	12	0	2	**184**
20	72	10	0	0	**82**
21	67	2	0	0	**69**
	2782	**252**	**13**	**21**	**3068**

Unit	Bone	Shell	Bone/Shell	Grog	None	Totals
1	40	104	7	0	3	**154**
2	101	146	29	0	2	**278**
3	26	27	3	0	6	**62**
4	8	7	0	0	0	**15**
6	143	177	31	0	7	**358**
6A	77	111	18	0	1	**207**
7	64	69	9	0	4	**146**
9	82	195	23	0	10	**310**
10	63	82	11	0	1	**157**
10A	13	33	0	0	1	**47**
11	60	87	21	0	1	**169**
12	71	90	31	4	2	**198**
17	222	351	49	1	9	**632**
19	50	124	9	1	0	**184**
20	31	45	6	0	0	**82**
21	20	41	8	0	0	**69**
	1071	**1689**	**255**	**6**	**47**	**3068**

Unit	Plain	Incised	Engraved	Punctated	
1	90.9	8.4	0.6	0.0	**99.9**
2	92.8	6.1	0.0	1.1	**100.0**
3	88.7	6.4	4.8	0.0	**99.9**
4	80.0	6.7	6.7	6.7	**100.1**
6	95.0	5.0	0.0	0.0	**100.0**
6A	89.4	9.2	0.0	1.4	**100.0**
7	88.4	11.0	0.7	0.0	**100.1**
9	89.0	10.3	0.0	0.6	**99.9**
10	93.0	6.4	0.0	0.6	**100.0**
10A	89.4	10.6	0.0	0.0	**100.0**
11	90.5	8.3	0.0	1.2	**100.0**
12	86.9	10.1	1.5	1.5	**100.0**
17	89.4	9.3	0.6	0.6	**99.9**
19	92.4	6.5	0.0	1.0	**99.9**
20	87.8	12.2	0.0	0.0	**100.0**
21	97.1	2.9	0.0	0.0	**100.0**
	90.7	**8.2**	**0.4**	**0.7**	**100**

Unit	Bone	Shell	Bone/Shell	Grog	None	
1	26.0	67.5	4.5	0.0	1.9	**99.9**
2	36.3	52.5	10.4	0.0	0.7	**99.9**
3	41.9	43.5	4.8	0.0	9.7	**99.9**
4	53.3	46.7	0.0	0.0	0.0	**100.0**
6	39.9	49.4	8.7	0.0	2.0	**100.0**
6A	37.2	53.6	8.7	0.0	0.5	**100.0**
7	43.8	47.3	6.2	0.0	2.7	**100.0**
9	26.5	62.9	7.4	0.0	3.2	**100.0**
10	40.1	52.2	7.0	0.0	0.6	**99.9**
10A	27.7	70.2	0.0	0.0	2.1	**100.0**
11	35.5	51.5	12.4	0.0	0.6	**100.0**
12	35.9	45.5	15.7	2.0	1.0	**100.1**
17	35.1	55.5	7.8	0.2	1.4	**100.0**
19	27.2	67.4	4.9	0.5	0.0	**100.0**
20	37.8	54.9	7.3	0.0	0.0	**100.0**
21	29.0	59.4	11.6	0.0	0.0	**100.0**
	34.9	**55.1**	**8.3**	**0.2**	**1.5**	**100**

Figure 40Ab is a rim sherd from a brimmed bowl or plate, which reflects European influences. Brimmed bowls or plates were not part of the vessel assemblage of local American Indians at the time of European contact, but rather appeared after contact with Europeans. Seven rim sherds with apparent European influences were recovered. These sherds represent 3% of all rim sherds by count, and 10% of all rim sherds by weight. Handles on ceramic vessels were also not part of the local American Indian pottery tradition. The handle sherds recovered during the current project (Figure 42a-c) may be from pitcher vessel forms.

Possible evidence for pottery manufacture at Los Adaes was recovered from Unit 2. A possible fired coil fragment (Figure 42d) resembles similar coil fragments recovered during the Lake Naconiche archaeological project in Nacogdoches County, Texas (Lake Naconiche Exhibit, Texas Beyond History). Some pottery was made by rolling long coils and squeezing the coils together. If a coil was too long, the end might be pinched off. These pinched coil ends sometimes get fired, and are therefore preserved.

Overall, the American Indian ceramic assemblage consisted of 55.1% shell tempered and 34.9% bone tempered sherds. A mixture of bone and shell temper was observed in 8.3% of the sherds. The remaining temper categories include none (1.5%) and grog (0.2%). The site of Los Adaes is distinguished from other historic period sites in the area by the presence of significant amounts of bone tempered ceramics. In general, shell temper dominates at historic period sites in the Red River valley, while bone temper dominates at historic sites as far west as Mission Dolores, located near modern day San Augustine, Texas. For the most part, historic period sites located west of Mission Dolores have less bone and more grog tempered pottery—shell temper is generally less than 5%. Sherds with both shell and bone temper constitute less than 2% of the total sherd count at Mission Dolores, and have not been identified in Deep East Texas historic period sites west of Mission Dolores (Marceaux 2011:284,342,356,364,389,397,407,454,507-509).

Table 13 shows combined surface treatment and temper information for the sherds complete enough to allow such analysis. It is notable that incised sherds are present in every unit, but engraved sherds—numbering only 13—occur in only six of the sixteen units. This suggests a general distribution of utility vessels such as Emory Punctated Incised vessels. Natchitoches Engraved vessels might be considered more specialized in function as they are more commonly found in burial contexts than in habitation contexts. Sherds from Emory Punctated Incised vessels have been recovered in much greater numbers than those of Natchitoches Engraved vessels in the past at Los Adaes (Gregory et al. 2004). Sherds with bone and shell temper also occur in every unit, while sherds with no identifiable temper occur in thirteen of the sixteen units. Sherds that are exclusively grog tempered are especially uncommon, and may represent vessels that originated outside of the area, perhaps from Deep East Texas.

Pete Gregory has suggested that bone tempered sherds at Los Adaes represent influences from the west and one implication of this idea is that earlier contexts at Los Adaes might contain more bone than shell tempered sherds, given that in the early years, the Spanish at Los Adaes would probably have had closer ties to the west and Mission Dolores, than to the French at Fort

St. Jean Baptiste and the Natchitoches Indians. Excavations around Stump 1 identified deposits with proportionately fewer French than Spanish wares and American Indian ceramics that were predominately bone tempered (51.6%)—shell tempered sherds comprised 41.4% of the sample. It was suggested that this deposit represented an early occupation of the site based on the presence of Puebla Polychrome (1650-1725) and the absence of Albisola lead-glazed ware (after 1750) (Avery 2001:90-100). Excavations around Stump 3 revealed an upper zone with a predominance of shell tempered American Indian sherds, no Puebla Polychrome, and Albisola lead-glazed ware, and a lower zone with predominantly bone tempered American Indian sherds, Puebla Polychrome, and Albisola lead-glazed ware sherds (Avery 2003:34-40). A glance at Table 14 indicates that Units 1, 6, 6A, 9, 10, 10A, 11, 12, 17, 19, 20, and 21 have a predominance of shell tempered sherds and therefore may represent deposits from after 1729, when it was apparent that the French had no intentions of attacking Los Adaes. The remaining three units—2, 3, and 7, have roughly equal amounts of shell and bone tempered sherds, and therefore may represent deposits that date prior to or perhaps just after 1729. None of the current project units has a predominance of bone tempered sherds.

European/Euro-American Ceramics

European/Euro-American ceramics were recovered from all test units in the current project, but they were much less numerous than American Indian ceramics, comprising only 6.6% or 454 of the total 6,863 ceramics recovered (Table 14). European ceramics include tin-enameled and lead-glazed ware from France, lead-glazed ware from Spain, tin-enameled ware from Great Britain and/or Holland, stoneware from Great Britain and Germany, and lead-glazed ware from Italy. With the exception of the olive jar—which originated in Spain—all other Spanish colonial ware originated in New Spain, or what is now Mexico, and is therefore considered to be Euro-American. The French were producing lead-glazed coarse earthenware in Canada, and it is possible that perhaps some of the unidentified lead-glazed coarse earthenware from the current project came from there, but it could just as likely have come from Mexico, Italy, or even south Louisiana (see Lee 2007).

Tin-enameled ware from Mexico (majolica) (Figures 43-44), France (faience) (Figure 45), and Great Britain or Holland (delft) (Figure 46) was recovered from the current project excavations. Majolica types represented include Puebla Blue on White (Figure 43a-c, e-h, j-k, r-x), San Agustín Blue on White (Figure 43n-p), Abó/Aranama Polychrome [Figure 44A(a-c)], and Puebla Polychrome [Figure 44A(d-h), Figure 44B]. Puebla Polychrome was manufactured in the city of Puebla (in what is now Mexico) from 1650 to 1725 (Deagan 1987:29). Puebla Blue on White was also manufactured in the city of Puebla from 1700 to 1850. Abó Polychrome (1650-1750) and Aranama Polychrome (1750-1800) (Deagan 1987:29) are difficult distinguish if the sherds are small, as is the case for the Figure 44A(a-c) examples. Faience types include Provence Blue on White (Figure 45c,i,k,l,o), Provence Polychrome (Figure 45a,j,p), Normandy Blue on White, Rim Variety H (Figure 45d), and La Rochelle Polychrome (Figure 45b,m) (Walthall 1991; Walthall and Waselkov 2002). The manufacturing dates for these types include the 18th century. Type names for delft ceramics that can be applied to sherds have not been established. The blue on white and polychrome delft sherds shown in Figure 46 are from tableware—most likely plates and/or shallow bowls.

Table 14. European/Euro-American Ceramics, Counts (upper) and Percentages (lower)

Unit	Spanish	French	British	Frn/Brt/Dut	Italian	German	UID	Totals
1	3	3	1	33	1	0	5	**46**
2	1	14	0	18	0	0		**33**
3	4	2	0	7	0	0		**13**
4	0	0	0	1	0	0		**1**
6	8	11	1	12	0	0	15	**47**
6A	7	1	2	10	0	0	2	**22**
7	1	2	0	4	0	0		**7**
9	14	4	10	65	0	0		**93**
10	0	3	2	6	0	0	8	**19**
10A	2	0	0	3	0	0	2	**7**
11	10	3	3	8	0	0	3	**27**
12	13	1	0	5	0	0	4	**23**
17	21	6	2	9	0	0	2	**40**
19	7	0	0	11	0	0	7	**25**
20	2	1	1	6	1	0	4	**15**
21	0	3	0	25	0	1	2	**31**
	93	**54**	**22**	**223**	**2**	**1**	**54**	**449**

Unit	Spanish	French	British	Frn/Brt/Dut	Italian	German	UID	Totals
1	7	7	2	72	2	0	11	**101**
2	3	42	0	55	0	0	0	**100**
3	31	15	0	54	0	0	0	**100**
4	0	0	0	100	0	0	0	**100**
6	17	23	2	26	0	0	32	**100**
6A	32	5	9	45	0	0	9	**100**
7	14	29	0	57	0	0	0	**100**
9	15	4	11	70	0	0	0	**100**
10	0	16	11	32	0	0	42	**101**
10A	29	0	0	43	0	0	29	**101**
11	37	11	11	30	0	0	11	**100**
12	57	4	0	22	0	0	17	**100**
17	53	15	5	23	0	0	5	**101**
19	28	0	0	44	0	0	28	**100**
20	13	7	7	40	7	0	27	**101**
21	0	10	0	81	0	3	6	**100**
	21	**12**	**5**	**50**	**0.4**	**0.2**	**12**	**100.6**

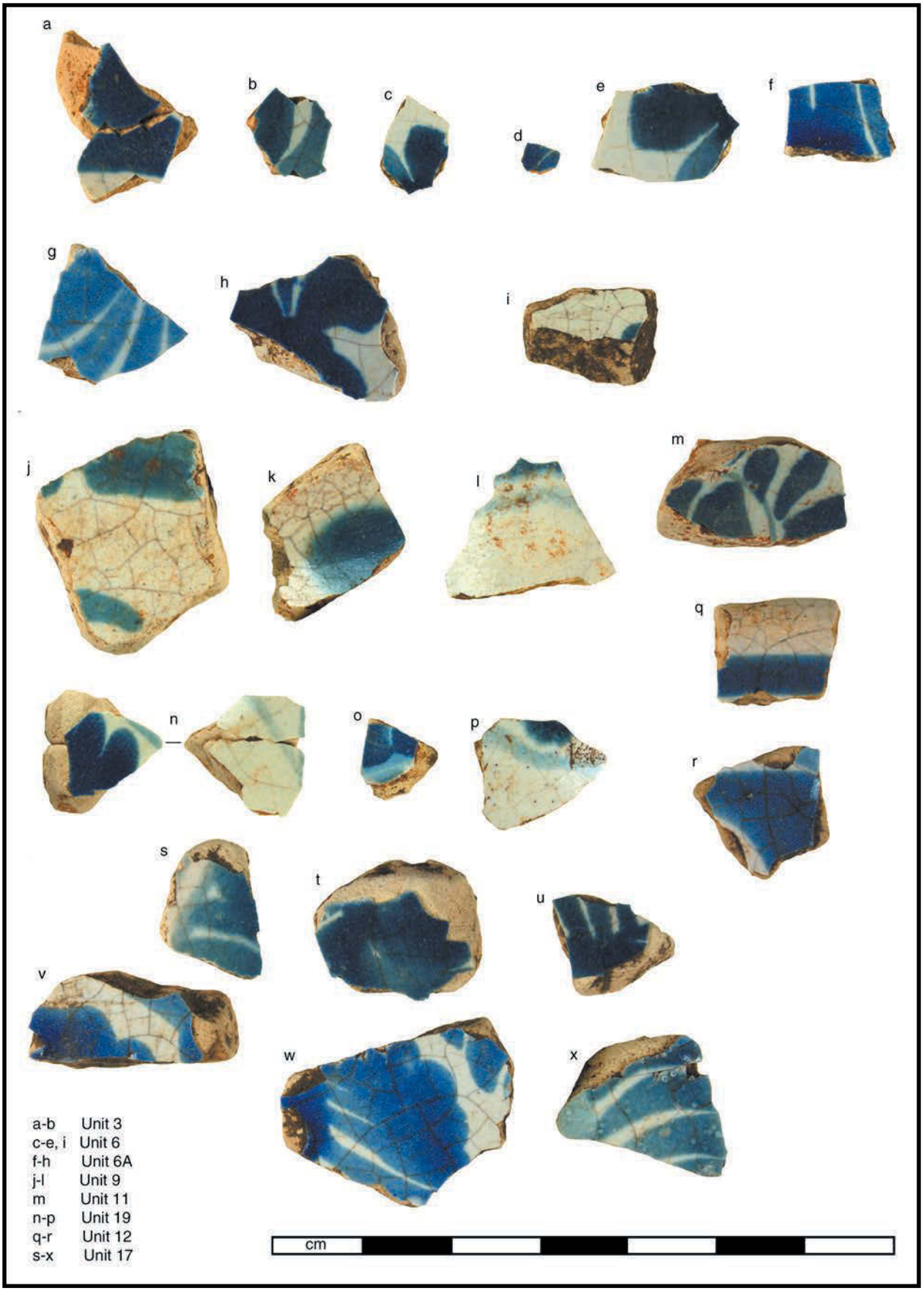


FIGURE 43. Majolica: Puebla Blue on White (a-c,e-h, j-k, r-x), San Agustín Blue on White (n-p), unidentified blue on white (d,i,q).

FIGURE 44A. Majolica: Abó/Aranama tradition polychrome (a-c), Puebla Polychrome (d-h).

FIGURE 44B. Majolica: Puebla Polychrome.

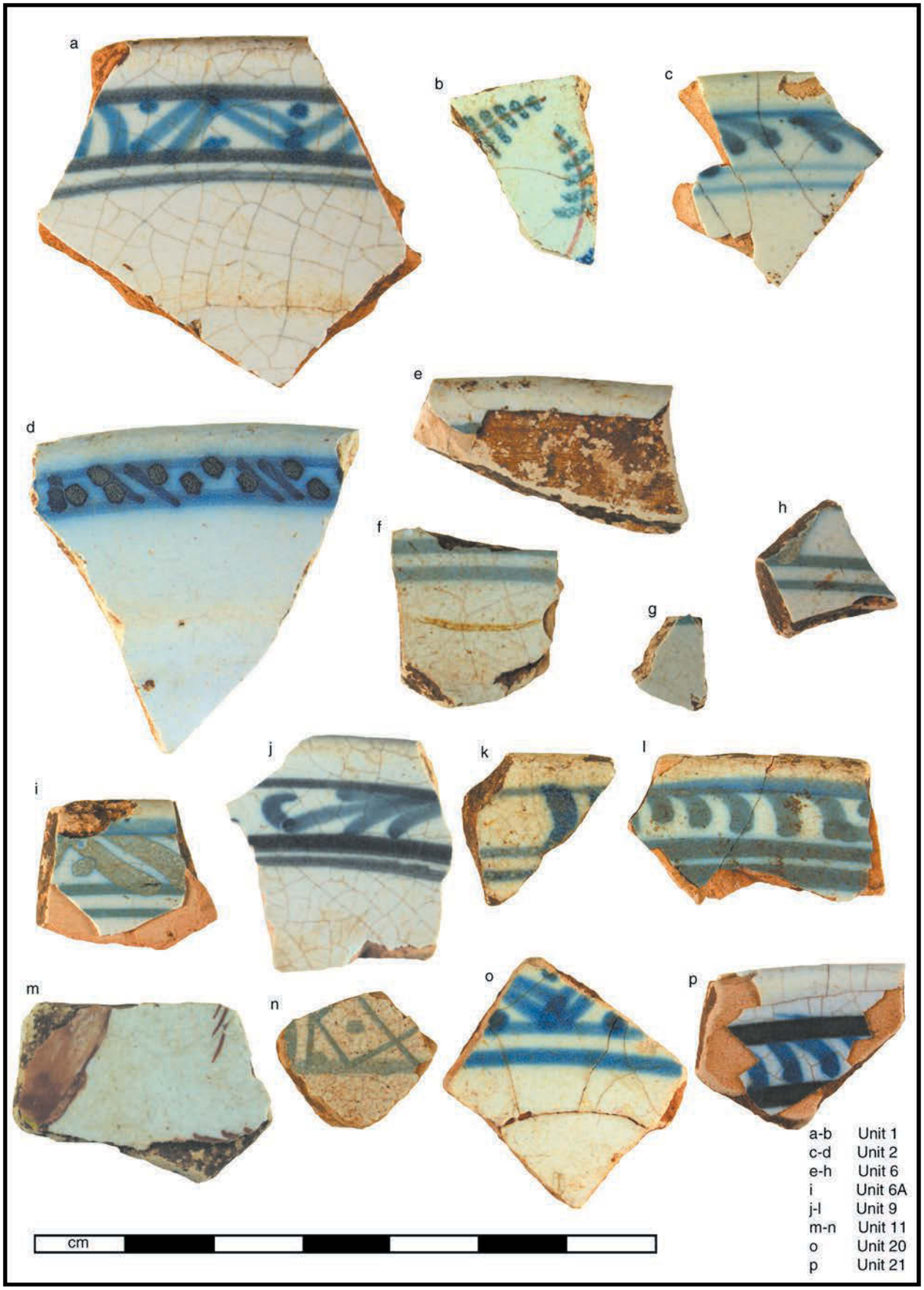


FIGURE 45. Faience: Provence Blue on White (c,i,k,l,o), Provence Polychrome (a,j,p), Normandy Blue on White, Rim Variety H (d), La Rochelle Polychrome (b,m), unidentified blue on white (e-h,n).

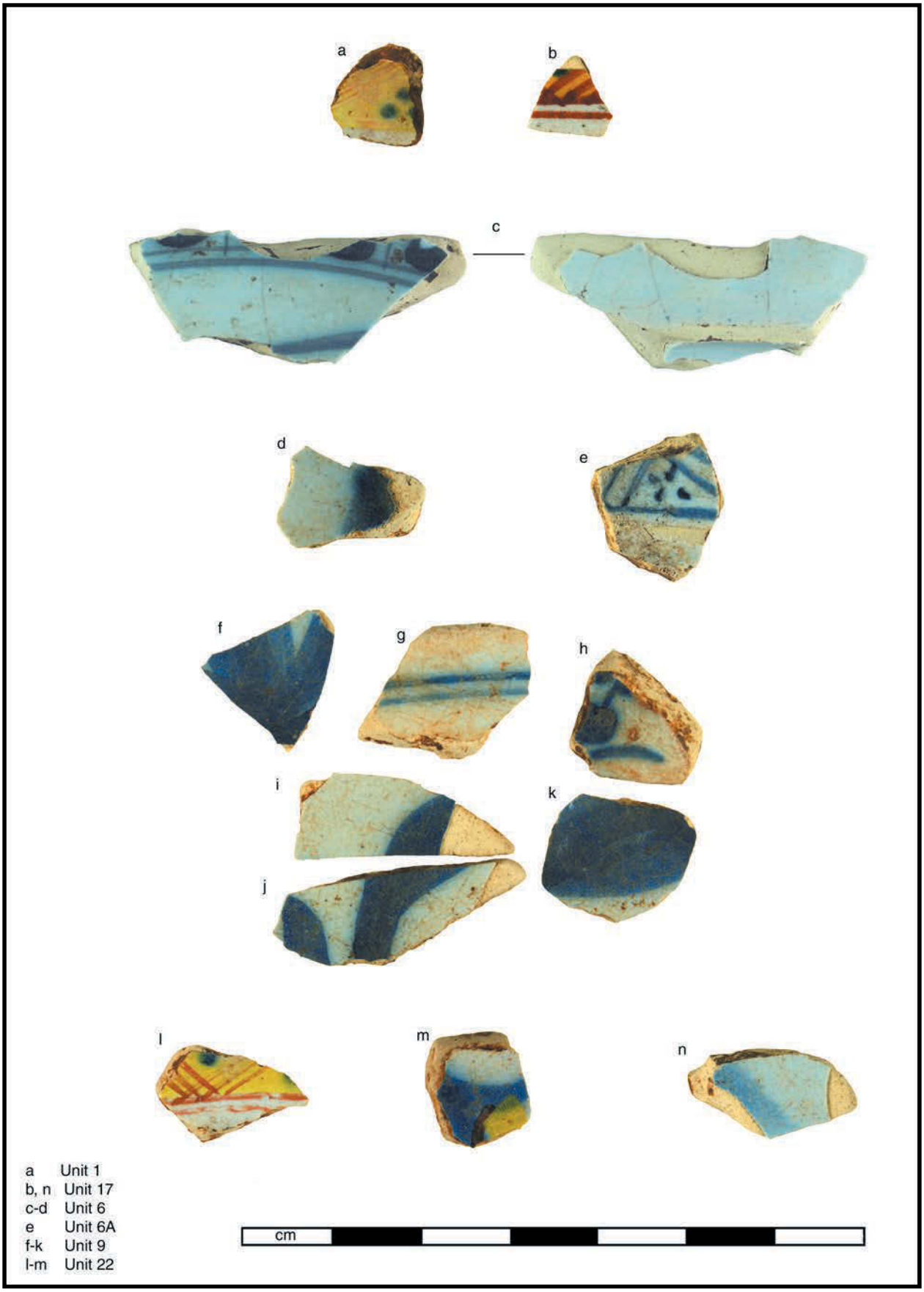


FIGURE 46. Delft.

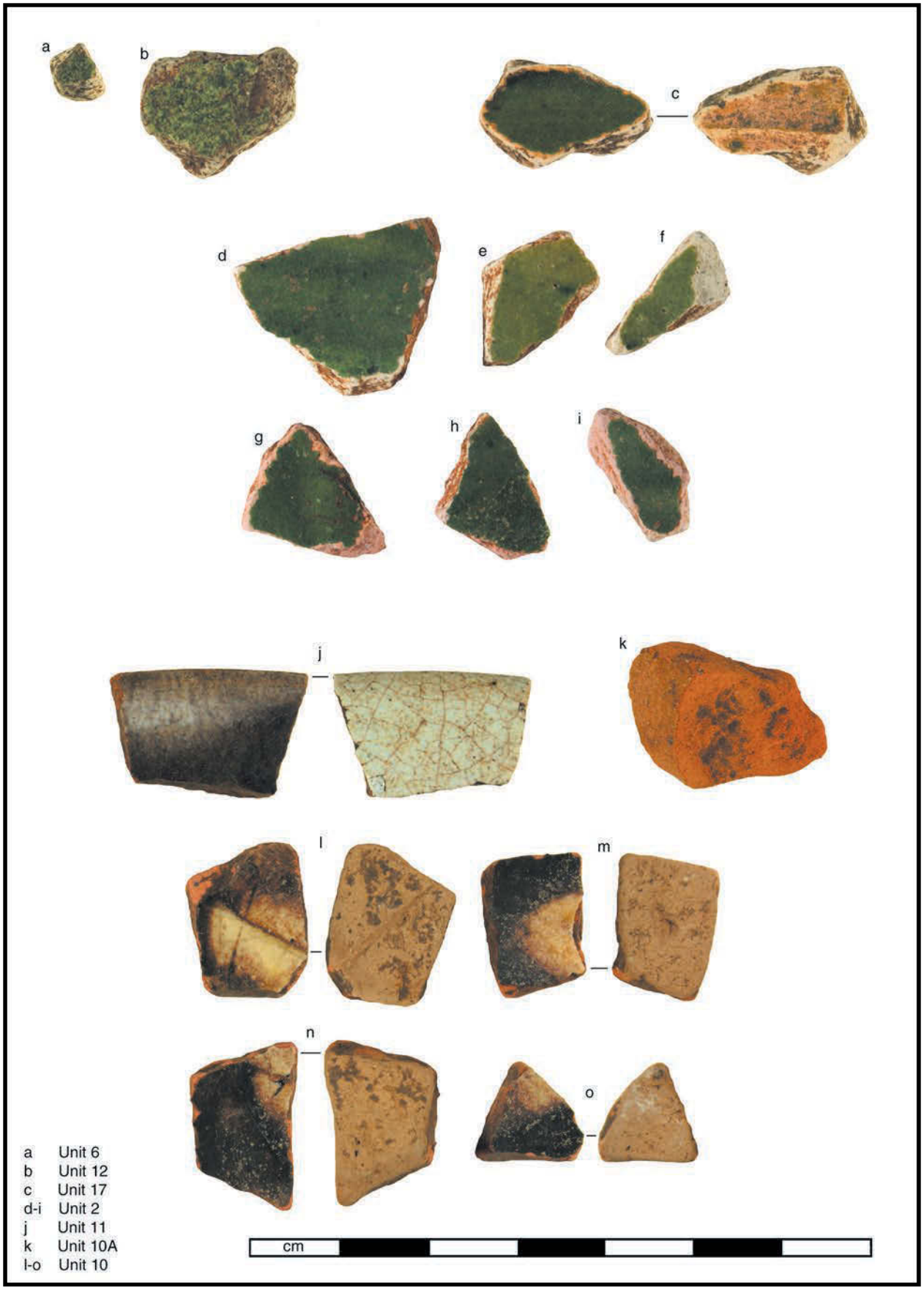


FIGURE 47A. Lead-glazed coarse earthenware: Spanish Olive Jar (a-b), Saintonge Plain (c-i), Rouen Plain (j), unidentified (k-o).

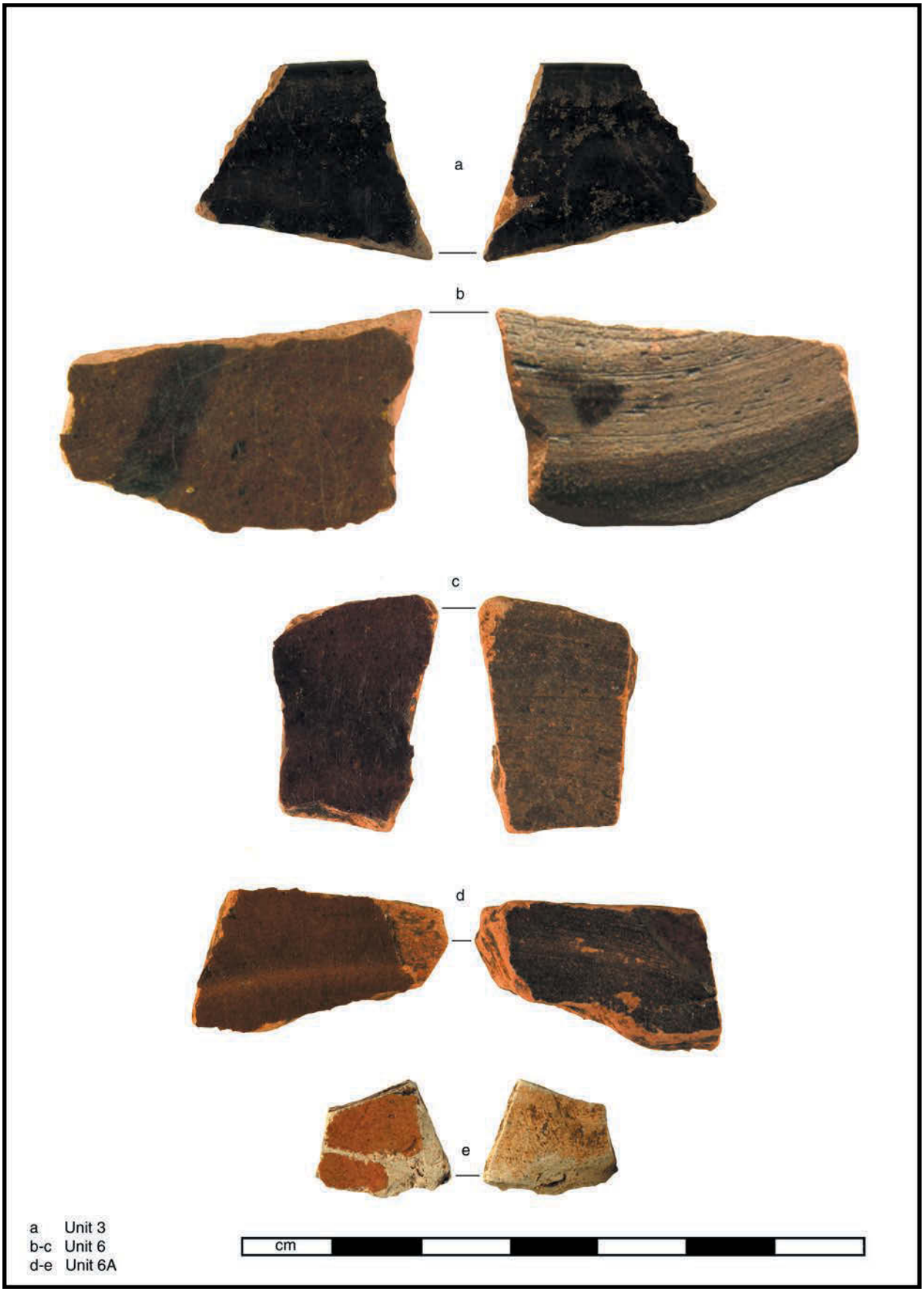


FIGURE 47B. Lead-glazed coarse earthenware.

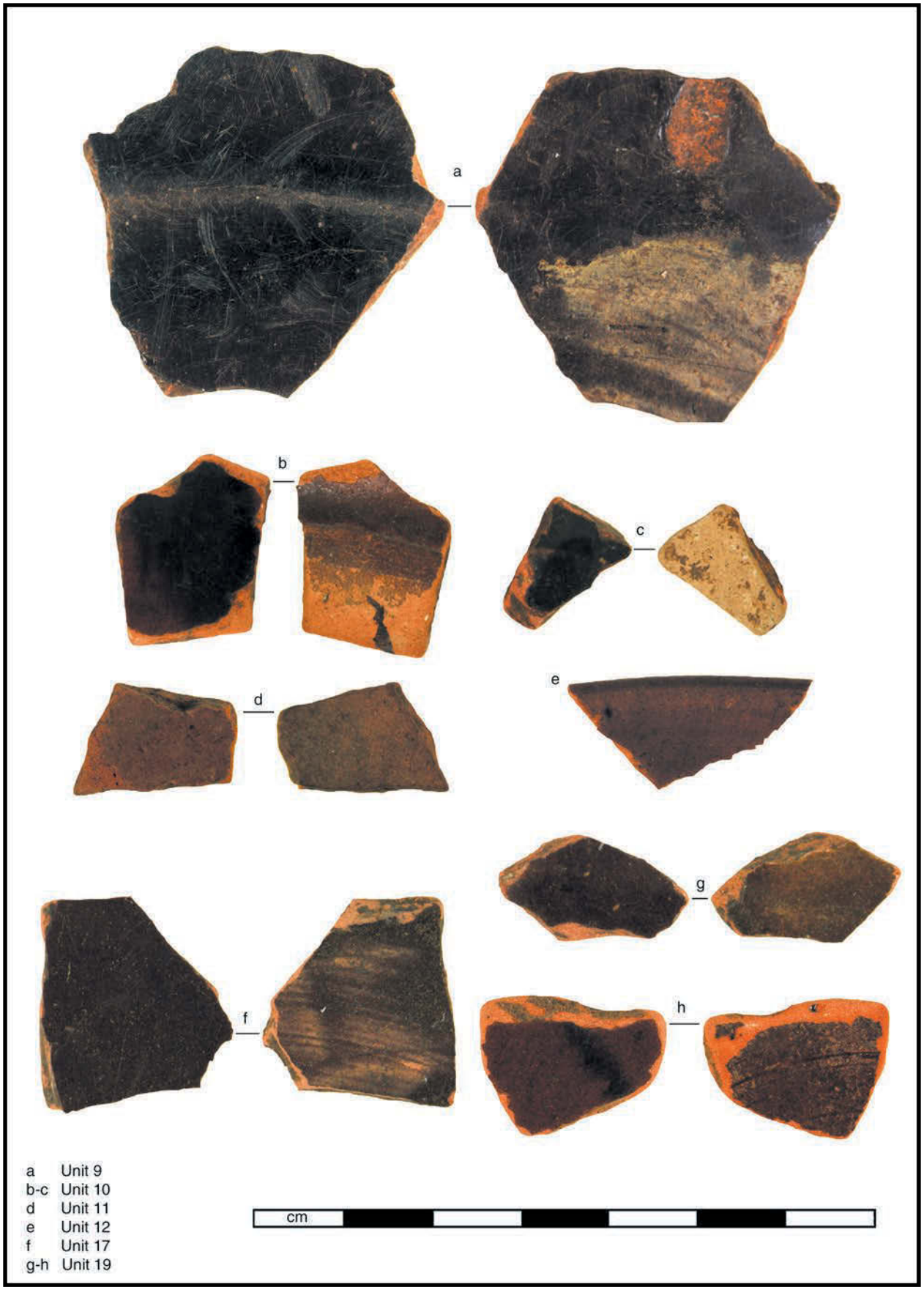


FIGURE 47C. Lead-glazed coarse earthenware.

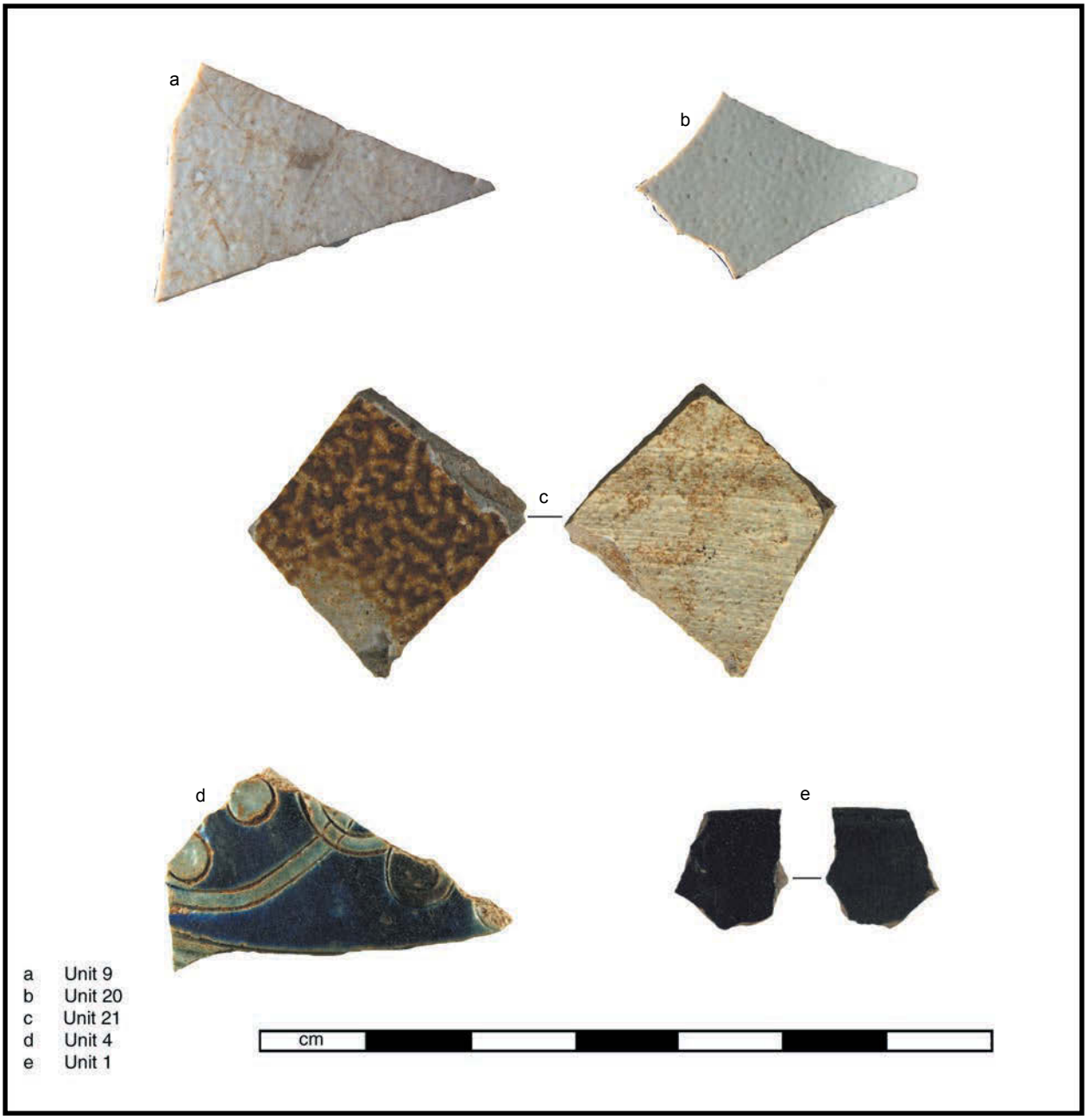


FIGURE 48A. Stoneware: British salt-glazed (a-b), unidentified salt-glazed (c), Westerwald blue and gray (d), Jackfield (?) (e).

