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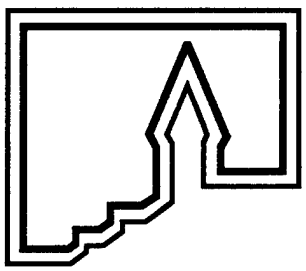
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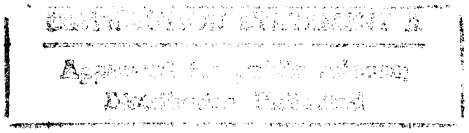
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Carbondale, Illinois

Principal Investigators
Mark J. Wagner and Michael J. McNerney

Authors
Mark J. Wagner
Frances R. Knight
Tracey Sandefur
Terrance J. Martin
Kathryn E. Parker





Cultural Resources
Management Report No. 199

June 1993

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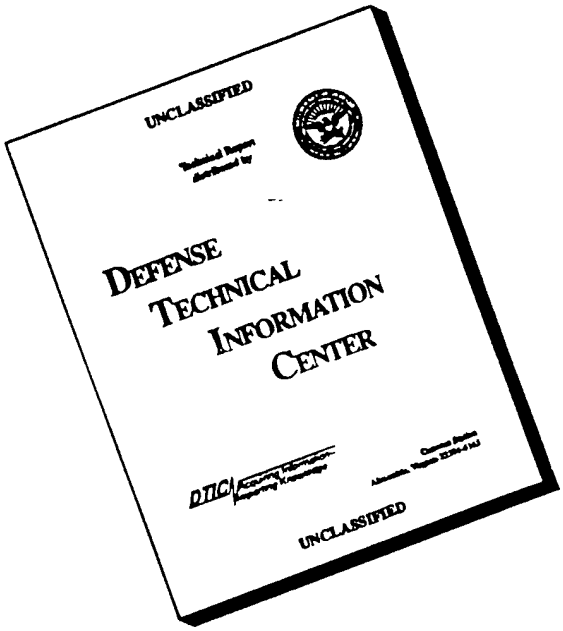
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Archaeological investigations were conducted at eight location at Ft. Leavenworth, Kansas, during October and November of 1992 by American Resources Group, Ltd., under a subcontract with HIgganbotham, Briggs, and Associates. Seven of these project areas (1-7) were identified by the Directorate of Public Works (DPW) at Ft. Leavenworth as locations for future construction. Archival research conducted as part of a 1977 archaeological survey identified 14 Historic Building Sites (HBS 5, 10, 38, 39-41, 46-49, 131-133, 141) within these project areas. Archaeological investigations at the various HBS sites consisted of a combination of archival research and screened shovel tests (all sites), excavation of archaeological test units (six sites), and use of a hydraulic soil probe to extract soil samples (two sites). One HBS site (10) was deleted from investigation during the course of the project. Archival research revealed that at least 14 additional HBS sites, some of which date back to the early 1830s, are potentially located within the seven project areas.

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In addition, one of the HBS sites (HBS 46) to be investigated as part of the current project was found to be incorrectly located on the 1977 map. Nineteenth century subsurface features were encountered at HBS 5, 38, 39, and 40-41. These consisted of two ca. 1866 privy vaults (HBS 5 and 38); an early to mid-nineteenth century brick cistern (HBS 39); and a mid to late nineteenth century dump discard area (HBS 40-41). Although nineteenth and twentieth century materials were recovered from the remaining HBS sites, subsurface features were not identified. Based on the information recovered by the investigations, it is recommended that HBS sites 40, 41, 131-133, and 141 are ineligib for the National Register of Historic Places. Insufficient data was recovered to evalu the NRHP eligibility of HBS 10, 46, 47, 48, and 49. The remaining HBS sites (HBS 5, 38, and 39) are recommended as potentially eligible for the NRHP. Test excavations for the purpose of assessing NRHP eligiblity and defining site boundaries also were conducted at areas 881 and 882 of the Fincher (14LV358) site. Intact midden deposits consisting of nineteenth century (ca. 1840-1880) cultural materials containing military, ceramic, glass, faunal, and other materials were found at the site. It is recommended that the Fincher site is a significant cultural property that meets the criteria for inclusion in the NRHP.

EXECUTIVE SUMMARY

Archaeological investigations were conducted at eight locations at Ft. Leavenworth in 1992. Seven of these project areas (1-7) were identified as locations for future construction. Archival research conducted in 1977 identified 14 Historic Building Sites (HBS 5, 10, 38, 39-41, 46-49, 131-133, 141) within these areas. Archaeological investigations consisted of a combination of archival research and screened shovel tests (all sites), excavation (six sites), and use of a hydraulic soil probe (two sites). One HBS site (10) was deleted from investigation. It is recommended that HBS sites 40, 41, 131-133, and 141 are ineligible for the National Register of Historic Places. Insufficient data was recovered to evaluate the NRHP eligibility of HBS 10, 46, 47, 48, and 49. HBS sites 5, 38, and 39 are recommended as potentially eligible for the NRHP. The archival research revealed that at least 14 additional HBS sites, some of which date back to the early 1830s, are potentially located within the project areas. In addition, one of the HBS sites (HBS 46) was found to be incorrectly located on the 1977 map. Management recommendations are: (1) Project areas 3 and 7 do not contain NRHP eligible resources. Further archaeological investigations are not recommended; (2) project area 2 may contain NRHP eligible resources masked by later construction and demolition. Archaeological monitoring of construction in this area is recommended; (3) project areas 1, 4, 5, and 7 may contain NRHP eligible resources. Additional archaeological testing is recommended within these areas prior to construction. Test excavations to assess NRHP eligibility and define site boundaries were conducted at Areas 881 and 882 of the Fincher (14LV358) site. Deposits of nineteenth century (ca. 1840-1880) military, ceramic, glass, faunal, and other materials were found at the site. It is recommended that the Fincher site meets the criteria for inclusion in the NRHP.

ABSTRACT

Archaeological investigations were conducted at eight locations at Ft. Leavenworth, Kansas, during October and November of 1992 by American Resources Group, Ltd., under a subcontract with Higganbotham, Briggs, and Associates. Seven of these project areas (1-7) were identified by the Directorate of Public Works (DPW) at Ft. Leavenworth as locations for future construction. Archival research conducted as part of a 1977 archaeological survey identified 14 Historic Building Sites (HBS 5, 10, 38, 39-41, 46-49, 131-133, 141) within these project areas. Archaeological investigations at the various HBS sites consisted of a combination of archival research and screened shovel tests (all sites), excavation of archaeological test units (six sites), and use of a hydraulic soil probe to extract soil samples (two sites). One HBS site (10) was deleted from investigation during the course of the project. Archival research revealed that at least 14 additional HBS sites, some of which date back to the early 1830s, are potentially located within the seven project areas. In addition, one of the HBS sites (HBS 46) to be investigated as part of the current project was found to be incorrectly located on the 1977 map. Nineteenth century subsurface features were encountered at HBS 5, 38, 39, and 40-41. These consisted of two ca. 1866 privy vaults (HBS 5 and 38); an early to mid-nineteenth century brick cistern (HBS 39); and a mid to late nineteenth century dump discard area (HBS 40-41). Although nineteenth and twentieth century materials were recovered from the remaining HBS sites, subsurface features were not identified. Based on the information recovered by the investigations, it is recommended that HBS sites 40, 41, 131-133, and 141 are ineligible for the National Register of Historic Places. Insufficient data was recovered to evaluate the NRHP eligibility of HBS 10, 46, 47, 48, and 49. The remaining HBS sites (HBS 5, 38, and 39) are recommended as potentially eligible for the NRHP. Test excavations for the purpose of assessing NRHP eligibility and defining site boundaries also were conducted at areas 881 and 882 of the Fincher (14LV358) site. Intact midden deposits consisting of nineteenth century (ca.1840-1880) cultural materials containing military, ceramic, glass, faunal, and other materials were found at the site. It is recommended that the Fincher site is a significant cultural property that meets the criteria for inclusion in the NRHP.

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CHAPTER I. INTRODUCTION

Mark J. Wagner

This report describes the result of archival research and archaeological test investigations at 14 presumed Historic Building sites (HBS) in seven separate locations at Fort Leavenworth, Kansas. In addition, archaeological test investigations were also conducted at the Fincher site (14LV358), a mid to late nineteenth century military dump/discard site (Wagner et al. 1988). These investigations were executed by American Resources Group, Ltd., under a subcontract with Higganbotham, Briggs, and Associates. The research was funded by the U.S. Army and administered by the Kansas City District, Corps of Engineers, as part of contract number DACA41-91-D00017, Delivery Order 0005.

The study performed herein by the Contractor for the Corps of Engineers is called for in the National Historic Preservation Act of 1966 (PL-89-665) as amended. Accomplishment of this work provides documentation evidencing compliance with Executive Order 11593, "Protection and Enhancement of the Cultural Environment," dated 13 May 1971, and Section 110 of the National Historic Preservation Act.

"Historic Building Sites" represent the known or presumed locations of demolished nineteenth and twentieth century structures within the Ft. Leavenworth military reservation whose location was determined through archival and cartographical research. One hundred and fifty seven Historic Building Sites (HBS) were located as part of a 1977 cultural resources survey of the installation. Archaeological investigations were not conducted at any of the HBS sites to recover artifacts that might confirm the identification of these locations as representing the remains of demolished structures. Bricks and the remains of stone foundations, however, were observed at several of the HBS sites (Barr and Rowlinson 1977).

All of Ft. Leavenworth also was assigned a single archaeological site number--14LV356--by the 1977 investigators. This trinomial form of designation was developed by the Smithsonian Institution to record the locations of archaeological sites throughout the nation. The number "14" represents Kansas which alphabetically is the 14th state in the United States; "LV" stands for Leavenworth County; and "356" indicates that Ft. Leavenworth is the 356th archaeological site recorded in Leavenworth County, Kansas.

The primary objective of the investigations was to recover sufficient information to evaluate the eligibility of 14 historic building sites (HBS 5, 10, 38, 39-41, 46-49, 131-133, 141)

and one military dump/discard site (14LV358-881) for inclusion in the National Register of Historic Places (Appendix A: Scope of Work). Specific tasks accomplished included (1) preparation of a research design; (2) a documentary search and literature review sufficient to determine the location of the 14 demolished HBS structures in relation to extant structures at the post; (2) archaeological field investigations at seven separate locations to assess the impact of proposed construction activities on potential NRHP eligible historic properties; (3) the excavation of test units at site 14LV358-881 to recover information to be used in the evaluation of this site for NRHP eligibility; (5) site documentation, i.e., maps, site survey forms, etc.; (6) preparation of cultural materials for curation; and (7) preparing a report of findings in accordance with the Scope of Work (item 7).

All work conformed to professional standards and guidelines set forth in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register, Volume 48, No. 190, September 29, 1983) and Army Regulation (AR) 420-40 (Historic Preservation).