FIGURE 48B. Stoneware: brown slip—American.

Lead-glazed ware sherds are more difficult to ascribe national origin than tin-enameled ware sherds. Spanish Olive Jar [Figure 47A(a,b)] and the French wares Saintonge Plain [Figure 47A(c-j)] and Rouen [Figure 47A(k)] are the exceptions. The Rouen ware is lead-glazed on the exterior and tin-enameled on the interior, and generally has a dark reddish orange paste. This ware arrives late to this area—sometime after 1770 (Noël Hume 1991:142). The origin of the lead-glazed sherds with apparent white enameled marks is unknown, but does not appear to be Spanish [Figure 47A(m-p)]. The lead-glazed sherds with the very dark brown appearance [Figure 47B(a), Figure 47C(a)] may represent examples of Charente Plain, a type of lead-glazed coarse earthenware produced in France during the 18th century (Carlson 1994:136). Lead-glazed coarse earthenware with dark slip trailed design elements was produced at Albisola in northwestern Italy as early as 1750, and on into the 19th century (Barton 1981:46-47). The sherd in Figure 47B(b) may represent an example of this ware.

Stoneware sherds are the least common of the European/Euro-American ceramics in the Los Adaes archaeological assemblage. Stoneware was not produced in Spain or Mexico during the 18th century. Stoneware produced in France, Great Britain, and Germany has been recovered from previous excavations at Los Adaes. The examples shown in Figure 48A are both salt-glazed stoneware [Figure 48A(a-d)] and slipped stoneware [Figure 48A(d)]. Salt-glazing is characterized by an orange peel texture. The British were making white salt-glazed stoneware tableware in the 18th century, and two examples of this ware were recovered in the current project [Figure 48A(a-b)]. The Figure 48A(c) sherd is from a salt-glazed stoneware utility container, and although this ware was produced in Germany and referred to as Bellarmine, it was also produced in Great Britain in the 18th century. An example of another German stoneware referred to as Westerwald blue on gray was recovered from Unit 4 [Figure 48A(d)]. The small, very thin (1.5 mm) rim sherd [Figure 48A(e)] is possibly an example of Jackfield stoneware, produced in Great Britain during the 18th and early 19th centuries. The slipped stoneware sherd (Figure 48B) may be American-made and probably dates to a late 19th/early 20th century occupation of the site. All of the stoneware varieties mentioned above have been previously recovered from excavations at Los Adaes (Avery 2005a:218-238).

Table 15 shows the distribution of European/Euro-American ceramics among the units of the current project. Overall, Spanish Colonial sherds comprise 93 of 449 sherds, or 20.7%, while combined French and British sherds comprise 66.6% of the European/Euro-American ceramics. The 223 Frn/Brt/Dut sherds are plain sherds that are either faience or delft—they are not majolica. Majolica has a thinner, more reflective enamel while faience and delft have thicker enamel that is similar to a matte finish, and the enamel on faience and delft is more likely to flake off. It is likely that the plain Frn/Brt/Dut sherds are mostly faience since most of the identifiable tin-enameled faience and delft is French. Still, it is noteworthy that ceramics originating from either Spain or Spanish colonies are in the minority at Los Adaes. These findings are consistent with the results of past excavations at Los Adaes (Avery 2005a:158). Since there are fewer than one hundred European/Euro-American sherds in each of the units of the current project, percentages might be misleading, but a glance at the data can yield some interesting trends.

Unit 21 stands out because no Spanish ceramics were recovered and conversely, Unit 17 is noteworthy for the large proportion of Spanish ceramics. The general lack of ceramics in Units 3 and 4 might be related to the fact that these units are located inside of barracks buildings, and a similar lack of ceramics in Unit 7 might indicate that the area in front of a barracks facing the interior of the presidio will be kept cleaner than the areas behind the barracks buildings (Units 9 and 21) and along the palisade walls (Units 1,2,6,6A,10,10A,11,12,17,19).

Asian Porcelain

Asian porcelain was the most technologically advanced of all ceramics in the 18th century. Europeans had been copying the Asian porcelain design elements for centuries in their tin-enameled ware—particularly the blue on white motifs, but were unable to actually manufacture porcelain until the 18th century. The Spanish had been bringing porcelain to the Americas as early as the mid 16th century, and by the mid 17th century, the Spanish were bringing porcelain in large amounts to the Americas by way of the Philippines in ships referred to as the Manila galleons (Deagan 1987:96; Kuwayama 1997:11-17). Kuwayama (1997:17) suggests that the volume of porcelain brought to the Americas by the Manila galleons was greatest during the mid 17th century, ". . . with declines through the seventeenth century and a continuing small volume thereafter until 1815." The French were also importing porcelain to Europe (Murphy-Gnatz 1998), but the French colonies in the Americas did not import large quantities of porcelain during the late 17th and early 18th centuries. Schulsky (2002:97) suggests that the porcelain found in early 18th century contexts at the French settlement of Old Mobile was acquired from the Spanish.

Only 21 porcelain sherds were recovered during the current project, representing only 0.3% of the ceramic assemblage. Previous excavations at Los Adaes have indicated that porcelain is more common in the area of the governor's house, and therefore, this light distribution outside the area of the governor's house might be expected. Porcelain was recovered in eleven of the sixteen units. The porcelain forms represented include small bowls or cups [Figure 49A(a,c-f), Figure 49B(f,g)] and plates [Figure 49B(c,e)].

Other Ceramics

Burnt clay fragments were recovered in all units except for Units 12 and 21, with a particularly high concentration in Unit 4 (Table 15). The burnt clay fragments from Units 1-3, 6, 6A, 7, 9, 10, 10A, 11, 17, 19, and 20 are small and highly weathered, but some show evidence of vegetal fiber inclusions and impressions [Figure 50A(e,j,o,t,z,ii,ss,tt,uu)]. In contrast, the burnt clay fragments from Unit 4 are large and all show evidence of fiber inclusions—some appear to be from the corner of a shaped clay feature [Figure 50B(a-b)]. It is possible that the burnt clay fragments are from a cooking/heating related feature located inside a barracks building.

A mud dauber nest recovered from Unit 4 indicates that the nest was built in the corner of a wooden structure (Figure 51). The nest fragment is highly weathered, but the linear impressions on one of the flat surfaces are still quite distinct.

A fragment of a hand molded brick was recovered from Unit 2 (Figure 52). It is likely that this brick fragment dates to a period after the Spanish occupation of the presidio.

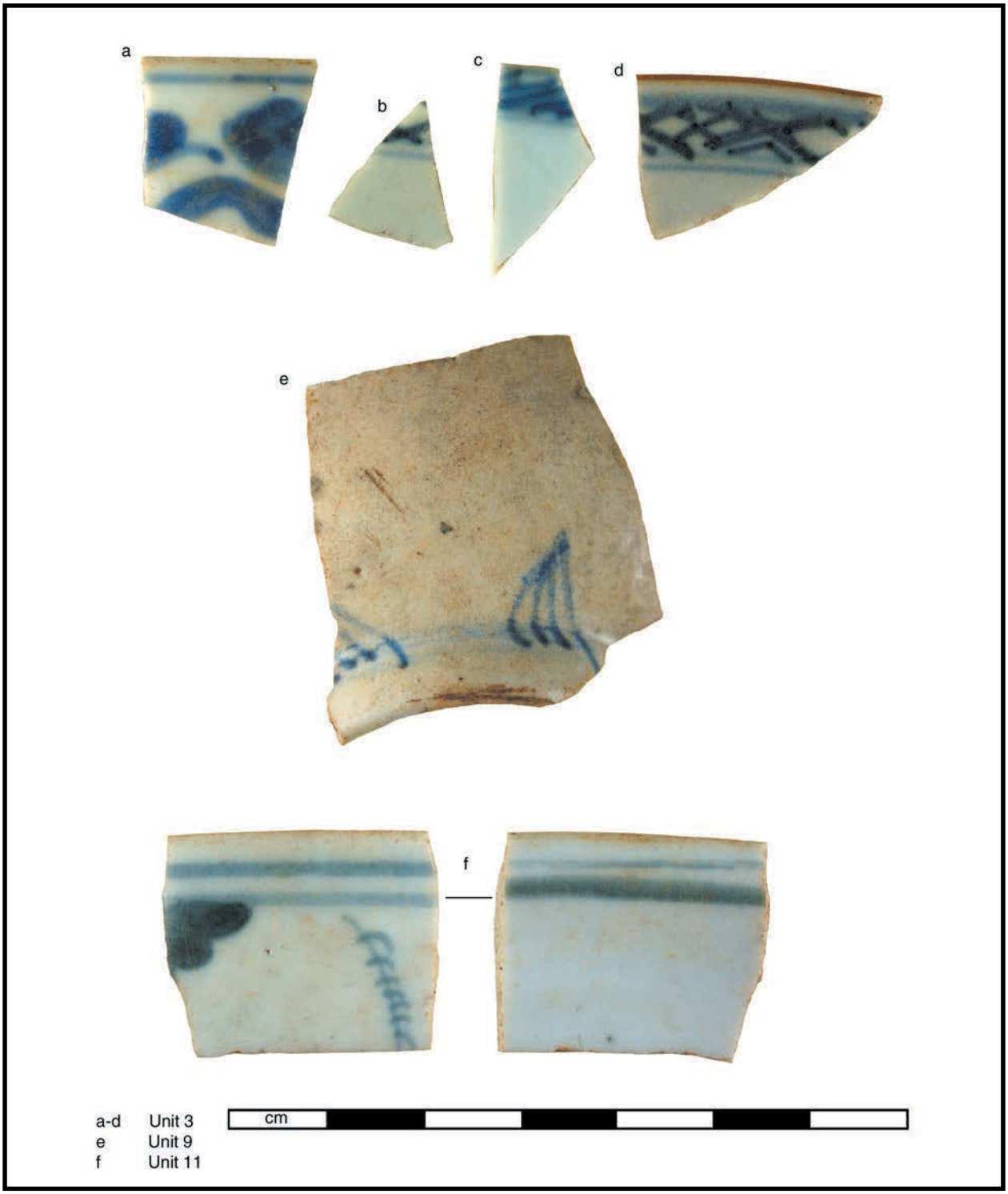


FIGURE 49A. Asian porcelain.

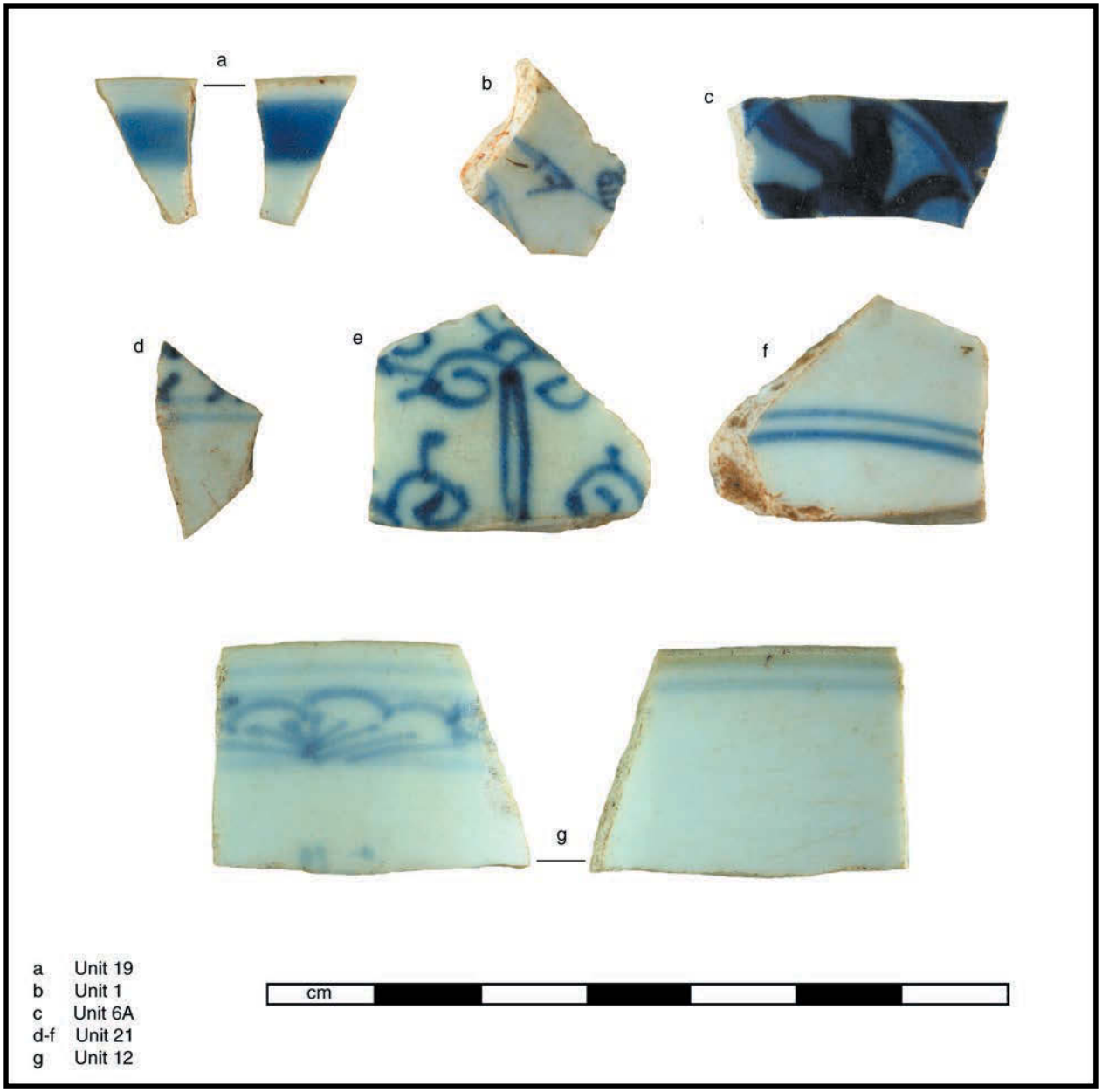


FIGURE 49B. Asian porcelain.

FIGURE 50A. Other ceramics—burnt clay.

FIGURE 50B. Other ceramics—burnt clay.

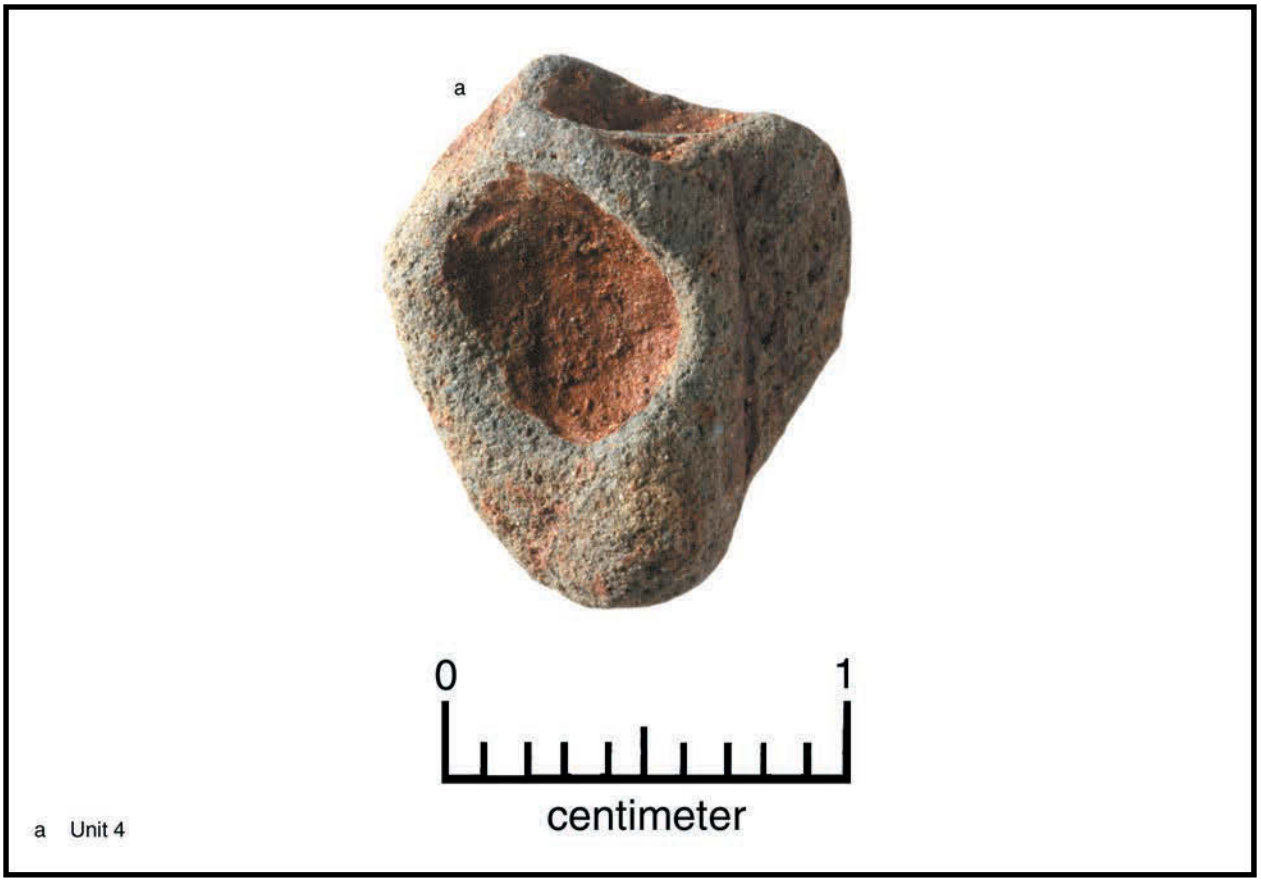


FIGURE 51. Other ceramics—Mud Dauber nest.

Table 15. Burnt Clay

Unit	ct.	wt. (g)
1	54	27.33
2	62	38.50
3	32	45.33
4	1440	5915.00
6	155	186.35
6A	84	57.95
7	6	7.12
9	122	121.91
10	26	16.61
10A	5	3.04
11	56	74.33
12	0	0.00
17	117	86.91
19	16	13.06
20	7	2.45
21	0	0.00

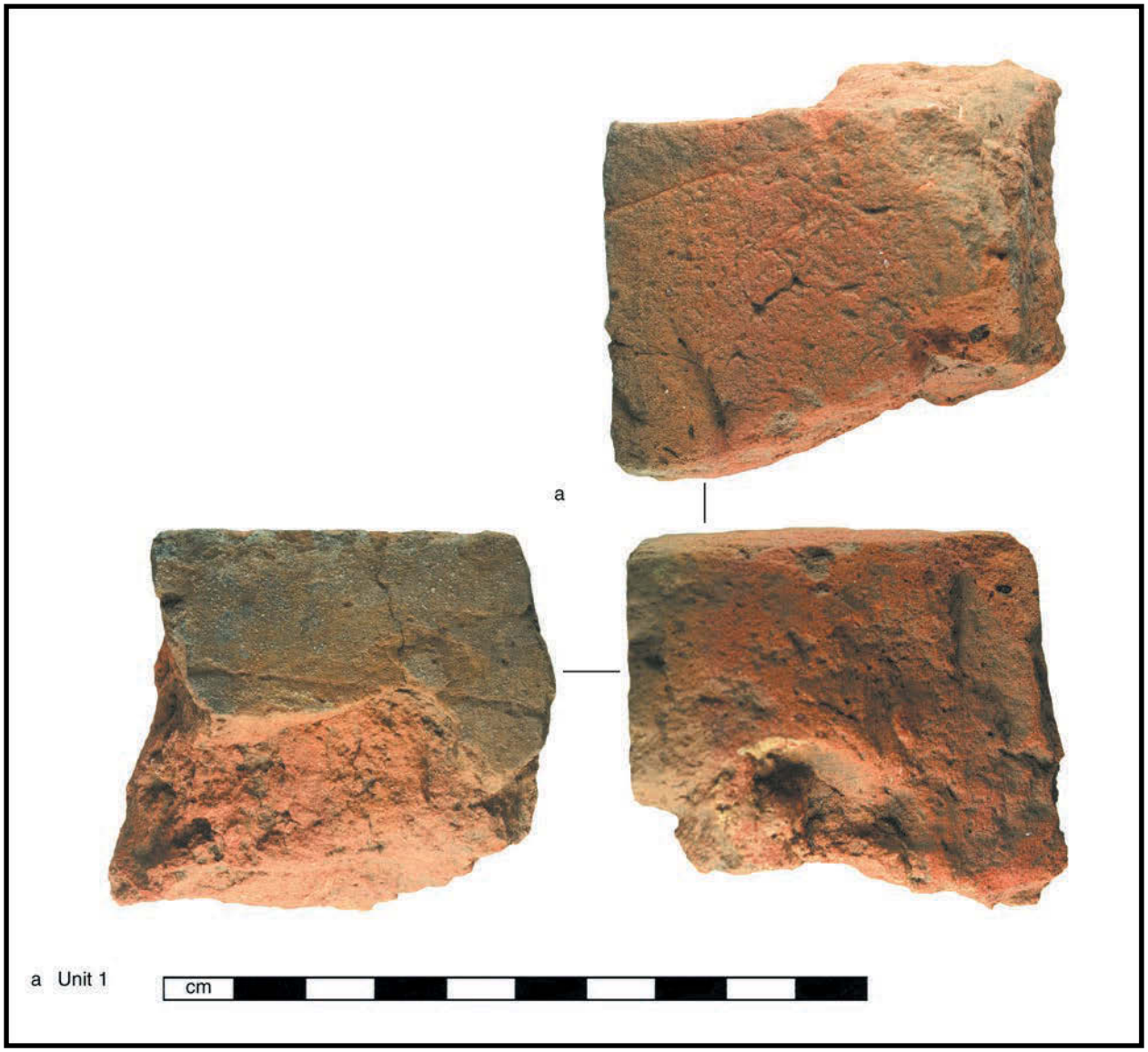


FIGURE 52. Other ceramics—hand-molded brick fragment.

Metal

Metal artifacts were recovered from all excavation units during the current project (Table 16) and include ferrous (iron containing) (Figure 53-54), cupreous (copper containing) (Figure 55), argentiferous (silver containing) (Figure 56), and plumbiferous (lead containing) (Figure 57). In the field, all ferrous metal and most of the cupreous metal was immediately placed in a 5% solution of water and sodium sesquicarbonate to mitigate the effects of exposure to the atmosphere. The sodium sesquicarbonate solution was changed several times over the course of a year to encourage the leaching out of chlorides in the metal. The artifacts were then removed from the sodium sesquicarbonate solution, daubed with a cotton cloth, and placed in an alcohol bath for 24 hours. After two additional baths in alcohol, and one bath in acetone, the artifacts were placed in a 5% acryloid B72 solution for several minutes, and then set out to dry. It was determined that the highly oxidized nature of the ferrous artifacts made them unsuitable candidates for electrolytic reduction, and therefore, the stabilization treatment of leaching out the chlorides and sealing the artifacts in acryloid B72 was deemed to be more appropriate. One artifact was selected for special treatment by Jay C. Blaine. A rear gunsight (also known as a back-sight) from a long arm was an unusual find, and Blaine took great care in treating this artifact [Figure 55A(h)].

Jay C. Blaine (personal communication, 8-23-11) describes the rear gunsight as follows: "The 16NA16 example was entirely cast, including the decoration. It also now lacks the underlying ring. While not qualifying at the luxury level of those illustrated by Lenk (2007) and Hayward (1963), it certainly does represent a flintlock of higher quality than those I'm familiar with from our southern area west of the Mississippi. It is the only archeological one of its kind I've seen to date. Such a back-sight is generally held to imply such sporting use as shooting 'birds on the wing.'"

Most of the identifiable ferrous artifacts are nails, and most of these nails are hand wrought nails dating to the 1700s [Figure 53A(a,c-l); Figure 53B; Figure 53C(a-h)]. Hand wrought nails were found in all units except Unit 21 (Table 16). Some of the hand wrought nails have an asymmetrical head, and have been referred to as "Spanish Seven" Nails because they look like the numeral "7" in profile [see Figure 53A(d,e,f,h,i); Figure 53B(a,c,k); Figure 53C(g,h)]. Machine-cut nails [Figure 53A(c,m)] were found only in Units 3 and 9, and are related to the 19th century occupation of the site. Only three common wire nails were recovered (Units 10, 19, and 20) and they are related to 20th century activities at the site. The large common wire nail recovered from Unit 10 [Figure 53C(i)] may be from Pete Gregory's excavations at the site in the late 1970s. Horse gear is represented by the following ferrous metal artifacts: jinglebob [Figure 54A(b)], *higa* [Figure 54A(c)], and a possible ring for bit suspension [Figure 54A(d)]. Two blade fragments were recovered [Figure 54A(e-f)] and a flat, rectangular object with a possible rivet might be a fragment of a type of armor called Brigandine [Figure 54A(g)]. Possible personal items include what appears to be a fragmented shoe buckle [Figure 54A(h)] and another light weight buckle fragment [Figure 54A(k)]. A light weight snipe hinge [Figure 54A(k)] was recovered, and a spike shaped into a loop may also represent a portion of a hinge [Figure 54A(i)]. This spike was recovered from Unit 4 and has charred wood adhering to it—suggesting it was pounded into a door post. Unidentified ferrous fragments were also recovered [Figure 54B(a-j)]. It is possible that some of these objects might be barrel hoop fragments [especially Figure 54B(a)] and a possible strike-a-light steel function is suggested for another object [Figure 54B(g)].

Table 16. Metal

Unit	1	2	3	4	6	6A	7	9	10	10A	11	12	17	19	20	21	21	Totals
Metal -- Ferrous																		
Wrought iron nail fragments	2	1	1	5	2	6	8	7	1	1	2	1	6	3	2			48
Machine-cut nail			1				2											3
Common wire nail									1					1	1			3
UID ferrous fragments	2	6	4		4	8	2	8	3			1	4		2			44
Rein chain link fragments								9										9
Knife blade fragment (?)	1							1				1						3
Buckle fragment							1	2										3
Jinglebob			1															1
Higa								1										1
Chain link (?)	1																	1
Light snipe hinge								1										1
Sanitary can fragments			4															4
Small screwdirver										1								1
Metal -- Cupreous																		
UID wire fragment						1												1
Button fragment												1						1
Finger ring fragment															1			1
Gunstock applique								3										3
Side plate fragment							1											1
Rear sight, long arm											1							1
Key sabore							1											1
Earring with paste set				1														1
Wire in seed bead								1										1
Partial bail hole													1					1
Sheet fragments						2		1					1	1				5
UID fragments		6																6
Metal -- Plumbiferous																		
Lead cloth seal												1						1
Lead ball shot, .55 caliber								1									1	2
Small lead shot	5	2	9	12	7	6	5	21	8	11	8	1	12	3	6	3	8	127
Lead cube															1		1	2
Lead splatter	1	8	5		8	10	23	6	17		2	1	33	2	1	1	3	121
UID lead fragment								1										1
UID pewter fragments								2										2
Pewter button (?)								1										1
Metal -- Argentiferous																		
Flnger ring fragment											1							1
UID		1			1													2
Totals	12	24	25	18	22	33	43	66	30	13	14	7	57	10	14	4	13	405

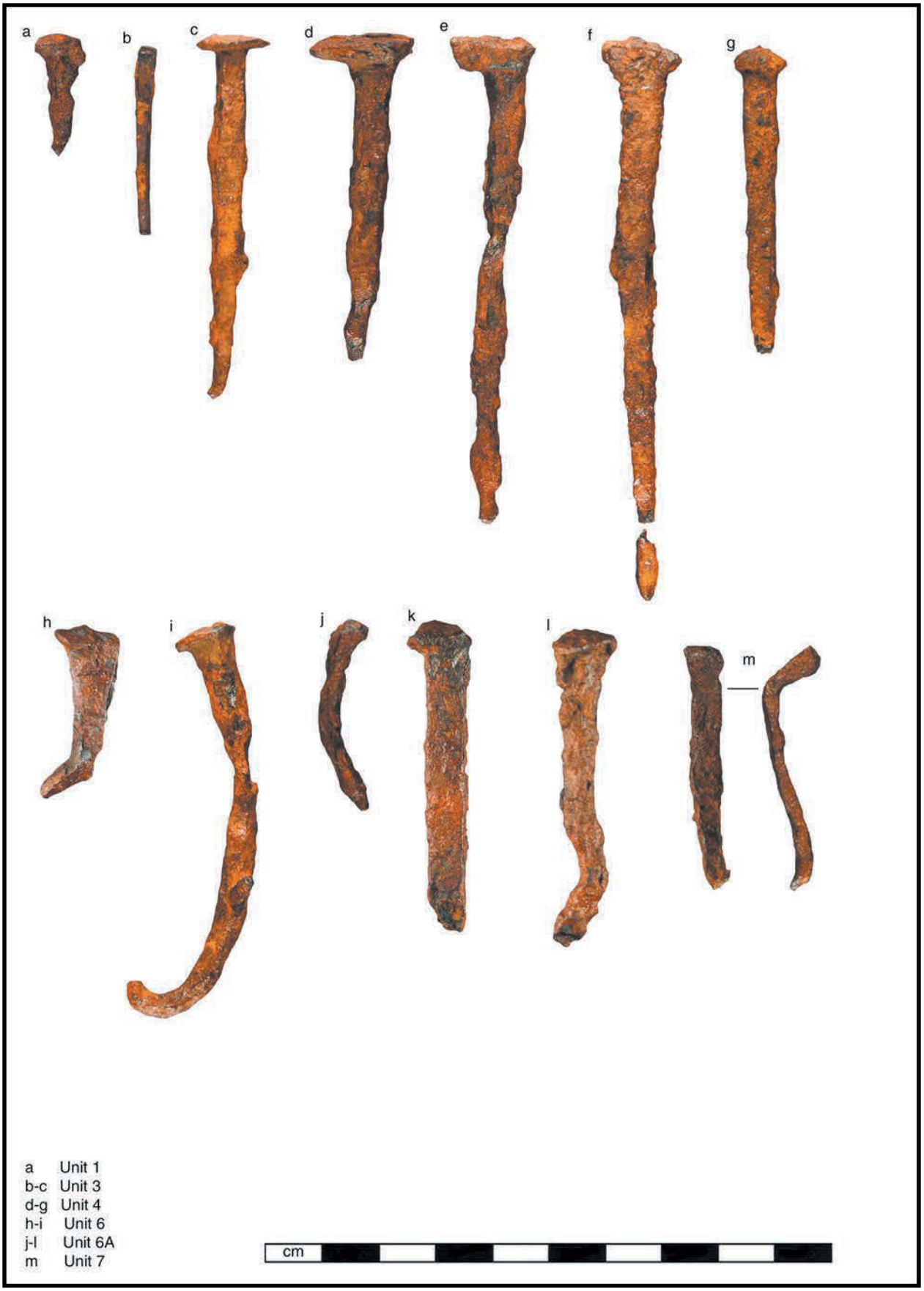


FIGURE 53A. Metal artifacts—ferrous, nails: hand wrought (a,c-l), machine-cut (c,m).

FIGURE 53B. Metal artifacts—ferrous, nails: Hand Wrought (a-q).

FIGURE 53C. Metal artifacts—ferrous, nails: hand wrought (a-h), common wire (i-k).

FIGURE 54A. Metal artifacts—ferrous, miscellaneous: possible head stall chain link (a), jinglebob (b), *higa* (c), possible ring for bit suspension (d), blade fragments (e-f), unidentified (g), possible shoe buckle fragments (h), light weight buckle fragment (j), shaped spike, possible heavy duty snipe hinge (l), light weight snipe hinge (k).

FIGURE 54B. Metal artifacts—ferrous, miscellaneous: unidentified (b-f, h-i), possible barrel hoop fragment (a), possible strike-a-light fragment (g), screwdriver with plastic handle (j).

FIGURE 55A. Metal artifacts—cupreous: rolled sheet fragment (a), key *sabor* (b), cut sheet fragment (c), side plate fragment (d), gunstock ornamentation (d-g), back-sight (h), partial bail hole (i), flattened finger ring fragment (j), small button head (k).

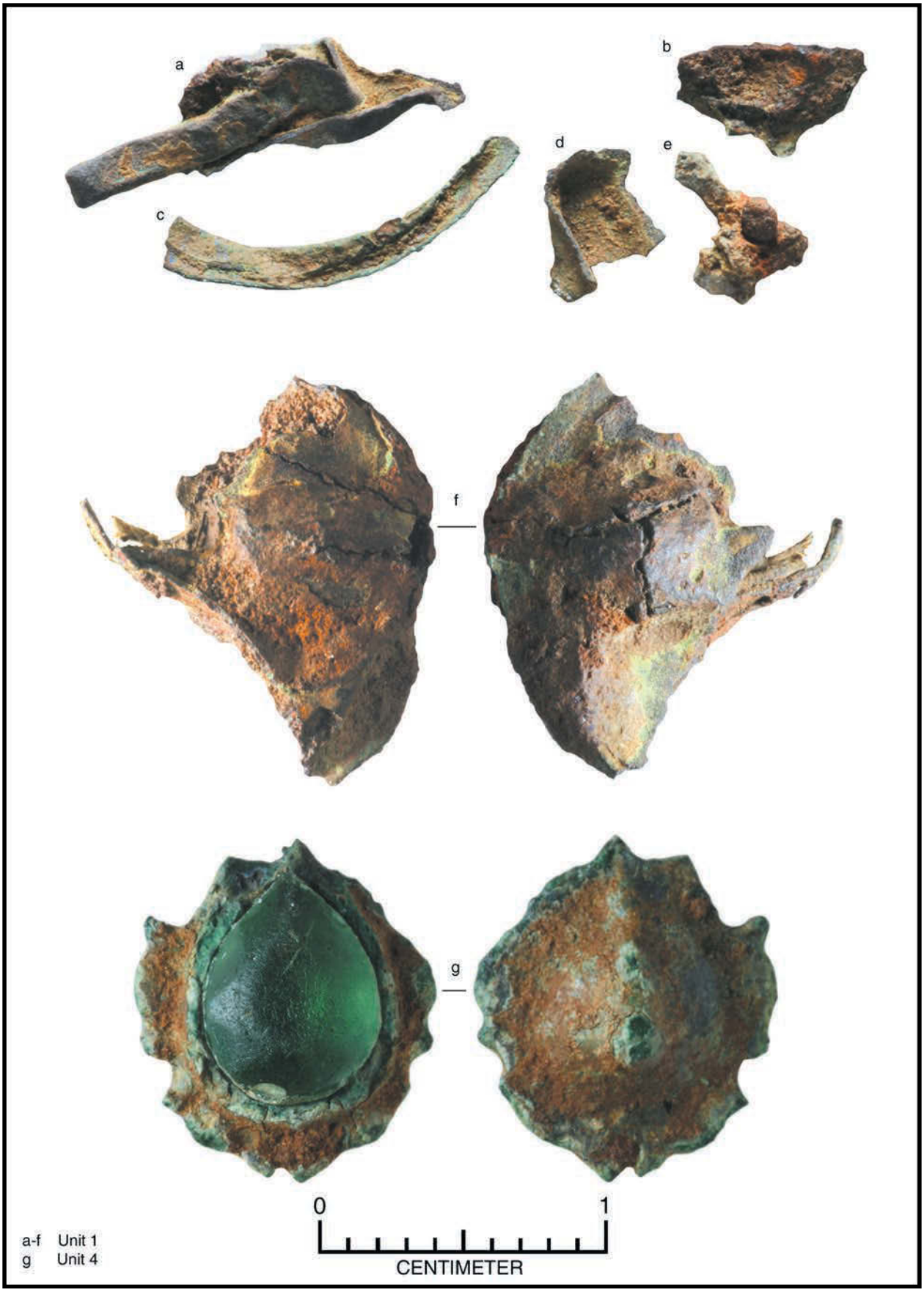


FIGURE 55B. Metal artifacts—cupreous, unidentified (a-f), earring fragment (g).

FIGURE 55C. Metal artifacts—cupreous: sheet fragments (a-d, k-l), wire and glass bead (e), wire fragment (f), cupreous stained bone fragments (g-j).

FIGURE 56. Metal artifacts—argentiferous: identified (a-b), finger ring fragment (c).

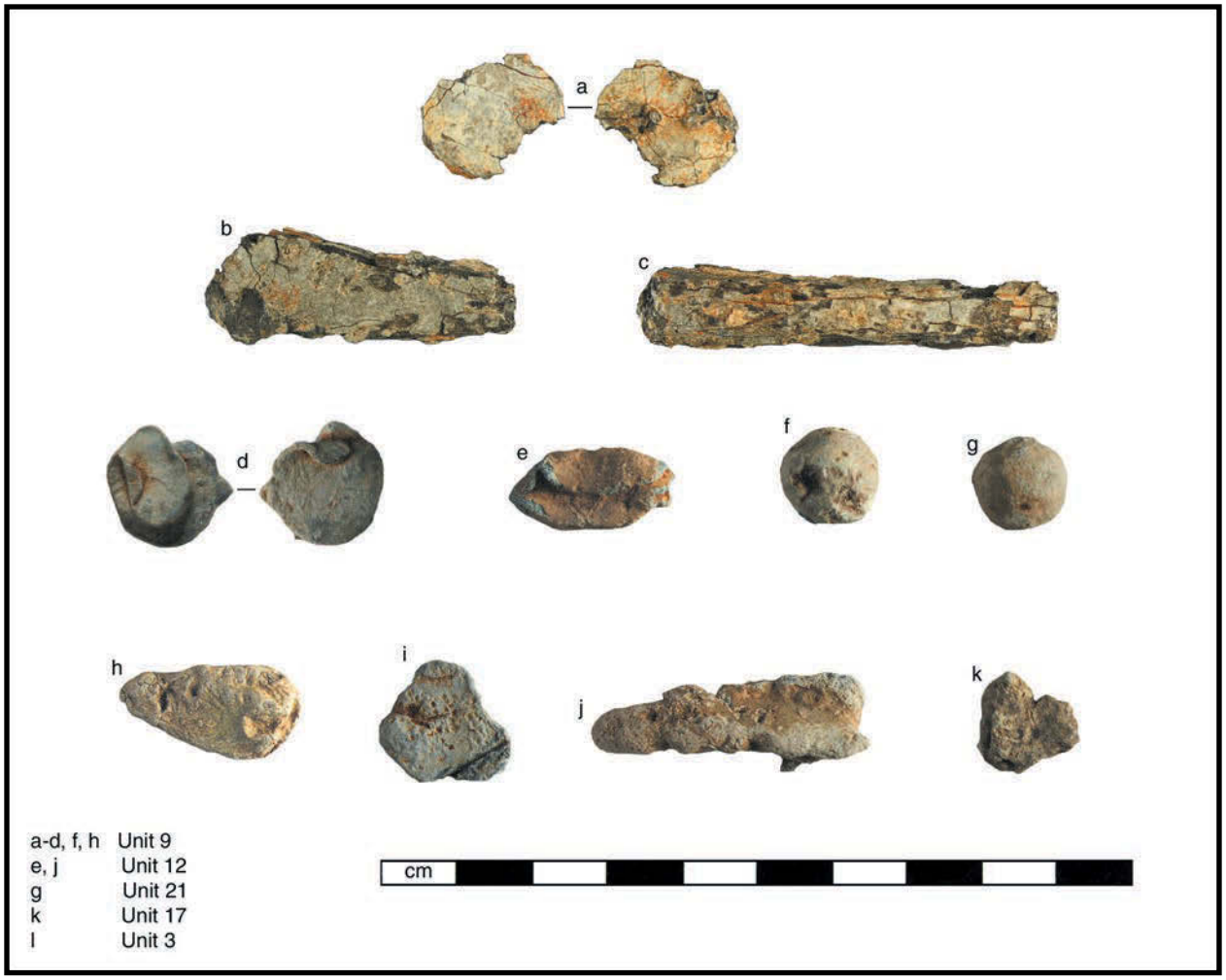


FIGURE 57A. Metal artifacts—plumbiferous: button fragment (a), possible handle fragments (b-c), cloth seals (d-e), ball shot (f-g), spillage (h-k).

FIGURE 57B. Metal artifacts—plumbiferous: small shot and/or spherical spillage (a-g), unidentified (h) flattened, rolled and cut (i), spillage (j-q).

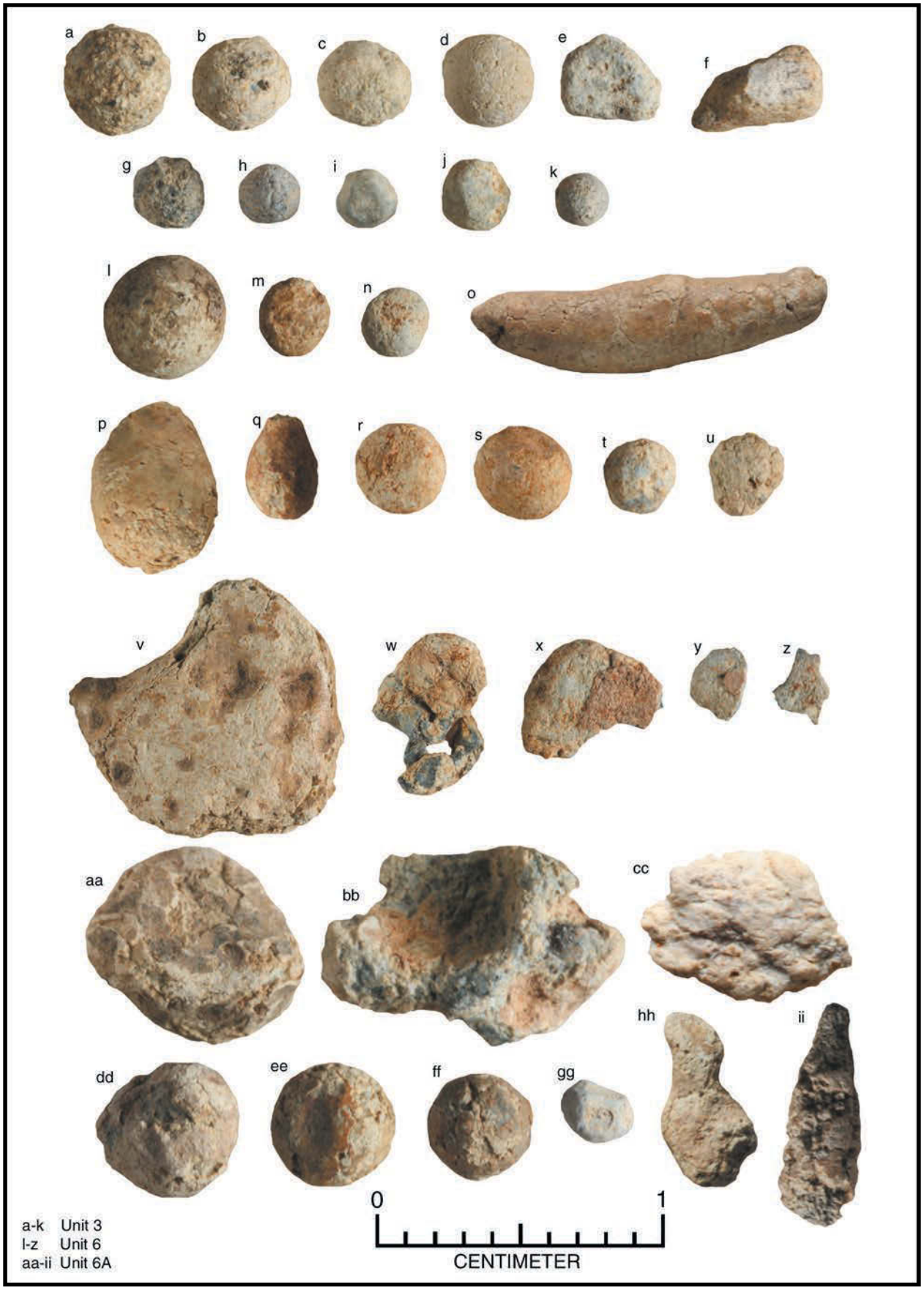


FIGURE 57C. Metal artifacts—plumbiferous: small shot and/or spherical spillage (a-d, g-n, r-t, dd-ff), spillage (e-f, p-q, u-cc, hh-ii), rolled (?) (o), possibly fired small shot (gg).

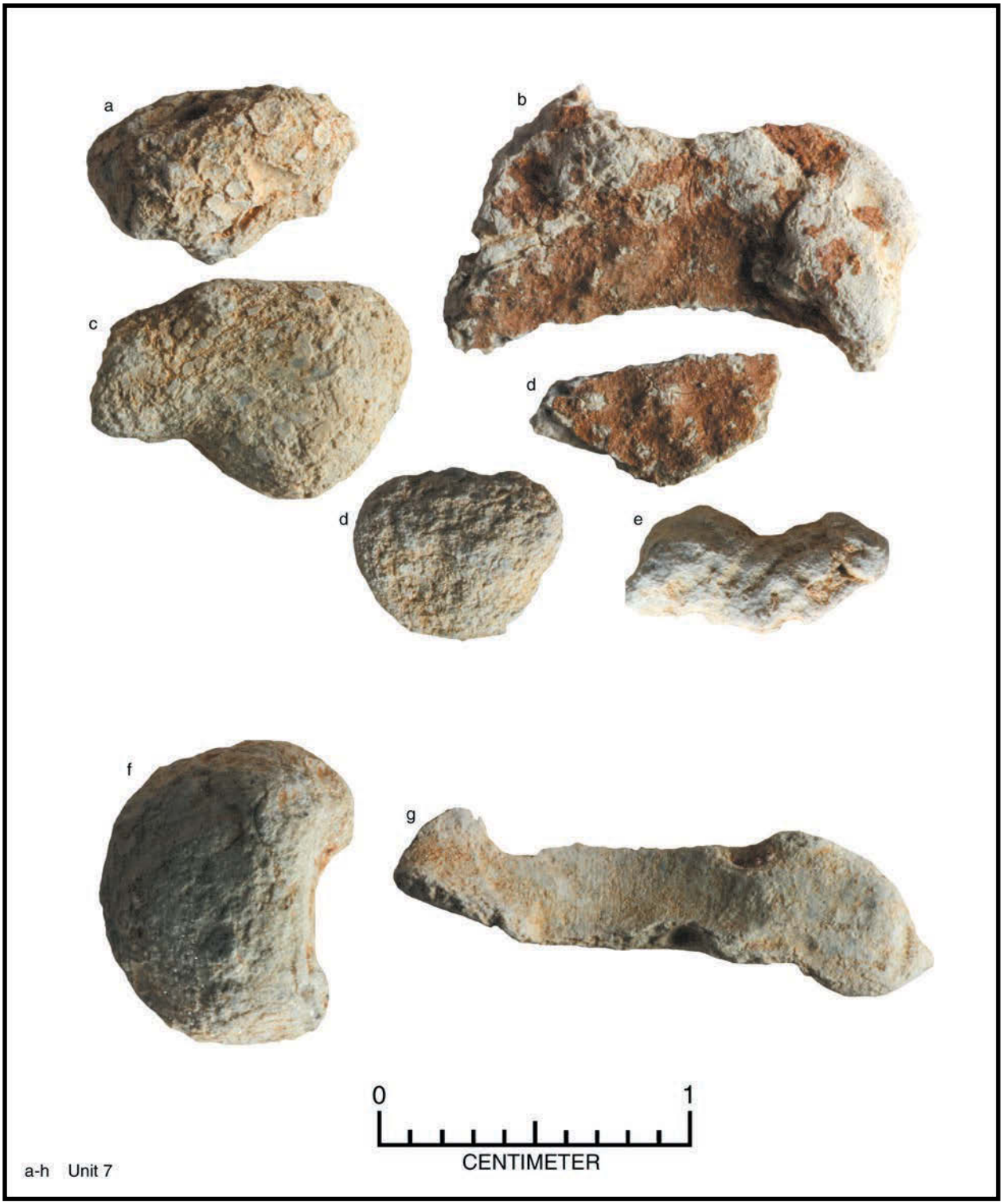


FIGURE 57D. Metal artifacts—plumbiferous: spillage (a-f), unknown (g).

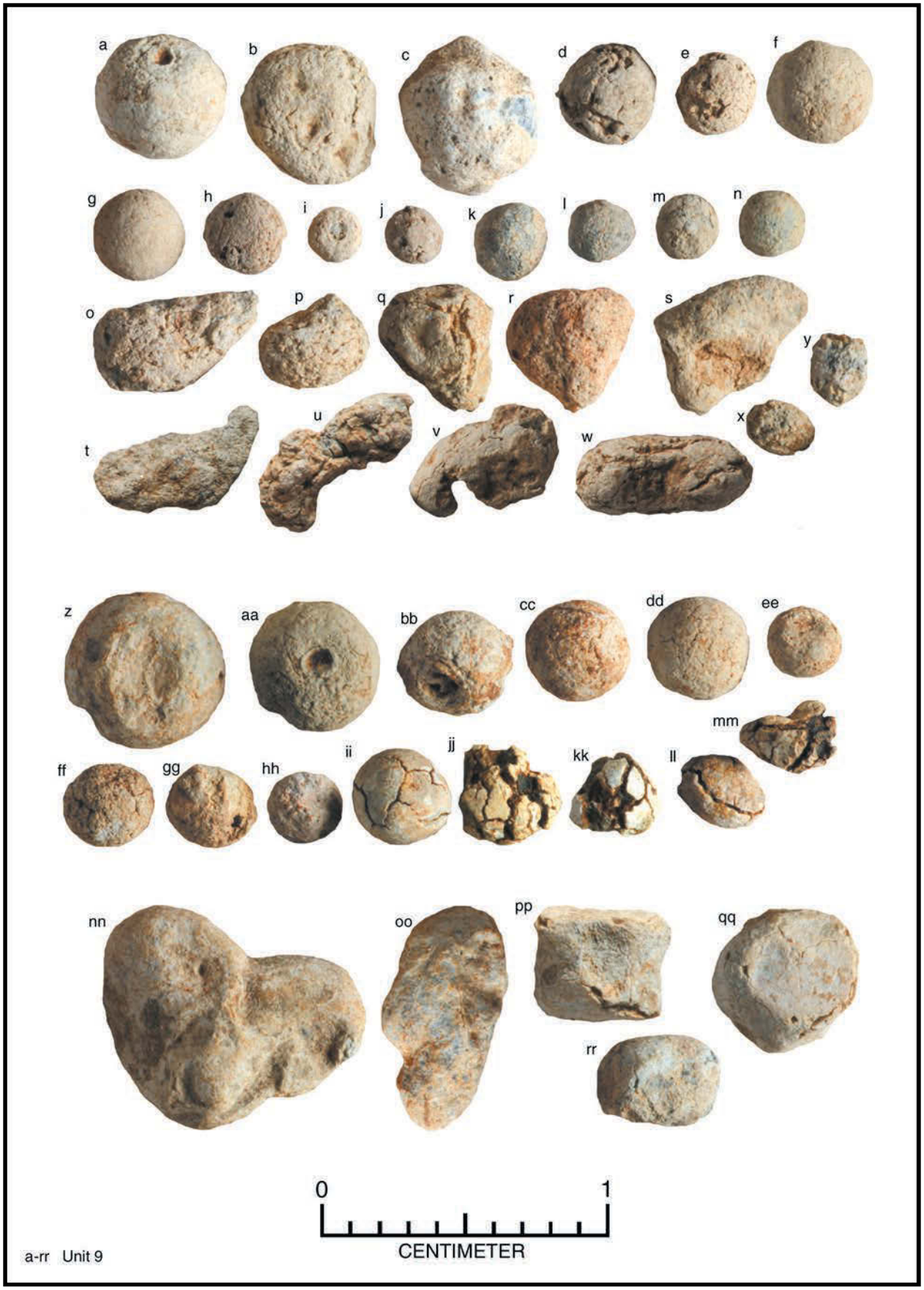


FIGURE 57E. Metal artifacts—plumbiferous: small shot and/or spherical spillage (a-n, z-hh), spillage (o-y, nn-oo), small shot and/or spherical spillage with ferrous inclusions (ii-mm), cut and rounded (pp-rr).

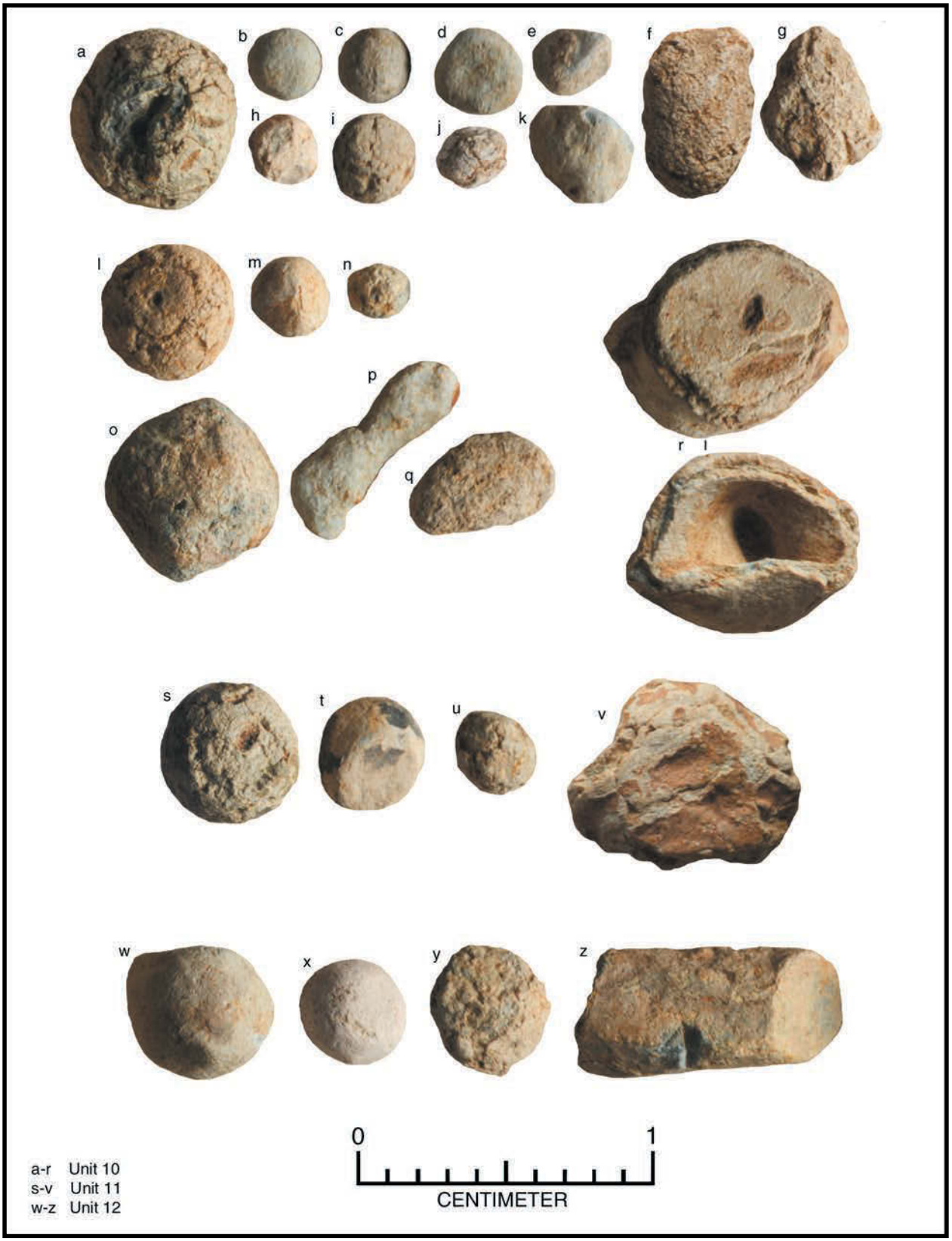


FIGURE 57F. Metal artifacts—plumbiferous: small shot and/or spherical spillage (a-e, h-n, s, u, w-y), spillage (f-g, p-q, v), flattened, rolled ,and cut (r), cut (z), cut and rounded (o), possibly fired small shot (t).

FIGURE 57G. Metal artifacts—plumbiferous: small shot and/or spherical spillage (n-aa, cc-ee), spillage (a-h, j-m, ff-gg), flattened and cut (i, jj-kk), flattened, rolled, and cut (bb).

Cupreous artifacts are much less numerous (n=22) and are represented in only nine of the seventeen units (Table 16). Horse gear is represented by a key *sabor* [Figure 55A(b)]. Gun parts include a side plate fragment [Figure 55A(d)], gunstock ornamentation [Figure 55A(d-g)], and a rear gunsight [Figure 55A(h)]. A cut sheet fragment [Figure 55A(c)] and a partial bail hole [Figure 55A(i)] represent the remains of a cupreous kettle. Personal items include a flattened finger ring fragment [Figure 55A(j)], a small button head [Figure 55A(k)], an earring fragment [Figure 55B(g)], and a wire through a bead, which might also have been part of an earring [Figure 55C(e)]. The remains of an object incorporating both bone and cupreous sheet metal [Figure 55C(g-j, l)] were also recovered. The bone has been stained green as a result of prolonged contact with the cupreous material.

Argentiferous artifacts are the least common in the current project (n=3). The function of two fragments is unidentified (Figure 56a-b). The third is a finger ring that has been cut in half (Figure 56c). At a glance, this might appear to be a "Jesuit Ring" shaped like a heart with an engraved design of some sort. Jesuit Rings may have originated as gifts for devout American Indian converts, but they quickly evolved into a secular trade item (Hauser 1982:39-42).

Plumbiferous artifacts are the most numerous of metal artifacts recovered in the current project (n=257) and are represented in all units (Table 16). A flat button [Figure 57A(a)] and two unidentified fragments [Figure 57A(b-c)] appear to be made of a mixture of lead and other metals which are not as stable as lead when exposed to moisture. Two lead cloth seals were recovered [Figure 57A(d-e)] and two examples of lead ball shot were also recovered, one of which has an indentation [Figure 57A(f)]. These two ball shot examples are approximately .50 caliber, which is a typical load for the long arms used by the horse soldiers of Los Adaes. Spanish infantry used larger long arms with a larger barrel diameter, which, in turn could accommodate a larger ball diameter.

There is abundant evidence for the processing of lead, including lead splatter [Figure 57A(h-k); Figure 57B(j-q); Figure 57C(v-cc); Figure 57D(a-f); Figure 57E(o-y); Figure 57G(c-hj,k,m,ff,gg)], and cut lead fragments [Figure 57B(i); Figure 57E(pp,rr); Figure 57F(r,z); Figure 57G(i, bb,jj.kk)]. There is also evidence for molten lead coming into contact with water. Molten lead will form a sphere when falling, much like a raindrop. When this sphere hits the water, there is immediate hardening on the surface in first contact with the water, and a slight indentation will form on the opposite side of the sphere. Such an indentation or dimple is visible on many of the small lead spherical objects [Figure 57B(a-b,f); Figure 57C(ee); Figure 57E(z,bb); Figure 57F(l); Figure 57G(y,z,hh)]. Two rounded lead objects appear to have tails that may have formed as a result of there not being sufficient distance in the fall to form a true sphere [Figure 57G(a-b)]. Which begs the question, are the small spherical objects the desired end product, or simply a by-product? That is, was the intent to make spherical lead ball shot, or was the molten lead simply collected in a water filled container as a by-product of pouring molten lead into a gang mold? It is always desirable to "overfill" a gang mold for lead ball shot, and so there will be spillage or splatter. This splatter may fall on the dirt or it may be collected in a water filled container. And it is possible that the answer might indeed be *both*—that is, yes—the overflow of molten lead is

collected in a water filled container and the resulting small spherical objects are then used as a load in a smooth bore long arm.

Some of the very small lead shot is modern and multiple indentations indicate that it was fired in a cluster [e.g. Figure 57G(ee)]. It is not common, but several lead splatter fragments seem to have a ferrous core [Figure 57E(jj-mm)] and one very small lead shot example also may have a ferrous core, indicated by surface cracking, possibly caused by oxidation of the ferrous core [Figure 57E(ii)].

There are several examples of the flattening and cutting of lead [Figure 57B(i); Figure 57E(pp,qq,rr); Figure 57F(o,r,z); Figure 57G(i,bb,jj,kk)]. These examples suggest various processing techniques, including the cutting of cubes from a flattened lead mass and the cutting of rolled lead. The resulting cut objects might then be processed into a round ball by rolling the cut object between two iron plates (Jay C. Blaine, 2010 personal communication).

Glass Containers

Glass artifacts recovered from the current project will be discussed in two general categories—container glass and personal adornment glass items. Container glass consists mostly of two types of bottles—round bottles and case bottles (see Table 17) (Figures 58-61). The case bottles are square in cross section so as to more efficiently be packed in cases, while round bottles are round in cross section. Glass personal items consist largely of glass beads, but glass tumblers and other adornment items are also included in the category. Container glass was described according to the following color categories: Green/Dark Green, Blue/Green, Clear, Brown, Amethyst, and White. Figures 58-61 show examples of glass fragments according to the various color categories, except for Brown and White. The Brown glass fragments are from 20th century beer bottles and the White glass fragment is also from a modern glass container. The Blue/Green category is probably the most diverse category as it includes the greatest color variation ranging from blue to greenish blue, and light bluish green.

Round glass container fragments were recovered from every unit, while case bottle container fragments had a more limited distribution—including Units 1,2,6,7,9,17 and 19 (Table 18). Case bottle glass fragments were Green/Dark Green [Figure 58A(e,h); Figure 58B(c,d)] and Blue/Green [Figure 59A(c,l,m)]. Several fragments from the corners of case bottles were also recovered—all were Green/Dark Green (Figure 58B). Rim fragments include a shaped string of glass near or at the lip [Figure 58A(q)] and an unshaped ring of glass below the rim [Figure 58B(b,e)]. No rim or basal fragments of Blue/Green color bottles were recovered. Basal fragments of Green/Dark Green bottles have substantial kick-ups [Figure 58B(a), Figure 58C, Figure 58D], and probably contained wine or perhaps even brandy. Case bottles are more associated with gin in modern times—the contents of the case bottles recovered is not known, but was probably a distilled beverage of some sort.

FIGURE 58A. Container glass—green/dark green: round bottle body fragments (a-c, f,l-m,t), case bottle body fragments (d-e, g-h,r,u,v), rim fragments (p-q).

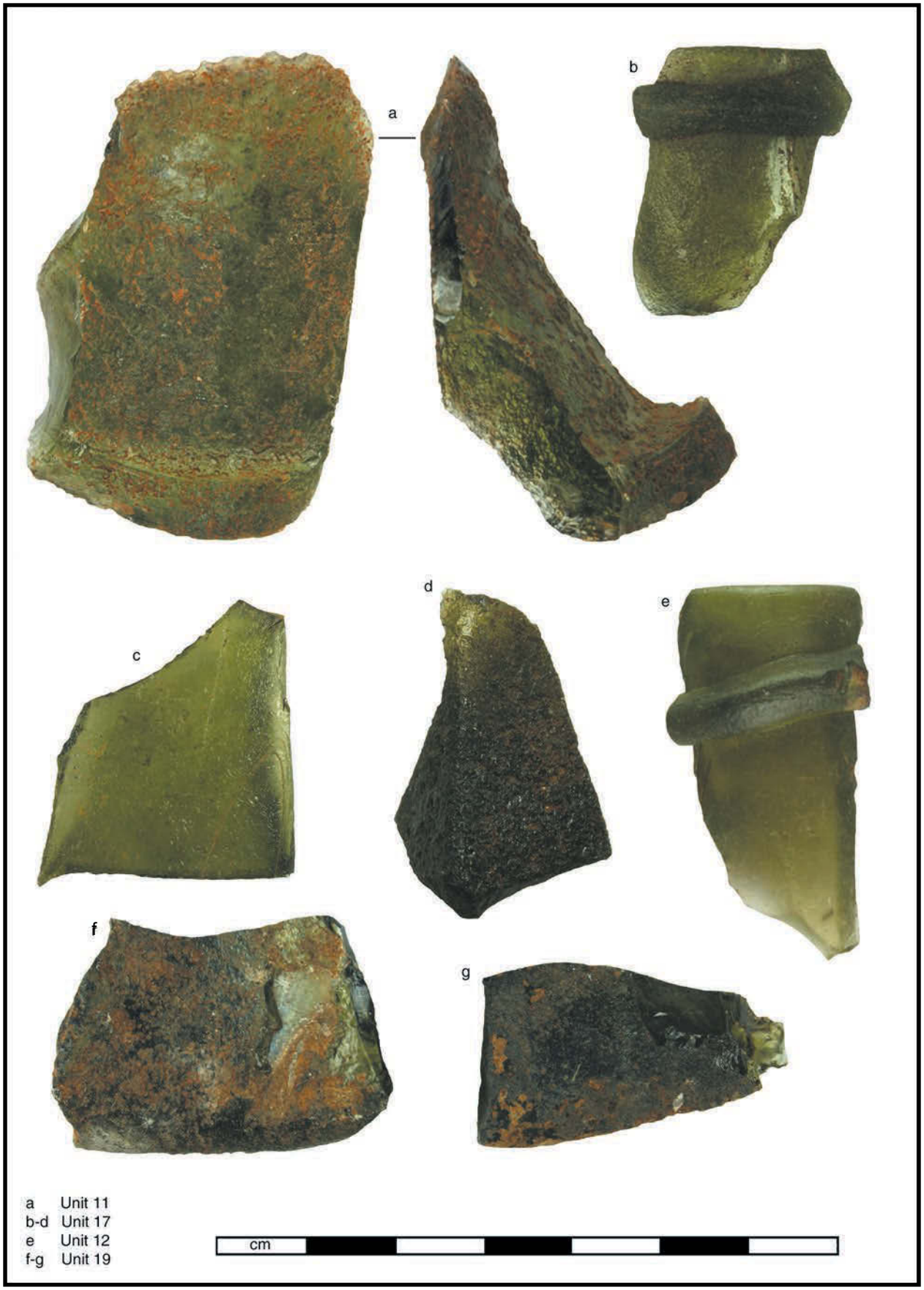


FIGURE 58B. Container glass—green/dark green: basal fragment (a), rim fragments (b, e), case bottle body fragments (c, d), round bottle body fragments (f-g).

FIGURE 58C. Container glass—green/dark green: basal fragment.

FIGURE 58D. Container glass—green/dark green: basal fragment.

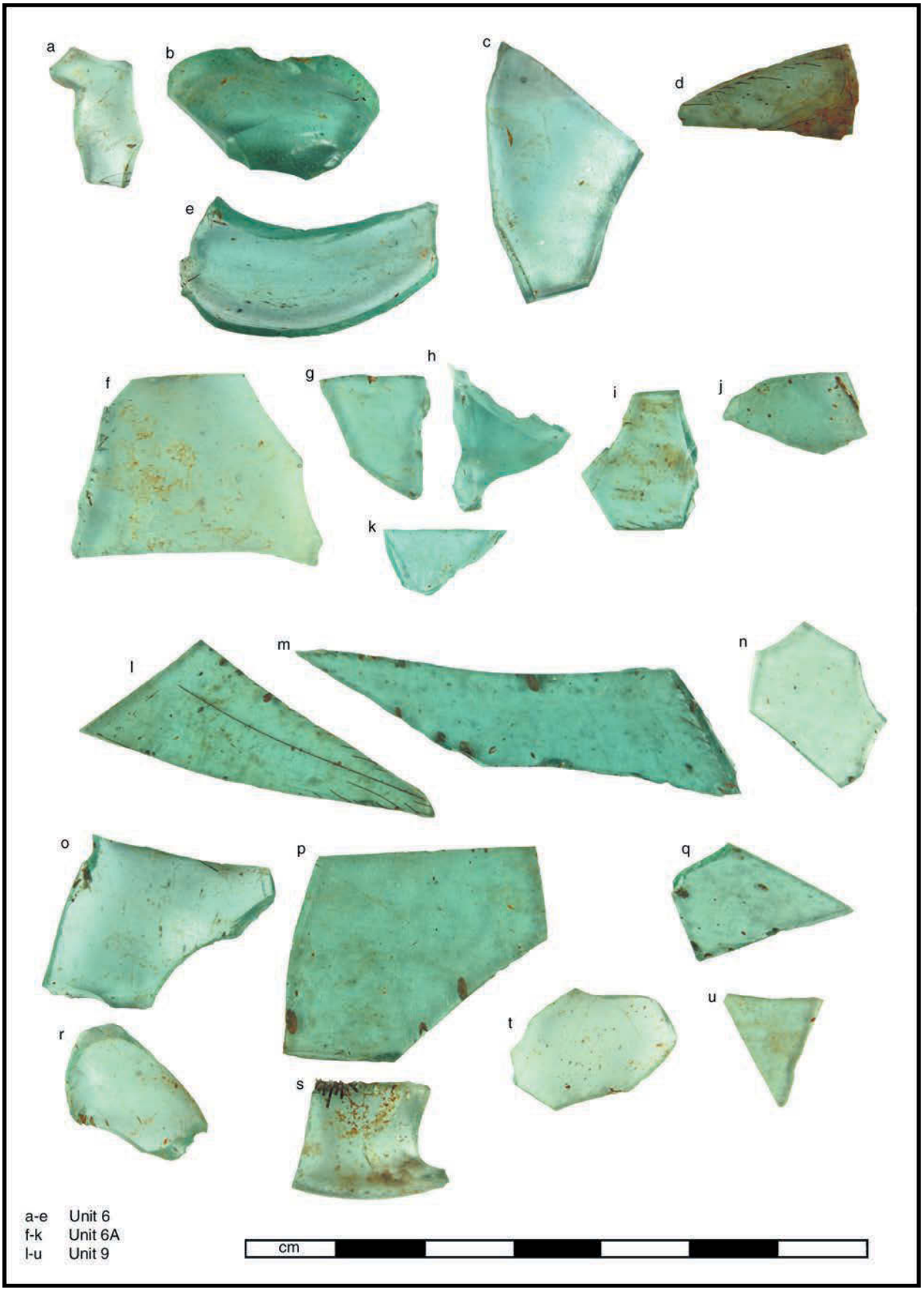


FIGURE 59A. Container glass—blue/green: round bottle body fragments (a,c,d,f-k,n,q,t), round bottle base fragments (b,e,o,r-s), case bottle body fragments (l-m,p,u).

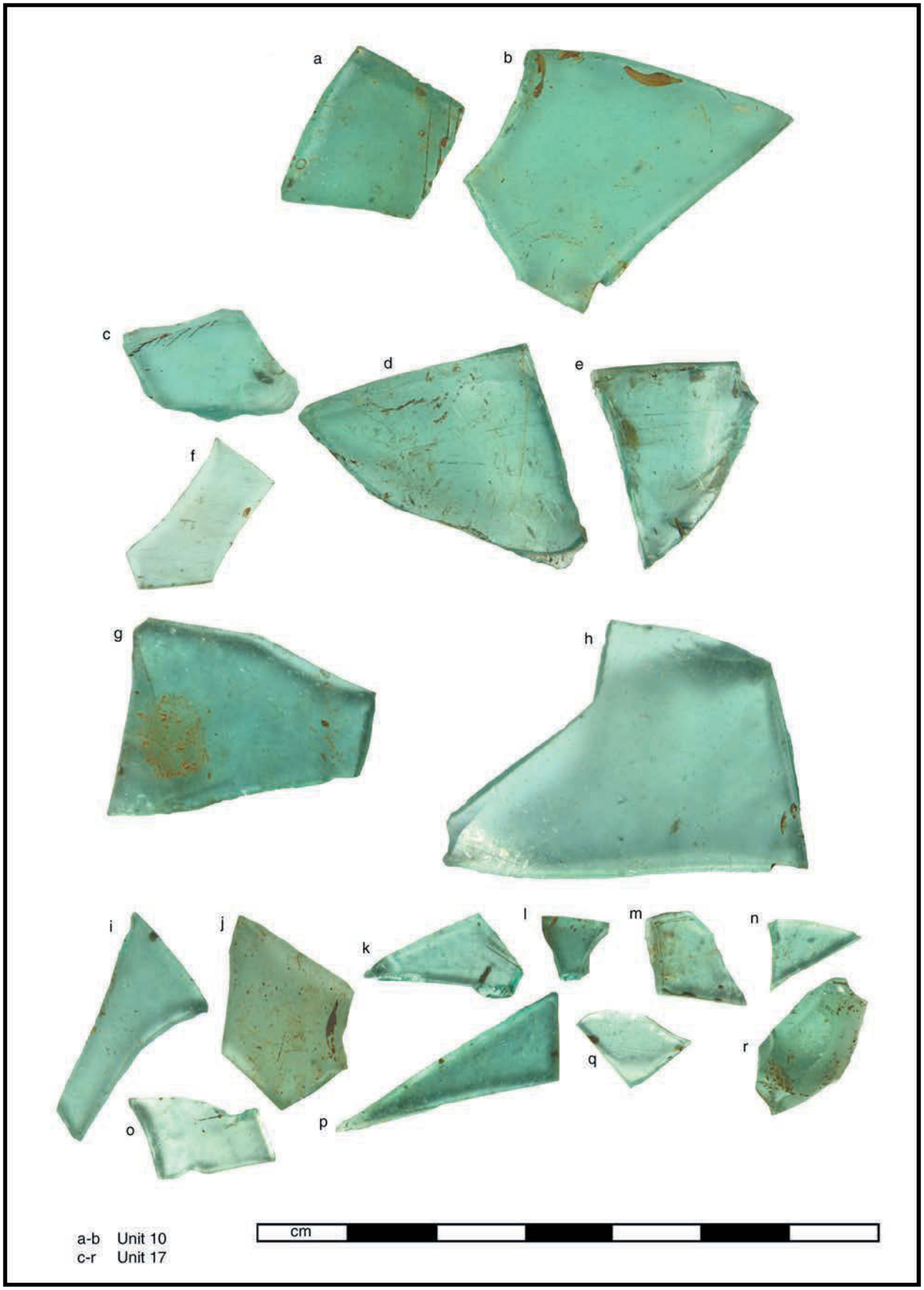


FIGURE 59B. Container glass—blue/green: round bottle body fragments (a-r).