Fort Leavenworth is an active U.S. Army Training and Doctrine Command installation located in northeastern Kansas in Leavenworth County, Kansas (Figures 1 and 2). The fort is located within a military reservation of 5,927 acres situated on the west bank of the Missouri River (Barr and Rowlison 1977:3) (Figure 3). The natural environment of the project area is briefly summarized in Chapter II. Previous archaeological research in the project area and the historic background of the installation are presented in Chapter III.

Field research was conducted at Fort Leavenworth between October 13 and November 14, 1992. Work carried out during this period consisted of archival research, shovel testing, archaeological test excavations, hydraulic coring of suspected nineteenth century privy vaults, and mapping of archaeological sites. This work was carried out by a four-person crew under the supervision of the senior author (Wagner).

Historic artifacts recovered by these investigations were analyzed by Frances R. Knight and Tracey Sandefur (American Resources Group). Dr. Terrance J. Martin (Illinois State Museum, Springfield) analyzed the faunal remains from the various sites while Kathryn E. Parker (Great Lakes Ecosystems, Indian River, Michigan) analyzed the botanical remains. The research design of the project, including the field and laboratory methods employed during the study, is explained in detail in Chapter lV. Chapter V presents the results of the field investigations at the 14 HBS sites while Chapter VI presents the results of the investigations at site 14LV358-881. The results of the faunal and botanical analyses are presented in Chapters VI and VII. Chapter IX contains a discussion of the results of the investigations in relation to the research problems outlined in the research design and the Kansas State Plan (Brown and Simmons 1987). Preliminary evaluations of the research potential of the archaeological sites identified and recommendations for future investigations at these sites are presented in Chapter X.

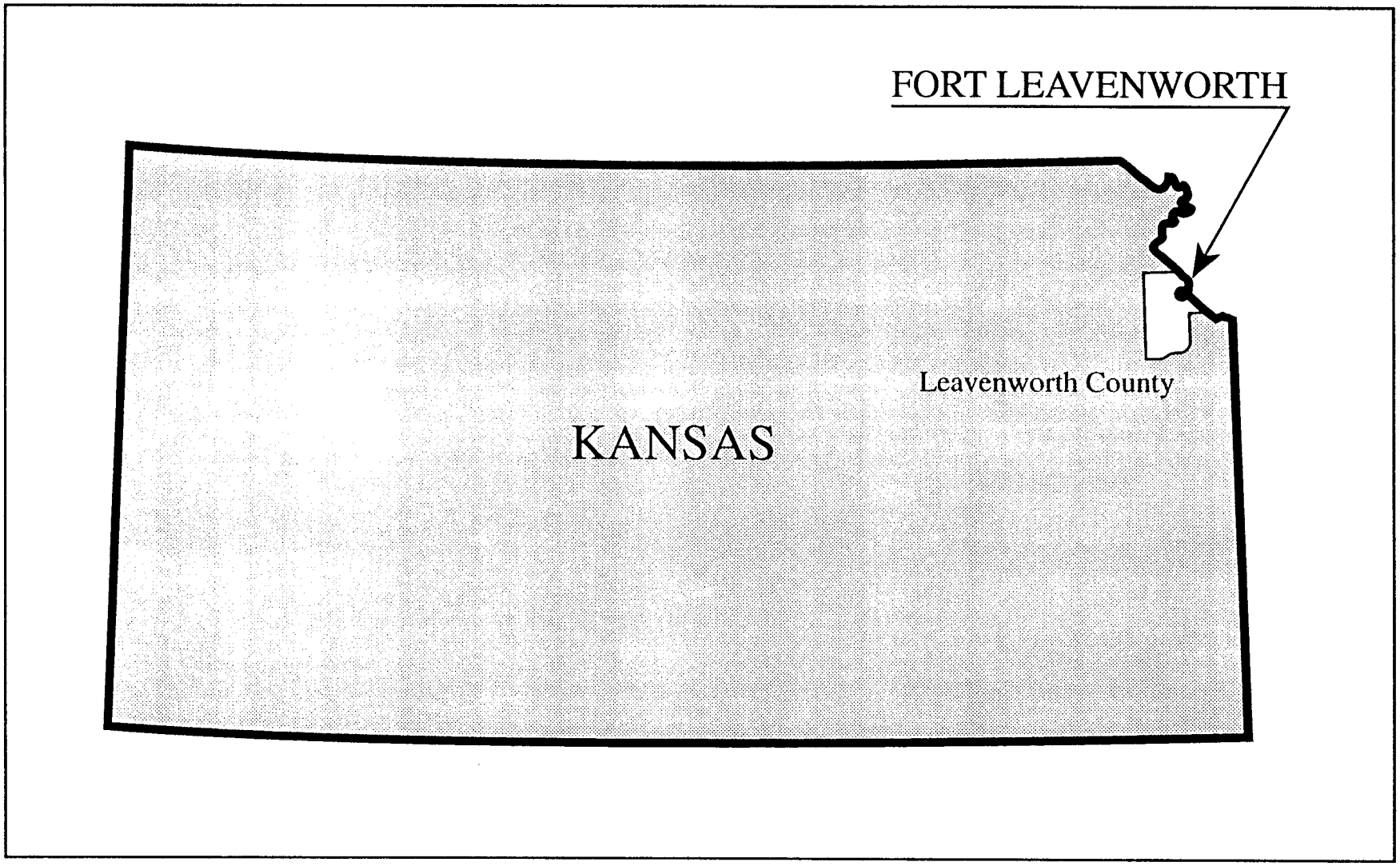


Figure 1. Location of Fort Leavenworth.

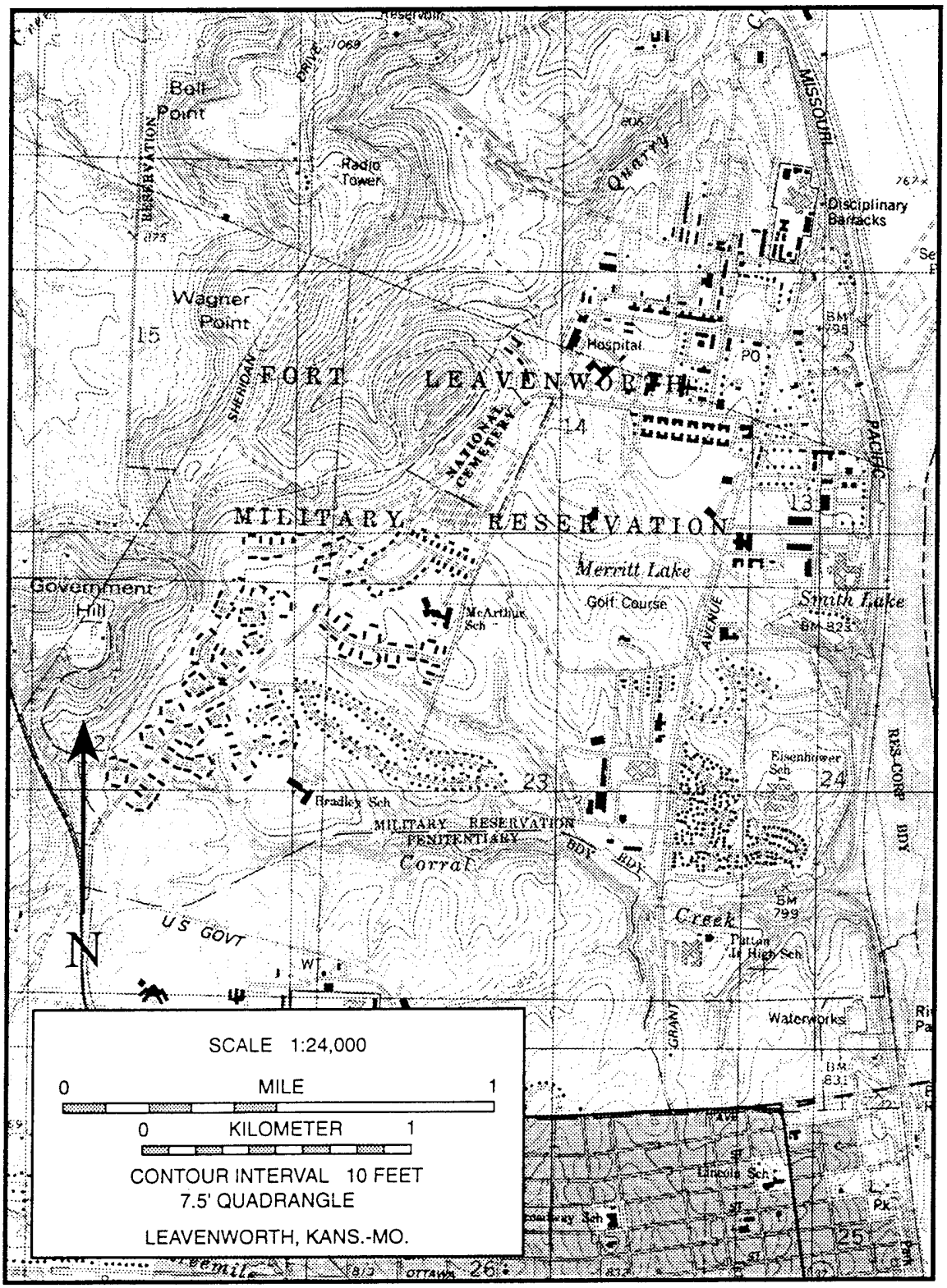


Figure 2. Ft. Leavenworth Military Reservation.