FIGURE 59C. Container glass—blue/green: round bottle body fragments (e-n), case bottle basal fragments (a-d).

FIGURE 60A. Container glass—clear: body fragments (a-n), rim fragment (o), tumbler fragments (p-q).

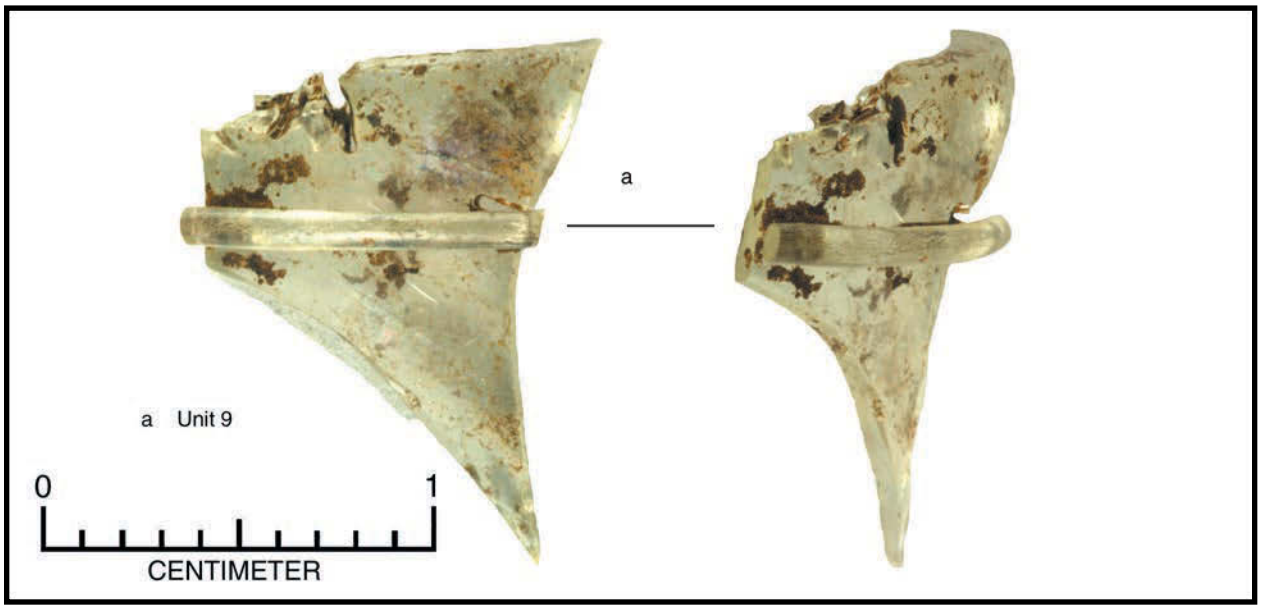


FIGURE 60B. Container glass—clear.

FIGURE 61. Container glass—amethyst.

Table 17. Glass, Containers

Unit	1	2	3	4	6	6A	7	9	10	10A	11	12	17	19	20	21	Totals
Glass--Curved																	
Green/Dark Green	4	17	2		5	8	4	6	22	11	11	15	67	7	13	19	**211**
Blue/Green	12	24	8	2	38	15	6	24	25	7	10	2	30	7	13	4	**227**
Clear	15	6	4		17	1		7	6	1	4	5	10	10	5		**91**
Brown		2			1	1	1							1			**6**
Amethyst																7	**7**
White								1									**1**
Glass--Flat																	
Dark green		1			20		3						13	2			**39**
Blue--Aquamarine	1	1			18			3					1	3			**27**
Totals	**32**	**51**	**14**	**2**	**99**	**25**	**14**	**41**	**53**	**19**	**25**	**22**	**121**	**30**	**31**	**30**	**609**

The Clear glass containers were much less abundant. Some of the Clear glass is definitely 20th century [Figure 60A(a-c,m,n)], but the date of the other glass in the Clear round container glass is less certain. Two fragments of Clear glass tumblers or drinking glasses were recovered [Figure 60A(p,q)]. These probably date to the 18th century. Of course, the Clear glass category is not perfectly "clear." The staining related to being deposited in the earth has undoubtedly altered the transparency of the Clear glass. One Clear glass rim is incredibly thin—measuring less than a millimeter (0.6 mm) [Figure 60B(a)]. Again, the contents of this vessel are not known.

The Amethyst glass was recovered only from Unit 21 (Figure 61). This type of glass, also called solarized, gets its purple tint from the sun causing a reaction with manganese oxide, which was added the glass to make it clear. The practice of using manganese oxide dates from the late 19th to the early 20th century in the United States.

All in all, the great majority of the glass fragments recovered during the current project date to the time of the Spanish occupation of Los Adaes. Both round and square or case bottles are represented, along with tumblers. The origin of the bottle glass fragments is uncertain. There was bottle glass production in Mexico during the 18th century (Deagan 1987:129), and bottles were also being produced in the British colonies during this same time (Noël Hume 1991:60). It is possible that the lighter green glass is of French origin, and the dark green or black glass is either from Great Britain or the British American colonies on the Atlantic coast.

Glass Personal Adornment

Glass items related to personal adornment recovered during the current project include 487 beads (Table 18), one earring, one pendent, and two glass inlays. These items are illustrated in Figures 62-72.

Glass beads were recovered from all units (Table 18) and were particularly abundant in Units 2, 9, 17, 19, and 20. Units 2, 9, 17 and 19 were excavated in areas characterized by surface dumping outside of structures, but Unit 19 may have been located within a structure. There are several bead classification systems (e.g. Harris and Harris 1967, Kidd and Kidd 1970, Stone 1974, Brain 1979, Karklins 1985, 1998), and all focus on three main characteristics—manufacture, size, and color. Rather than adopt or reject any of these classifications, the current discussion will focus solely on manufacture, size, and color.

There are two manufacturing techniques represented among the beads recovered during the current project—wound and drawn. Wound beads are made by winding molten glass around a wire. Only four wound beads were recovered during the current project (Figure 62). Drawn beads are made by picking up a molten gob of glass with a blow tube, blowing a bubble in the gob, and then stretching the gob into a long tube. Individual beads are made by breaking the tube into smaller bits. The broken bits are then either reheated or tumbled to round off the broken edge, but sometimes the broken edge remains unaltered [e.g. Figure 65C(ll,pp)].

Table 18. Glass, Beads

Unit	1	2	3	4	6	6A	7	9	10	10A	11	12	17	19	20	21	Totals
Glass Beads--Large (>6mm)																	
Black	1																1
Blue		1	1							1							3
Glass Beads--Medium (4-6mm)																	
Black	1	2										1	2		1	3	10
Blue	1														1		2
Clear		1			1									1			3
White		1															1
Green													1				1
Glass Beads--Small (2-4mm)																	
Black	11	35	16	3	15	9	8	23	10	1	7	8	18	13	18	12	207
Blue	8	14	1	2	2	2	9	17	1		1	3	12	10	11	4	97
Clear	2	3	3	2	6	1	7	10	2	1	2	3	5	9	5	1	62
White	2	8			5	2	4	4		1	1		3	7	2	5	44
Red	1	1	1	1	1	1	1	1	1			1	1			1	12
Green							1	1									2
Yellow		8															8
Glass Beads-- Very Small (<2mm)																	
Black	2	8		2		2	3	1					1	2		2	23
Blue		3	1			2							2				8
White							1								1		2
Brown														1			1
Totals	**29**	**85**	**23**	**10**	**30**	**19**	**34**	**57**	**14**	**4**	**11**	**16**	**45**	**43**	**39**	**28**	**487**

FIGURE 62. Glass beads—wound.

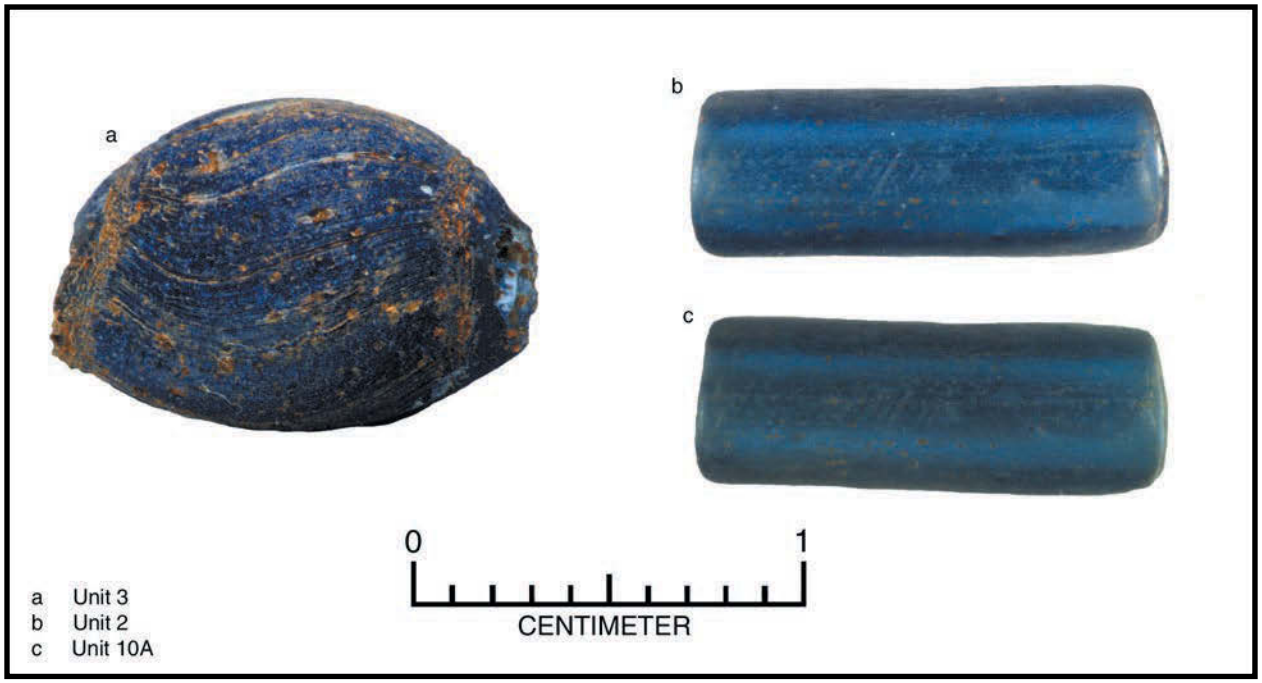


FIGURE 63. Glass beads—drawn, large.

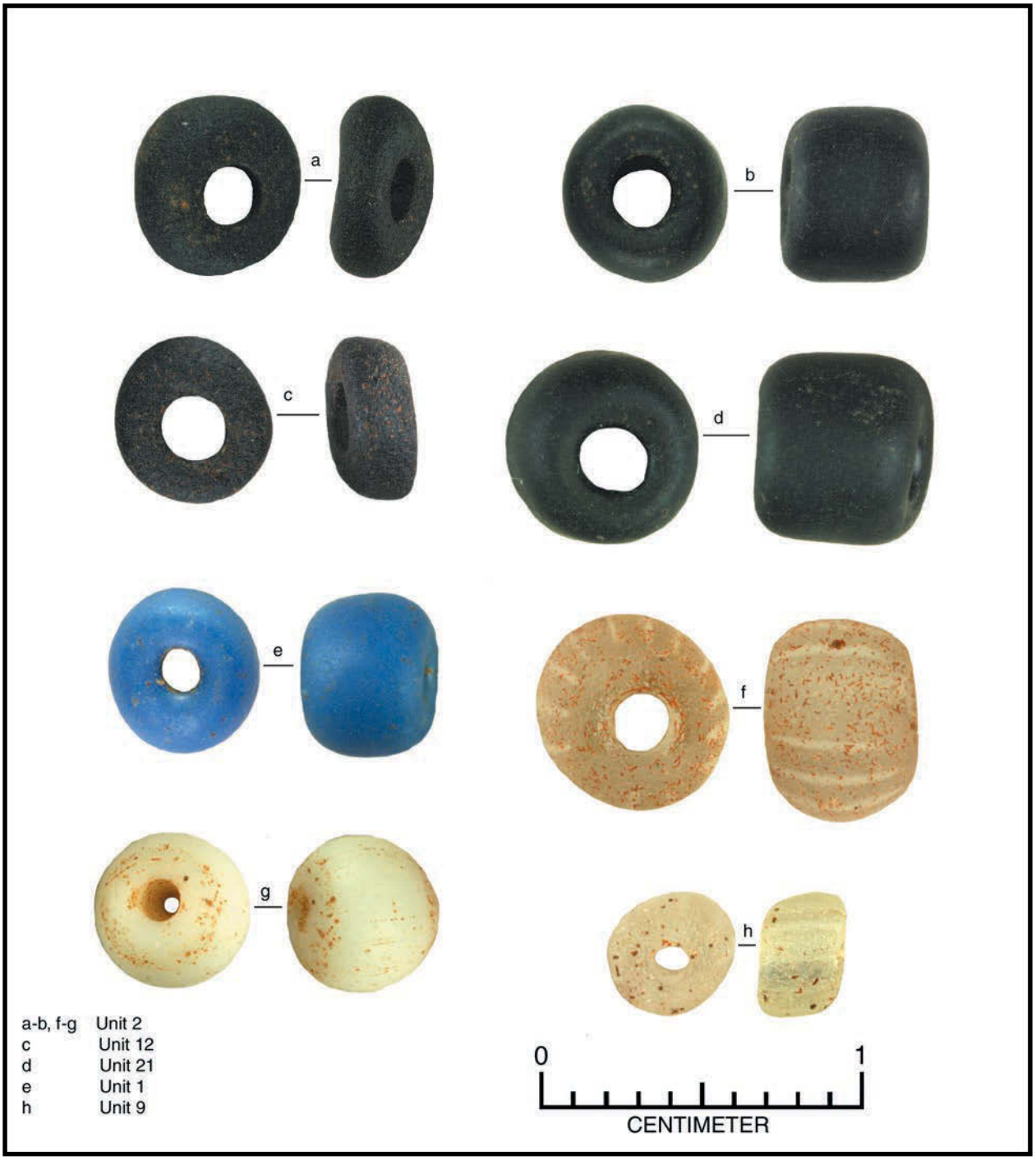


FIGURE 64. Glass beads—drawn, medium.

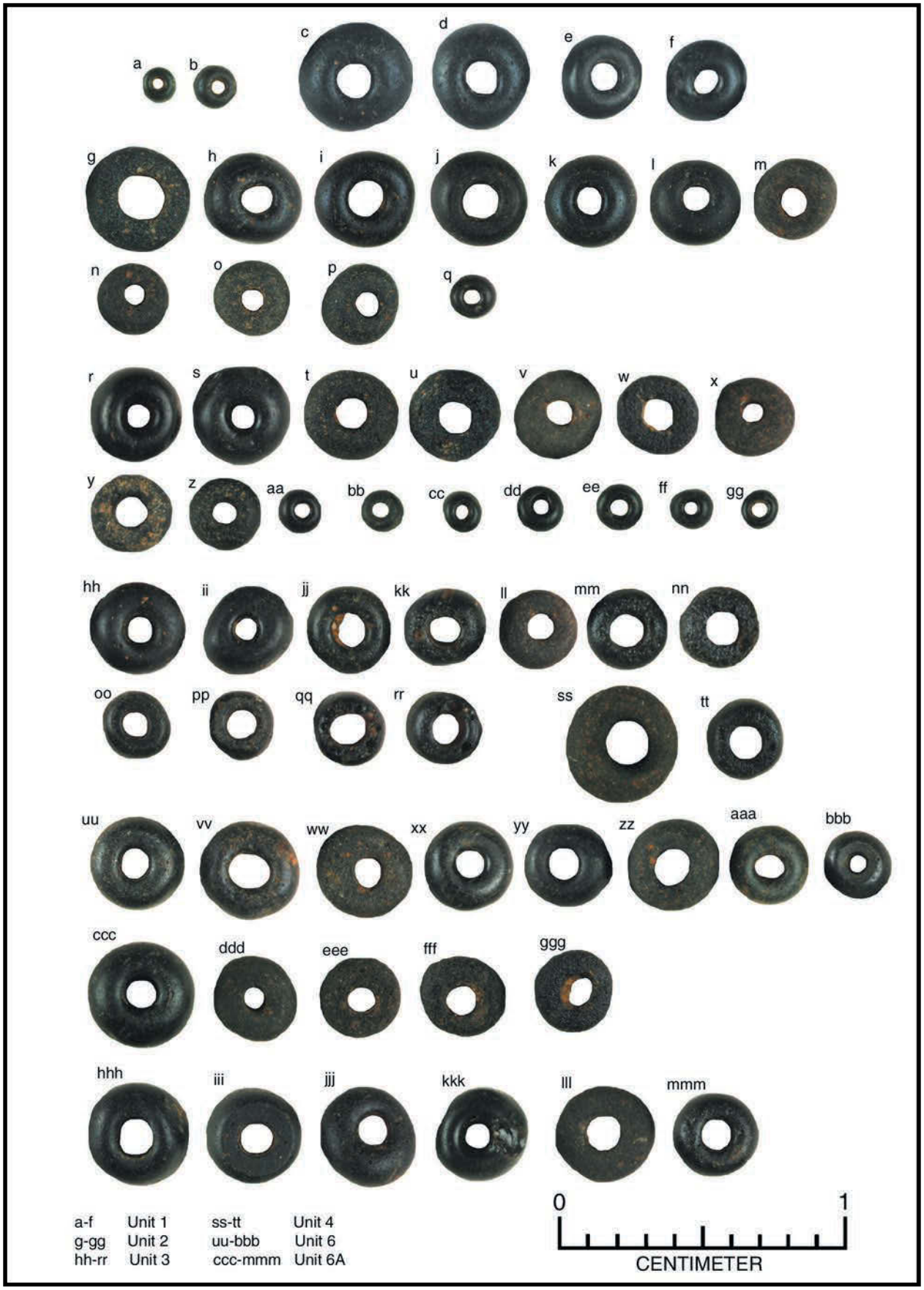


FIGURE 65A. Glass beads—drawn, black, small and very small.

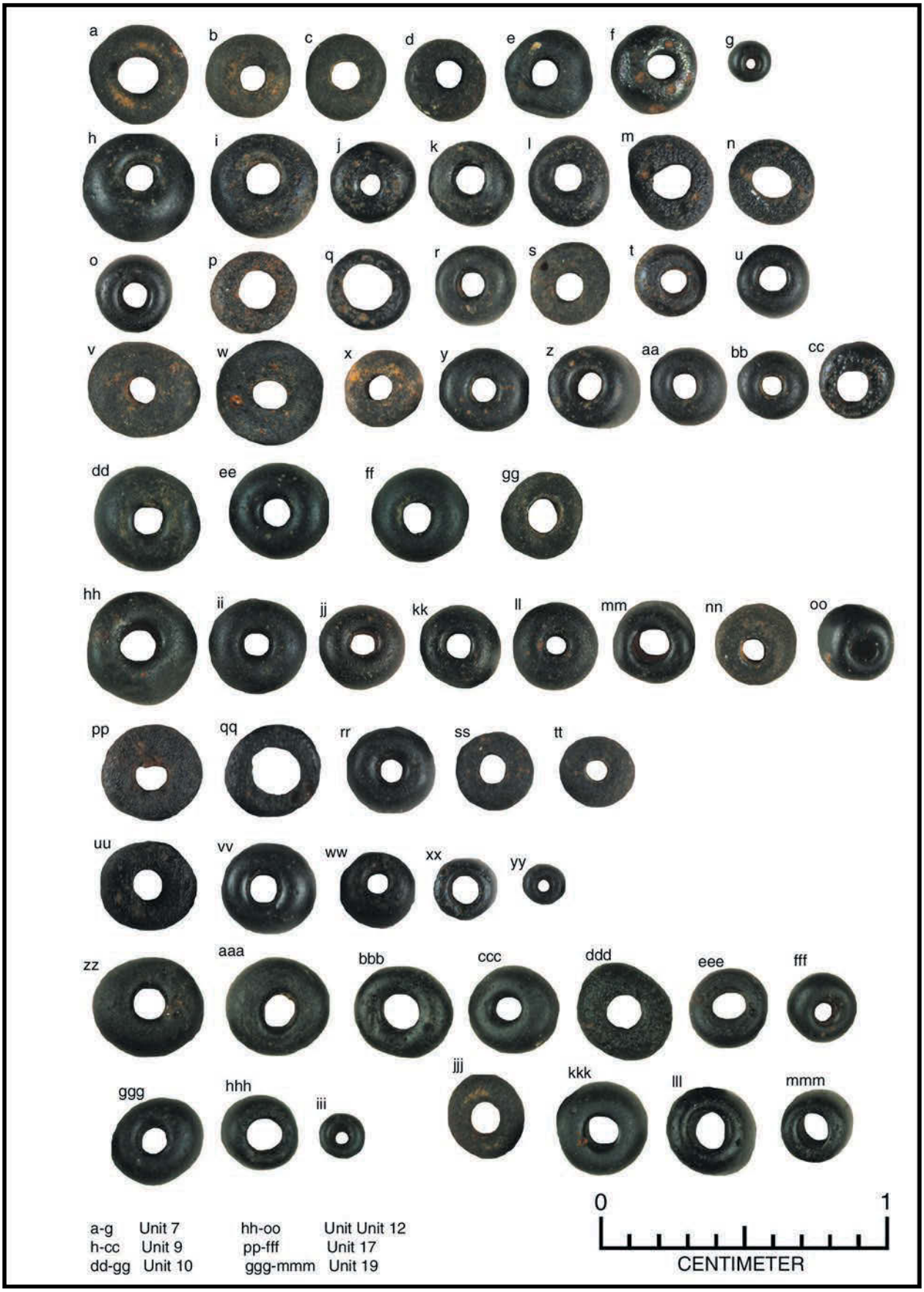


FIGURE 65B. Glass beads—drawn, black, small and very small.

FIGURE 65C. Glass beads—drawn, black, small and very small.

FIGURE 66A. Glass beads—drawn, blue, small and very small.

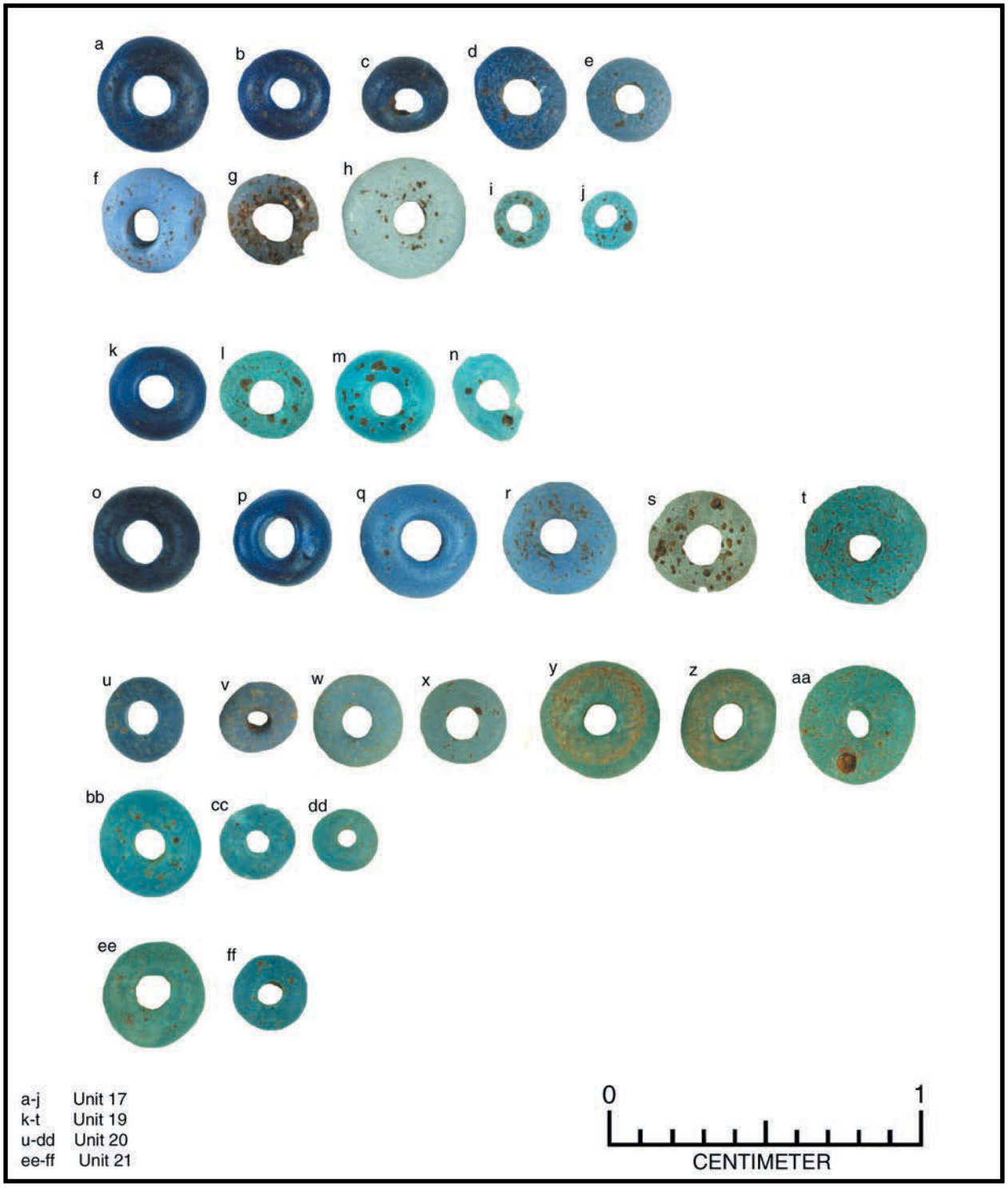


FIGURE 66B. Glass beads—drawn, blue, small and very small.

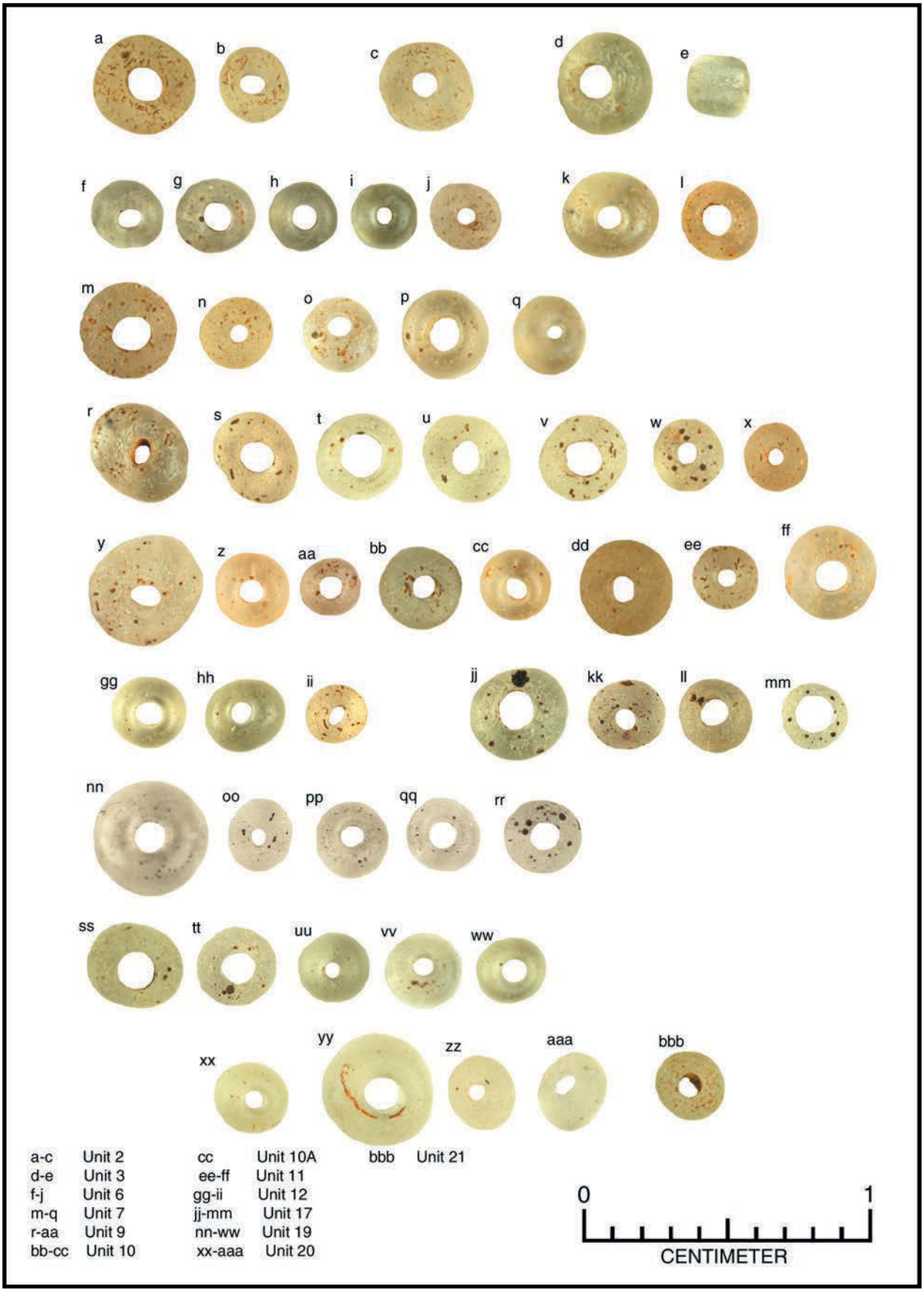


FIGURE 67. Glass beads—drawn, clear, small.

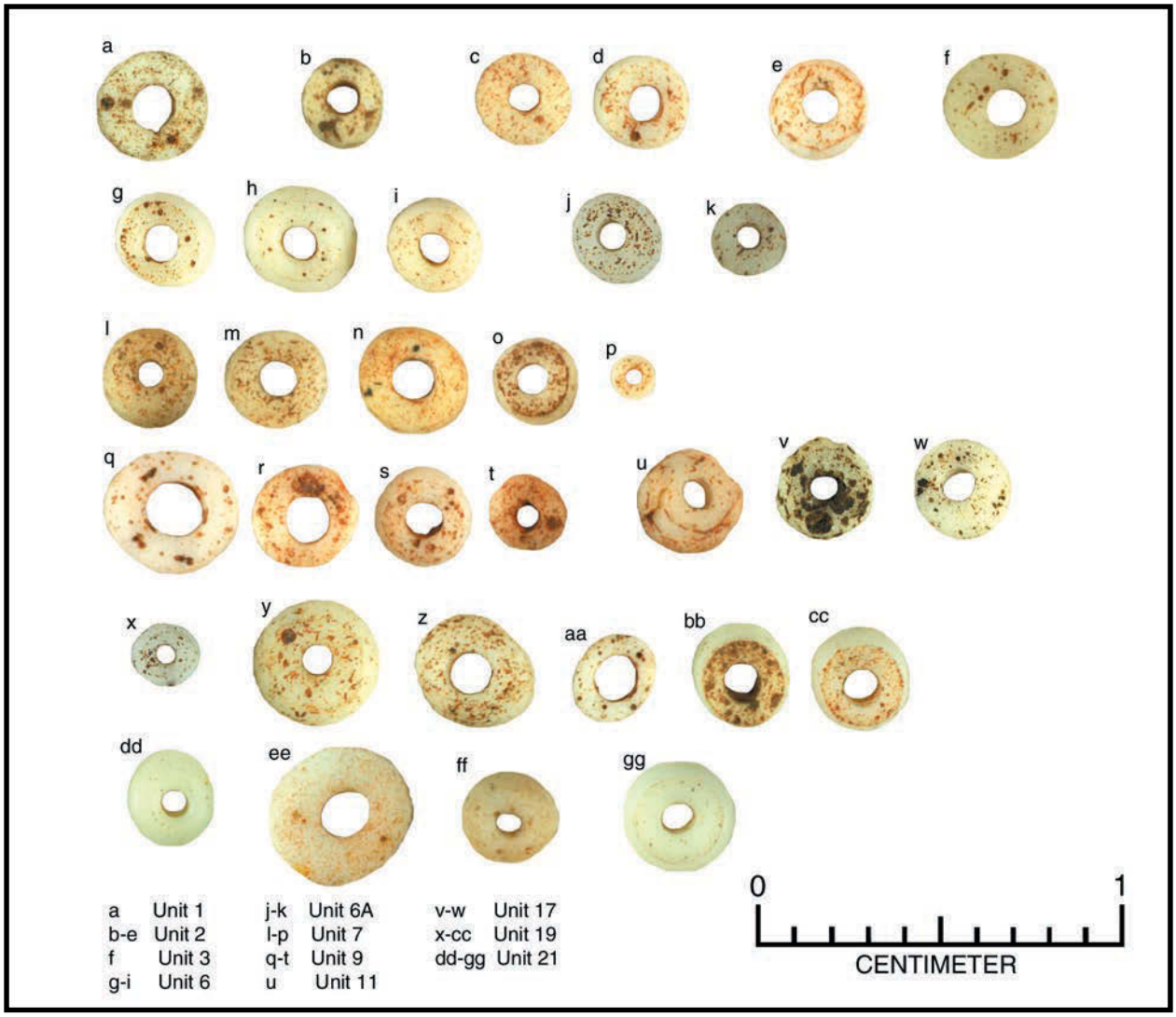


FIGURE 68. Glass beads—drawn, white, small and very small.

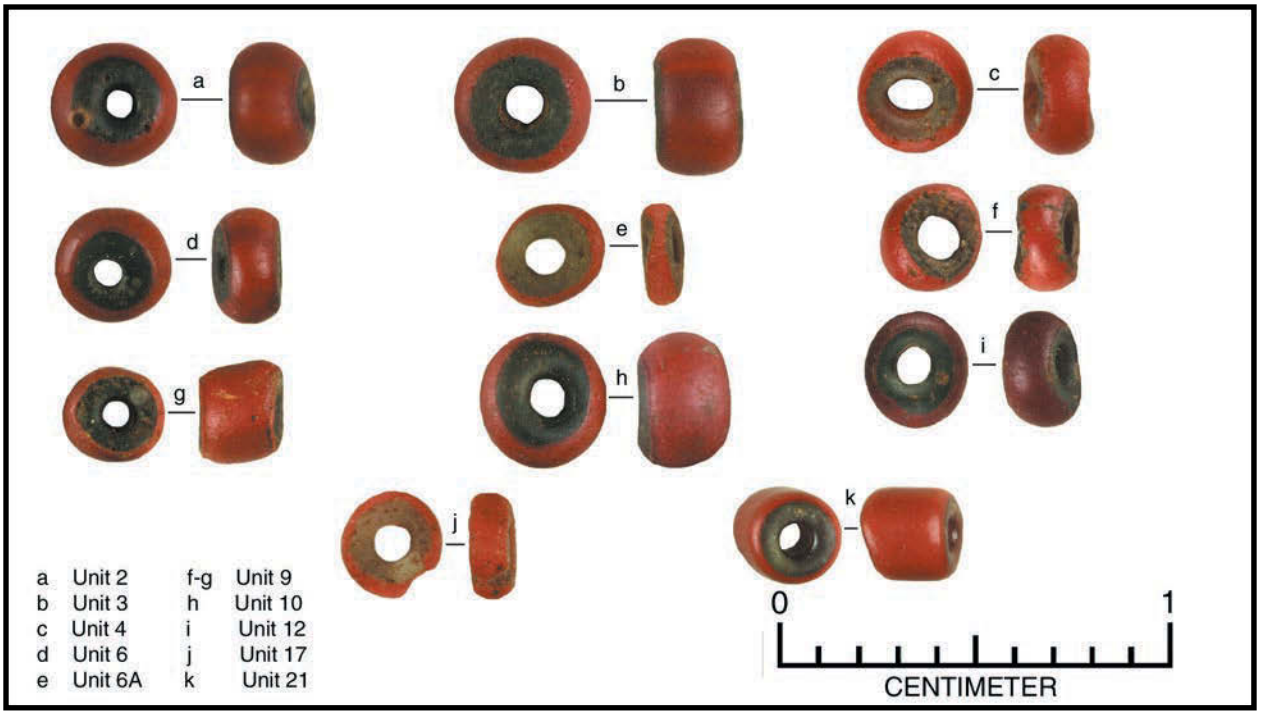


FIGURE 69. Glass beads—drawn, red, small.

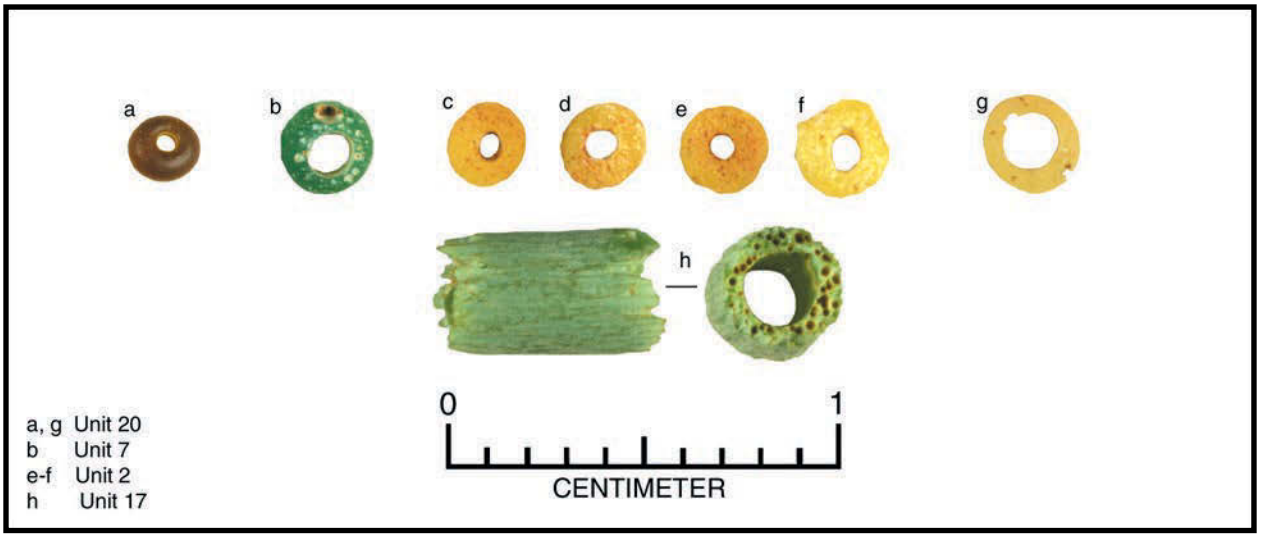


FIGURE 70. Glass beads—drawn, brown, yellow and green.

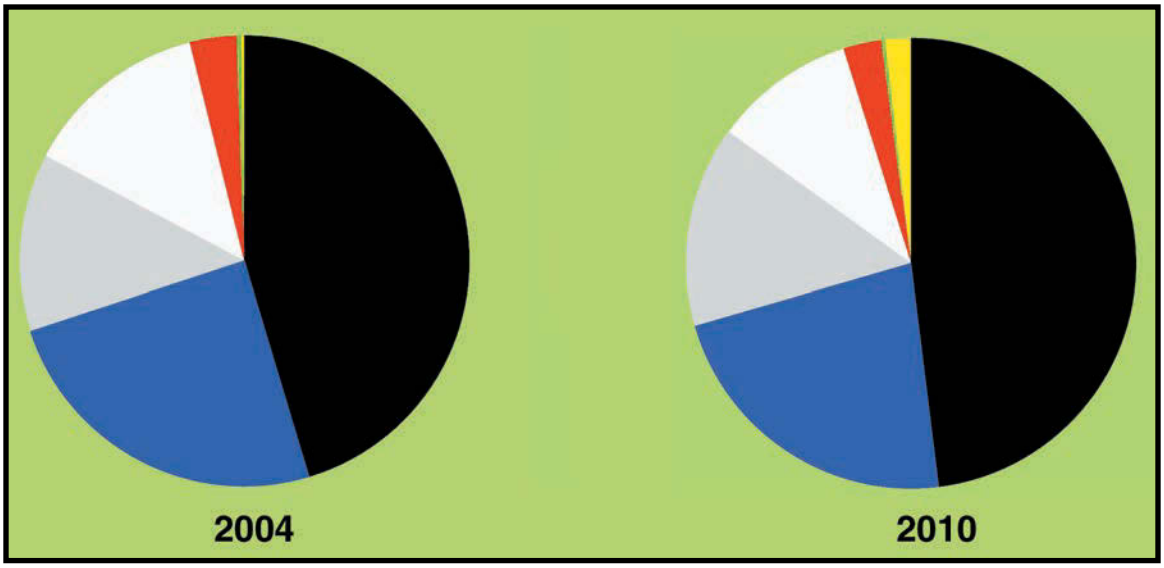


FIGURE 71. Small glass bead color patterns

FIGURE 72. Glass—personal adornment: possible inlays (a, c), pendant (*higa*?) (b).

The size divisions of Large (>6 mm), Medium (4-6 mm), Small (2-4 mm), and Very Small (<2 mm) are derived from Brain (1979), but most bead researchers follow a similar size distribution. The Large beads are generally necklace beads, Medium beads are sometimes referred to as Pony Beads, and the Small and Very Small beads are referred to as seed beads and are commonly used in embroidered designs.

Bead color is the most subjective element in bead classification systems, and so a choice was made to simplify the color classification scheme to Black, Blue, Clear, White, Red, Green, and Yellow. A large number of beads are illustrated in this report (Figures 62-70) so that researchers who wish to use a more elaborate color classification scheme may do so. There is not much variation in color among the black beads (Figures 62, 64a-d, and 65), but there is considerable variation in color among the blue beads (Figures 63, 64e, and 66). The color variation observed in the Clear and White beads may be a product of being buried in the ground for hundreds of years.

Field techniques have a significant effect on the number of Small and Very Small glass beads recovered. Fine screening through 1/16th inch window screen is essential for recovery of Small glass beads. But, of course, the Very Small beads are smaller than 1/16th inch or 2 mm, and so the recovery of Very Small beads is more a factor of chance when water screening through window screen. Before the current project, a total of 135 Large, 79 Medium, 1,129 Small, and 1 Very Small glass beads had been recovered at Los Adaes (Avery 2011:131). The current project recovered 4 Large, 17 Medium, 432 Small, and 34 Very Small glass beads (Table 18).

The time required for water screening excavated deposits through window screen and sorting the recovered material in the lab is considerable, which begs the question, what can we learn from beads that are less than ¼ inch in size? A study of seed bead color variation at colonial period sites in Northwest Louisiana and East Texas (Avery 2008) has suggested that such variation might be related to American Indian groupings. One immediately apparent difference from the seed bead color pattern from Los Adaes and that of many contemporaneous American Indian sites in Texas is that while black seeds predominate at Los Adaes, blue is the predominant color for seed beads from the Texas sites (Avery 2008). Figure 71 shows the seed bead color pattern for Los Adaes for excavations prior to the current project compared to the seed bead color pattern for the current project. The color pattern is remarkably similar. Bead counts from each of the units of the current project are probably too small to investigate any variation between units, but Unit 7 is notable because black seed beads do not dominate the way they do in the other units (Table 19). A larger sample from all areas of the current project units would be necessary to identify any variation in seed bead color pattern within the presidio.

The earring with a green glass inset has already been described [Figure 55B(g)]. The other glass items of personal adornment include a glass pendant (Figure 72b), and two examples of possible glass inlays (Figure 72a,c). The glass pendant is the same as pendants recovered from San Luis, a Spanish mission in Florida dating to the later 17th century (Deagan 2002:128). The rounded glass inlay is similar to paste jewels recovered from the 1742 ship wreck of the Matanceros (Deagan 2002:122). These paste jewels were mass produced in Spain and shipped to

the American colonies, although other European countries were producing these as well (Deagan 2002:122). The origin and function of the rectangular glass inlay is much less clear. It is presumed to be an inlay of some sort, but this has not been verified by a literature search—no such examples occur in any of the references consulted for this report (e.g. Stone 1974; Noël Hume 1991; Deagan 1987, 2002).

Lithics

Lithic or stone artifacts recovered during the current project include chipped stone, ground stone, and naturally occurring stone, and they will be discussed in that order (Table 19). Chipped stone artifacts are not as common on historical period sites because there are very few chipped stone tools—the most common being gunflints and strike-a-lights, both of which were recovered during the current project. The gunflint [Figure 73A(p)] and the possible strike-a-lights [Figure 73A(a,u); Figure 73B(j)] appear to be made of Central Texas chert [Figure 73A(p)]. The gunflint fragment [Figure 73C(s)] is made of the honey colored flint generally associated with a French origin. Much of the chipping debris is probably related to gunflint maintenance and the use of strike-a-lights. Figure 73A-C shows all of the chipped stone tools and almost all of the chipping debris larger than ¼ inch, while Figure 73B shows a sample of the less than ¼ inch chipping debris. The great majority of chipping debris recovered during the current project was less than ¼ inch. It is interesting, though, that while most of the >1/4 inch chipping debris is non-local, probably Central Texas chert, most the <1/4 inch chipping debris is the honey colored flint generally associated with a French origin (compare Figures 73A-C with Figure D). It is important to mention that a Late Paleo/Early Archaic component has been identified at Los Adaes, including a San Patrice projectile and an Albany scraper (Avery 2005b:35).

Only two groundstone artifacts were recovered during the current project (Figure 74). A possible *mano* fragment (Figure 74a) made of a hard, fine grained sandstone may be related to the pre-contact occupation of the site because the projected cross section does not resemble the cross section of historic period *manos*. The *mano* fragment has been stained red by the iron soil rich soils of Los Adaes. Fresh fractures reveal that the sandstone might be Catahoula sandstone, which was available in the area during the pre-contact times. A *metate* fragment, made of volcanic tuff (Figure 74) is associated with the Spanish occupation of the site. Only a small number of *mano* (n=16) and *metate* (n=21) fragments have been recovered from excavations at Los Adaes (Avery 2005b:81).

Table 19. Lithics

Unit	1	1	2	2	3	3	4	4	6	6	6A	6A	7	7	9	9
	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt
Chipping debris	25	1.6	83	3.74	46	8	8	0.2	9	1.5	24	2.3	47	1.5	45	9.9
Gunflint fragment																
Gunflint															1	2.1
Possible strike-a-light	1	3.53														
Groundstone fragment																
Utilized flake																
Iron Rock >1/4 inch	5166	2168	2005	8799	5375	2837.7	308	1430.5	5060	2714.0	1690	1146.0	7161	3067.0	5663	1315.0
Iron Rock <1/4 inch		5095		5436		6248		**		8750.0		4260.0		3300.0		7670.0
Sandstone	7	88	9	144.6	51	220	14	1032	7	186.5	5	102.0			60	820.0
Silicified Wood			4	4.85					17	25.0	10	10.6			3	7.6
Pebbles	5	1	259	8.6	789	193			6	3.8	7	7.1	21	1.4	13	8.8
Other rock	6	4.4	20	98.7					17	25.0	10	10.6	14	10.7	1	6.5

** not determined, <1/4 inch material is primarily burnt clay

Unit	10	10	10A	10A	11	11	12	12	17	17	19	19	20	20	21	21	21-TR	21-TR
	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt	ct	wt
Chipping debris	37	2.0	24	7.8	11	7.5	21	1.2	52	8.6	41	5.9	201	9	135	5.1	38	2.1
Gunflint fragment													1	3.7				
Gunflint																		
Possible strike-a-light			1	6.9														
Groundstone fragment			1	171.6	1	27.5												
Utilized flake	1	3.8																
Iron Rock >1/4 inch	2583	1411.0	1856	786.0	3962	1971.0	3259	1750.0	4305	4755	2890	2317	4946	2359	1562	1376	915	414
Iron Rock <1/4 inch		5275.0		2643.0		7160.0		4850.0		7050		4790		10875		6005		1855
Sandstone	19	155.0			9	159.8	3	4.8	26	540.7	19	256	5	1.2	7	16.9		
Silicified Wood	2	0.6			2	4.0	3	2.4	13	101	1	0.1	2	0.3				
Pebbles	7	0.8	9	1.2	4	3.5	3	1.5	107	16.6	32	13.7	9	3.1	33	132.8	2	1
Other rock	6	0.8	4	1.7	2	4.0	4	2.3	13	101	17	5.2	1	0.1	12	0.6	9	0.2

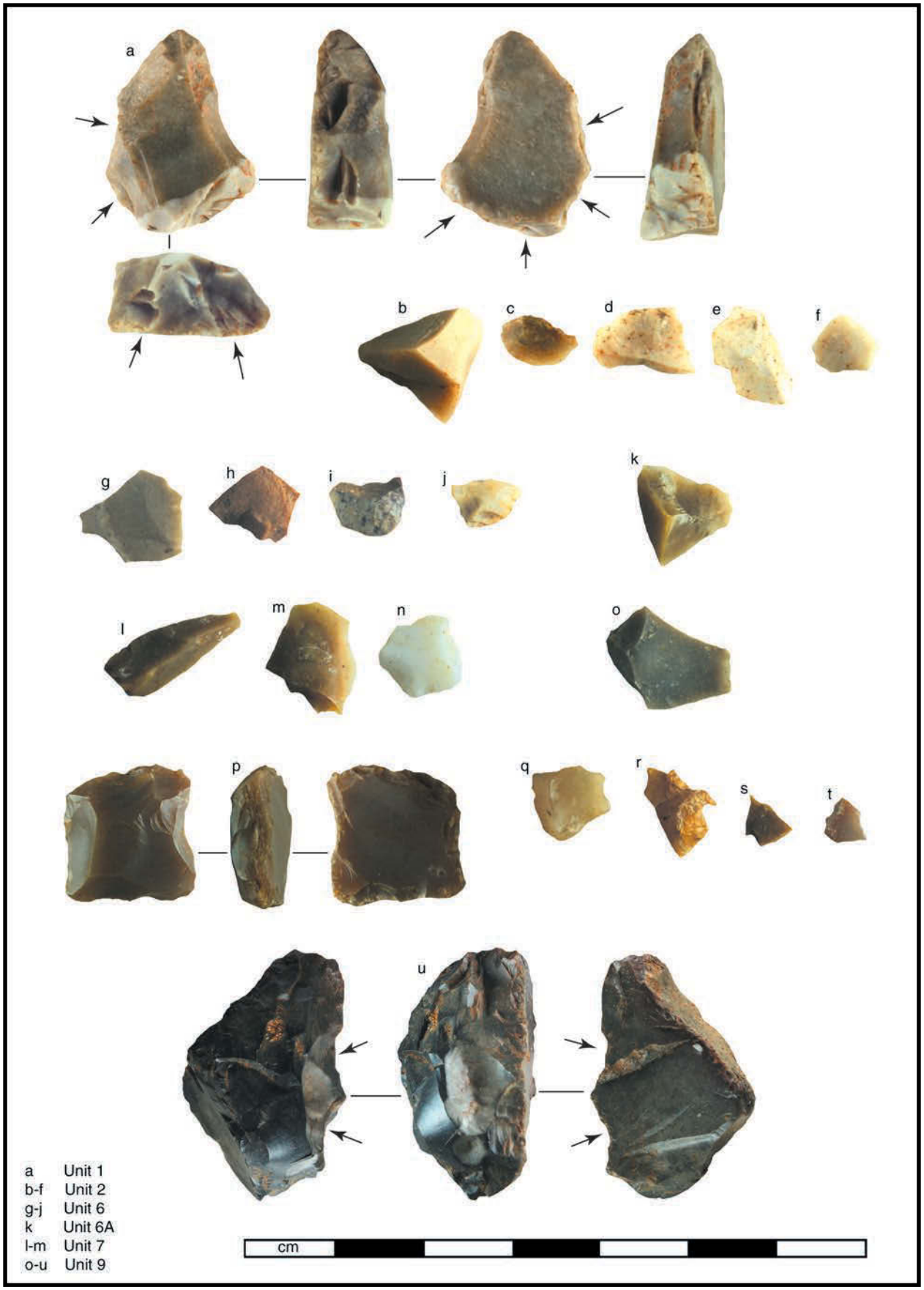


FIGURE 73A. Lithics—chipped stone: possible stike-a-lights (a, u), gunflint (p), chipping debris (b-o, q-t).

FIGURE 73B. Lithics—chipped stone: possible modified flakes (a-b), possible gunflint fragment (c), chipping debris (d-p).

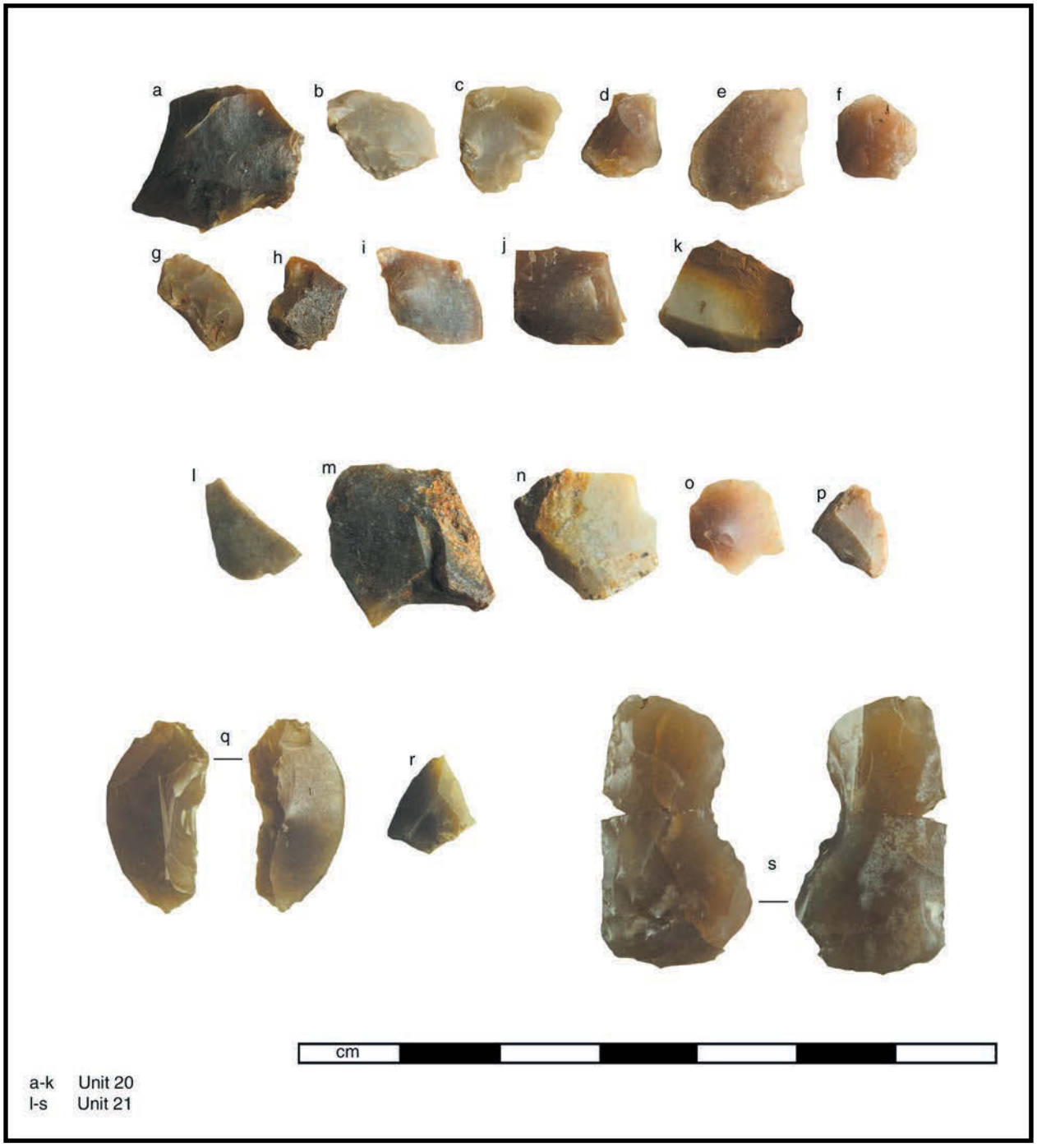


FIGURE 73C. Lithics—chipped stone: chipping debris (a-r), gunflint fragment (s).

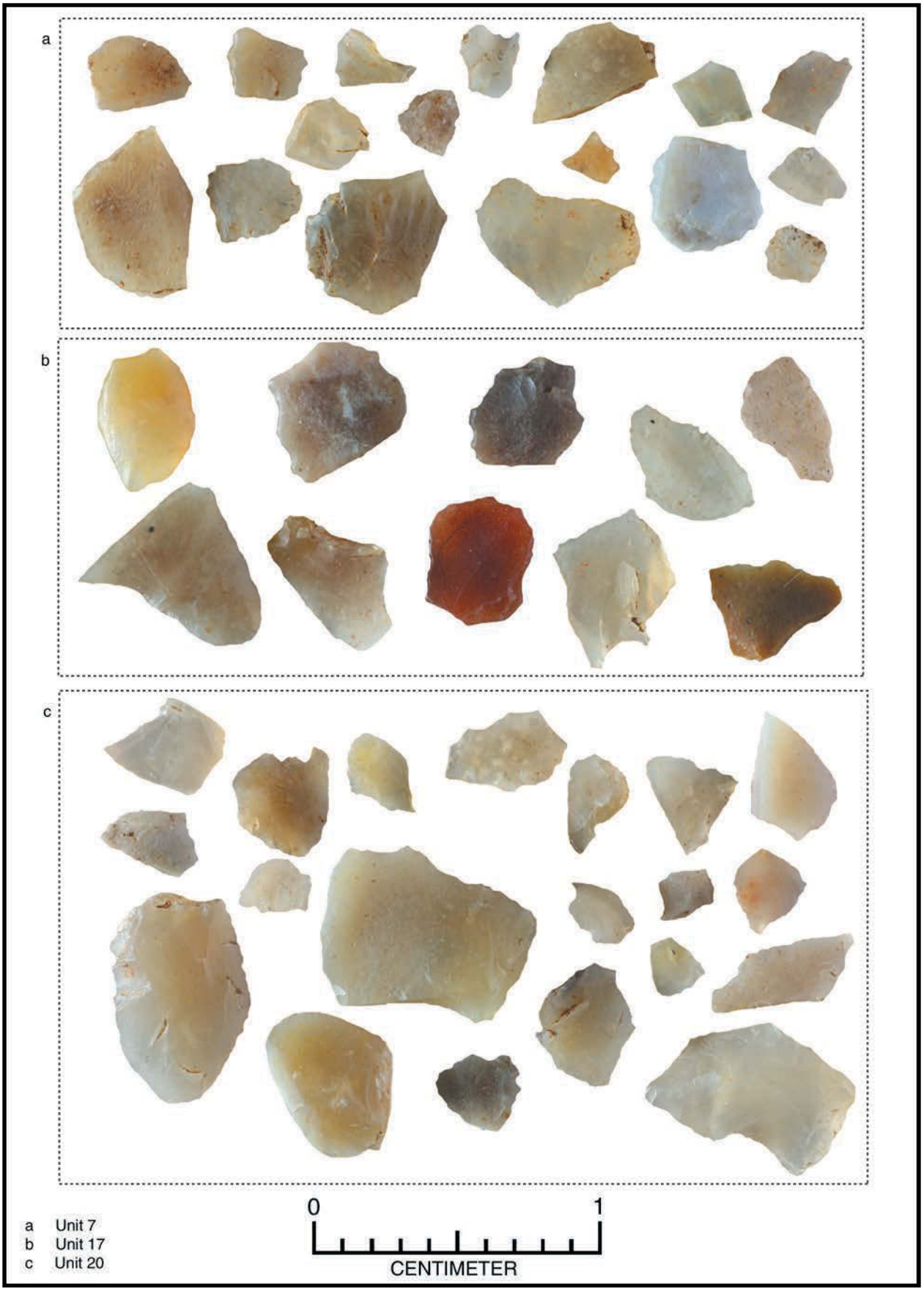


FIGURE 7D. Lithics—chipped stone: <1/4 inch chipping debris (a-c).

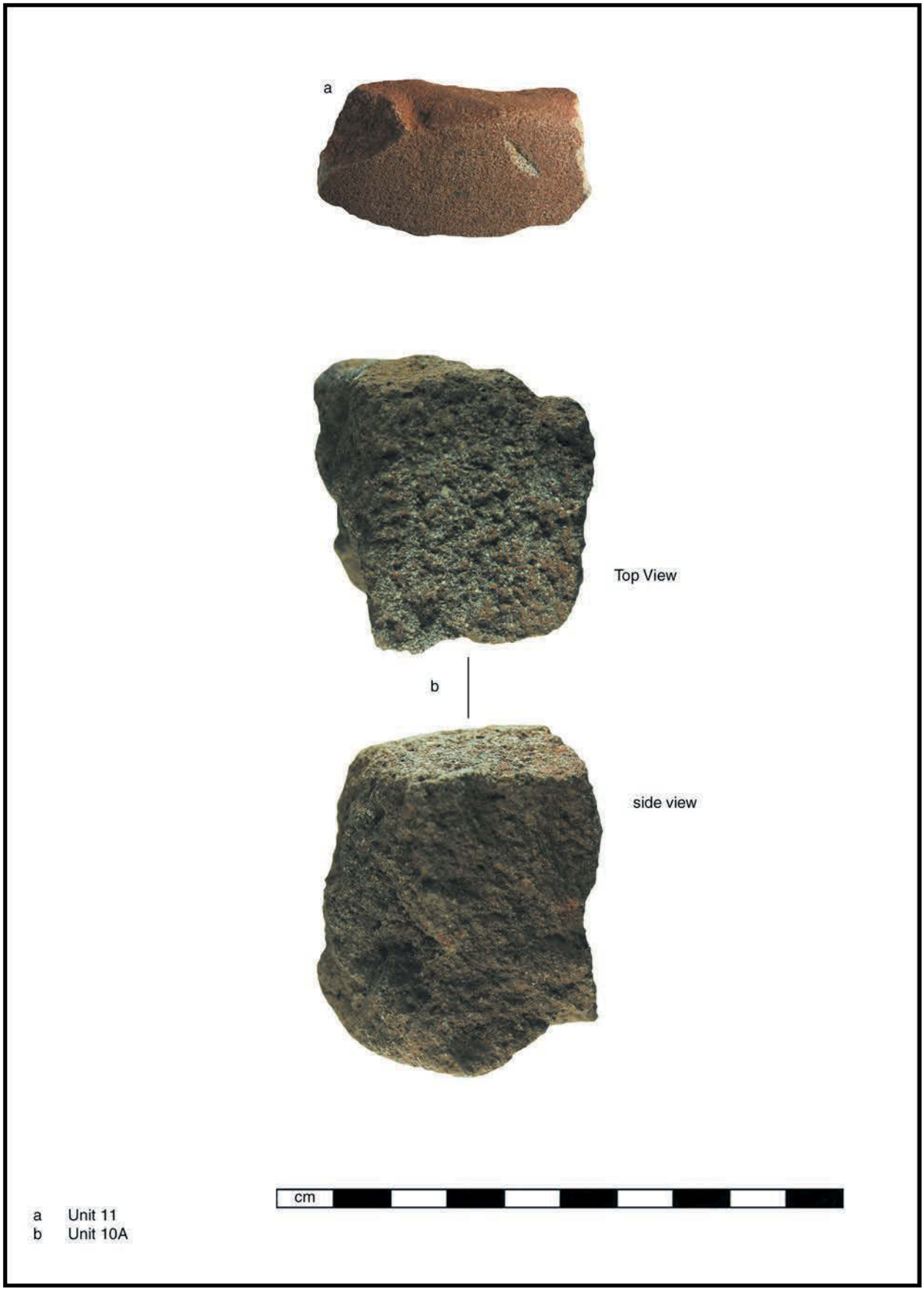


FIGURE 74. Lithics—groundstone: *mano* fragment (a), *metate* fragment (b).

The naturally occurring lithics recovered during the current project year include ironstone concretions (Figure 75), sandstone (Figure 76), and silicified or petrified wood (Figure 77). With the possible exception of a fist-sized fragment of ironstone concretion [Figure 75E(c)], none of the natural lithics recovered during the current project appears to have been modified. The aforementioned ironstone concretion appears to have been shaped by direct percussion, but this could have occurred during the excavation of wall trenches for the palisade wall of the presidio. The more intensive documentation of ironstone concretions may be relevant for the current project given the possibility that iron might affect the results of the geophysical survey techniques. Ironstone concretions come in a variety of shapes and textures (Figure 75A-E).

The tabular sandstone fragments are far less numerous than the ironstone concretions (Table 19). Pete Gregory has suggested that these tabular fragments were brought to Los Adaes to be used as chinking for the walls of the structures. There is an outcrop of this sandstone within two miles of Los Adaes. It is interesting that while numerous smaller fragments of ironstone concretions were recovered from the units excavated in the current project, this is not the case for the tabular sandstone (Table 19). In fact, the highest density of sandstone is from Unit 9, which was located just outside of one of the barracks buildings.

The distribution of silicified wood suggested that it is probably naturally occurring at the site, and therefore is most concentrated in the area of the most intense dumping, which in this case is Unit 17.

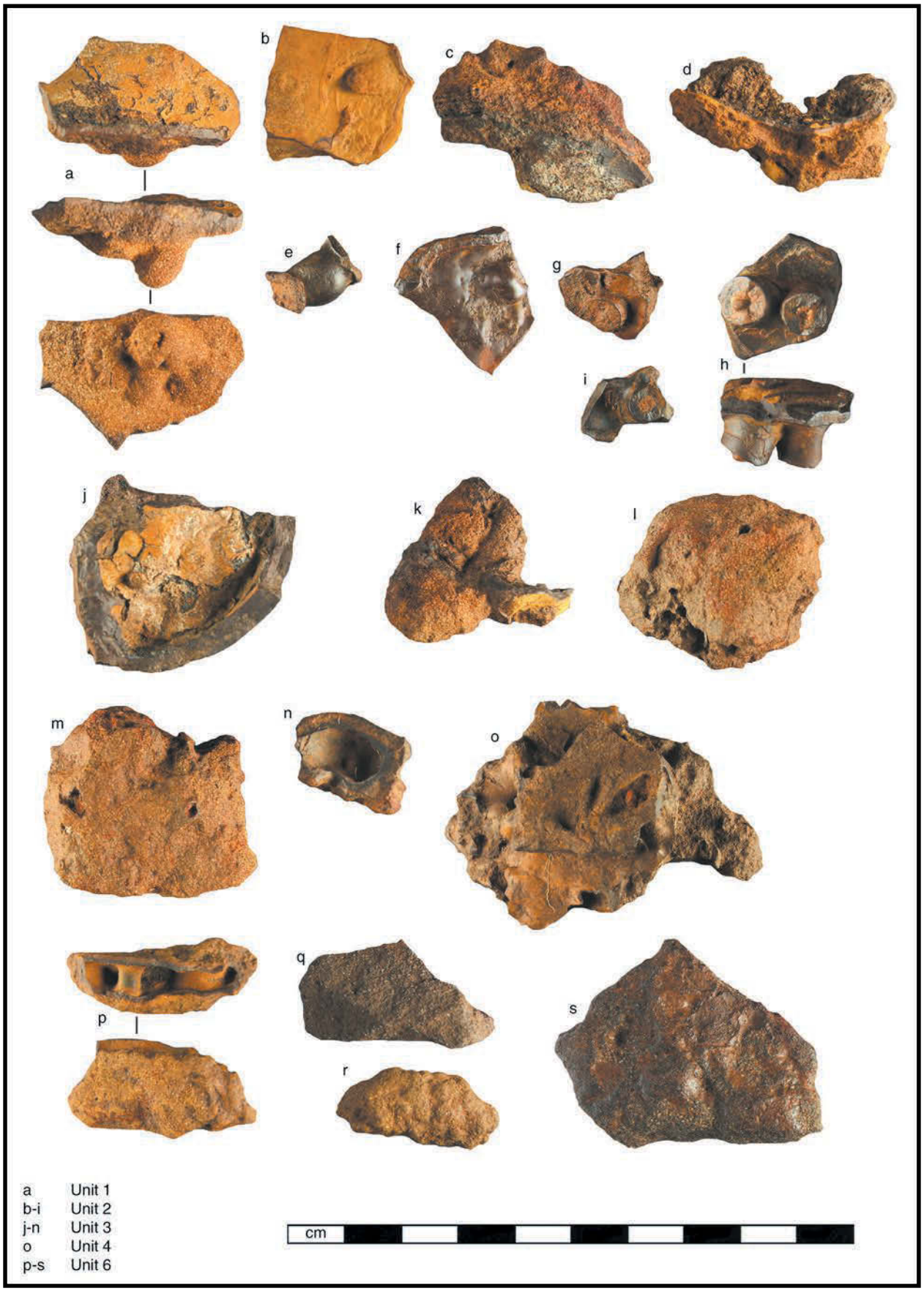


FIGURE 75A. Lithics—ironstone concretions.

FIGURE 75B. Lithics—ironstone concretions.

FIGURE 75C. Lithics—ironstone concretions.

FIGURE 75D. Lithics—ironstone concretions.

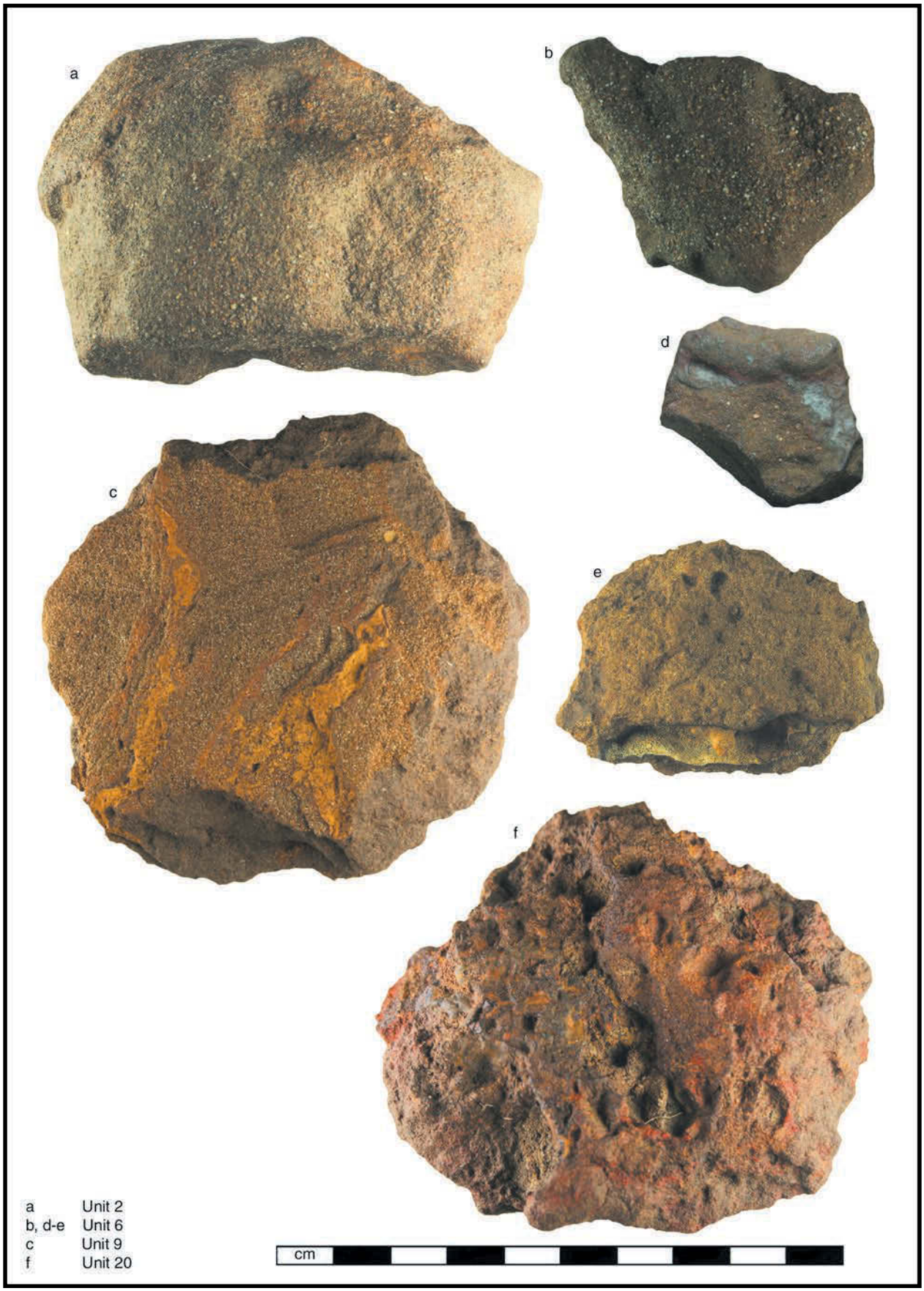


FIGURE 75E. Lithics—ironstone concretions.

FIGURE 76A. Lithics—sandstone.

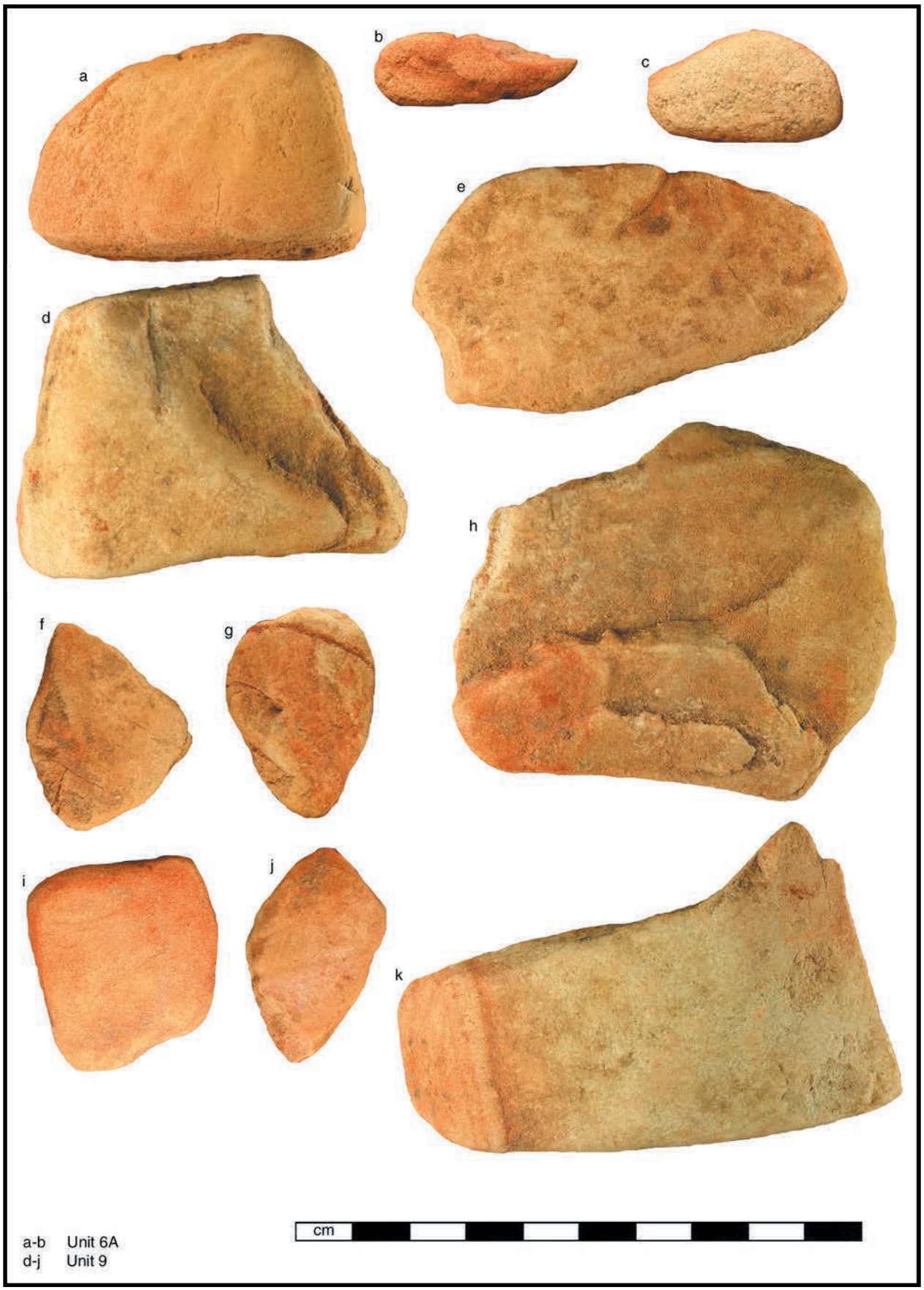


FIGURE 76B. Lithics—sandstone.