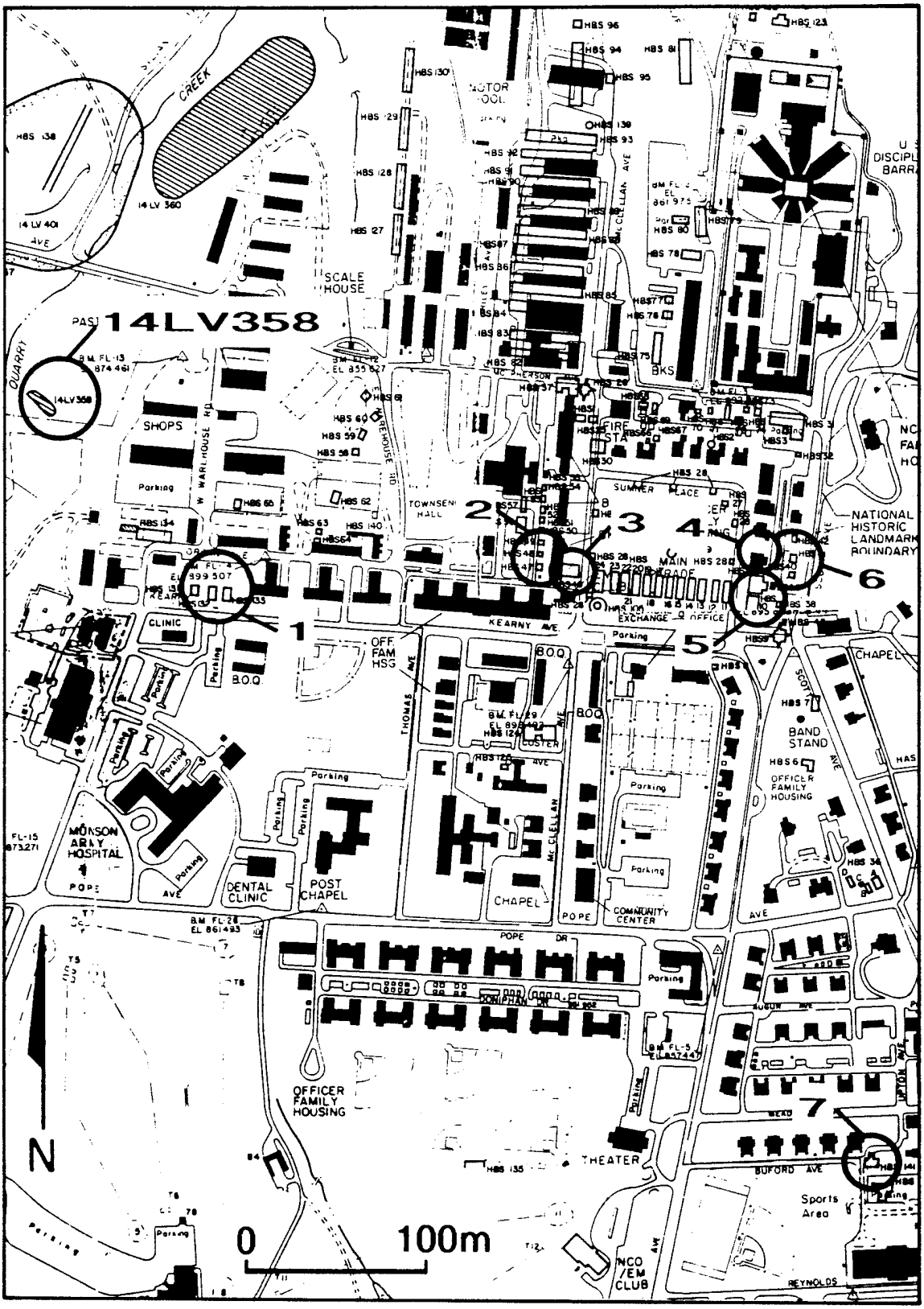


Figure 3. Project area locations, Fort Leavenworth.

CHAPTER II. ENVIRONMENTAL SETTING

Mark J. Wagner

Description of the Installation

The Fort Leavenworth Military Reservation occupies a 5,927 acre area on the west side of Missouri River in Leavenworth County, Kansas (Figure 2). The city of Leavenworth, Kansas, is located immediately south and adjacent to the south boundary of the military reservation. Ft. Leavenworth is an active military post, the primary function of which is to serve as a military graduate school for the training and education of officers for high command and staff assignments. The headquarters of the Combined Arms Center (CAC), under which functions the United States Army Command and General Staff College, is located at the post. Officers from the army, other branches of the services, and allied nations who show demonstrated potential for high command are prepared by the college to assume this duty. The Combined Arms Combat Developments Activity, a subordinate command of the Combined Arms Center, is also headquartered at Ft. Leavenworth. The United States Disciplinary Barracks, established at the fort as the United States Military Prison in 1873, is a maximum security correctional institution for army, air force, and marine prisoners (Stanley 1976:2).

Topography

The reservation is situated geographically in the Glaciated Region of Kansas, a dissected drift plain bordered on the south by the Kansas River valley and on the west by the Flint Hills (Mandel 1987:III-3).

At least two ice sheets have previously invaded northeast Kansas and Leavenworth County which left a covering of glacial drift of unconsolidated till and loess of Pleistocene Age over much of the terrain and in lower areas alluvium of more recent age. Most of the topography in the Fort Leavenworth area may be classified as rock-controlled. Typically along the Missouri River in this portion of the state, the country is quite dissected into a rough and hilly terrain. In many cases the topography in this region is deeply incised and contains prominent rugged hills, steep-walled ravines, and long, narrow, winding ridges. Throughout the area exposures of limestone, shale, sandstone, and some coal of the Pennsylvania series of the Carboniferous system of rock can be seen in the eroded ledges.

The Oread Limestone, relatively weather resistant compared to the other rock members, caps the escarpments in the vicinity. A major topographic feature found in this region is the Oread Escarpment which forms the steep slopes of Government Hill, Pilot Knob, and other conspicuous ridges west of the Missouri River.

Hydrology

The Missouri River forms the eastern boundary of the Fort Leavenworth military reservation. The river varies from 250 m to 350 m in width and flows through a steep-walled valley. The bluffs range from 30 m to 90 m in height with the valley itself being approximately 4.5 km wide near Leavenworth. The Missouri is classified geologically as a mature stream which is characterized by the river flowing in large meanders or long, sweeping curves across the floor of the valley. The channel of the Missouri has shifted frequently during the historic period in the Fort Leavenworth vicinity; this shifting of the mainstream often left numerous sloughs, marshes, and oxbow lakes that eventually filled with silt and associated vegetation combinations.

The eastern part of the military reservation is drained by a series of small, intermittent streams including Corral, Quarry, and One Mile creeks. Corral and Quarry creeks flow through well-defined channels with sloping to steep banks which suggests that water flow in these streams was once greater than it is at present. One Mile Creek flows through a heavily developed section of the post and varies in appearance from a well-defined stream with steep banks to what is essentially a modern shallow drainage ditch. The upper courses of these streams gradually merge into the uplands and rolling terrain at the heads of the drainages to the west. The drainage is entirely to the Missouri River although some portions of the post are indirectly drained by Salt and Plum creeks located west and north of the military reservation.

Geology

Fort Leavenworth is contained within the only portion of Kansas that was covered with continental ice sheets during the Pleistocene. Consequently, till deposits cap landforms, and these deposits contain cobbles with sources to the north and east of Fort Leavenworth. Most noteworthy are cobbles of igneous and metamorphic rock (e.g., granite, basalt, biabase, and quartzite) which do not have naturally occurring outcrops of any significance in Kansas (except sedimentary quartzite) (Tolstead and Swineford 1985). The uplands immediately surrounding Ft. Leavenworth are deeply incised, and glacial deposits have been removed by erosion; however, glacial cobbles were noted by American Resources Group personnel in at least one of the streams within the project area.

Fort Leavenworth is underlain by the Pennsylvanian System bedrock which is part of the Forest City Basin (Branson 1962; Schoewe 1949). The basin encompasses northeastern Kansas, southeastern Iowa, and northwestern Missouri; it is composed of alternating layers of limestone, siltstone, sandstone, shale, coal, and underclay. Three Pennsylvanian stratigraphic units have exposures in the vicinity of Fort Leavenworth: Shawnee Group, Douglas Group, and Lansing Group (Jewett 1964; Moore 1949). Four formations are noteworthy because they contain chert: the Spring Hill Member of the Plattsburg Limestone, Plattsmouth and Toronto members of the Oread Limestone, Spring Branch Member of the Lecompton Limestone, and the Ervine Creek Member of the Tecumseh Formation (Logan 1988; Moore 1949; Reid 1980, 1984). In summary, Ft. Leavenworth is contained within the glaciated portion of Kansas, and it is underlain by Pennsylvanian bedrock. In regard to prehistoric lithic resources, the deeply incised streams and eroded slopes in the vicinity of the fort provided chert and glacial cobbles for the production of chipped-stone and groundstone tools, respectively.

Soils

The soils of the Glaciated Region of northeastern Kansas are predominantly Typic Udolls of the Mollisol order (Mandel 1987:III-30). Parent materials consist primarily of glacial till and thick to moderately thick deposits of loess. Soil associations represented within the Fort Leavenworth military reservation consist of the Onawa-Haynie-Eudora, Marshall-Sharpsburg, and Gosport-Sogn associations (Zavesky and Boatright 1977).

Soils of the Onawa-Haynie-Eudora association are found on the Missouri River floodplain at the northeast end of the post. Onawa soils are nearly level, calcareous, poorly-drained soils located on flat to slightly depressional bottom land. Haynie soils are nearly level well-drained soils located on low bottom land adjacent to the river or on slightly raised areas within the high bottom land. Euradora soils are nearly level well-drained soils on high bottom land that is rarely flooded (Zavesky and Boatright 1977:3-4).

The Marshall-Sharpsburg soil association consists of gently sloping to moderately steep soils on the rolling loess hills below the Oread Limestone escarpment northwest of the city of Leavenworth (Zavesky and Boatright 1977:5). The gently sloping to steep, well-drained Marshall soils occur on the sides and tops of ridges and on concave foot slopes. Sharpsburg soils are gently sloping to sloping moderately well-drained soils on the concave sides and tops of ridges.

The Gosport-Sogn association consists of sloping to steep soils in the uplands. Gosport soils are moderately deep, strongly sloping to steep soils in upland areas downslope from areas of limestone outcrop. Sogn soils are shallow, strongly sloping soils associated with limestone escarpments and mixed with Gosport soils (Zavesky and Boatright 1977:9).

Flora and Fauna

The Missouri River valley forms a corridor which provides a route for an extension of the oak-hickory through what was once the tall grass prairie. The flora and fauna of the deciduous forest complex have utilized this corridor and the adjacent feeder streams' valleys to spread inland throughout much of northeastern Kansas.

The timbered fringes of the Missouri and of the adjacent smaller tributaries mark the western boundary of the Eastern deciduous forest. The tree crowns of this forest form a dense overstory that allows little direct sunlight to reach the ground in summer. Tree species represented include several varieties of oak, hickory, and elm along with sycamore, cottonwood, ash, willow, walnut, hackberry, locust, and maple species. The understory of the forest often consists of an almost impenetrable mass of intermixed species of weedy annuals and perennials along with greenbrier, gooseberry, wild grape, virginia creeper, sumac, and poison ivy.

A mosaic of tall grass prairie and oak-hickory forest occurs immediately west of the oak-hickory forest in Leavenworth and adjacent counties in northeastern Kansas (Mandel 1987:III-21). The oak-hickory forest association is found on steep slopes and ravines within this area while the tall grass prairie occurs on level to rolling uplands with clayey soils. Dominant flora within the prairie areas include little and big bluestem, switchgrass, Indian grass, and brome grass.

Modern day faunal species within the Fort Leavenworth military reservation include deer, raccoon, coyote, fox, many forms of rodents, and numerous types of birds. Other fauna consists of amphibians, fishes, turtles, beaver, wading birds, plus migratory and some resident waterfowl species (Barr and Rowlison 1977:3-5).