FIGURE 76C. Lithics—sandstone.

FIGURE 76D. Lithics—sandstone.

FIGURE 76E. Lithics—sandstone.

FIGURE 76F. Lithics—sandstone.

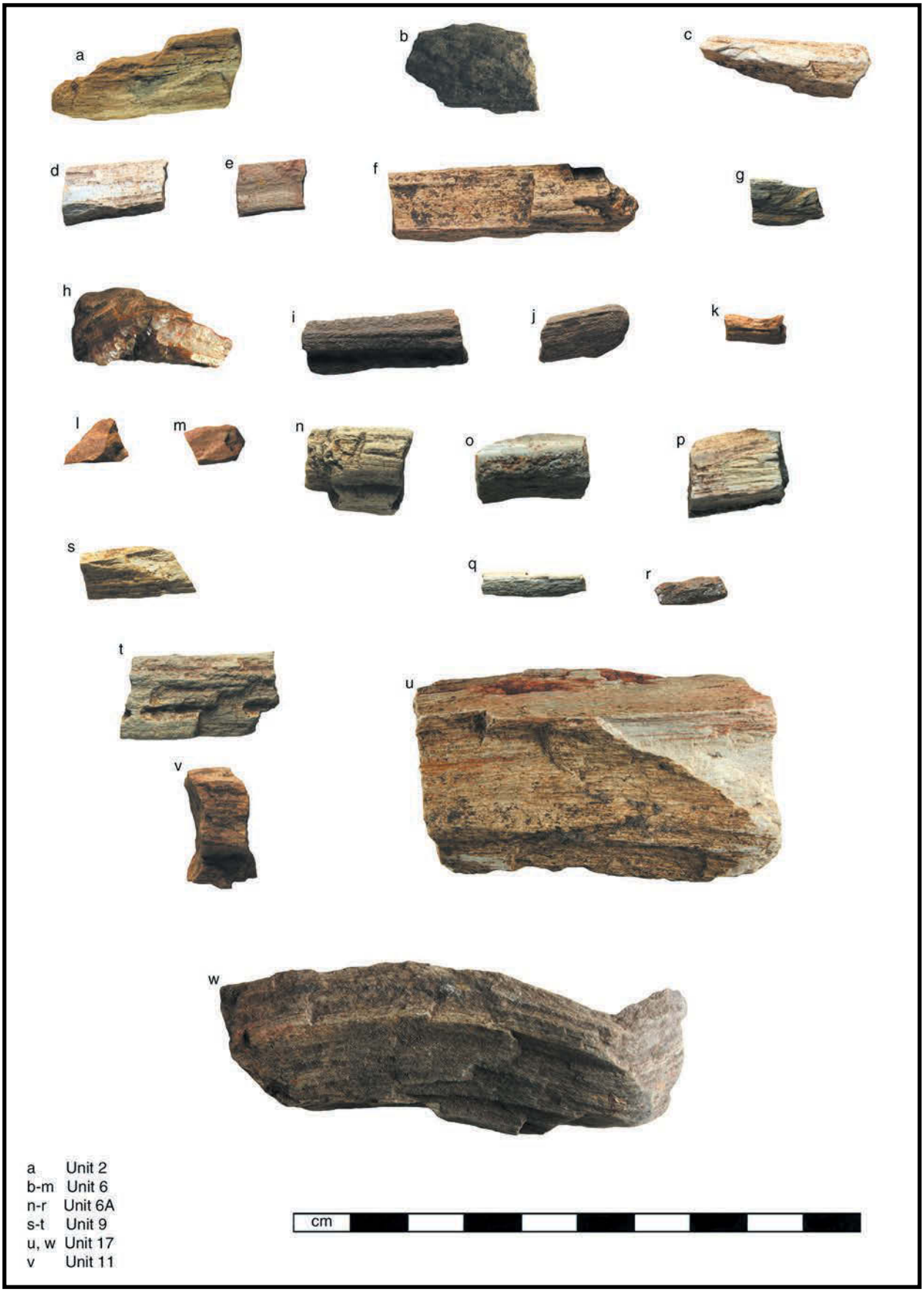


FIGURE 77. Lithics—silicified wood.

Discussion

The goal of the current project was to ground-truth anomalies delineated by various geophysical survey techniques in order to assess the accuracy of these techniques. The following discussion will focus primarily on what was learned about the accuracy of the geophysical techniques and also what was learned about the site history. Soil conditions will also be discussed, and comparisons to other Spanish colonial sites in the area will be addressed.

The overall results of the ground-truthing excavations indicated that magnetometry, MS, and resistivity were very successful in identifying cultural features at Los Adaes. These features included the palisade wall trench on the eastern and southern portions of the presidio (Units 6, 6A, 10, 10A, 19), the defensive ditch along the eastern side of the presidio (Unit 12), the southwest bastion (Unit 2), a circular feature along the wall of one of the southern barracks (Unit 3), a possible hearth or earth oven area inside another of the southern barracks (Unit 4), the eastern wall of an eastern barracks building (Unit 9), and the possible western wall of the subaltern's barracks (Units 20 and 21).

The palisade wall trench was clearly delineated by all three techniques along the eastern and southern edges of the presidio, and Units 6, 6A, 10, 10A, 11, and 19 demonstrated that the palisade wall trench was indeed where the geophysical survey techniques had determined it to be. The palisade wall trench in the area of Units 6, 6A, 10, 10A, and 11 had previously been identified by Pete Gregory's excavations in 1979, but the location of the timbers and rebar which marked the palisade was thought, at first, to have created iron enriched soil conditions which, in turn, could be mistaken for the palisade trench. Ground-truthing of this area clearly indicated that this was not the case. More importantly, the geophysical survey delineated a part of the palisade wall which had not been identified by Gregory, and was not in line with the modern timbers and rebar (Unit 19). Compacted surfaces were observed in Units 10, 10A, and 11, but not in Units 6 and 6A. It was determined that much of Units 6 and 6A included one of Gregory's test units, but Gregory's test units were not encountered in Units 10, 10A, and 11, which may explain the lack of compacted surfaces observed in Units 6 and 6A. Unit 19 was excavated in this area, and the palisade trench was clearly apparent. The new location of the southwestern portion of the south wall led us to the conclusion that the southwestern bastion was not as intact as had been otherwise thought, and had been impacted significantly by erosion.

A linear geophysical anomaly was observed in the area of the defensive ditch along the eastern palisade wall and this linear anomaly was verified by the excavation of Unit 12. Red clay deposits mixed with loamy soils and containing a high density of artifacts was observed in the excavations, and soil probing indicated that this cultural deposit went to a depth of 75 cm bs. The identification of gley soil deposits near the base of the cultural deposit suggests that the ditch may had held standing water at some time.

The two units in the area of the southwestern bastion verified the geophysical survey results in that a linear anomaly was observed in Unit 1 and a large build up of cultural deposits was observed in Unit 2. The large pile of cultural deposits in the Unit 2 area is consistent with the construction of earthen platforms on which to set the cannons in the bastion of a presidio. The cannons would not have set at ground level, but would have been raised. The deposits identified in Unit 2 appear to be re-deposited trash deposits and the profile walls of the unit indicate lenses of dumping. Artifact size is small, and artifact density is high—particularly glass seed beads, which is interesting. The Unit 1 anomaly was clearly identified during excavation, but its interpretation is not as clear. In fact, the function and/or origin of this anomaly has not been determined.

The units excavated in the area of three barracks buildings—Units 3, 4, 7, 9, 20, and 21—were also quite successful in verifying the anomalies identified by the geophysical survey. The excavation of Unit 3 revealed an area of *in situ* burning and high artifact density where an anomaly was delineated by the geophysical survey. The anomaly in the area of Unit 4 was defined by a very high density of burnt clay fragments with vegetal fiber inclusions. Some of the burnt clay fragments had flat surfaces, and two fragments can be described as corner fragments as they have perpendicular flat surfaces. These fragments are not brick fragments, but rather seem to part of a massive clay object, possibly a hearth or even some type of earth oven inside the structure, as depicted in a 1770-1780 *casta* painting (Katzew 2004:25). There was a general lack of trash deposits in Unit 4, that is, there was a low density of ceramics, animal bone, and ironstone concretions.

The excavation results of Unit 7 did not verify the linear anomaly indicated by the geophysical survey, but a post mold in Unit 9 was observed in the area of the linear geophysical anomaly. Compacted soil was observed in the south half of Unit 7 and chipping debris indicated gunflint maintenance activity. Unit 9 artifacts indicated a dumping area with large quantities of all categories of artifacts. The post mold in Unit 9 was located in the west wall of the unit and suggests the location of the east wall of the barracks building.

The geophysical linear anomaly observed in the area of Units 20 and 21 was verified by excavation, but the interpretation of this anomaly is not certain. The prepared clay surface of Unit 20 is similar to the prepared clay surfaces observed in Units 10, 10A, and 11, and therefore may be located adjacent to the western palisade wall and outside of the officer's barracks. This interpretation would suggest that the linear anomaly was associated with the west wall of the officer's barracks. Soil probing failed to identify a wall trench for the western palisade wall. Pete Gregory had also tried to locate the western palisade wall with a roughly east-west trench, but was unable to identify the trench. It was suggested that perhaps erosion has erased any remnants of the western wall in this area, but soil probing indicated a white silt/silty loam horizon at roughly the same depth for the areas of Unit 6, and Units 20 and 21, suggesting that erosion/stability conditions were roughly the same for the areas. The palisade wall trench was almost a meter deep in the Unit 6, 6A area, so it is reasonable to suggest that the palisade wall trench would be just as deep in the Unit 20 area. But, of course, if the western palisade wall trench were just as deep as the eastern palisade wall trench, the geophysical survey should have identified it. The western palisade wall remains a mystery.

The artifacts recovered during the current project are very consistent with previous investigations. The proportions of American Indian and European/European American/Asian ceramics are very similar, and even the proportions of the various European/European American ceramics are very much the same, as are the proportions of seed bead color categories (c.f. Gregory 2005; Avery 2005a-c, 2011). Hand wrought iron nails dominated the metal assemblage from the current project, as in previous years (see Blaine and Avery 2005). But we have not reached the point of redundancy in terms of artifacts and several new artifact types were recovered during the current project, which include a rear sight from a long arm, a glass pendent, a flat plumbiferous button, an argentiferous ring fragment, and a possible pottery coil fragment. Burnt mussel shell hinge remains—the possible by-product of making shell temper—were concentrated in Unit 9 and the possible pottery coil fragment adds to the possibility that pottery was being made on site. This is still a tentative interpretation, but intriguing nonetheless.

As for other artifacts, the faunal analysis did not identify any species which had not been recovered in previous excavations at Los Adaes. LeeAnna Schniebs reports in Appendix 2 that the following were identified in her faunal analysis: fish (n=1), indeterminate bird (n=1), canid (n=4), indeterminate artiodactyl (sheep/goat or deer; n=33), pig (n=2), deer (n=7), and bovid (n=234). While there has been substantial faunal analysis of the Los Adaes assemblage in the past, there has only been minimal macrobotanical analysis, and as a result, Leslie Bush's macrobotanical analysis in Appendix 3 identified a number of new species for Los Adaes, including squash, sunflower, and grape.

The fine screening of excavated deposits indicated that glass seed beads, lead processing debris, and chert/flint chipping debris are widely scattered at the site, with certain areas of concentration. The distribution of tabular sandstone fragments (particularly in Unit 9) suggests that they were used as chinking in wall construction as hypothesized by Pete Gregory, and the concentration of >1/4 inch ironstone concretions in Unit 2 (Figure 79) suggests that they were used to create the southwestern bastion. It is not clear if the ironstone concretions had any affect on the geophysical sensing at the site—Unit 20 has a particularly large amount of <1/4 inch ironstone concretions (Figure 78). Some of the ironstone concretions are quite dense, and while others seem to be more like sand particles bonded together by the iron, and still others are quite soft and powdery.

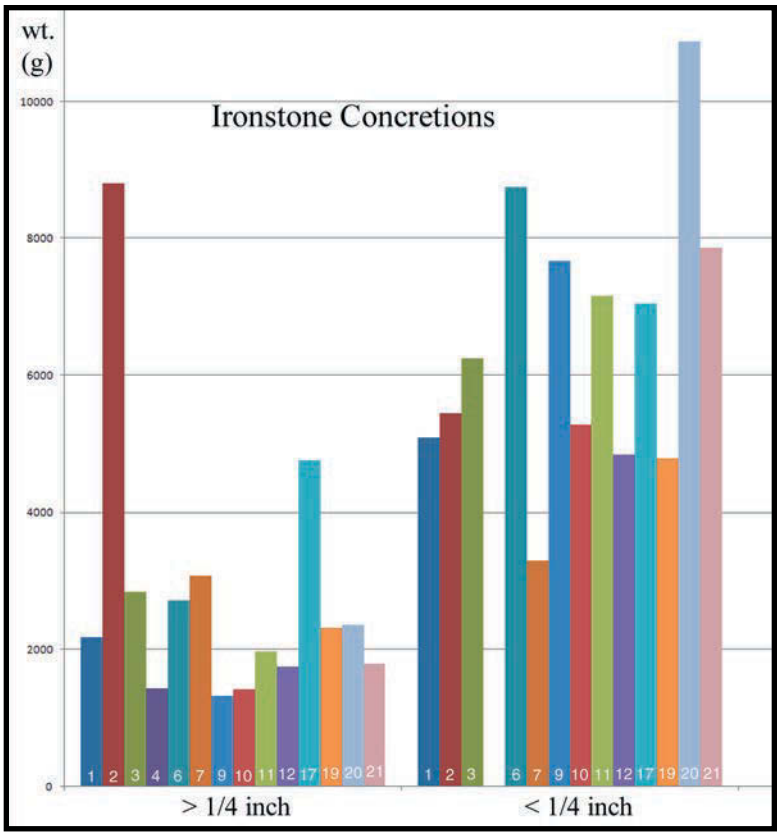


FIGURE 78. Ironstone concretion distribution.

The artifacts recovered from Los Adaes during the current project are generally similar to other Spanish colonial sites near the eastern extent of Spanish Texas, especially Mission Dolores (which is the closest, located at San Augustine, Texas), but also Mission Rosario, Mission Espíritu Santo, and Presidio San Agustín, which are located closer to the Gulf of Mexico (Tunnell and Ambler 1967:75; Carlson 1994:91; Walter 2007:85). There are less French and British goods represented at Spanish colonial sites to the west, including the San Antonio missions and Presidio and Mission San Sabá (Avery 2005a). The main similarity for most Spanish colonial sites on the eastern border is the predominance of the local American Indian pottery. Very fine quality chert suitable for gunflint manufacture is present in the San Antonio region, unlike the Los Adaes region. As a result, gunflints made of French flint and Central Texas chert are most common at Los Adaes. The strike-a-lights recovered from Los Adaes are also commonly made of Central Texas chert (Avery 2005b). The possible strike-a-lights recovered during the current project all appear to be made of Central Texas chert, and while the complete gunflint from the current project year also appears to be made of Central Texas chert, the gunflint fragment is clearly made of the honey colored flint generally ascribed to a French origin.

Very few of the Spanish mission and presidio sites have been the focus of geophysical survey. A geophysical survey at Mission Dolores included magnetometry, GPR (Bruseth, Osburn, and Pierson 2008), and EM-61 (Walker 2008) surveys. The very wet conditions and highly

ferruginous clay soils at Mission Dolores resulted in a limited success of the GPR survey, but the magnetometer identified intact colonial period deposits in an area that was thought to be completely disturbed. Also, the EM-61 survey identified an anomaly where a large pit feature was encountered during shovel testing. The site of Fort St. Louis and Presidio La Bahia near Matagorda Bay was also surveyed with a magnetometer. The adobe blockhouse and central structures were observed as anomalies, and this was used to guide excavations in search of the palisade trench, using the 1721 architects plan of the presidio (Bruseth et al. 2004).

Summary and Conclusion

The 2009 geophysical survey at Los Adaes yielded spectacular results, and the 2010 ground-truthing excavations verified the existence of most of the targeted anomalies. The extremely dry soil conditions prevented trowel excavation, but the two highly experienced excavators employed for the project were nevertheless able to discern areas of soil compaction. Soil probing was particularly useful once excavation units were opened and precluded expansion of the units in most cases. Portions of the eastern and southern palisade wall trench were identified, as well as the defensive ditch along the eastern wall. Anomalies related to interior structures were also verified, including the probably walls of an eastern and western barracks, and a burnt clay feature that may represent a hearth or cooking construct of some kind was identified inside one of the southern barracks buildings. Water screening through 1/16 inch window screen, while certainly labor intensive and time consuming both in the field and in the lab, is clearly a necessary component of excavations at Los Adaes to recover small glass beads, lead processing debris, and lithic chipping debris. Since the 1721 architect's plan and the 1767 engineer's map of Los Adaes were georeferenced with the anomalies identified by the geophysical survey, and the ground-truthing excavations verified most of the anomalies, it can be inferred that, for the most part, these two documents can serve as fairly accurate guides for the location of cultural features at Los Adaes and thus can be used both as management tools and as guides for future archaeological investigations at Los Adaes. Of course, the demonstration of the success of magnetometry, magnetic susceptibility, and electrical resistance in identifying cultural features indicates one or more of these techniques must also be a part of any future archaeological investigations at Los Adaes.

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APPENDIX 1

Photo Documentation of Project

The sod layer of every unit was shovel skimmed and screened through 1/4 inch hardware cloth, but all material was water screened. left to right, Mark Walters, Jameel Damlouji, Mike Hargrave.

Unit 1 at base of level 2, dark stains visible in northeast and southeast corners, linear anomalies along north and south walls not visible.

Unit 2, base of level 3, deposit lenses visible in east wall.

Bo Nelson excavating Unit 3. The extremely dry conditions preventing shovel skimming below the sod zone as levels were excavated by chunking out the levels in 5 cm increments with either a shovel or pick ax.

A feature is visible in the northeast corner of Unit 3, the feature was encountered half way through level, and consists of *in situ* burning and a concentration of bone and ceramic artifacts.

Unit 4 was characterized by large quantities of burnt clay that appeared to be part of a hearth or earth oven.

Unit 6 (to the east) and Unit 6a (1.0 x 0.5 m unit) was excavated in the area of one of Pete Gregory's excavation units. Rebar which holds the timbers marking the approximate location of the palisade wall of the presidio is visible in the northwesten area of the photo.

Staining from a postmold is visible along the west wall of Unit 9, indicating the location of the east wall of the barracks building.

Morris Jackson, Texas Volunteer Archeology Steward from Nacogdoches excavating Unit 11 under the watchful eye of Mark Walters.

Mark Walters (left) and Bo Nelson are preparing to connect Units 10 and 11 with Unit 10A as Pete Gregory looks on.

Jeff Girard (left) and Mike Hargrave (right) place a soil probe in the area of Unit 9.

Mike Hargrave, Jeff Girard, and Mark Walters, left to right, examine soil probe samples from Unit 4.

Excavation of Level 2, Unit 17, is paused to document a concentration of animal bone, ceramic, and glass artifacts in the southeast quarter of the unit.

Unit 20, to the east, is at 20 cm bs, and Unit 21 is at 10 cm bs in this photo. The linear feature at the juncture of the two units is quite distinct.

Mike Montgomery and Robert Caldwell at the water screen.

NSU was well represented with MAHR students Robert Caldwell and Thomas Parrie, and Pete Gregory, top to bottom. Rhonda Gauthier, an NSU graduate now working at Fort St. Jean Baptiste State Historic Site is closest to the camera.

Chaylon Woods (far right), NSU MAHR student is stirring the excavated material to make the water screening a little easier. Sherry Wagener and Kellye French are closest to the camera, along with Mitzi Roe on the near water screen. Pete Gregory and Robert Caldwell are at the far water screen.

Jessica Bush and Cheraki Williams have just dumped a bucket of water-soaked excavated deposits into the screen.

Mitzi Roe came back another day, this time with her son Tucker.

Tommy Adkins watches as more buckets are unloaded by Bo Nelson and Mike Hargrave.

Daniel Stout, Dennis Jones and his daughter Jenny, left to right.

Ray Berthelot, Nick Neylon, and Dennis Jones, left to right.

Daniel Stout, Dennis Jones and his daughter Jenny, and Jeff Girard's daughter Chelsea, front to back.

Tom Middlebrook (left), Texas Volunteer Archeological Steward visits with Jay C. Blaine (right) as Jay examines the metal artifacts from the excavations. Jay's wife, Jerrylee (middle) listens in.

SFA student workers Emily Williams, Jack Klug, Alyssa Berard, and Melanie Johnson, left to right.

Ashley Johnson volunteered to sort the water screened material at the SFA archaeology lab annex in the Mission Dolores Museum and Visitor's Center.

Amber Cochran, SFA archaeology lab intern, applies the top coat on artifact labels.

Heather Merchant, SFA Anthropology student, cuts out paper labels before putting them on artifacts.

APPENDIX 2

Faunal Artifacts—by LeeAnna Schniebs

Investigations in the spring of 2010 to ground truth a geophysical survey at Los Adaes (16NA16) yielded 2,511 faunal fragments from 14 1x1 meter units and two .5 x 1 meter units; this includes 37 pieces of bone that were point provenienced in seven of the units. Depths range from 0 to 30 centimeters BS (cm bs). Total weight of the sample is just over 1,878 grams, and consists mainly of unidentifiable small broken fragments from larger bones. Only 11.2% of the sample (n=282) is identifiable to family or species, while most of the remainder is grouped into class and size categories. A complete inventory of the faunal sample can be found in Table 1 and Table 2 summarizes the information.

Standard zooarchaeological identification techniques were employed in this analysis using comparative skeletal collections. Attributes include taxon, element and portion of that element, symmetry, age if possible, and burning. Weights of specimens were also recorded but are only provided as documentation for future reference to bone mass. The analysis presented herein is concerned with identifying the animals exploited and general subsistence preferences of the occupants at Los Adaes.

The faunal sample from the units suggests that domesticated animals provided their main protein and that few indigenous animals supplemented the diet. Identifiable faunal recovery is comprised of fish (n=1), indeterminate bird (n=1), canid (n=4), indeterminate artiodactyl (sheep/goat or deer; n=33), pig (n=2), deer (n=7), and bovid (n=234). Illustrations of these animals and the specific elements recovered are in Figures 1 through 6; element recovery is listed in Table 3 as well. The remainder consists of indeterminate vertebrate (n=20) and unidentifiable bone fragments from mammals of various sizes (n=2,209). It is surprising that more deer (*Odocoileus virginianus*) and/or sheep/goat (*Ovis*/*Capra*) bones were not recovered; as they were recorded in previous analyses from Los Adaes (see Pavao-Zuckerman 2001, Lee 1986, Avery 1995). However, some of the fragmented unidentifiable mammal bones may be their remains. Turtles, rabbits, wild and/or domesticated birds (such as turkey or chicken) are totally absent. The single bird bone fragment that was recovered may be the remains of a more recent deposit.

One fish element was recovered from Level 2 in Unit 2. The fish vertebra (Figure 1) could not be specifically identified because of slight fragmentation and lack of comparative material. This specimen is from a very small-sized individual (possible bait remnants). Many fish are common to the area, such as drum, bass, gar, and various catfish; channel catfish, alligator gar, and buffalo fish were identified in previous reports (see Pavao-Zuckerman 2001, Avery 1995, Lee 1986).

Table 1. Complete Inventory of Faunal Sample from Los Adaes (16NA16)

Lot	Unit	Level	Qty	Taxon	Elem/Por	Side	Age	Burn	Wt/g	Comments
3191	1	1	1	lg mam	unid			burn	0.1	
3192	1	2	5	lg mam	unid			burn	0.6	
3192	1	2	3	unid	unid			burn	0.2	
3193	1	3	7	bovid	tooth frag			not	2.5	
3193	1	3	7	lg mam	unid			burn	1.6	
3194	2	1	30	bovid	tooth frag			burn	5.1	
3194	2	1	19	lg mam	unid			burn	5.9	
3194	2	1	15	lg mam	unid			not	6.5	
3194	2	1	2	v.lg mam	l.b.frag			not	41.8	in 2 frags each
3195	2	2	1	bovid	rad dist	R	imm	not	29.8	no dx epiph
3195	2	2	1	bovid	phx3	L		not	8.3	
3195	2	2	1	fish	vert	A		not	0.05	poss v.sm catfish
3195	2	2	1	unid	unid			burn	0.01	poss sm mam l.b.frag
3195	2	2	2	v.lg mam	l.b.frag			burn	10.9	
3195	2	2	23	v.lg mam	unid			burn	13	
3195	2	2	5	v.lg mam	unid			not	10	
3196	2	3	4	bovid	tooth frag			not	0.6	
3196	2	3	8	lg mam	unid			burn	0.7	
3196	2	3	18	lg mam	unid			not	1.3	
3196	2	3	8	unid	unid			burn	0.1	
3196	2	3	8	unid	unid			not	0.1	
3199	3	2	2	bovid	tooth frag			not	0.4	
3199	3	2	75	lg mam	unid			burn	10.6	
3199	3	2	62	lg mam	unid			not	6.1	
3199	3	2	45	mammal	unid			burn	2.1	
3199	3	2	50	mammal	unid			not	1.7	
3199	3	2	2	v.lg mam	rib frag			not	15.2	
3199	3	2	3	v.lg mam	vert frag			not	6.5	
3199	3	2	2	v.lg mam	l.b.frag			not	4.1	spir frac
3202	4	2	2	lg mam	unid			burn	0.3	
3204	6	1	7	artiodactyl	tooth frag			not	0.9	
3204	6	1	11	lg mam	unid			burn	2.2	
3204	6	1	10	lg mam	unid			not	1.5	
3204	6	1	15	v.lg mam	unid			not	11.3	
3205	6	2	75	bovid	tooth frag			not	17.1	
3205	6	2	19	lg mam	unid			burn	6.1	
3205	6	2	20	lg mam	unid			not	2	
3205	6	2	90	mammal	unid			burn	4.2	
3205	6	2	135	mammal	unid			not	5.6	
3205	6	2	22	v.lg mam	unid			not	17.5	
3207	6A	1	7	lg mam	unid			burn	1.2	
3207	6A	1	1	lg mam	unid			not	0.3	
3207	6A	1	60	mammal	unid			burn	0.7	
3208	6A	2	9	bovid	tooth frag			not	1.8	
3208	6A	2	8	lg mam	unid			burn	2.2	
3208	6A	2	24	lg mam	unid			burn	1.9	
3208	6A	2	20	lg mam	unid			not	4.5	
3208	6A	2	15	lg mam	unid			not	1.4	
3208	6A	2	70	mammal	unid			burn	2.7	
3208	6A	2	90	mammal	unid			not	3.2	
3208	6A	2	4	v.lg mam	l.b.frag			not	17	

Table 1. Complete Inventory of Faunal Sample from Los Adaes (16NA16)

Lot	Unit	Level	Qty	Taxon	Elem/Por	Side	Age	Burn	Wt/g	Comments
3208	6A	2	14	v.lg mam	unid			not	25.9	
3210	7	1	7	lg mam	unid			burn	1.5	
3210	7	1	14	mammal	unid			burn	0.4	
3213	9	1	6	bovid	tooth frag			not	12.6	
3213	9	1	6	lg mam	unid			burn	1.5	
3213	9	1	30	lg mam	unid			not	10.2	
3213	9	1	1	pig	tooth frag			not	0.7	
3213	9	1	3	v.lg mam	l.b.frag			burn	2.4	
3213	9	1	3	v.lg mam	l.b.frag			not	20.7	
3213	9	1	4	v.lg mam	unid			not	6.4	
3214	9	2	1	deer	acetab+pubis frag	R		not	2.9	
3214	9	2	1	deer	scap neck frag	L		not	10.3	
3214	9	2	1	deer	rad shaft frag	L		not	3.7	spir frac
3214	9	2	1	deer	ulnar notch	L		not	1.5	
3214	9	2	1	deer	tib shaft frag			not	5.1	spir frac
3214	9	2	1	deer	calc px epiph	L	imm	not	1.1	unfused
3214	9	2	1	deer	tooth frag			not	0.2	
3214	9	2	48	lg mam	unid			burn	16.1	
3214	9	2	2	lg mam	vert frag			not	1.8	
3214	9	2	23	lg mam	l.b.frag			not	32.3	spir frac
3214	9	2	195	lg mam	unid			not	117.3	
3214	9	2	9	lg mam	unid			not	5.4	
3214	9	2	1	med bird	hum prox	R		not	1.3	crow-size
3214	9	2	1	pig	M3 up	L	imm	not	5.8	unerupted
3214	9	2	5	v.lg mam	unid			not	22.6	
3214	9	2	9	v.lg mam	unid			not	50.8	
3214	9	2	3	v.lg mam	unid			not	12.5	
3216	10	1	3	artiodactyl	tooth frag			not	0.2	
3216	10	1	1	bovid	tooth frag			not	0.5	
3216	10	1	3	lg mam	unid			burn	0.6	
3216	10	1	2	lg mam	unid			not	1.8	
3216	10	1	78	mammal	unid			burn	1	
3216	10	1	13	mammal	unid			not	0.3	
3217	10	2	9	bovid	tooth frag			not	1.5	inc. incisor frags
3217	10	2	4	lg mam	unid			burn	0.7	
3217	10	2	60	mammal	unid			burn	1.4	
3217	10	2	15	mammal	unid			not	0.8	
3219	10A	1	1	canid	PM4 lo	R		not	0.1	
3219	10A	1	1	canid	PM4 up	R		not	0.1	
3219	10A	1	2	lg mam	unid			burn	0.4	
3219	10A	1	10	mammal	unid			burn	0.1	
3220	10A	2	11	bovid	tooth frag			not	0.7	
3220	10A	2	1	canid	canine tooth frag			not	0.1	
3220	10A	2	1	canid	PM4 lo	L		not	0.1	
3220	10A	2	45	mammal	unid			burn	0.6	
3220	10A	2	30	mammal	unid			not	0.4	
3222	11	1	15	artiodactyl	tooth frag			not	0.8	
3222	11	1	2	artiodactyl	tooth frag			not	0.3	
3222	11	1	10	lg mam	unid			burn	1.1	
3222	11	1	2	lg mam	unid			burn	0.5	
3222	11	1	2	lg mam	unid			not	2.7	

Table 1. Complete Inventory of Faunal Sample from Los Adaes (16NA16)

Lot	Unit	Level	Qty	Taxon	Elem/Por	Side	Age	Burn	Wt/g	Comments
3222	11	1	15	mammal	unid			burn	0.3	
3222	11	1	50	mammal	unid			not	0.6	
3223	11	2	1	bovid	mtpod shaft frag			not	11.6	
3223	11	2	2	bovid	tooth frag			not	10.2	
3223	11	2	5	lg mam	unid			burn	1	
3223	11	2	8	lg mam	unid			not	8.3	
3225	12	1	13	bovid	tooth frag			not	2.8	
3225	12	1	12	lg mam	unid			burn	3	
3225	12	1	1	lg mam	petrous frag			not	2.5	poss deer
3225	12	1	12	lg mam	unid			not	6.4	
3227	17	1	1	bovid	fem shaft frag			not	23	
3227	17	1	11	lg mam	unid			burn	3.8	
3227	17	1	22	lg mam	unid			not	1.9	
3227	17	1	120	mammal	unid			burn	3.1	
3227	17	1	90	mammal	unid			not	2.8	
3227	17	1	14	v.lg mam	l.b.frag			not	82.8	
3227	17	1	29	v.lg mam	unid			not	16	
3228	17	2	1	artiodactyl	nav-cub frag	R		not	2	poss sheep/goat or deer
3228	17	2	5	artiodactyl	tooth frag			not	2.3	poss sheep/goat or deer
3228	17	2	1	bovid	mtpod shaft frag			not	17	
3228	17	2	1	bovid	phx2 dist	R		not	8.7	
3228	17	2	24	bovid	tooth frag			not	10.2	
3228	17	2	9	lg mam	unid			burn	2.7	
3228	17	2	84	lg mam	unid			not	25.7	
3228	17	2	1	v.lg mam	l.b.frag			burn	2.5	
3228	17	2	5	v.lg mam	l.b.frag			not	115.5	
3228	17	2	14	v.lg mam	unid			not	32.6	
3230	19	1	1	bovid	tooth frag			not	0.4	
3230	19	1	2	lg mam	unid			burn	0.2	
3230	19	1	1	v.lg mam	unid			not	3.6	
3231	19	2	16	bovid	tooth frag			not	7.1	
3231	19	2	9	lg mam	unid			burn	1.4	
3231	19	2	3	v.lg mam	unid			burn	1.9	
3231	19	2	30	v.lg mam	unid			not	16.4	
3233	20	1	1	v.lg mam	unid			not	1.5	in 2 frags
3234	20	2	23	lg mam	unid			burn	7.1	
3236	21	1	1	bovid	tooth frag			not	0.2	
3193-1	1	3	1	lg mam	l.b.frag			not	1	in 2 frags
3194-3	2	10cmbs	1	bovid	M3 up	R		not	42.4	slight wear only
3194-4	2	10cmbs	1	bovid	M2 up	R		not	45.9	in frags; inc. alveolar frags
3199-5	3	21cmbs	1	v.lg mam	unid			not	3.2	in 2 frags
3199-8	3	19cmbs	1	v.lg mam	innominate frag			not	21.6	bovid or pig? in 2 frags
3199-9	3	18cmbs	2	v.lg mam	unid			not	8	
3205-3	6	12cmbs	1	v.lg mam	unid			not	9.7	
3205-9	6	20cmbs	1	bovid	M3 lo	L		not	5.7	
3205-9	6	20cmbs	1	bovid	M3 up	R		not	15	slight wear only
3205-9	6	20cmbs	2	bovid	tooth frag			not	13.6	
3205-9	6	20cmbs	4	v.lg mam	unid			not	2.7	prob bovid alveolar frags
3208-3	6A	19cmbs	5	v.lg mam	unid			not	31.2	
3214-1	9	13cmbs	1	bovid	phx2 frag	L		not	12.2	almost complete; in 2 frags
3214-2	9	13cmbs	1	bovid	tib shaft frag	R		not	25.5	spir frac

Table 1. Complete Inventory of Faunal Sample from Los Adaes (16NA16)

Lot	Unit	Level	Qty	Taxon	Elem/Por	Side	Age	Burn	Wt/g	Comments
3214-2	9	13cmbs	1	v.lg mam	l.b.frag			not	3.5	
3214-4	9	15cmbs	3	bovid	alveolar frag			not	6.9	in frags
3214-4	9	15cmbs	1	bovid	mand frag	R		not	35.2	in 2 frags
3214-4	9	15cmbs	1	bovid	M1 lo	R	imm	not	0	erupting; in 2 frags
3214-4	9	15cmbs	1	bovid	M2 up	L	imm	not	23.2	slight wear only
3214-5	9	16cmbs	1	bovid	scap head	R		not	35.2	
3228-2	17	10to18	1	bovid	mttarsal	R		not	316.1	
3228-7	17	18cmbs	1	bovid	rad shaft frag			not	68.9	
3228-8	17	18cmbs	2	v.lg mam	unid			not	6.6	
3228-9	17	19cmbs	2	v.lg mam	l.b.frag			not	25.2	

Table 2. Summary of Los Adaes (16NA16) Faunal Sample

Taxon (Common Name, Scientific Name)	NISP	MNI	Weight (grams)	Percent of Sample	Burned	Not Burned
Unidentifiable vertebrate (Vertebrata)	20		0.41	0.797	12	8
Indeterminate fish (Osteichthyes)	1	1	0.05	0.04		1
Indeterminate medium-size bird (Avian)	1	1	1.3	0.04		1
Dogs and relatives (Canid)	4	1	0.4	0.16		4
Even-toed ungulates (Artiodactyla)	33		6.5	1.315		33
Pig (*Sus scrofa*)	2	1	6.5	0.08		2
Deer (*Odocoileus virginianus*)	7	1	24.8	0.279		7
Bovid (*Bos* sp.)	234	1	817.9	9.318	30	204
Mammal (size-indeterminate Mammalia)	1080		32	43.01	607	473
Large mammal (large Mammalia)	891		315.9	35.483	339	552
Very large mammal (very large Mammalia)	238		673.1	9.478	32	206
TOTAL	2511		1878.86	100	1020	1491

Table 3. Faunal Elements Recovered from Los Adaes (16NA16)

Taxon (Common Name, Scientific Name)	Element										
	unidentifiable	cranial	tooth	vertebra	scapula	rib	pelvis	front long bone	rear long bone	long bone fragment	podial or phalanx
Unidentifiable vertebrate (Vertebrata)	20										
Indeterminate fish (Osteichthyes)				1							
Indeterminate medium-size bird (Avian)								1			
Dogs and relatives (Canid)			4								
Even-toed ungulates (Artiodactyla)			32								1
Pig (*Sus scrofa*)			2								
Deer (*Odocoileus virginianus*)			1		1		1	2	1		1
Bovid (*Bos* sp.)		4	219		1			2	3	2	3
Mammal (size-indeterminate Mammalia)	1080										
Large mammal (large Mammalia)	864	1		2						24	
Very large mammal (very large Mammalia)	193			3		2	1			39	
TOTAL	2157	5	258	6	2	2	2	5	4	65	5

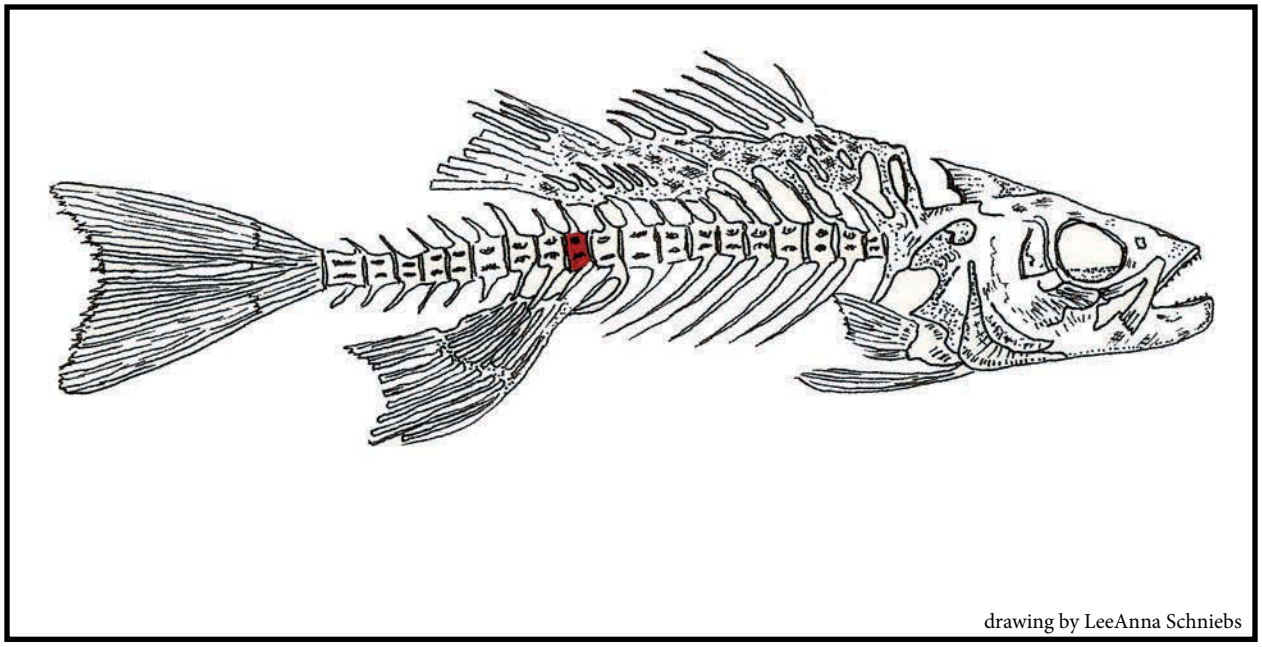

FIGURE 1. One vertebra from an unidentifiable fish.

The unidentifiable bird bone is a humerus fragment (Figure 2) from a medium-sized individual, noted in the comments as crow-size. Recovered from Level 2 in Unit 9, this specimen does not appear to be subsistence debris.

Canid is represented by four elements (Figure 3) recovered from Levels 1 and 2 in Unit 10-A. These teeth are most likely the remains of a small domesticated individual. The Caddo were known to have dogs, called *jubines* (Swanton 1942:134).

Pig (*Sus scrofa*) is represented by one tooth fragment from Level 1 in Unit 9, and a complete tooth from Level 2 in the same unit (Figure 4). Based on size, the teeth are from at least one large individual which would have provided a large quantity of meat.

Deer (*Odocoileus virginianus*) is represented by seven elements found in Level 2 of Unit 9. The fragments are comprised of a tooth, scapular neck, pelvis, radius, ulna, tibia, and calcaneus (Figure 5). None of the pieces are burned. The grouping of these fragments may indicate that the individual was butchered, disarticulated, and non-meat bearing portions were disposed of at the same location.

Bovid (*Bos* sp.) is represented by 234 specimens (Figure 6). This includes 213 tooth fragments and six complete teeth. The remainder of the bovid bones consists of four cranial elements (one mandible fragment and three tooth socket fragments), a scapula head, a pelvis fragment, six long bone fragments (two radius, one femur, one tibia, two metapodial), one complete metatarsal, and three toe bones. Bovid was recovered from all units except for Units 4, 7, and 20. These are most likely the remains of cow rather than bison, although none of the elements have the diagnostic attributes required for distinguishing between the two.

The majority of the faunal sample is recorded as unidentifiable indeterminate-sized mammal (n=1,080). These bones are so fragmented that specific identification was not recorded, but probably are the remains of the larger animals and possibly some animals in the size range of dog. The remainder of the Los Adaes faunal sample consists of large mammal (n=891) and very large mammal (n=238) bone fragments. These general categories encompass animals of at least deer and/or sheep/goat-size and the very large mammals include pig, cow, or horse-size remains. Although no horse or mule was recovered in this collection, they would be common stock for use as “beasts of burden (load-bearing livestock)”. Goat, horse, and elk were recorded in previous faunal reports from investigations at Los Adaes (see Avery 1995).

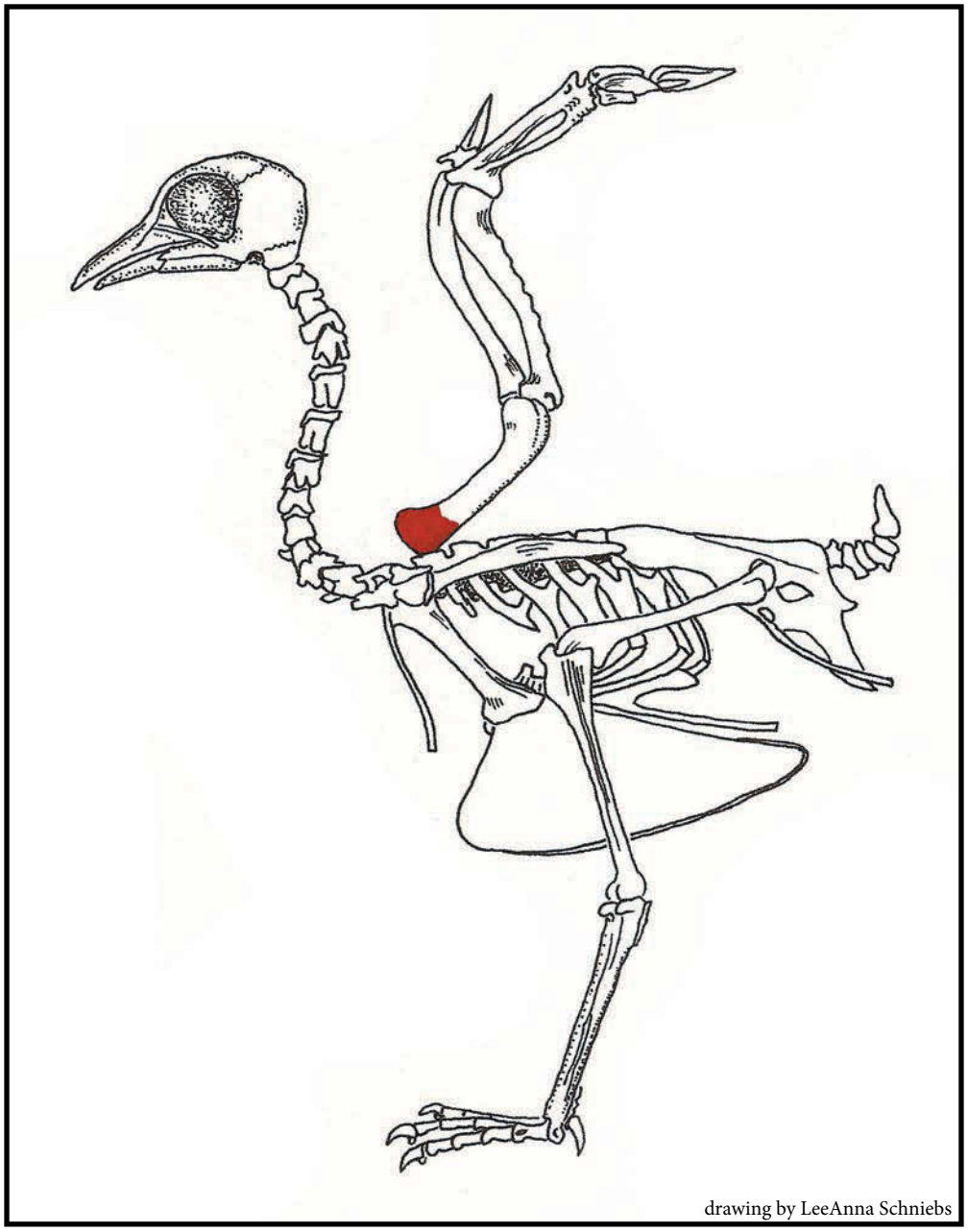

FIGURE 2. Distal humerus fragment from an unidentifiable bird.

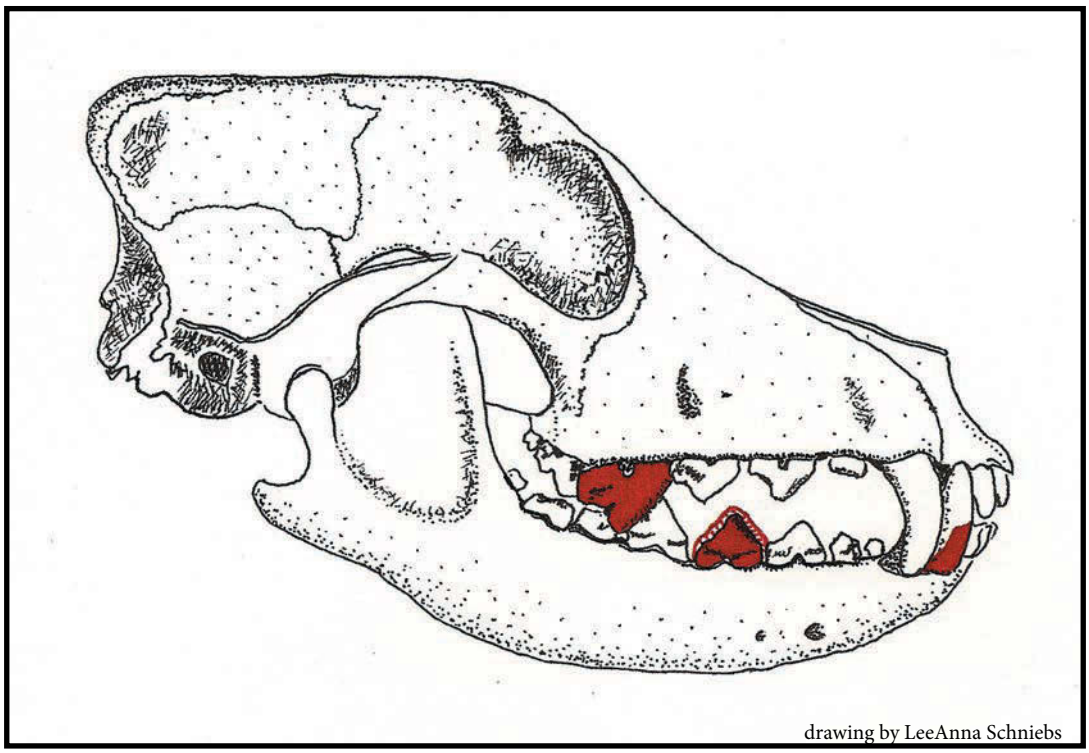

FIGURE 3. Three teeth and one tooth fragment from indeterminate canid.

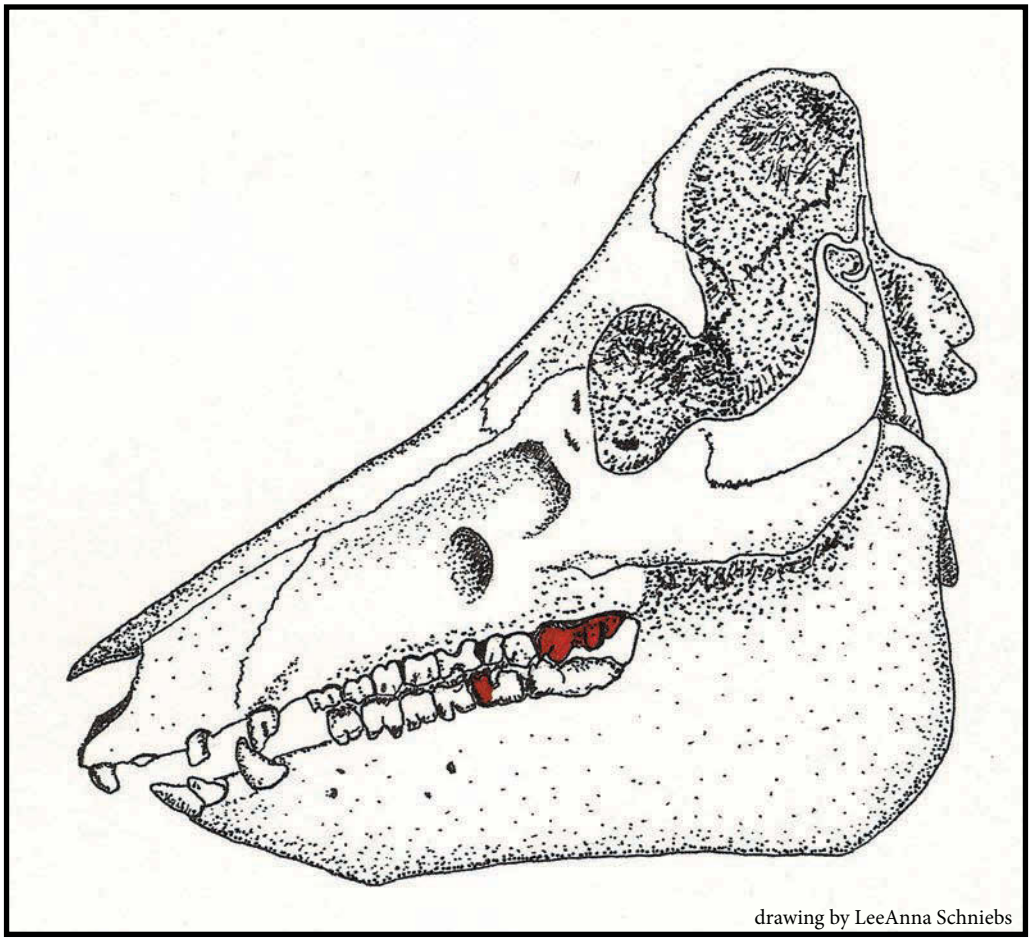

FIGURE 4. One tooth and one tooth fragment from pig.

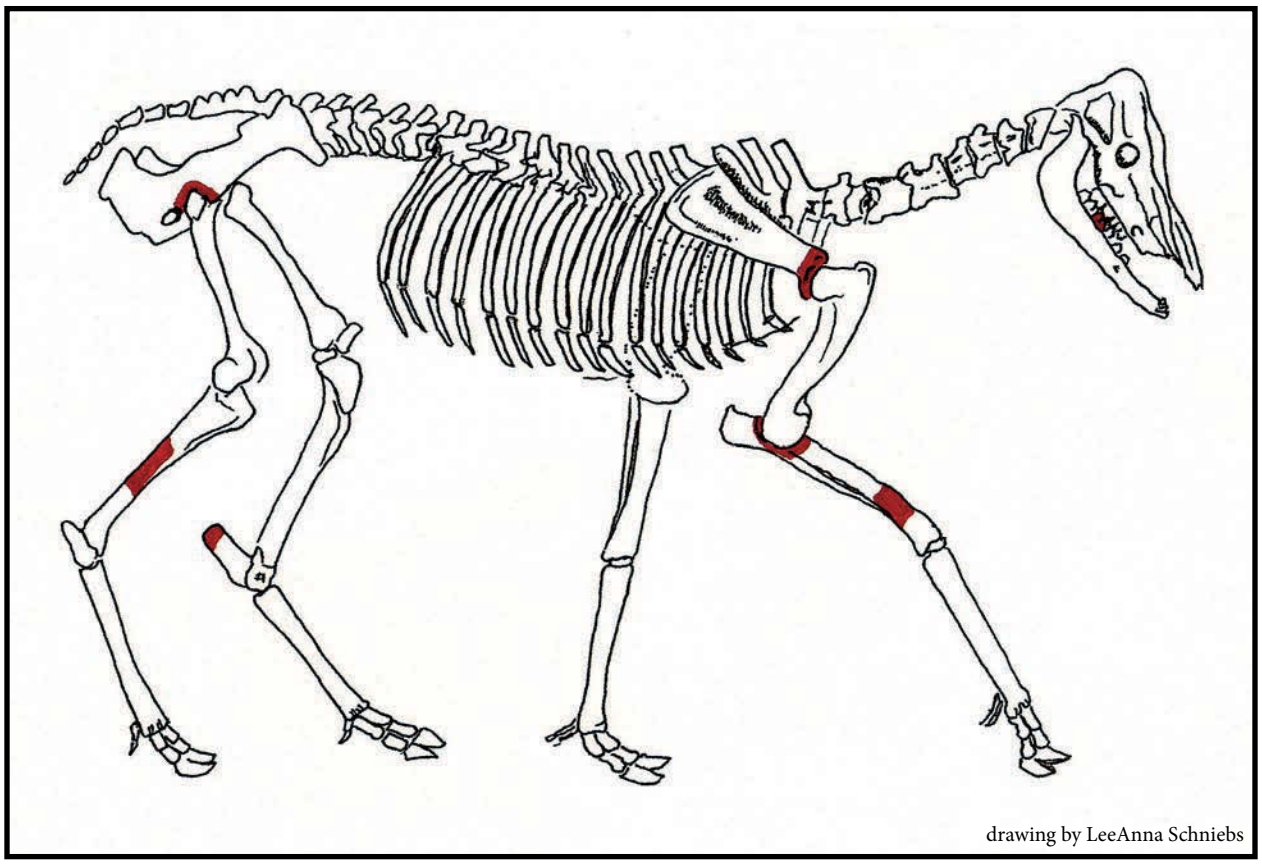

FIGURE 5. Bone fragments recovered from deer.

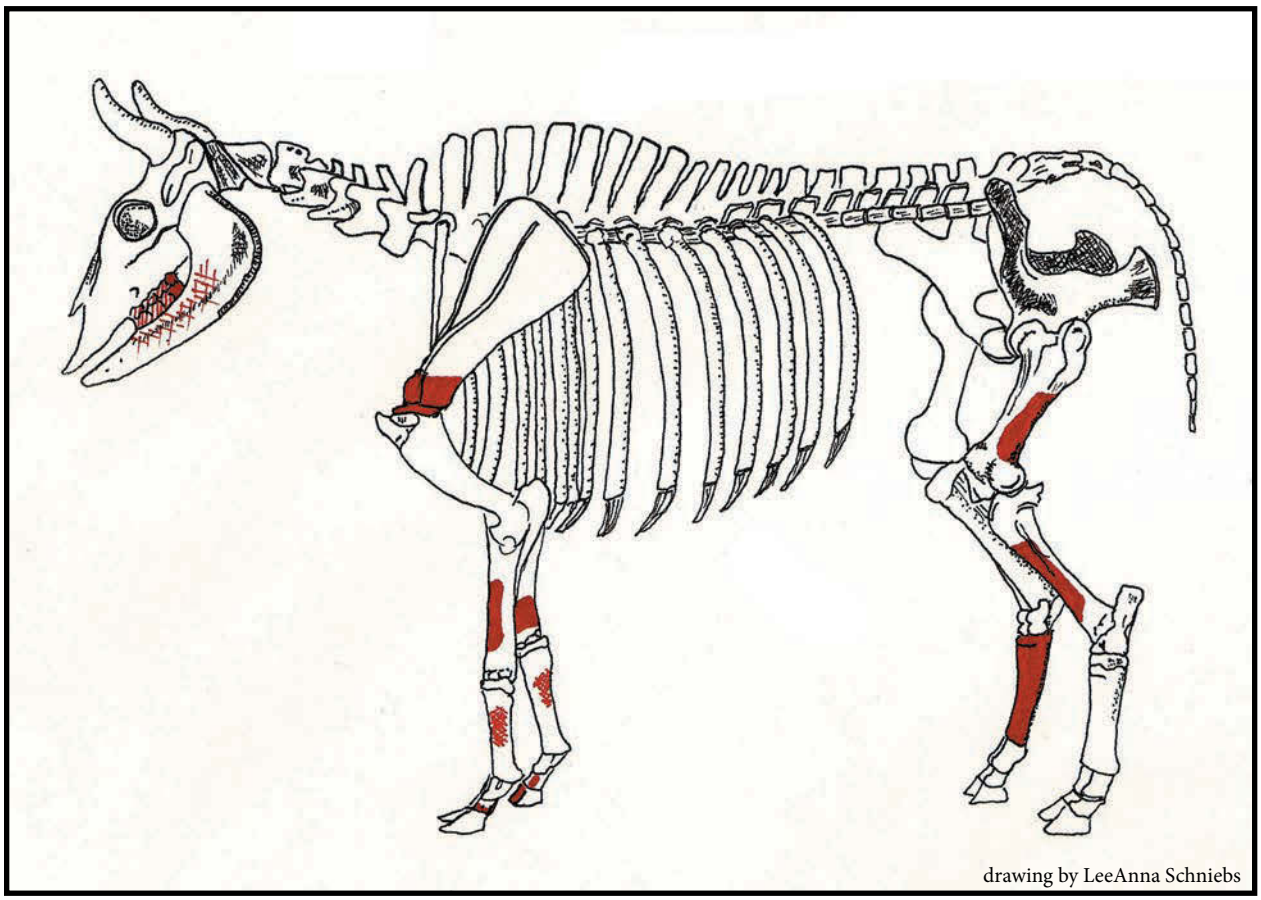

FIGURE 6. Bone fragments recovered from bovid.

Distribution of the Los Adaes faunal sample is summarized in Table 4, and specific recovery by unit and level can be found in Table 5. Sixteen units yielded faunal specimens, and totals range from one to 438 bone fragments in each unit. The majority was recovered from two levels in Unit 17 (17.44%), including six pieces that were point provenienced (bovid metatarsal, bovid radius shaft, and four very large unidentifiable mammal bone fragments). Other point provenienced items came from Unit 2 (two bovid teeth), Unit 3 (four very large mammal fragments), Unit 6 (five very large mammal and four bovid), Unit 6-A (five very large mammal), and Unit 9 (nine bovid and one very large mammal). Also high in recovery are the following: Unit 6 (n=413, 16.44%), Unit 9 (n=366, 14.57%), Unit 6-A (n=327, 13.02%), and Unit 3 (n=245, 9.75%). The remaining units yielded less than 200 fragments each. These high counts are somewhat misleading, as most of the specimens are small fragments from large unidentifiable elements of very large, large, and indeterminate size mammals.

In general, this faunal sample from Los Adaes is highly fragmented and preservation is poor. Taphonomic patterns observed during analysis are comprised of surface exfoliation, deterioration, and abrasion. A total of 1,020 bone fragments are burned (40.62%), recovered from all units except for Unit 21 (Table 6). The only identifiable burned specimens are the 30 bovid tooth fragments found in Unit 2, Level 1. Patterns of discarded burned bone are indiscernible; that is, the limited sampling strategy revealed no specific areas of trash disposal.

Faunal recovery from recent investigation of a pit feature at Mission Dolores de los Ais (41SA25; see Schniebs 2010) is similar to the remains from this sample in that both collections are highly fragmented, identification was limited, and domesticates are dominant in quantity over the indigenous animals. At Mission Dolores, the fish, turtle, and rabbit were supplemental foods to the chicken, pig, and cow; the larger animals undoubtedly provided the bulk of the occupant's protein intake and were probably bred on site, as were the chickens. Earlier studies at Mission Dolores (Corbin et al. 1980 and 1990) identified cow, goat, pig, canid, and felid as domesticates; native animals are comprised of deer, turtle, and fish. Indeterminate bird and unidentifiable small mammal remains were also recovered by Corbin.

It has been established that domesticated animals were preferred at both Mission Dolores as well as at Los Adaes. However, none of the bones from the current Los Adaes collection showed any evidence of butchering. Both Corbin and Schniebs noted several bones from Mission Dolores with cuts and/or saw marks.

The faunal sample from this investigation gives a broad over-view of subsistence practices in the ranching lifestyle and economy at Los Adaes. Further studies would provide more information, perhaps revealing more hunting activities and the exploitation of the rich natural resources of the area.

Table 4. Summary of Los Adaes (16NA16) Faunal Distribution by Unit

Taxon (Common Name, Scientific Name)	Faunal Summary by Unit															
	U-1	U-2	U-3	U-4	U-6	U-6-A	U-7	U-9	U-10	U-10-A	U-11	U-12	U-17	U-19	U-20	U-21
Unidentifiable vertebrate (Vertebrata)	3	17														
Indeterminate fish (Osteichthyes)		1														
Indeterminate medium-size bird (Avian)								1								
Dogs and relatives (Canid)										4						
Even-toed ungulates (Artiodactyla)					7				3		17		6			
Pig (*Sus scrofa*)								2								
Deer (*Odocoileus virginianus*)								7								
Bovid (*Bos* sp.)	7	38	2		79	9		15	10	11	3	13	29	17		1
Mammal (size-indeterminate Mammalia)			95		225	220	14		166	85	65		210			
Large mammal (large Mammalia)	14	60	137	2	60	75	7	313	9	2	27	25	126	11	23	
Very large mammal (very large Mammalia)		32	11		42	23		28					67	34	1	
TOTAL	24	148	245	2	413	327	21	366	188	102	112	38	438	62	24	1

Table 5. Distribution of Los Adaes (16NA16) Faunal Specimens

Unit	Taxon (Common Name, Scientific Name)	Level or Depth				
Unit 1 (n=24)		Lev. 1	Lev. 2	Lev. 3		
	Unidentifiable vertebrate (Vertebrata)		3			
	Bovid (*Bos* sp.)			7		
	Large mammal (large Mammalia)	1	5	8		
	TOTAL	1	8	15		
Unit 2 (n=148)		Lev. 1	10 cmbs	Lev. 2	Lev. 3	
	Unidentifiable vertebrate (Vertebrata)			1	16	
	Indeterminate fish (Osteichthyes)			1		
	Bovid (*Bos* sp.)	30	2	2	4	
	Large mammal (large Mammalia)	34			26	
	Very large mammal (very large Mammalia)	2		30		
	TOTAL	66	2	34	46	
Unit 3 (n=245)		Lev. 2	18 cmbs	19 cmbs	21 cmbs	
	Bovid (*Bos* sp.)	2				
	Mammal (size-indeterminate Mammalia)	95				
	Large mammal (large Mammalia)	137				
	Very large mammal (very large Mammalia)	7	2	1	1	
	TOTAL	241	2	1	1	
Unit 4 (n=2)		Lev. 2				
	Large mammal (large Mammalia)	2				
Unit 6 (n=413)		Lev. 1	12 cmbs	Lev. 2	20 cmbs	
	Even-toed ungulates (Artiodactyla)	7				
	Bovid (*Bos* sp.)			75	4	
	Mammal (size-indeterminate Mammalia)			225		
	Large mammal (large Mammalia)	21		39		
	Very large mammal (very large Mammalia)	15	1	22	4	
	TOTAL	43	1	361	8	
Unit 6-A (n=327)		Lev. 1	19 cmbs	Lev. 2		
	Bovid (*Bos* sp.)			9		
	Mammal (size-indeterminate Mammalia)	60		160		
	Large mammal (large Mammalia)	8		67		
	Very large mammal (very large Mammalia)		5	18		
	TOTAL	68	5	254		
Unit 7 (n=21)		Lev. 1				
	Mammal (size-indeterminate Mammalia)	14				
	Large mammal (large Mammalia)	7				
Unit 9 (n=366)		Lev. 1	13 cmbs	15 cmbs	16 cmbs	Lev. 2
	Indeterminate medium-size bird (Avian)					1
	Pig (*Sus scrofa*)	1				1
	Deer (*Odocoileus virginianus*)					7
	Bovid (*Bos* sp.)	6	2	6	1	
	Large mammal (large Mammalia)	36				277
	Very large mammal (very large Mammalia)	10	1			17
	TOTAL	53	3	6	1	303

Table 5. Distribution of Los Adaes (16NA16) Faunal Specimens

Unit	Taxon (Common Name, Scientific Name)	Level or Depth				
Unit 10 (n=188)		Lev. 1	Lev. 2			
	Even-toed ungulates (Artiodactyla)	3				
	Bovid (*Bos* sp.)	1	9			
	Mammal (size-indeterminate Mammalia)	91	75			
	Large mammal (large Mammalia)	5	4			
	TOTAL	100	88			
Unit 10-A (n=102)		Lev. 1	Lev. 2			
	Dogs and relatives (Canid)	2	2			
	Bovid (*Bos* sp.)		11			
	Mammal (size-indeterminate Mammalia)	10	75			
	Large mammal (large Mammalia)	2				
	TOTAL	14	88			
Unit 11 (n=112)		Lev. 1	Lev. 2			
	Even-toed ungulates (Artiodactyla)	17				
	Bovid (*Bos* sp.)		3			
	Mammal (size-indeterminate Mammalia)	65				
	Large mammal (large Mammalia)	14	13			
	TOTAL	96	16			
Unit 12 (n=38)		Lev. 1				
	Bovid (*Bos* sp.)	13				
	Large mammal (large Mammalia)	25				
	TOTAL	38				
Unit 17 (n=438)		Lev. 1	10-18cmbs	18 cmbs	19 cmbs	Lev.2
	Even-toed ungulates (Artiodactyla)					6
	Bovid (*Bos* sp.)	1	1	1		26
	Mammal (size-indeterminate Mammalia)	210				
	Large mammal (large Mammalia)	33				93
	Very large mammal (very large Mammalia)	43		2	2	20
	TOTAL	287	1	3	2	145
Unit 19 (n=62)		Lev. 1	Lev. 2			
	Bovid (*Bos* sp.)	1	16			
	Large mammal (large Mammalia)	2	9			
	Very large mammal (very large Mammalia)	1	33			
	TOTAL	4	58			
Unit 20 (n=24)		Lev. 1	Lev. 2			
	Large mammal (large Mammalia)		23			
	Very large mammal (very large Mammalia)	1				
Unit 21 (n=1)		Lev. 1				
	Bovid (*Bos* sp.)	1				

Table 6. Distribution of Burned Faunal Specimens from Los Adaes (16NA16)

Unit	Taxon (Common Name, Scientific Name)	Level		
Unit 1 (n=16)		Lev. 1	Lev. 2	Lev. 3
	Unidentifiable vertebrate (Vertebrata)		3	
	Large mammal (large Mammalia)	1	5	7
	TOTAL	1	8	7
Unit 2 (n=91)		Lev. 1	Lev. 2	Lev. 3
	Unidentifiable vertebrate (Vertebrata)		1	8
	Bovid (*Bos* sp.)	30		
	Large mammal (large Mammalia)	19		8
	Very large mammal (very large Mammalia)		25	
	TOTAL	49	26	16
Unit 3 (n=120)		Lev. 2		
	Mammal (size-indeterminate Mammalia)	45		
	Large mammal (large Mammalia)	75		
	TOTAL	120		
Unit 4 (n=2)		Lev. 2		
	Large mammal (large Mammalia)	2		
Unit 6 (n=120)		Lev. 1	Lev. 2	
	Mammal (size-indeterminate Mammalia)		90	
	Large mammal (large Mammalia)	11	19	
	TOTAL	11	109	
Unit 6-A (n=169)		Lev. 1	Lev. 2	
	Mammal (size-indeterminate Mammalia)	60	70	
	Large mammal (large Mammalia)	7	32	
	TOTAL	67	102	
Unit 7 (n=21)		Lev. 1		
	Mammal (size-indeterminate Mammalia)	14		
	Large mammal (large Mammalia)	7		
	TOTAL	21		
Unit 9 (n=57)		Lev. 1	Lev. 2	
	Large mammal (large Mammalia)	6	48	
	Very large mammal (very large Mammalia)	3		
	TOTAL	9	48	
Unit 10 (n=145)		Lev. 1	Lev. 2	
	Mammal (size-indeterminate Mammalia)	78	60	
	Large mammal (large Mammalia)	3	4	
	TOTAL	81	64	

Table 6. Distribution of Burned Faunal Specimens from Los Adaes (16NA16)

Unit 10-A (n=57)		Lev. 1	Lev. 2	
	Mammal (size-indeterminate Mammalia)	10	45	
	Large mammal (large Mammalia)	2		
	TOTAL	12	45	
Unit 11 (n=32)		Lev. 1	Lev. 2	
	Mammal (size-indeterminate Mammalia)	15		
	Large mammal (large Mammalia)	12	5	
	TOTAL	27	5	
Unit 12 (n=12)		Lev. 1		
	Large mammal (large Mammalia)	12		
Unit 17 (n=141)		Lev. 1	Lev.2	
	Mammal (size-indeterminate Mammalia)	120		
	Large mammal (large Mammalia)	11	9	
	Very large mammal (very large Mammalia)		1	
	TOTAL	131	10	
Unit 19 (n=14)		Lev. 1	Lev. 2	
	Large mammal (large Mammalia)	2	9	
	Very large mammal (very large Mammalia)		3	
	TOTAL	2	12	
Unit 20 (n=23)		Lev. 2		
	Large mammal (large Mammalia)	23		

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APPENDIX 3

Macrobotanical Artifacts—by Leslie Bush

Presidio Nuestra Señora de Pilar de los Adaes was established soon after the 1721 re-founding of the nearby Los Adaes mission. The location was apparently chosen for strategic reasons, to monitor French activity at Natchitoches. Neither the dry uplands nor the marshy lowlands of the area are suitable for agriculture, and the water supply is an intermittent spring-fed stream. Inhabitants of the mission and presidio therefore relied on Spanish supply trains and, more importantly, ranching and trade with Caddos and French. When Fray Gaspar José de Solís inspected the mission and presidio in 1768, he found

> The people live on the corn and do not have any sown fields. The flesh of the bulls that is furnished them is very bad. All seed, such as corn, Frijoles, etc. is scarce. There is only an abundance of whiskey . . . . (Kress 1931:65)

Pursuant to his inspection, the mission was closed in 1773. Inhabitants of the mission and presidio returned to San Antonio or dispersed into the frontier.

Ecological setting

Los Adaes is situated at the southwestern edge of an upland ridge overlooking Stoker Branch, which flows into Bayou Dupont northwest of the site. A small tributary stream curves around the base of the landform on which the site is located, and a second tributary stream originates approximately 500 m NNE of the presidio. In the site area, upland and slope soils are Sacul fine sandy loams that grade into clay and clay loam at about ten inches (25 cm) below the surface. Lowland soils along Stoker Branch are Guyton silt loams, frequently flooded and poorly drained (USDA SCS 1990).

Los Adaes lies in the West Gulf Coastal Plain where upland climax vegetation is dominated by longleaf pine forests in the outer plain and shortleaf pine forests in the inner plain (Diggs et al. 2006). Los Adaes lies near the northern boundary of the longleaf region, and the sandy soils on the site suggest a longleaf-oak woodland (USDA SCS 1990; LNHP 2009). Shortleaf pines are also typical of these communities, and hickories may also be present. Slope forests, more protected from wildfire, would have been a mixed forest, probably the loblolly pine-mockernut hickory-American holly-beautyberry community that occurs on slopes with acidic soils (LNHP 2009). The lowland areas along Stoker Branch would have been a bottomland hardwood forest (LNHP 2009; Yodis et al. 2003). Bottomland hardwood forests comprise several distinct communities, including oak-sweetgum, water locust-water hickory and sycamore-sweetgum-elm (LNHP 2009).

Methods

Thirty-one screen samples, two point samples, and one flotation sample from Presidio Los Adaes were submitted for identification and analysis from 2010 excavations. The screen samples were water-screened through 1/16” mesh (1.6 mm). The flotation sample was processed by personnel from Stephen F. Austin State University in a bucket-to-bucket system, with the light fraction caught in cotton cloth and the heavy fraction poured though 1/16” mesh. Flotation volume was 4 gallons (15.14 liters).

The flotation sample was sorted according to standard procedures at the Macrobotanical Analysis laboratory in Manchaca, Texas (Pearsall 2000). The sample was weighed on an Ohaus Scout II 200 x 0.01 g electronic balance before being size-sorted through a stack of graduated geologic mesh. Materials that did not pass through the No. 10 mesh (2 mm square openings) were completely sorted, and all carbonized and semi-carbonized botanical remains were counted, weighed, recorded, and labeled. Uncarbonized botanical material that did not pass through the 2 mm mesh (rootlets, pebbles) was weighed, recorded, and labeled as "contamination". Materials that fell through the 2 mm mesh ("residue") were examined under a stereoscopic microscope at 7-45 X magnification for carbonized botanical remains. Identifiable carbonized material other than wood, nutshell and corn was removed from residue, counted, weighed, recorded, and labeled. Uncarbonized seeds were recorded on a presence/absence basis on laboratory forms and are given Tables B.2 and B.3.