Land Use

Current land use within the boundaries of the military reservation varies considerably, largely as the result of topographical factors. With the exception of Sherman Army Airfield and the War Games facility, most of the Missouri River floodplain is either wooded or used for agricultural purposes. The majority of the post buildings are located on the rolling uplands overlooking the Missouri River floodplain with the United States Disciplinary Barracks, General Staff College, hospital, and other military facilities located at the northern end of this area. The center of this upland area contains a golf course, athletic fields, the post exchange, and other support buildings with military family housing units located to the southwest and southeast. The extreme southern part of the rolling upland section of the reservation is used by the United States Disciplinary Barracks as a cow pasture. The tops of the rugged hills in the western part of the military reservation including Hancock Hill,

Government Hill, Bell Point, and Wagner Point have been graded for the construction of roads, radio towers, and other facilities. The upper wooded slopes of these hills are too steep for building purposes and consequently remain undeveloped. Finally, the lower western slopes of Bell and Wagner points currently are used as cow pastures and farmland.

CHAPTER III. CULTURAL CONTEXT

Mark J. Wagner

Introduction

Contemporary approaches to cultural resource management emphasize the importance of placing archaeological and historic properties in contexts that include a broad range of related properties classified into defined property types. A historic context is a theoretical construct that is defined as ". . .an organizational format that groups information about related historic properties based on a theme, geographic limits, and chronological period (Federal Register 1983:44718).

The Kansas Preservation Plan (Brown and Simmons 1987) first became available in 1987. Modeled after the National Park Service's Resource Protection Planning Process (RP3), the plan offers study units, cultural units, themes, and research questions for the investigation of the state's past. The historical archaeology section of the Kansas Preservation Plan was not completed until two years later (Lees 1989). Five chronologically based study units were defined to provide cultural contexts for the evaluation of historical archaeological sites. These were: (1) Exploration and Contact with Native Americans (1541-1820); (2) Exploration and Settlement (1820-1865); (3) Period of Rural and Agricultural Dominance (1865-1900); (4) Time of Contrasts (1900-1939); (5) The Recent Past (1939-Present). Each of these study units represents a period in which major changes in the history of Kansas occurred. Five research contexts--historical particularism, reconstruction of past lifeways, processual studies, archaeological science, and direct historical approach--for the investigation of historical archaeological resources associated with each of the study units also were defined. These research contexts were defined as:

> a statement of problem domains or specific research topics which are of current interest in the state or to which research could be productively applied....these research questions can...be used to structure research, to define the sites of interest and to validate significance evaluations (Lees 1989:75).

The chronological periods presented in the Kansas Preservation Plan Section on Historical Archaeology (Lees 1989) represent the state-wide historic context for Ft. Leavenworth, the occupation of which (1827-present) spans all of these periods. Ft.

Leavenworth, however, was created as the result of national policy rather than being associated with internal developments within Kansas. As such, historical archaeological sites associated with Ft. Leavenworth do not reflect the agricultural and industrial changes characteristic of the Period of Rural/Agricultural Dominance (1885-1900) and Time of Contrasts (1900-1939) respectively.

For the above reasons, it is suggested here that the significance of sites within Ft. Leavenworth should be evaluated on the basis of their ability to provide information regarding the daily lives, activities, and material culture of the tens of thousands of military personnel that have occupied Ft. Leavenworth from 1827 until the present day. Wagner et al. (1988) defined nine temporal periods for Ft. Leavenworth based on changes in the functions and responsibilities of the fort through time. These periods are: (1) Santa Fe Trail/Indian Relocation (1827-1844); (2) Oregon Trail/Mexican War (1845-1860); (3) Civil War (1861-1865); (4) Post Civil War (1866-1881); (5) Infantry and Cavalry School (1882-1897); (6) Spanish American War/Philippine Insurrection (1898-1902); (7) General Service Schools (1902-1917); (8) World War 1 (1918); (9) School of the Line/General Staff School (1919-1945). Although characteristics associated with the periods overlap (the Santa Fe Trail, for example, was a major overland route until approximately 1865), each period represents a time in which the responsibilities of the post were expanded or changed beyond those of the preceding period.

The above temporal periods were presented (with one revision) by the authors of the historic preservation plan for Ft. Leavenworth as forming the cultural context of the installation (Cox et al. 1989:89). The single revision consisted of the addition of a temporal period (French Exploration and Ft. de Cavagnial [1714-1765]) that pre-dated the founding of the installation.

In the following section, information is presented regarding the characteristics of each of the chronological periods for Ft. Leavenworth (Wagner et al. 1988; Cox et al. 1989). This information forms the cultural context for Ft. Leavenworth and provides a setting for the research questions to be examined through the Phase II investigations.

Santa Fe Trail/Indian Relocation (1827-1844)

Ft. Leavenworth was established in 1827 on the orders of the War Department. These orders directed that the post be established on the left side of the Missouri River near the mouth of the Platte River. Approximately six weeks following the issuance of the orders, four companies of the 3rd Regiment of the U.S. Infantry under the command of Captain W.G. Belknap left in keelboats from Jefferson Barracks, Missouri, to establish the new post; the wives and children of some of the soldiers accompanied them. The whereabouts of Colonel Leavenworth during this time are unknown, but he appears to have preceded the troops in order to select a suitable site for the cantonment (Blackburn 1971:58).

Colonel Leavenworth's report to the War Department on May 8, 1827, stated that his examination of the country revealed that no suitable site for the cantonment existed on the left side of the river. Using his own judgment, he had selected a site on the right side of the river that offered the advantages of being on the same side of the river as the Santa Fe Trail and being surrounded by dry, rolling country. Leavenworth's choice for the post was approved by the War Department on September 19, 1827, and officially designated as "Cantonment Leavenworth" the same year (Hunt 1926:60).

The initial structures at Cantonment Leavenworth consisted of a tent camp. These were quickly replaced by small bark and log huts erected in the general location of the square known as the Main Parade. By 1828, the bark huts were being replaced by log structures, and new cottonwood stables were under construction (Hunt 1926:22). An 1829 inspection report by Col. George Croghan, inspector general, found that:

> The same mistake has been committed here that I have elsewhere more than once complained of too much has been undertaken everything is upon too vast a scale to warrant a belief in its completion ... within any reasonable time ... A great deal has been done, much more in truth than could have been expected of a garrison so reduced by sickness; still the work is not half accomplished ... A good hospital has been erected, and four houses originally intended to quarter one company each (though now occupied by officers) have been put up and very nearly completed, but there yet remains to be provided for: Officers quarters, store houses, guard house, magazine, etc., etc. (DeZurko 1947:355).

As the above report indicates, the garrison suffered heavily from sickness due to the unhealthiness of the region. Malarial fevers struck the post so severely in 1827 that at one point 77 of the 174 enlisted men were sick. An additional 65 soldiers were detailed to take care of the sick, leaving only 32 men for active duty (Hunt 1926:24). In 1828, a surgeon at the post reported that 163 cases of malaria had occurred during June of that year, 11 of which were fatal (Walton 1973:26). Malarial fevers again struck the post in the spring of 1829 with several deaths resulting. The War Department considered the situation so serious that the 3rd Infantry was ordered to leave the post and proceed back to Jefferson Barracks in St. Louis, Missouri. They were replaced by the 6th Infantry which had orders to spend the summer on the Plains and only occupy the Cantonment in the winter (Hunt 1926:27-30).

The respite for the 3rd Infantry was short lived. Reports of Indian trouble in Randolph County, Missouri, resulted in Colonel Leavenworth ordering one company of the 3rd Infantry and five companies of the 6th Infantry to leave Jefferson Barracks to return to Cantonment Leavenworth. Colonel Leavenworth was able to settle the matter without further bloodshed through meetings with the Iowa Indians and the Missouri settlers (Walton 1973:16-17).

Cantonment Leavenworth had been established to protect trade caravans traveling along the Santa Fe Trail between the United States and Mexico. However, the first expedition to actually perform such a duty did not occur until two years after the post was founded, when a battalion of the 6th Infantry under Major Bennet Riley set out along the trail in June, 1829 (Hunt 1926:32). Major Riley escorted a group of traders as far as Choteau's Island in the Arkansas River; this was the beginning of Mexican Territory, and the regiment went into camp to await the return of the traders in the fall. Indians attacked the caravan shortly after the regiment left it. Notified by messenger of the attack, Riley entered Mexican territory and provided the caravan with an escort for five more days, afterwards returning to Chouteau Island (Young 1955:42). Over the next three months, the command was attacked several times by Kiowa and Comanche Indians who were after their livestock, and several soldiers were killed or wounded (Young 1955:43-48). Riley rendezvoused with the traders in the fall and escorted them back to United States territory, arriving safely at Cantonment Leavenworth on November 8, 1829. Following Riley's expedition, the Santa Fe Trail remained peaceful for several years, but protection was required again in 1832 and 1834 (Richmond 1974:45). In both years companies of Mounted Rangers operating out of the post escorted trade caravans down the Santa Fe Trail. As Hunt (1926:49) notes, this duty was probably more frequent than existing records indicate.

In 1832 the War Department issued an order that all cantonments be reclassified as forts, and the name of the post was officially changed to Fort Leavenworth. Also in 1834 Fort Leavenworth was designated as the headquarters of the 1st Regiment of Dragoons by the War Department (Barr and Rowlison 1977:19, 21). Dragoons were troops trained to fight both on foot and on horseback and formed a separate branch of service in the pre-Civil War army (Russel 1965:xiii). The 1st Regiment of Dragoons had been organized at Jefferson Barracks, Missouri, in 1833 to replace the Mounted Rangers who had proved ineffective in dealing with the Indians (Hunt 1926:59).

In addition to providing military escort to traders using the Santa Fe Trail, Fort Leavenworth became a center of Indian relocation during the early 1830s as the eastern tribes were forced to give up their lands east of the Mississippi River and move west of the Missouri River. The idea had been suggested as early as 1803, when President Thomas Jefferson proposed that the eastern tribes be given land in an Indian territory west of the Mississippi in exchange for those on which they lived (Richmond 1974:25). Jefferson believed this would result in an orderly American settlement in the east and provide the Indians with time to become civilized (i.e., acculturated); nothing substantial came of this plan. Some missionaries also wished to remove the Indians from white influence which they felt was destroying the Indians spiritually and physically. As early as 1818 Isaac McCoy, a Baptist teacher and minister, believed the only solution to be the creation of an Indian state beyond the Mississippi River where the Indians could become Christian farmers (Barnes 1936:230; Richmond 1974:26). He approached the Secretary of War, John C. Calhoun, with his plan. Calhoun in turn passed it on to President James Monroe who, in 1825, proposed a voluntary migration plan (Manzo 1981:247). In June 1825, William Clark arranged a treaty with the Kansa and Osage Indians whereby they gave up large areas of land in Kansas for

the resettlement of the eastern tribes (Richmond 1974:26). In 1828 Isaac McCoy escorted delegations of Potawatomies, Ottowas, Creeks, Chickasaws, and Choctaws to the west to inspect the new lands (Barnes 1936:228). These and other eastern Woodland Indian groups were distressed by the lack of trees and the severity of the climate in Kansas (Manzo 1981:247-252). Few were anxious to move, and in 1830 Congress passed the Indian Removal bill providing for the mandatory removal of the eastern Indians to a western Indian territory.

Fort Leavenworth was contained within part of the Kansas lands given to the Delaware Indians; no provision had been made in the treaty regarding the boundaries of the military post (Blackburn 1971:65). Isaac McCoy had been designated by the Government in 1830 to survey the lands allotted to the Delaware and other Indian tribes. McCoy reached an agreement with John Quick, a Delaware representative and Indian Commissioner, regarding the location and size of the military reservation. Using soldiers supplied by the post, McCoy surveyed and established the boundaries of the military reservation on December 30, 1830 (Hunt 1926:41-42).

Numerous Indian councils were held at Fort Leavenworth throughout the 1830s. The upper Missouri Indian agent, John Doughtery, had moved his office to Ft. Leavenworth in 1827 shortly after the founding of the post. Both Doughtery and the post commander at the time, Colonel Leavenworth, apparently believed Doughtery would be more useful at the post than at Council Bluffs (Holt and Holt 1985:28). In 1830 Doughtery called the first large council, which was attended by representatives of the Oto, Iowa, Omaha, Shawnee, Delaware, Sac, and Kickapoo tribes (Hunt 1926:39). A second council was held with the Pawnee Indians on September 24, 1830, at the request of Isaac McCoy who was responsible for surveying part of their lands. The Pawnee agreed to the survey, which was completed without incident. A large council was held at the post in 1834 to settle trouble between the Pawnee and Delaware that had started when the Pawnee and their Oto allies continued to hunt on land reserved for the Delaware. The conflict broke into open warfare with the Pawnee ambushing Delaware hunting parties and the Delaware in turn burning a Pawnee village (Walton 1973:24). The Indians began arriving at the post several days before the council, "having pitched their camps in the adjacent groves" (Irving 1955:241). After several days of meetings, the Pawnee and Delaware agreed to a treaty that essentially agreed with the Delaware position, and the matter was settled. Other councils at the fort included one with the Sac and Fox in September, 1836, for the purpose of extinguishing their land titles in Missouri (Hunt 1926:66-67). Doughtery remained as Indian Agent at Ft. Leavenworth until 1839, when he resigned in disappointment over not receiving a promotion to Commissioner of Indian Affairs (Holt and Holt 1985:34-35).

In addition to the Indian councils held at the fort during the 1830s, Indians visited the post frequently to trade with the sutler and apparently just to visit. Treat Irving (1955:28-34) reported seeing a group of approximately 40 Kansa at the post in 1833. Their village was over 100 miles away, suggesting that they were probably camping at the post. The Kansa felt comfortable enough at the post that they would enter the post buildings frequently and without notice. Although the Kansa may have been at the post to attend a

council, Irving gives the impression that their presence at the post had no particular purpose. Irving also reported seeing a Sac Indian in the woods adjoining the post and numerous Kickapoo who had come to trade with the post sutler (Irving 1955:36-38). In all, a considerable Indian presence within the boundaries of the military reservation during the 1830s appears to be indicated.

Military expeditions to police the Santa Fe Trail and impress the Indians with shows of force continued to leave the post during the late 1830s and early 1840s. The major expeditions included the Dragoon Expedition of 1833-1834 during which the first post commander, Colonel Leavenworth, died of injuries; the expedition of Colonel Henry Dodge to the Rocky Mountains and Colorado in 1835; and the Pawnee Village Expeditions of 1844-1845 under the command of Major Clifton Wharton. Military escorts continued to be provided to caravans traveling on the Santa Fe Trail during this period. In 1843 Captain Phillip St. George Cooke escorted a caravan of traders down the Trail to the Mexican border, in the process capturing a group of "Texan Invincibles" under Captain Jacob Snively. These men had been engaged in confiscating property within United States territory under the dubious authority of a Texas commission (Hunt 1926:70). Innumerable patrols and smaller commands also left the post on an almost monthly basis during the 1830s and 1840s to provide escorts, protect civilians from Indian attack, settle disputes among various Indian groups, assist in Indian relocation, and evict squatters from Indian lands (Young 1955:91, 92, 98).

Oregon Trail/Mexican War (1845-1860)

During this period the responsibilities of the post began to expand. Although military escorts continued to be provided to trading caravans along the Santa Fe Trail, the onset of western migration along the Oregon Trail and the Mexican War expanded the responsibilities of the post beyond that of its original purpose of protecting southwestern bound travelers.

Although the Oregon Trail had been used by fur traders as early as 1813, it was not until 1830 that a wagon train under the direction of William Sublette traveled along the trail to the Rocky Mountains (Richmond 1974:47). By the winter of 1844-45, western bound emigrants planning to use the trail were gathered along the Missouri frontier in unprecedented numbers. A branch of the trail ran through Fort Leavenworth and in May, 1845, the 1st Dragoons received orders to protect western bound emigrants along the trail. In addition, they were to explore as far as the South Pass, discover the disposition of the Indians, and return by way of the Santa Fe Trail to escort the trade caravans east (Young 1955:153). The South Pass Expedition was under the command of Colonel Kearny with the troops supplied from Fort Leavenworth. During this three month 2,200 mile journey, the 1st Dragoons escorted a western bound emigrant train, rescued a group of stranded French-Canadian voyagers, negotiated with the Sioux near Fort Laramie, crossed the Continental Divide at South Pass, met with the Cheyenne, and escorted the trade caravans back up the Santa Fe Trail to Fort Leavenworth (Young 1955:152-171). While on the return

trip, the expedition for the first time encountered western bound emigrants along the Santa Fe Trail in addition to the usual trade caravans (Young 1955:171).

Western emigration along the Oregon trail steadily increased throughout the late 1840s. In 1844, there were over 1,400 emigrants; by 1845 3,000; and by 1848 13,000 emigrants, 50,000 head of stock, and 3,000 wagons used the trail. The California Gold Rush of 1848 increased traffic on the trail; 5,350 wagons crossed the Missouri River in a single month in 1849 (Walton 1973:64). In 1848 and 1849 military expeditions were dispatched from Fort Leavenworth to investigate the land around Columbia, Oregon, and the Great Salt Lake area of Utah toward which the immigrants were heading (Hunt 1926:82).

With the beginning of the Mexican War in 1846, Fort Leavenworth became a base for military operations against Mexican possessions in the Southwest. The United States Congress authorized the raising of 50,000 troops to be divided into three divisions: the Army of the West, the Army of the Center, and the Army of Occupation. The Army of the West was to be based at Fort Leavenworth under the command of Colonel Stephen Kearney. With the exception of a small force of Regular Dragoons, Kearney's force was made up of volunteers from Missouri including cavalry, artillery, and infantry units. The entire force numbered 1,658 men. The volunteer recruits were housed, equipped, and trained at Fort Leavenworth until Kearney's expedition departed the fort on June 26, 1846 (Hunt 1926:76). Kearney's expedition and a subsequent one under the command of Colonel Sterling Price resulted in the conquest of New Mexico and California by the fall of 1847. While Kearney's expedition was in the West, numerous additional volunteer regiments were sent to Fort Leavenworth to be equipped and dispatched as needed. During the Mexican War Fort Leavenworth assumed a role that it would continue to fulfill during the Civil War and the Indian Wars of the 1870s, that of supply depot and quartermaster to military forces in the western United states.

Fort Leavenworth remained an important supply depot following the close of the Mexican War in 1848. By 1850, 67 Army posts were located west of the Mississippi River. Fort Leavenworth was the supply depot for many of these posts, especially those close to the Santa Fe and Oregon Trails (Blackburn 1973:4). Supplies including pork and military equipment were shipped to Fort Leavenworth from St. Louis and other downstream ports. New storehouses were built on the post in 1850 to handle the increase in material, including a three story warehouse along the river at which steamboats unloaded their supplies.

During the Mexican War, the Army initially attempted to operate its own freight system to move supplies from Fort Leavenworth to outlying posts and the regiments in the field. The quartermaster at Fort Leavenworth alone purchased 459 horses, 3,658 mules, 14,904 oxen, and 516 pack saddles for the cavalry, artillery, and transportation (Walker 1966:228). This venture ended in dismal failure due to the inability of the Army to care for the thousands of animals involved and the maintenance and repair of the wagons. One observer estimated that five million dollars of government supplies were strewn along the Santa Fe Trail as a consequence of the Army's freight operation (Blackburn 1973:5). In 1847

the quartermaster at Fort Leavenworth was instructed to contract with civilian freighters. In 1848 the government entered into a contract with James Brown of Independence, Missouri, to transport supplies from Fort Leavenworth to Santa Fe (Walker 1966:230). The government engaged various contractors over the next several years, but in 1855 the firm of Russell, Majors, and Waddell obtained a two year monopoly on military freighting west of the Missouri River, becoming the leading freight company on the Santa Fe and Oregon Trails (Blackburn 1973:6). In 1857 the Army notified this firm that they would have to transport three million pounds of supplies to Utah to supply an expedition against the Mormons; this was above and beyond the company's existing contract to transport supplies to the other forts. The firm dispatched the supplies in 41 oxen-pulled wagons as well as sending 2,000 head of cattle (Blackburn 1973:7). Although the headquarters of Russell, Wadell, and Majors was located in the town of Leavenworth, the many thousands of oxen and mules used to haul the wagons as well as animals belonging to the Government were corralled in One Mile Creek (otherwise known as Corral Creek) in the southern part of the military reservation (Young 1955:97). In describing this establishment in 1849, Horace Greeley enthused:

> Such acres of wagons! Such pyramids of extra axletrees! Such herds of oxen! Such regiments of drivers and other employees! No one who does not see can realize how vast a business this is, nor how immense its outlay as well as income. I presume the great firm has at this hour two millions of dollars invested in stock, mainly oxen, mules, and wagons. [Last year they employed six thousand teamsters and worked 45,000 oxen] (Hunt 1926:98).

Although Greeley's account might seem exaggerated, the Russell, Majors, and Waddell bookkeeper recorded that in March of 1859 the company owned 4,796 wagons, 46,720 oxen, 4,380 mules, and had 4,680 employees (Walker 1966:240). By the close of 1859, however, the company actually was bankrupt due to unwise investments in the Pony Express, stagecoaching, and a chain of retail stores. By 1860 Russell, Majors, and Waddell had been replaced as freight contractors to the Army by the firm of Irwin, Jackson, and Company (Walker 1966:241).