Screen samples were not further screened in the laboratory. They were examined under a stereoscopic microscope at 7-45 X magnification, identified, counted, weighed, recorded, and labeled in the same manner as the flotation material.

A subsample of twenty wood and wood charcoal fragments were examined for identification from each sample. When the sample contained fewer than 20 wood fragments, all fragments present were examined. Wood fragments were snapped to reveal a transverse section and examined under a stereoscopic microscope at 28-180 X magnification. When necessary, tangential or radial sections were examined for ray seriation, presence of spiral thickenings, types and sizes of intervessel pitting, and other minute characteristics that can only be seen at the higher magnifications of this range.

Botanical materials were identified to the lowest possible taxonomic level by comparison to materials in the Macrobotanical Analysis comparative collection and through the use of standard reference works (e.g., Core et al. 1979; Hoadley 1990; Panshin and de Zeeuw 1980; Schopmeyer 1974). Plant nomenclature follows that of the PLANTS Database (USDA, NRCS 2011).

Results

Carbonized botanical remains from Los Adaes are summarized in Table B.1. Table B.2 shows semi-carbonized and uncarbonized plants. Sorting and identification of the Los Adaes material resulted in the identification of 267 botanical sub-lots (Table B.3) and 48 non-botanical sub-lots (Table B.4). In all, 3304 botanical items weighing 279.85 grams were identified.

Table B.1: Carbonized Plant Remains from 2010 Geophysics Ground-Truthing at Los Adaes (16NA16), All Recovery Methods

	Number	Weight (g)
Corn		
Corn cupules and glumes	18	0.33
Corn kernel	3	0.19
Wild plants		
Grape seed	3	0.19
Smartweed seed	1	0.01
Wood charcoal		
Pine, hard group	187	10.84
Softwood Type 3	37	2.96
Pine, hard group, Type 2	3	0.33
Pine, unspecifiable	3	0.16
Softwood total	**230**	**14.29**
Oak, white group	77	55.82
Oak, red group	56	4.24
Oak, live	4	0.28
Oak, unspecifiable	14	2.03
Oak total	**151**	**62.37**
Hickory	28	2.93
Sweetgum	23	1.37
Locust (water- or honey-)	12	0.84
Ash	4	0.25
Legume family	2	0.14
Black walnut	2	0.27
Sycamore	2	0.17
Plum/cherry/peach	2	0.15
Winged elm	2	0.19
Maple	1	0.19
Sugarberry	1	0.06
Persimmon	1	0.12
Hop hornbeam	1	0.18
Willow/cottonwood	1	0.02
Basswood	1	0.08
Hardwood, indeterminable	9	0.93
Not examined for species	2476	118.65
Total examined for species	**473**	**84.55**

	Number	Weight (g)
Other cultivated plants		
Peach pit	8	0.99
Sunflower seed	1	0.01
Squash flower scar	1	0.01
Nut resources		
Hickory nutshell	31	1.99
Hickory family nutshell	8	0.14
Hickory nut hull	1	0.12
Other material		
Resin	51	1.13
Indeterminable	27	1.58
Bark	2	0.42

Table B.2: Semi-Carbonized and Uncarbonized Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), All Recovery Methods

	Number	Weight (g)	
Semi-carbonized			
Wood			
Pine, hard group	51	9.64	
Softwood Type 3	10	1.76	
Pine, unspecifiable	4	0.26	
Other material			
Indeterminable	15	0.5	
Unknown	7	0.03	
Bark	2	0.18	
Uncarbonized			
Wood			
Pine, unspecifiable	48	2.51	prob. roots
Pine, hard group	40	52.58	
Hardwood, unspecifiable	3	0.02	
Softwood, unspecifiable	1	0.02	
Other material			
Bark	5	0.14	
Root	3	1.66	
Fruit	2	0.13	
Fungus	4	0.03	
Rhizome	1	0.04	
Uncarbonized seeds, not from flotation			
Unknown	1	0.01	
Vetch	4	0.02	

Uncarbonized seeds observed in flotation sample (Lot 3240)

Carpetweed	Legume
Coneflower	Pokeweed
Copperleaf	Sandmat
Daisy family	Selfheal
Flatsedge	Unknown
Fumewort	Violet
Goosefoot	Woodsorrel
Grass family	

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

Lot Number	Unit	Level	Recovery Method	Plant State	Plant Part	Botanical Name	Common Name	Number	Weight (g)
3192	1	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	3	0.27
3192	1	2	Screen	Carbonized	Seed	Prunus persica	Peach	1	0.11
3192	1	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	4	0.43
3192	1	2	Screen	Carbonized	Wood	Tilia americana	Basswood	1	0.08
3192	1	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	4	0.22
3192	1	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	2	0.14
3192	1	2	Screen	Carbonized	Wood	Fraxinus sp.	Ash	1	0.05
3192	1	2	Screen	Carbonized	Wood	Liquidambar styraciflua	Sweetgum	1	0.05
3192	1	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	3	0.11
3193	1	3	Screen	Carbonized	Seed	Prunus persica	Peach	1	0.15
3193	1	3	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	8	0.63
3193	1	3	Screen	Carbonized	Wood	Fraxinus sp.	Ash	3	0.20
3193	1	3	Screen	Carbonized	Wood	Prunus sp.	Plum/cherry/peach	1	0.07
3193	1	3	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	1	0.15
3193	1	3	Screen	Carbonized	Wood	Acer sp.	Maple	1	0.19
3193	1	3	Screen	Carbonized	Wood	Hardwood	Hardwood	1	0.27
3193	1	3	Screen	Carbonized	Resin			1	0.08
3193	1	3	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	1	1.26
3193	1	3	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	1	0.03
3193	1	3	Screen	Carbonized	Flower scar	Cucurbita sp.	Squash/gourd	1	0.01
3194	2	1	Screen	Uncarbonized	Seed	Unknown	Unknown	1	0.01
3194	2	1	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.07
3194	2	1	Screen	Carbonized	Wood	Carya sp.	Hickory	3	0.36
3194	2	1	Screen	Carbonized	Wood	Hardwood	Hardwood	1	0.19
3194	2	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	3	0.36
3194	2	1	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	5	0.49
3194	2	1	Screen	Carbonized	Wood	Quercus virginiana	Coastal live oak	2	0.25
3194	2	1	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	6	0.70
3194	2	1	Screen	Carbonized	Bark			1	0.14
3194	2	1	Screen	Carbonized	Wood	Not examined	Not examined	23	1.93
3195	2	2	Screen	Carbonized	Wood	Carya sp.	Hickory	3	0.40
3195	2	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	4	0.75
3195	2	2	Screen	Carbonized	Wood	Juglans nigra	Black walnut	1	0.09
3195	2	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	6	0.53

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

3195	2	2	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	3	0.32
3195	2	2	Screen	Carbonized	Wood	Quercus sp.	Oak	2	0.59
3195	2	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	1	0.04
3195	2	2	Screen	Carbonized	Wood	Not examined	Not examined	216	14.67
3195	2	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.09
3195	2	2	Screen	Semi-carbonized	Wood	Softwood Type 3	Softwood Type 3	4	0.44
3195	2	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	2	0.13
3195	2	2	Screen	Carbonized	Seed	Zea mays	Corn	1	0.09
3196	2	3	Screen	Carbonized	Nutshell	Carya sp.	Hickory	2	0.14
3196	2	3	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	3	0.05
3196	2	3	Screen	Carbonized	Wood	Juglans nigra	Black walnut	1	0.18
3196	2	3	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	9	0.24
3196	2	3	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.02
3196	2	3	Screen	Carbonized	Wood	Hardwood	Hardwood	1	0.03
3196	2	3	Screen	Carbonized	Resin			3	0.07
3196	2	3	Screen	Carbonized	Indeterminable			2	0.13
3196	2	3	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	1	0.01
3196	2	3	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	1	0.01
3198	3	1	Screen	Carbonized	Indeterminable			1	0.02
3198	3	1	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	1	0.06
3198	3	1	Screen	Carbonized	Wood	Quercus virginiana	Coastal live oak	1	0.01
3199	3	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	5	0.44
3199	3	2	Screen	Carbonized	Resin			1	0.01
3199	3	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	4	0.29
3199	3	2	Screen	Carbonized	Indeterminable			1	0.08
3199	3	2	Screen	Carbonized	Wood	Carya sp.	Hickory	3	0.52
3199	3	2	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	4	0.41
3199	3	2	Screen	Carbonized	Wood	Ostrya virginiana	Hop hornbeam	1	0.18
3199	3	2	Screen	Carbonized	Wood	Quercus sp.	Oak	4	0.29
3199	3	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	1	0.12
3199	3	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	2	0.13
3199	3	2	Screen	Carbonized	Wood	Not examined	Not examined	60	2.08
3201	4	1	Screen	Carbonized	Wood	Quercus sp.	Oak	2	0.31
3201	4	1	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	2	0.25
3202	4	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	2	0.16
3202	4	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	16	1.85

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

3202	4	2	Screen	Carbonized	Wood	Carya sp.	Hickory	2	0.59
3202	4	2	Screen	Carbonized	Wood	Not examined	Not examined	261	19.97
3202	4	2	Screen	Carbonized	Seed	Helianthus annuus	Sunflower	1	0.01
3202.1	4		Hand	Carbonized	Wood	Quercus subg. Quercus	White group oak	1	48.98
3205	6	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.09
3205	6	2	Screen	Carbonized	Indeterminable			8	0.83
3205	6	2	Screen	Semi-carbonized	Wood	Softwood Type 3	Softwood Type 3	6	1.32
3205	6	2	Screen	Uncarbonized	Root			2	1.58
3205	6	2	Screen	Uncarbonized	Wood	Hardwood	Hardwood	3	0.20
3205	6	2	Screen	Carbonized	Wood	Carya sp.	Hickory	4	0.31
3205	6	2	Screen	Carbonized	Wood	Quercus sp.	Oak	2	0.32
3205	6	2	Screen	Carbonized	Wood	Pinus sp. (hard) Type 2	Hard pine group Type 2	2	0.11
3205	6	2	Screen	Carbonized	Wood	Gleditsia triacanthos	Honeylocust	2	0.23
3205	6	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	5	0.19
3205	6	2	Screen	Carbonized	Wood	Softwood	Softwood	4	0.15
3205	6	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	3	0.12
3205	6	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	1	0.01
3207	6A	1	Screen	Carbonized	Resin			1	0.01
3207	6A	1	Screen	Carbonized	Seed	Vitis sp.	Grape	1	0.01
3207	6A	1	Screen	Uncarbonized	Fruit			1	0.01
3207	6A	1	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.01
3207	6A	1	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	3	0.06
3207	6A	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	12	0.20
3207	6A	1	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	3	0.05
3207	6A	1	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	1	0.04
3207	6A	1	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.02
3207	6A	1	Screen	Carbonized	Indeterminable			1	0.02
3207	6A	1	Screen	Carbonized	Wood	Not examined	Not examined	25	0.23
3207	6A	1	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	4	0.16
3208	6A	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.03
3208	6A	2	Screen	Carbonized	Resin			10	0.16
3208	6A	2	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	5	0.13
3208	6A	2	Screen	Carbonized	Indeterminable			2	0.08
3208	6A	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	5	0.16
3208	6A	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	6	0.33
3208	6A	2	Screen	Carbonized	Wood	Liquidambar styraciflua	Sweetgum	1	0.02

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

3208	6A	2	Screen	Carbonized	Wood	Gleditsia triacanthos	Honeylocust	2	0.09
3208	6A	2	Screen	Carbonized	Wood	Quercus virginiana	Coastal live oak	1	0.02
3208	6A	2	Screen	Carbonized	Wood	Salicaceae	Willow/cottonwood family	1	0.02
3208	6A	2	Screen	Carbonized	Wood	Carya sp.	Hickory	2	0.20
3208	6A	2	Screen	Carbonized	Wood	Not examined	Not examined	406	10.07
3210	7	1	Screen	Carbonized	Resin			2	0.02
3210	7	1	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	1	0.07
3210	7	1	Screen	Carbonized	Wood	Hardwood	Hardwood	2	0.18
3210	7	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	2	0.03
3211	7	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.11
3211	7	2	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	3	0.76
3211	7	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	17	1.53
3211	7	2	Screen	Carbonized	Wood	Quercus sp.	Oak	1	0.32
3211	7	2	Screen	Carbonized	Wood	Pinus sp. (hard) Type 2	Hard pine group Type 2	1	0.22
3211	7	2	Screen	Carbonized	Wood	Platanus occidentalis	Sycamore	1	0.09
3211	7	2	Screen	Carbonized	Wood	Not examined	Not examined	274	25.00
3213	9	1	Screen	Carbonized	Rachis	Zea mays	Corn	13	0.22
3213	9	1	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	2	0.72
3213	9	1	Screen	Carbonized	Wood	Prunus sp.	Plum/cherry	1	0.08
3213	9	1	Screen	Carbonized	Wood	Platanus occidentalis	Sycamore	1	0.08
3214	9	2	Screen	Carbonized	Seed	Zea mays	Corn	1	0.09
3214	9	2	Screen	Semi-carbonized	Wood	Pinus sp.	Pine	2	0.18
3214	9	2	Screen	Uncarbonized	Fruit	Rosaceae	Rose family	1	0.12
3214	9	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	8	0.56
3214	9	2	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.21
3214	9	2	Screen	Carbonized	Wood	Fabaceae	Legume	1	0.07
3214	9	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	4	0.73
3214	9	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	6	0.99
3214	9	2	Screen	Carbonized	Wood	Not examined	Not examined	143	15.65
3214	9	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.01
3216	10	1	Screen	Carbonized	Nutshell	Carya sp.	Hickory	2	0.02
3216	10	1	Screen	Carbonized	Resin			10	0.11
3216	10	1	Screen	Uncarbonized	Fungus			1	0.01
3216	10	1	Screen	Carbonized	Indeterminable			2	0.05
3216	10	1	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	1	0.14
3216	10	1	Screen	Carbonized	Wood	Liquidambar styraciflua	Sweetgum	6	0.31

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

3216	10	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	11	0.23
3216	10	1	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	1	0.08
3216	10	1	Screen	Carbonized	Wood	Quercus sp.	Oak	1	0.14
3216	10	1	Screen	Carbonized	Wood	Gleditsia triacanthos	Honeylocust	1	0.05
3216	10	1	Screen	Carbonized	Wood	Not examined	Not examined	95	1.17
3217	10	2	Screen	Carbonized	Resin			4	0.03
3217	10	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.07
3217	10	2	Screen	Carbonized	Nutshell	Juglandaceae	Hickory/walnut family	2	0.02
3217	10	2	Screen	Carbonized	Nut hull	Carya sp.	Hickory	1	0.12
3217	10	2	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	2	0.12
3217	10	2	Screen	Uncarbonized	Wood	Pinus sp.	Pine (poss. root)	3	0.10
3217	10	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	16	0.51
3217	10	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	3	0.06
3217	10	2	Screen	Carbonized	Wood	Gleditsia triacanthos	Honeylocust	1	0.07
3217	10	2	Screen	Carbonized	Wood	Not examined	Not examined	112	1.42
3219	10A	1	Screen	Uncarbonized	Wood	Pinus sp. (hard)	Hard pine group	15	0.17
3219	10A	1	Screen	Semi-carbonized	Wood	Indeterminable	Indeterminable	15	0.50
3219	10A	1	Screen	Uncarbonized	Wood	Pinus sp.	Pine (poss. root)	5	0.02
3219	10A	1	Screen	Semi-carbonized	Unknown			7	0.03
3219	10A	1	Screen	Carbonized	Seed	Prunus persica	Peach	1	0.02
3219	10A	1	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	3	0.18
3219	10A	1	Screen	Carbonized	Wood	Fabaceae	Legume	1	0.07
3219	10A	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	13	0.11
3219	10A	1	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.01
3219	10A	1	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	2	0.01
3219	10A	1	Screen	Carbonized	Wood	Not examined	Not examined	29	0.11
3220	10A	2	Screen	Uncarbonized	Wood	Pinus sp.	Pine (poss. root)	9	0.19
3220	10A	2	Screen	Uncarbonized	Wood	Pinus sp. (hard)	Hard pine group	6	0.42
3220	10A	2	Screen	Uncarbonized	Seed	Vicia sp.	Vetch	1	0.01
3220	10A	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	15	0.13
3220	10A	2	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	2	0.04
3220	10A	2	Screen	Carbonized	Wood	Gleditsia triacanthos	Honeylocust	1	0.02
3220	10A	2	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	1	0.01
3220	10A	2	Screen	Carbonized	Wood	Liquidambar styraciflua	Sweetgum	2	0.02
3220	10A	2	Screen	Carbonized	Wood	Carya sp.	Hickory	2	0.01
3220	10A	2	Screen	Carbonized	Wood	Not examined	Not examined	77	0.34

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

3220	10A	2	Screen	Uncarbonized	Fungus			2	0.01
3220.2	10A		Hand	Uncarbonized	Wood	Pinus sp. (hard)	Hard pine group	1	51.34
3222	11	1	Screen	Carbonized	Resin			4	0.14
3222	11	1	Screen	Semi-carbonized	Bark			1	0.06
3222	11	1	Screen	Carbonized	Wood	Gleditsia triacanthos	Honeylocust	2	0.22
3222	11	1	Screen	Carbonized	Wood	Liquidambar styraciflua	Sweetgum	5	0.55
3222	11	1	Screen	Carbonized	Wood	Ulmus alata	Winged elm	2	0.19
3222	11	1	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.01
3222	11	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	1	0.01
3223	11	2	Screen	Uncarbonized	Seed	Vicia sp.	Vetch	3	0.01
3223	11	2	Screen	Uncarbonized	Wood	Pinus sp. (hard)	Hard pine group	6	0.53
3223	11	2	Screen	Carbonized	Resin			8	0.18
3223	11	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	2	0.07
3223	11	2	Screen	Carbonized	Indeterminable			8	0.19
3223	11	2	Screen	Semi-carbonized	Bark			1	0.12
3223	11	2	Screen	Uncarbonized	Wood	Pinus sp.	Pine (poss. root)	7	0.18
3223	11	2	Screen	Carbonized	Wood	Liquidambar styraciflua	Sweetgum	8	0.42
3223	11	2	Screen	Carbonized	Wood	Gleditsia triacanthos	Honeylocust	3	0.16
3223	11	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	7	0.21
3223	11	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	1	0.03
3223	11	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	1	0.01
3223	11	2	Screen	Carbonized	Wood	Not examined	Not examined	131	5.56
3225	12	1	Screen	Uncarbonized	Bark			5	0.14
3225	12	1	Screen	Uncarbonized	Rhizome			1	0.04
3225	12	1	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.10
3225	12	1	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	5	1.33
3225	12	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	3	0.31
3225	12	1	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	3	0.14
3225	12	1	Screen	Carbonized	Resin			1	0.27
3225	12	1	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.10
3225	12	1	Screen	Uncarbonized	Root			1	0.08
3225	12	1	Screen	Carbonized	Wood	Celtis sp.	Sugarberry	1	0.06
3228	17	2	Screen	Carbonized	Wood	Hardwood	Hardwood	1	0.12
3228	17	2	Screen	Carbonized	Wood	Softwood Type 3	Softwood Type 3	2	0.11
3228	17	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	3	0.15
3228	17	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	2	0.39

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

3230	19	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	18	1.83
3230	19	1	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.07
3230	19	1	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	1	0.05
3230	19	1	Screen	Carbonized	Wood	Not examined	Not examined	7	1.98
3231	19	2	Screen	Carbonized	Rachis	Zea mays	Corn	4	0.10
3231	19	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.07
3231	19	2	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	3	0.55
3231	19	2	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	18	6.04
3231	19	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	18	1.92
3231	19	2	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	1	0.12
3231	19	2	Screen	Carbonized	Indeterminable			1	0.13
3231	19	2	Screen	Carbonized	Wood	Not examined	Not examined	111	10.57
3231	19	2	Screen	Carbonized	Indeterminable			1	0.05
3231	19	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.04
3231	19	2	Screen	Carbonized	Seed	Vitis sp.	Grape	1	0.01
3231	19	2	Screen	Carbonized	Seed	Zea mays	Corn	1	0.01
3231	19	2	Screen	Carbonized	Wood	Quercus sp.	Oak	2	0.06
3231	19	2	Screen	Carbonized	Seed	Prunus persica	Peach	2	0.07
3231	19	2	Screen	Carbonized	Nutshell	Juglandaceae	Hickory/walnut family	6	0.12
3233	20	1	Screen	Uncarbonized	Wood	Pinus sp.	Pine (poss. root)	3	0.32
3233	20	1	Screen	Carbonized	Wood	Pinus sp.	Pine	3	0.16
3233	20	1	Screen	Carbonized	Wood	Diospyros virginiana	Persimmon	1	0.12
3233	20	1	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	1	0.14
3233	20	1	Screen	Carbonized	Wood	Carya sp.	Hickory	1	0.09
3233	20	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	4	0.18
3233	20	1	Screen	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	1	0.08
3234	20	2	Screen	Carbonized	Nutshell	Carya sp.	Hickory	1	0.12
3234	20	2	Screen	Carbonized	Seed	Prunus persica	Peach	3	0.64
3234	20	2	Screen	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	1	0.23
3234	20	2	Screen	Uncarbonized	Wood	Pinus sp.	Pine (poss. root)	21	1.70
3234	20	2	Screen	Carbonized	Bark			1	0.28
3234	20	2	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	7	0.65
3234	20	2	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	4	0.27
3234	20	2	Screen	Carbonized	Wood	Hardwood	Hardwood	1	0.08
3236	21	1	Screen	Uncarbonized	Wood	Pinus sp. (hard)	Hard pine group	1	0.06
3236	21	1	Screen	Semi-carbonized	Wood	Pinus sp.	Pine	2	0.08

Table B.3: Plant Remains from 2010 Geophysics GT at Los Adaes (16NA16), by Lot

3236	21	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	2	0.11
3236	21	1	Screen	Uncarbonized	Wood	Softwood	Softwood	1	0.02
3237	21	1	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	2	0.08
3238	21	Trench Fill	Screen	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	8	0.77
3238	21	Trench Fill	Screen	Carbonized	Wood	Quercus subg. Quercus	White group oak	1	0.12
3240	17	2	Flotation	Carbonized	Rachis	Zea mays	Corn	1	0.01
3240	17	2	Flotation	Carbonized	Resin			6	0.05
3240	17	2	Flotation	Semi-carbonized	Wood	Pinus sp. (hard)	Hard pine group	11	0.21
3240	17	2	Flotation	Uncarbonized	Wood	Pinus sp. (hard)	Hard pine group	11	0.06
3240	17	2	Flotation	Carbonized	Wood	Quercus subg. Quercus	White group oak	3	0.05
3240	17	2	Flotation	Carbonized	Wood	Quercus subg. Lobatae	Red group oak	6	0.07
3240	17	2	Flotation	Carbonized	Wood	Pinus sp. (hard)	Hard pine group	9	0.12
3240	17	2	Flotation	Carbonized	Wood	Carya sp.	Hickory	1	0.01
3240	17	2	Flotation	Carbonized	Wood	Hardwood	Hardwood	2	0.06
3240	17	2	Flotation	Carbonized	Wood	Not examined	Not examined	506	7.90
3240	17	2	Flotation	Carbonized	Seed	Polygonum sp., lenticular	Smartweed	1	0.01
3240	17	2	Flotation	Uncarbonized	Fungus			1	0.01
3240	17	2	Flotation	Uncarbonized	Seed	Corydalis sp.	Fumewort		
3240	17	2	Flotation	Uncarbonized	Seed	Acalypha sp.	Copperleaf		
3240	17	2	Flotation	Uncarbonized	Seed	Asteraceae	Daisy family		
3240	17	2	Flotation	Uncarbonized	Seed	Cyperus sp.	Flatsedge		
3240	17	2	Flotation	Uncarbonized	Seed	Oxalis sp.	Woodsorrel		
3240	17	2	Flotation	Uncarbonized	Seed	Rudbeckia/Echinacea spp.	Coneflower		
3240	17	2	Flotation	Uncarbonized	Seed	Phytolacca americana	Pokeweed		
3240	17	2	Flotation	Uncarbonized	Seed	Unknown	Unknown		
3240	17	2	Flotation	Uncarbonized	Seed	Fabaceae	Legume		
3240	17	2	Flotation	Uncarbonized	Seed	Chenopodium sp.	Goosefoot		
3240	17	2	Flotation	Uncarbonized	Seed	Poaceae	Grass family		
3240	17	2	Flotation	Uncarbonized	Seed	Viola sp.	Violet		
3240	17	2	Flotation	Uncarbonized	Seed	Mollugo verticillata	Carpetweed		
3240	17	2	Flotation	Uncarbonized	Seed	Chamaesyce sp.	Sandmat		
3240	17	2	Flotation	Uncarbonized	Seed	Prunella sp.	Selfheal		

Table B.4: Non-botanical items from Botanical Samples 2010 Geophysics GT at Los Adaes (16NA16)

Lot	Unit	Level	Identification	Comments	Number	Weight (g)
3192	1	2	Fauna, Bone, Mammal		4	1.79
3192	1	2	Rocks/Sediment			0.27
3193	1	3	Fauna, Bone, Mammal		3	0.17
3193	1	3	Rocks/Sediment			0.41
3193	1	3	Fauna, Bone, Mammal		1	0.03
3194	2	1	Insect		1	<0.01
3194	2	1	Fauna, Bone, Mammal		2	0.76
3195	2	2	Residue < 2mm			0.53
3195	2	2	Rocks/Sediment			0.85
3195	2	2	Ceramic		2	0.51
3196	2	3	Plastic or Rubber		1	0.22
3199	3	2	Rocks/Sediment			0.17
3199	3	2	Ceramic		4	1.45
3199	3	2	Glass bead		1	0.04
3199	3	2	Fauna, Bone, Mammal		3	0.18
3202	4	2	Fauna, Bone, Mammal		1	0.64
3202	4	2	Rocks/Sediment			0.33
3205	6	2	Ceramic		1	0.16
3205	6	2	Rocks/Sediment			0.59
3207	6A	1	Fauna, Bone, Mammal	burned	7	0.22
3208	6A	2	Fauna, Bone, Mammal	burned	4	0.25
3208	6A	2	Ceramic		6	0.91
3208	6A	2	Rocks/Sediment			0.55
3211	7	2	Ceramic		5	2.15
3211	7	2	Rocks/Sediment			1.09
3214	9	2	Ceramic		2	1.26
3214	9	2	Rocks/Sediment	includes possible coal		2.06
3214	9	2	Fauna, Bone, Mammal		7	1.66
3214	9	2	Fauna, Tooth, Fish		1	<0.01
3216	10	1	Fauna, Bone, Mammal		5	0.10
3216	10	1	Rocks/Sediment			0.09
3217	10	2	Rocks/Sediment			0.34
3217	10	2	Fauna, Bone, Mammal		1	0.02
3222	11	1	Fauna, Bone, Mammal		1	0.04
3222	11	1	Rocks/Sediment	includes possible coal		0.29
3222	11	1	Ceramic		2	0.06
3223	11	2	Fauna, Bone, Mammal		4	0.07
3223	11	2	Rocks/Sediment			0.51
3223	11	2	Ceramic		10	0.85
3225	12	1	Fauna, Bone, Mammal		2	0.24
3225	12	1	Rocks/Sediment			0.17
3230	19	1	Rocks/Sediment			0.27
3231	19	2	Ceramic		1	0.38
3231	19	2	Rocks/Sediment			1.09
3231	19	2	Fauna, Bone, Mammal	burned	6	0.19
3234	20	2	Unknown metal	looks botanical, but is 4x expected weight, has rust.	1	0.94
3240	17 (Flot.)	2	Fauna, Bone, Mammal		5	0.08
3240	17 (Flot.)	2	Rocks/Sediment	includes possible coal	1	0.01

Macrobotanical Analysis Discussion

Uncarbonized and semi-carbonized plant remains

Uncarbonized plant material is a common occurrence on most archeological sites, but it usually represents modern rootlets or seeds of modern plants that have made their way into the soil either through their own dispersal mechanisms or by faunalturbation, floralturbation, or argilliturbation (Keepax 1977; Bryant 1985:51-52; Miksicek 1987:231-232). Uncarbonized plant material sometimes also falls into open units during excavation. Most uncarbonized and semi-carbonized plant parts at Los Adaes are probably modern in origin. Roots, rhizomes, seeds, and fungi are expected in the soil. The seed composition at Los Adaes also supports a modern origin: 1) The seeds consist of weedy annuals expected in an open area of a modern park; and 2) There is no overlap between the uncarbonized seeds and the carbonized seeds such as sunflower and grape that are more clearly associated with the presidio occupation.

Uncarbonized and semi-carbonized wood is more difficult to interpret. None of the hardwoods recovered in carbonized form on the site were also found in uncarbonized or semi-carbonized form; only softwoods (mostly pine) were less than fully carbonized. It is possible that recent fires account for the continuum of softwoods on the site.

Examination of uncarbonized and semi-carbonized wood by level, however, suggests that the pine wood may indeed have survived from the 18th century occupation of the presidio. As show in Table B.5, the ratio of uncarbonized and semi-carbonized wood to completely carbonized wood increases with depth. Only screen samples were used to construct the table, since both point samples came from Level 3 and the flotation sample came from Level 2. Uncarbonized, unspecifiable pine was also excluded since many of these appear to be roots. That relatively more uncarbonized wood is present in the lowest excavated level at Los Adaes suggests that better preservation and not recent origin could account for its presence. In addition, if the uncarbonized wood originated at the surface, it would be expected to become less common with depth. If the semi-carbonized and uncarbonized softwoods are associated with the 18th-century presidio, the lack of hardwood could be explained by use of hardwood for fuel and softwood for architecture. The sample size from Level 3 is small, however, and tree falls, which allow tree branches to enter sub-surface deposits, are well-documented at the site. The integrity of the archeological deposits, rather than a blanket statement about the botanical remains, should be used to evaluate the possibility that semi-carbonized and uncarbonized wood dates to the 18th century occupation of the site on a unit-by-unit basis.

Table B.5: Wood from Screen Samples, by State and Level

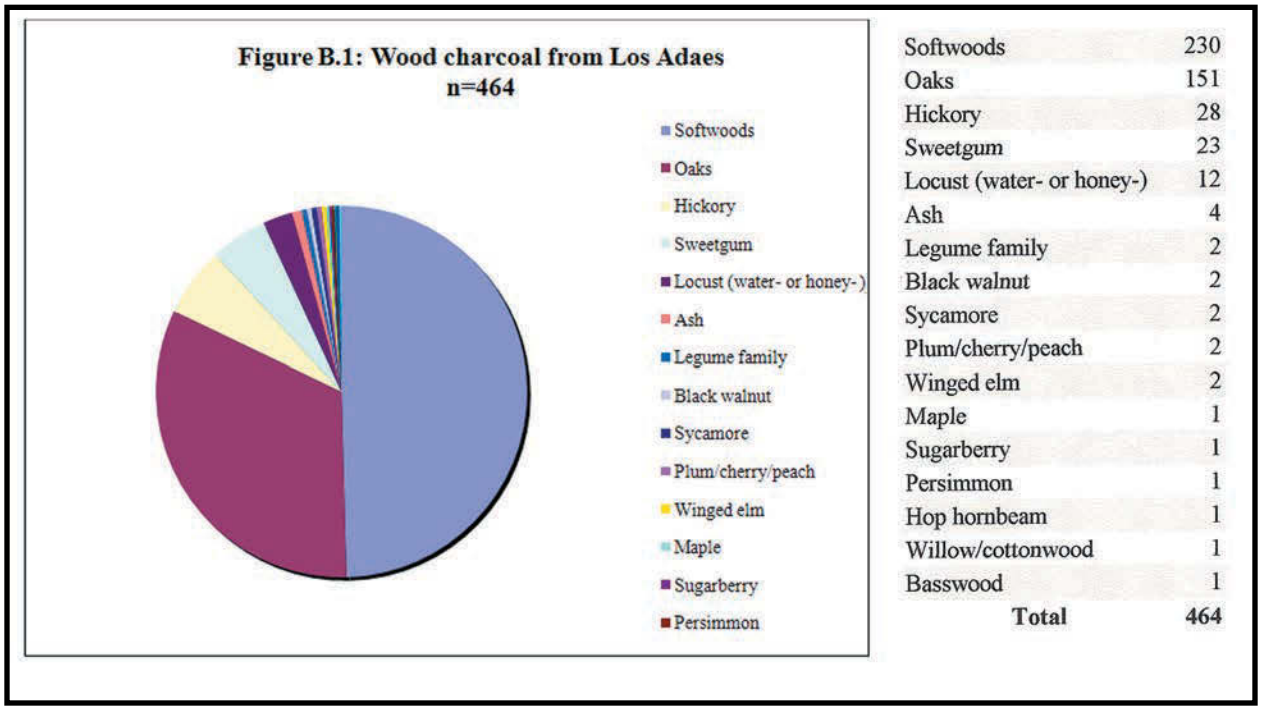
	Semi- and Uncarbonized Wood (g)	Carbonized Wood (g)	Semi- and Uncarbonized: Carbonized
Level 1	1.13	16.95	0.07
Level 2	10.96	126.09	0.09
Level 3	1.26	2.97	0.42

Carbonized plant remains

Wood. Wood was by far the most common plant part recovered at Los Adaes, with 203.20 g of wood charcoal recovered. Of the 464 fragments that were identified to family, genus or species, pines and Softwood Type 3 made up almost exactly half of the sample. Oaks accounted for another 33 percent, and hickory and sweetgum were the next most common woods at six and five percent, respectively. Thirteen taxa accounted for the remaining six percent of wood (Figure B.1).

As discussed above, it is possible that softwoods on the site represent construction wood and the hardwoods were primarily used for fuel. No evidence for architectural use of any wood was observed in these samples. Other than a pine limb or pole sawn off by excavators in the profile of Unit 10A, no cut wood was noted, whether carbonized, semi-carbonized or uncarbonized.

Whatever their use, most of the trees represented in the samples could have been obtained from forests in the immediate vicinity of the site. Hard Pine Type 2 is one exception, since local pines (shortleaf, longleaf and loblolly) fall into the Southern Yellow Pine category of the Hard Pine group. Hard Pine Type 2, in contrast, has the narrow growth rings and extremely narrow latewood that characterizes Western Yellow Pines such as ponderosa pine (*Pinus ponderosa*). Only three fragments of this wood were recovered, from Units 6 and 7. Softwood Type 3 may represent another import. This is a fine-textured softwood with large resin canals and what appear to be spiral thickenings in the tracheids. Fragments of Softwood Type 3 wood charcoal tend to break into cubic shapes rather than the flat pieces that characterize typical southern pines. The spiral thickenings in Softwood Type 3 would indicate Douglas-fir (*Pseudotsuga* sp.), but the large resin canals indicate pine. Possibly, this wood and the western-type pine originated in the oak-evergreen forests of central Mexico.



Softwoods	230
Oaks	151
Hickory	28
Sweetgum	23
Locust (water- or honey-)	12
Ash	4
Legume family	2
Black walnut	2
Sycamore	2
Plum/cherry/peach	2
Winged elm	2
Maple	1
Sugarberry	1
Persimmon	1
Hop hornbeam	1
Willow/cottonwood	1
Basswood	1
Total	**464**

FIGURE B.1. Wood charcoal from Los Adaes.

Other plants. Corn, peach, sunflower and squash are the cultivated plants represented in these samples. Corn was present as both cupules and kernels, indicating that corn processing took place at the presidio and not just corn consumption. Cupules are small outer parts of the corn cob, each of which anchors two kernels. No true cob fragments were found in these investigations for identification of the type of corn present, although earlier investigations have recovered such items from the presidio (Avery 2001; Lee 1986).

Hickory nutshell was ubiquitous in the samples, appearing in 12 of 16 units. Like corn cupules, nutshell is a processing waste and indicates hickory processing and probably collection of hickory nuts by residents at the presidio. Grape, another wild food plant, was represented by two seeds. One smartweed seed was also recovered, but it is not clear whether this was an economic plant at the presidio. At least one species of smartweed has fruits that act as burs (*P. virginianum*). Such a seed may have been tossed into the fire as a nuisance plant.

The distribution of food plants by unit is shown in Table B.6. Since most food plants are represented only by a few specimens each, assessing botanical differences among the units is problematic. In this small sample, the contents of the midden areas appear to be fairly uniform. Unit 19, a surface midden deposit outside the palisade wall, contained the most diverse assemblage of food plants. In Unit 19 and in Unit 9, corn is present as both kernels and cupules.

Table B.6: Food plants, by excavation unit

Unit	Squash	Corn	Grape	Sunflower	Peach	Nutshell
1	X				X	X
2		X				X
3						X
4				X		
6						X
6A			X			X
7						X
9		X				X
10						X
10A					X	
11						X
12						X
17		X				
19		X	X		X	X
20					X	X
21						

Summary

Botanical samples from 2010 investigations at Los Adaes resulted in the identification of wood, crops, and wild plants.

Much of the wood was probably used for fuel and came from the uplands, slopes, and bottomlands near the site. Western yellow pine and possibly another softwood must have been imported to the area. No sawn or cut wood was observed, but hard pines are the most likely candidates for architectural wood.

Crops identified in these samples were corn, squash, peaches, and sunflower. Wild plant resources were hickory nut mast and grapes.

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