Fort Leavenworth also became an ordnance depot and arsenal during the 1850s. A depot had been established at the post during the Mexican War but was discontinued in 1849 (Blackburn 1973:8). The Chief of Ordnance believed that the western movement of military operations required a movement of the government arsenal from Liberty, Missouri, to a more western location. Fort Leavenworth was selected as the site (Hunt 1926:121). A small depot was established in 1858. This was enlarged in 1859; in 1860, 138 acres in the southeast corner of the post became the site of the arsenal (Blackburn 1973:8; Hunt 1926:121).

Military and exploratory expeditions continued to depart from Fort Leavenworth during the 1850s. In 1854 Major Edward Steptoe led an expedition with the mission of finding a new route to California while Colonel Faunterloy and two troops of dragoons

escorted a supply train and officers' families to Fort Union, New Mexico (Hunt 1926:99). In 1855 General William S. Harney organized a military expedition from Fort Leavenworth to punish the Sioux for the massacre of 30 soldiers under the command of Lieutenant Gratton the year before. Harney met the Indians in Nebraska, refused to negotiate, and defeated them in a battle in which many of the Indians were killed (Young 1955:110-111). In May, 1857, Colonel E.V. Sumner led a successful expedition against the Cheyenne who had been attacking emigrants in Kansas and Nebraska (Hunt 1926:115). Also in 1857, General Sidney Johnson led an expedition against the Mormons in Utah who refused to acknowledge the authority of the federal government. The Mormons and the weather combined to defeat the purpose of the expedition, and the matter was settled by negotiation in 1859 (Hunt 1926:115-118). Finally, in 1858 a force of 2,000 men departed Fort Leavenworth for Benicia Barracks in California (Hunt 1926:119-120).

Indian councils and conferences continued to be held at Fort Leavenworth throughout the 1840s; in October, 1848, the representatives of the Delaware, Wyandotte, Shawnee, Potawatomie, Ottowa, Chippewa, Peoria, and Miami met at Fort Leavenworth to protest proposed legislation to organize the territory of Nebraska, which they feared spelled the loss of their lands. Although they did succeed in making their views heard at the council, nothing was decided and the Indians became uneasy about their future. Their fears were realized in 1853, when a bill was submitted to organize the territory of Nebraska. A revision of this bill in 1854 called for the creation of two territories, Kansas and Nebraska (Richmond 1974:61). An important objection to this bill was that the new territory could not be organized until the Indian occupancy titles were extinguished (Abel 1904:86). Treaties were reached with the Delaware, Kickapoo, Miami, Shawnee, and Piankashaw providing for the sale or cession of their land to the federal government in 1854; with the Wyandot in 1855; with the Kaw, Chippewa, Sac, and Fox in 1860; with the Potawatomie and Ottowa in 1862; the Cherokee in 1866; and with the Osage in 1867 (Abel 1904:88-109). Although many of these Indians groups did not leave Kansas for several years after the treaties, the treaties opened the way for white settlement of their lands.

The Kansas-Nebraska Act also provided that the question of whether slavery should be allowed in the new territories would be decided on the basis of popular sovereignty. The net effect of this provision was that both the pro- and anti-slavery factions encouraged their supporters to emigrate to Kansas, and the conflict eventually turned to bloodshed. Fort Leavenworth was the acting capital of the new territory from October to November of 1854. In the same year, threats of violence from slavery supporters caused many of the residents of the newly founded town of Leavenworth to abandon their homes on several occasions and move onto the military reservation for protection (Hunt 1926:113-114); Free-Soil families are also reported as having asked and been granted refuge on the military reservation in 1856 (Walton 1973:116). Unable to calm the disturbances in Kansas between the Free-Soil and pro-slavery factions, the Governor requested in December 1855 that the federal government authorize the Commander of Fort Leavenworth to assist him. The War Department issued orders authorizing the Governor to use federal troops in early 1856; over the next several years soldiers from Fort Leavenworth used the threat of force on numerous

occasions to quell disturbances and enable the territorial government to operate (Walton 1973:112-118).

The Civil War (1861-1865)

During the Civil War, Fort Leavenworth functioned as an arsenal, a supply base, and a training and organizational camp for volunteer troops. Rumors that the Confederates intended to seize the arsenal led to the withdrawal of troops from Forts Kearney, Randall, and Ridgely to reinforce Fort Leavenworth in April 1861. In addition, troops withdrawn from Fort Smith reached Fort Leavenworth in May 1861 (Hunt 1926:127-131).

During the Civil War the supply depots at Fort Leavenworth furnished equipment and food to troops and forts farther west as well as troops stationed in Kansas to protect the state against Confederates. In 1861 Irwin, Jackson, and Company, government freighters, moved their headquarters from Kansas City to Leavenworth when the army moved its western supply depots to Fort Leavenworth. For three years (1861-1863), this firm had a monopoly on government freight contracts. By 1864 it was estimated that more than four million dollars of supplies had passed through the post since the start of the Civil War. During that time Fort Leavenworth was the supply base for all troops in the department of Kansas and New Mexico as well as those on the Great Plains (Blackburn 1973:9).

A training camp for volunteers named Camp Lincoln was established within the military reservation on May 29, 1861 (Hunt 1926:134). Over the next four years, thousands of volunteers were drilled, equipped, and shipped out from this camp. Camp Lincoln appears to have been located in the southern part of the military reservation south of the permanent post buildings. For example, Walton (1973:123) notes that one of the volunteer regiments, the 1st Kansas Regiment, "went into camp at a spot halfway between the post and the city," suggesting a southern location for Camp Lincoln.

In addition to training volunteers, Camp Lincoln may also have served to process the "Galvanized Yankees," former Confederate prisoners of war who had enlisted in the United States Army for service against the Indians on the western frontier (Walton 1973:133). Two of these regiments, approximating 1,200 men, were organized at Fort Leavenworth in February 1865. After training, these men were shipped out to other frontier posts for patrol duty and expeditions against the Indians. Following the end of the war, the majority of the "Galvanized Yankees" were discharged from the army at Fort Leavenworth in late 1866 (Walton 1973:135).

General Stirling Price's northward march through Missouri with 16,000 Confederate soldiers in September 1864 led to the construction of a series of defensive earthworks known as Fort Sully in the southwestern part of the Fort Leavenworth military reservation. Although fortified with siege guns, the earthworks were never tested in battle due to the defeat of General Price's army in a series of engagements in Missouri before he was able to reach Fort Leavenworth (Hunt 1926:141-142; Walton 1973:135-137).

In addition to its duties as an arsenal and a training camp, Fort Leavenworth continued to protect the western frontier during the Civil War with military expeditions leaving the post to engage the Indians and protect western bound emigrants. At the time of General Price's 1864 invasion, most of the Fort Leavenworth troops were in the West pursuing Indians (Hunt 1926:141).

Post Civil War (1866-1881)

Following the end of the Civil War, increasing pressure from white settlement resulted in a series of Indian attacks against outlying settlements and the Kansas Pacific Railway during the winter of 1866-1867 (Hunt 1926:144-145). In order to deal with the situation more effectively, a series of new posts--Forts Dodge, Harker, Hays, and Wallace--were created to reinforce the existing posts of Leavenworth, Riley, Larned, and Zarah (Richmond 1974:89). During the beginning of this period, Fort Leavenworth continued to function as a logistical base, with troops and supplies for the expeditions against the Indians passing through the post on the way to their ultimate destinations. The completion of railroads across the Plains and mountains, however, doomed the long distance freighting business. The fiscal year ending June 30, 1866, saw the first use of railroads west of the Missouri River for the transportation of military supplies. Although Fort Leavenworth continued to function as a supply depot for New Mexico and the plains, military posts in Colorado and Utah were supplied by train by 1866. The importance of Fort Leavenworth steadily diminished throughout the 1870s. In 1874 the arsenal was discontinued and transferred to Rock Island, Illinois. The quartermaster supply depots continued to function at a diminished level throughout the 1870s but were discontinued by the 1880s (Blackburn 1973:11-12). A government observer who visited the town of Leavenworth in the early 1870s reported that freight wagons were abandoned on vacant lots around town until they were carried away piece by piece. The oxen that had been used to pull the wagons were sold for whatever they would bring or abandoned on the prairies (Walker 1966:59).

One notable event that occurred at Fort Leavenworth in the post-Civil War period was the organization of the all black 10th Regiment of United States Cavalry under the command of Colonel Benjamin Grierson. These "Buffalo Soldiers" (as they were later to be called by the Indians) were trained and equipped at Fort Leavenworth during late 1866 and early 1867. Prejudice against the use of black troops by the Post Commander resulted in their being quartered in January and February 1867 "in a swampy area, the only low ground on the post" (Walton 1973:141), presumably somewhere on the floodplain at the northeast edge of the military reservation. By June 1867, at least part of the 10th Cavalry had moved and were "encamped along the road between Leavenworth and the city" in the southern part of the military reservation (Leckie 1967:14). Colonel Grierson organized the regiment quickly, and by August 1867 eight companies had left Fort Leavenworth for other posts (Leckie 1967:16).

Fort Leavenworth settled into a relatively comfortable existence as a garrison post from 1870-1880; facilities on the post were renovated and new buildings constructed (Hunt

1926:147-149). By 1875 a race track with a grandstand had been constructed in the bottoms at the northeast end of the military reservation, and race days were scheduled.

The race track saw a different use in 1876, when Chief Joseph and 430 Nez Perce Indians were confined in the center of the track from November 27, 1877, to July 21, 1878. They had been captured by Colonel Nelson Miles in Montana and sent to Fort Leavenworth to await relocation to a reservation. The floodplain location was so unhealthy that the Indian inspector who supervised their removal to the Indian Territory the next year reported that at one point 260 of the Indians were sick from malarial fevers and that one quarter of them had died (McWhorter 1952:529). Out of a total of 431 Indian prisoners known to be at the post on December 4, 1877, 410 were alive the next spring. The actual death rate was probably higher as it is not known how many babies were born during this time or how many additional Nez Perce prisoners were added to the original group of 431 (McWhorter 1952:530).

The 1870s also witnessed the construction of the first military prison at Fort Leavenworth. The decision to place the prison at Fort Leavenworth apparently was made concurrently with the decision to move the Arsenal to Rock Island, Illinois, on February 2, 1874 (Hunt 1926:151). The prison was located within the existing Quartermaster's Depot on the north side of the post, and the supply depot was transferred to the abandoned arsenal buildings.

Infantry and Cavalry School (1882-1897)

With the lessening of Indian troubles on the frontier, it was recognized by the Army that many of the smaller military posts no longer served a useful purpose. In 1877 General John Pope, commander of the Department of the Missouri, recommended the abandonment of the smaller posts and the concentration of their troops at Fort Leavenworth. Pope believed that not only would this save the Army money but that it would raise the morale and increase the training opportunities of the formerly isolated troops (Hunt 1926:155-156, 158-159).

During this same period three of the great northern Civil War officers--Generals Grant, Sherman, and Sheridan--were concerned about the need for a school to teach basic command skills to infantry and cavalry officers. All three separately reached the conclusion that an effort must be made to improve the educational qualifications of officers (Walton 1973:162). As Commander of the Army of the United States, General Sherman issued General Orders No. 42 of 1881 creating a school of application for infantry and cavalry officers at Fort Leavenworth (Hunt 1926:159-160). The student body was to consist of one lieutenant from each cavalry and infantry regiment with the students nominated by the commanding officers of the regiment. At the school they were to be attached to troops of cavalry, infantry, and artillery where they would perform the duties of company officers as well as attending courses in military science. The school was officially designated as established by the War Department on January 26, 1882 (Walton 1973:164).

In 1886 the name of the school was officially changed to the United States Infantry and Cavalry School (Hunt 1926:166). In 1888 the course of instruction was revised into a two year program in which students took courses in the Department of Military Art which provided them with a systematic course of instruction in tactics. In addition, students were instructed in military, constitutional, and international law; engineering; military hygiene; and early aid to the injured (Hunt 1926:170-171). By 1890 a large part of the instruction in military art consisted of practical exercises which were probably conducted on the military reservation. The curriculum was revised again in 1897 with an even greater emphasis on practical instruction (Hunt 1926:177).

Spanish American War/Philippine Insurrection (1898-1902)

The school was closed during this period because of a lack of Regular Army officers to serve as instructors. The influence of the training that graduates of the school had received was not demonstrated to any great degree during the war as most of these officers were still lieutenants. Fort Leavenworth was used as a staging area during this time with the 14th Cavalry organized at the post in March 1901. Following the end of the war, Fort Leavenworth was used as a separation center for the discharge of soldiers from the service.

General Service Schools (1903-1917)

Following the Spanish-American War, the Army recognized that many officers who had not had the opportunity to attend the Cavalry and Infantry School at Fort Leavenworth were inadequately trained. In response, the War Department instructed that much of the training that had formerly occurred at the Fort Leavenworth school would now take place at other post schools so as to involve more officers. Fort Leavenworth became a sort of post graduate college to which officers who had shown superior merit in the post schools were sent for further instruction. The length of the course was reduced to one year, and the students were still lieutenants (Hunt 1926:181; Walton 1973:170).

In 1904 the two year course was reinstituted with the first year designated the Infantry and Cavalry School and the second the Staff College. In 1905 the name of the school was changed to the United States Infantry and Cavalry School; in 1907 it was changed to the Army School of the Line. In 1907 the school commandant, Brigadier General Franklin J. Bell, announced that only senior captains and young ranking majors would thereafter be accepted as students (Walton 1973:170). The purpose behind the change of rank was to insure that the students would have sufficient rank to implement what they learned upon their graduation (Hunt 1926:183).

Graduates of the school began to make their influence felt during Pershing's Vera Cruse Expedition of 1914, but it was not until World War I that Fort Leavenworth graduates commanded brigades and divisions and served in high staff positions. General Pershing and Marshal Foch of France both singled out the Fort Leavenworth school graduates for praise following the end of the war (Hunt 1926:184; Walton 1973:171).

A vivid description of training activity at the post during this time appeared in the July 7, 1917, issue of the Army and Navy Journal:

> On the hillsides of the parade ground are squads of men noting the topographical features of the country by small sketches which will be later elaborated into maps. The men scattered over the landscape in khaki colored groups each party intent on his own lessons give an impression of activity long missed on the reservation. On the north end of the west parade grounds, troops of Cavalry are rapidly changing the soft turf into a field of dust as the horses walk, trot, gallop, wheel, and charge. Nearby is the plot where the horsemen learn the use of their sabers. In another direction a detachment of the Signal Corps soldiers can be seen stringing a concealed telegraph wire from one spot to another - laying it on the ground or beneath the surface. One of the most interesting tasks of the officers is trench building. Over the hill south of Merrit Lake are a series of barbed-wire barricades reinforced by rows of sharpened stakes. Behind these are the trenches exactly as those used in France. The main fighting trenches are connected by passageways ...permitting (safe) retreat or (the bringing up of supplies (in Walton 1973:172).

The description is particularly significant in that it indicates a great deal of training activity took place just prior to World War I in the peripheral areas of the reservation away from the main post buildings.

World War 1 (1918)

As during the Spanish American War, classes were suspended at Fort Leavenworth during World War 1. The post once again became a training and induction center through which thousands of men were processed. Accelerated training courses were introduced from which students graduated as lieutenants in 90 days; the post also became a center for signal corps instruction.

School of the Line/General Staff School (1919-1946)

When the school reopened as the School of the Line and General Staff School in 1919, the tour had once again been reduced to one year. Assignment to and graduation from the school was a prerequisite for the advancement of the careers of Regular Army officers (Walton 1973:173). Many of the officers who were to play important roles as senior army commanders during World War II, including Eisenhower, Marshall, and Bradley, were graduates of Fort Leavenworth. Almost to a man their staffs were comprised of officers who had attended the college (Walton 1983:173).

In contrast to the Spanish-American War and World War I, the Fort Leavenworth school did not close during World War II. The courses were shortened to accommodate a greater number of officers; during the course of World War II, over 19,000 officers graduated from the Fort Leavenworth school. Similar to the earlier wars, however, Fort Leavenworth once again functioned as an induction and separation center. Over 318,000 men were processed through the induction center; 452,000 men went through the reception center; and 147,000 men were discharged from the service at the post.

CHAPTER IV. RESEARCH DESIGN AND METHODOLOGY

Mark J. Wagner

Introduction

The primary objective of the Phase II investigations at the 14 HBS sites and site 14LV358-881 was to recover sufficient information to evaluate the eligibility of these sites for inclusion in the National Register of Historic Places (Appendix A). This was accomplished through:

(1) a literature and archival review that examined primary documents that provided specific information regarding the physical location, original appearance, history, and function of the various sites;

(2) The excavation of a series of screened shovel tests at HBS sites 47-49, 131-133, and 141;

(3) The excavation of screened shovel tests and test units at sites HBS 5, HBS 38, 39, 40, 41, and 46;

(4) The use of a hydraulic soil probe to assess the contents and depth of possible privy vaults at HBS sites 5 and 38;

(5) The excavation of screened shovel tests and a series of units at site 14LV358-881 to obtain information on the vertical and horizontal extent of cultural deposits and obtain a representative artifact sample;

(6) Analysis of the recovered materials to obtain information regarding the function, length of utilization, and types of artifacts associated with each site;

(7) Evaluation of the archaeological significance of each site using the cultural context framework developed by Wagner et al. (1988) and Cox et al. (1989) for the evaluation of such resources.

(8) The submittal of a detailed written report to the U.S. Army Corps of Engineers describing the results of the investigations and providing specific recommendations regarding the cultural resources at each site.

Research Domains

The sites to be investigated represent a cross-section of functionally and temporally diverse military-related structures and facilities at Ft. Leavenworth. Functional site types include barracks, officers' quarters, outbuildings, band quarters, privy vaults, and dump/discard sites. Based on information contained in Barr and Rowlinson (1977) and Wagner et al. (1988), these sites span the early nineteenth to early twentieth centuries. As such, the archaeological investigations at these sites had the potential to recover information regarding nineteenth-century dietary patterns, military social relations, material culture, temporal change, and functional activity areas at Ft. Leavenworth.

A series of research avenues to investigate these topics was generated as part of the project proposal (Appendix B). A decrease in the scope of the investigations prior to the start of fieldwork, as well changes in the locations and types of investigations during the course of the investigations (Appendix C), however, greatly affected the ability of the project to address these subjects. None the less, these research avenues (with slight modifications) are presented below as they represent the theoretical framework under which the investigations were conducted.

Site 14LV358-881 represents an enlisted men's dump/discard area dating to the mid to late nineteenth century (Wagner et al. 1988:290-296). The faunal assemblage from this site consisted almost entirely of meat cuts from domesticated animals indicative of the preparation of stews, soups, and roast. This pattern contrasts markedly with that recovered from officer's quarters (Martin 1987) at other nineteenth century military posts which have been found to contain a high proportion of wild species. The inclusion of officer's quarters (HBS 131-133) and privy vaults (HBS 5 and 38) believed to have been used by both officers will provide an opportunity to examine the diets of officers at Ft. Leavenworth. This information can then be compared to that recovered from site 14LV358-881 by both the 1988 and current investigations as well as that recovered from other nineteenth century military installations (Martin 1987) to assess variations in diet between officers and enlisted men in the nineteenth century Army.

Although preliminary information regarding the meat-consumption patterns of nineteenth century military personnel in Kansas has been recovered (Kirby 1985; Martin 1987; Reynolds 1983), similar information regarding the importance of floral resources in the diet is lacking. The botanical remains recovered from site 14LV358-881 in 1988 represent the first flotation-derived floral remains recovered from any type of historical site in Kansas (Lees 1989). These, however, unfortunately, provided very little in the way of information regarding floral consumption patterns at Ft. Leavenworth (Wagner et al. 1988).

The inclusion of privy vaults within the sample of sites to be investigated, however, should generate a sizable botanical assemblage that can be use to examine the floral consumption patterns of both officers and enlisted men.

The current investigations also provide an opportunity to examine the material culture associated with officers at Ft. Leavenworth during the nineteenth century. Although data regarding the material culture of enlisted men was recovered by the investigations at site 14LV358-881 (Wagner et al. 1988) similar information is lacking for officers. The inclusion of officer's quarters and privy vaults associated with officers in the sample of sites to be investigated will provide comparative data that can be used to assess the relative socio-economic positions of officers and enlisted men in the nineteenth century military. It has been previously noted that there is a high, although not perfect, correlation between social classes and the material culture acquired by historic site residents (McBride and McBride 1987:152). The "types of goods selectively acquired and discarded by households are strongly influenced by socioeconomic status", reflecting the unequal distribution of goods and services as a result of social and economic differences within society (Spencer-Wood 1987:3). The ability of site occupants to purchase consumer goods should have clear archaeological correlates in that the difference in material culture will reflect the amount of capital available to spend on such goods (Orser 1987:129-130).

The investigations also will provide information on temporal changes in material culture associated with the transition of Ft. Leavenworth from a frontier post in the early to mid nineteenth century to a garrison post by the late nineteenth century. It should be expected that this transition will be reflected in changes in the proportion of the various functional artifact categories throughout the nineteenth century. Specifically, the proportion of arms and transportation items within the artifact assemblage should decrease through time while household items should increase. The inclusion of functionally distinct site types within the sample of sites to be investigated, i.e. privies, dump/discard sites, officers quarters, and so on also will provide information on the types of artifact patterns associated with these various types of activities. Such information will provide comparative data that can be used both at Ft. Leavenworth and elsewhere for the interpretation as to the function of historical sites that lack documentation.

The botanical, faunal, material culture, and functional analyses will provide information that can be used to examine the nature of the social relationships that existed between officers and enlisted men within the nineteenth century Army. Based on documentary information, enlisted men in the United States clearly occupied a subordinate role within nineteenth century American society. Scorned by civilians for voluntarily having given up their freedom, enlisted men occupied a subordinate position within a rigid military hierarchy in which virtually all aspects of their daily lives were controlled by an officer caste that often despised and tyrannized them (Coffman 1986:137, 200-203; Rickey 1963:62-74). A characteristic of subordinate groups such as enlisted men is that they are blocked from achieving political, economic, and social power within the larger society (Ringer and Lawless 1989:28-29). Orser (1988:321) has noted that recognizing the material relationships of this

type of power relationship in the archaeological record is a difficult but achievable task. Similarly, as noted by Stine (1990:49) archaeologists "cannot excavate social inequality. Archaeologists can, however, discover direct and indirect effects of social inequality within a community". Archaeological correlates of a power relationship characterized by social and economic inequality between officers and enlisted men at Ft. Leavenworth should be reflected in variances in dietary patterns and the types, amount, and value of material culture items between the two groups.

Research Hypotheses

The following specific research hypotheses were developed to examine the research avenues presented in the preceding section. The extent to which any hypothesis can be examined, of course, is contingent on the types and quantities of archaeological data recovered. In the case of the current project, the decrease in the scope of the investigations prior to the start of fieldwork made it very difficult to recover the type of data needed to address some of these hypotheses:

(1) A variance in dietary pattern existed between officers and enlisted men in the nineteenth century Army. This pattern is characterized by access to a wider range of floral and faunal species and more expensive meat cuts by officers in comparison to enlisted men.

(2) The artifact assemblage will reflect the transition of Ft. Leavenworth from a frontier to garrison post during the nineteenth century. This transition will be marked through a change in the proportion of functional artifact categories through time.

(3) Differences in artifact patterning will occur among the various functional site types.

(4) Ceramic and other material culture indicators of status will indicate that enlisted men were of lower socio-economic status than officers or contemporary civilian groups.

(5) Enlisted men occupied a subordinate social position within the nineteenth century Army, one which was characterized by unequal access to social and economic power in comparison to officers. This subordinate role will be reflected in variations in the types and quantities of material goods associated with the two classes in the archaeological record.

Methodology

The methods described in this section were proposed to meet requirements for four types of anticipated tasks: field investigations, laboratory analysis, report writing, and curation. Each task is addressed separately for purposes of this research design.

Task 1 - Field Investigations

Because the ages, functions, assumed data contents, and present conditions of the 14 historic building sites (HBS 5, 10, 38, 39-41, 46-49, 131-133, 141) and military dump/discard site (14LV358-881) to be investigated under this contract were variable, excavation strategies were tailored to the conditions at each individual site. The general philosophy was to maximize data recovery and minimize cost.

It was proposed as part of the original project research design that screened shovel tests, soil probing, and visual surface reconnaissance would be used at all 14 HBS sites and site 14LV358-881 to define site limits; obtain information regarding subsurface cultural deposits; and locate subsurface building foundations, privy vaults, and other structural features (Appendix B). During the course of the investigations, however, one of the HBS sites (HBS 10) was deleted from further investigation (Appendix C).

All of the 13 remaining HBS sites were located in grass lawns associated with standing structures. Discolored grass areas within these lawns that possibly marked the location of subsurface architectural features were mapped when present for each site. The lawn containing each HBS site was then shovel tested on a grid pattern with individual shovel tests and transects separated by 5 m intervals. Each shovel test was precisely placed used a transit stationed over a site datum keyed in to the existing structures and roads. Each shovel test was excavated to either the B soil horizon or to a maximum depth of 30 cm bs. Each shovel test measured approximately 30 cm by 30 cm in size. The soil from each shovel test was passed through 1/4" mesh to recover artifacts. The datums for all HBS sites consisted of temporary wooden stakes that were removed at the end of the test investigations. The locations of these datums, however, were keyed into permanent structures in the vicinity of each site so that the datums could be re-established at a future date.

Following the completion of the surface reconnaissance and shovel testing, soil probing and/or additional shovel tests was to be used to further delineate possible structure foundations at HBS sites 40-41, 46, 131-133, and 141. The subsurface location and extent of the structure walls and floors were to be confirmed by systematically placing soil probes or shovel tests above the suspected locations of these features (Appendix B). At HBS 40-41 and 131-133, however, the presence of heavy rock and brick rubble below the existing ground surface made soil probing useless. Soil probes also were not used at the HBS 141 location as there appears never to have been a structure at this location. Exposed foundation wall sections at HBS 131-133 were mapped and photographed.

It initially was proposed that two 1 x 2 m units be excavated at HBS sites 40-41, 46, 131-133, and 141 following completion of the shovel testing and recording of the structure foundations at these sites (Appendix B). Following an on site meeting with the CORP's representative, however, the amount of hand excavations was decreased. One 1 x 1 m unit

was excavated at HBS 40; one 1 x 1 unit was excavated at site HBS 41; two 1 x 1 m units were excavated at HBS 46; and no hand excavations were conducted at HBS sites 131-133 and 141 (Appendix C).

All of the units were excavated with hand tools (i.e., shovels and trowels). Each unit was excavated in 10 cm arbitrary levels. The southwest corner of all units at each site was recorded in relation to the site datum, with all measurements within each unit taken from these corners using a line level and a hand held tape. This corner also was used as a designator for the entire unit, with each unit assigned an individual number. The bottom and sides of these units were inspected and all soil zones recorded. The floor of each unit was troweled and mapped at a 1:20 scale at the base of each level if soil staining was present. If soil staining was absent, a notation to that effect was recorded in the site notebook and a map was not prepared. All fill from these units was passed through 1/2" mesh screen with a 10 liter sample from each level passed through 1/4" mesh. Artifacts were collected by 10 cm level. One five liter flotation sample was recovered from each level of each unit. Standard level forms were filled out for each level excavated and at least one wall of each hand excavation unit was profiled and photographed. If features were found, they were mapped on the level floor plans and drawn on the unit profiles. In order to facilitate record keeping, hand units were identified by a letter of the alphabet as well as by a site grid number.

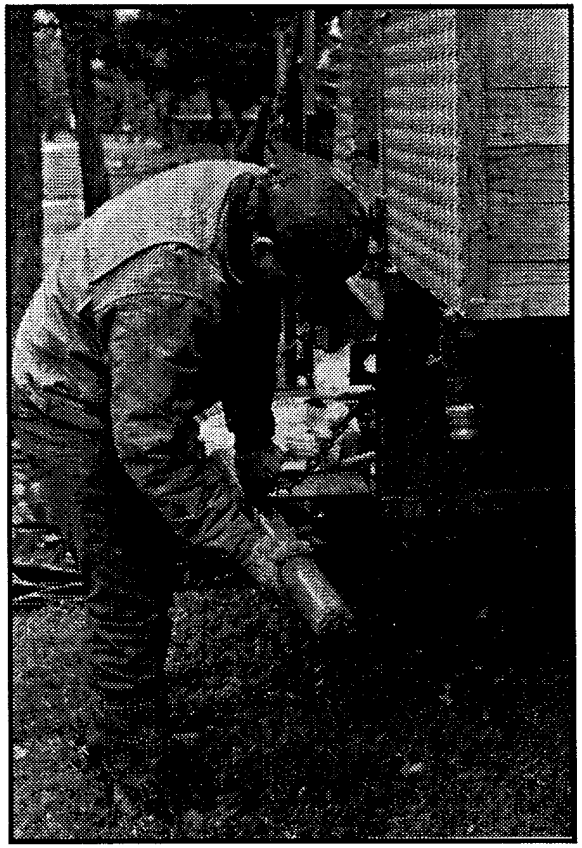
Investigation procedures at HBS 45-47 were to have consisted of systematic shovel testing, soil probing, hand excavation of two test units, and the coring of the privy vaults (Appendix B). Archaeological investigations at these sites were concluded, however, following the completion of the shovel testing (Appendix C).

Excavation methods at HBS 5 and 38 consisted of a combination of surface reconnaissance, systematic shovel testing, and soil probing techniques. A truck-mounted Giddings hydraulic soil probe also was used to obtain information on the nature and depth of the fill within the two privy vaults (Figure 4a-b).

The excavation strategy at site 14LV358-881 included systematic shovel testing, soil probing, and the hand excavation of a series of six 1 m x 1 m units. The units were excavated in a general cross pattern through the site area to provide north-south and east-west profiles of cultural deposits at the site, recover a representative sample of materials from across the site, and define the vertical depth of the midden. Excavation methodologies, including the collection of flotation samples, were identical to those of the previously described units.

Task 2 - Laboratory Analysis

All artifacts were processed (washed, sorted, cataloged, and labeled) at the laboratory facilities of American Resources Group, Ltd., in Carbondale, Illinois. Processed artifacts were separated first into three major classes--ceramic, glass, and metal. Subclasses were then



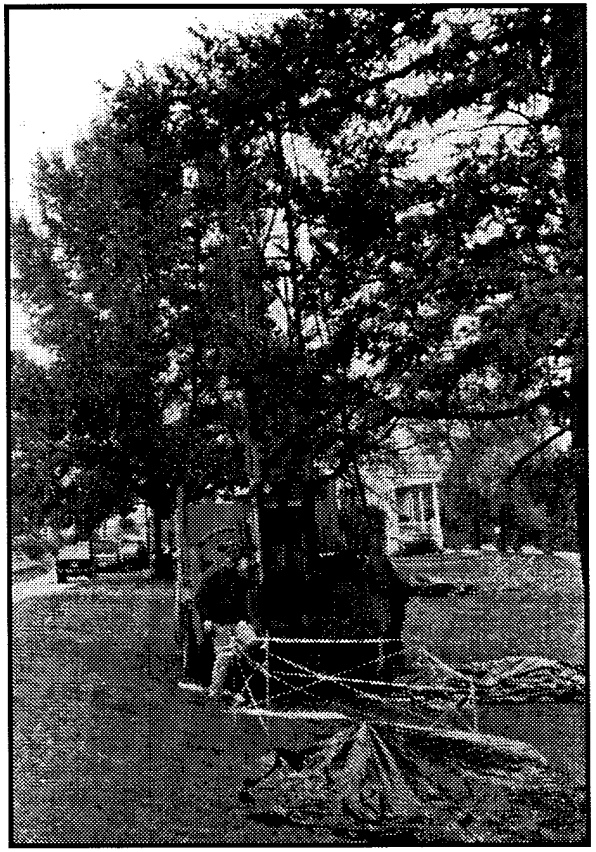


Figure 4a-b. Hydraulic soilprobing, HBS 38.

defined within each major class. Material noted in the field but not collected also was identified. This fourth class of artifacts consisted of construction materials other than ceramic, glass, and metal and included such materials as cement, brick, and sandstone. These classes were used to describe and quantify material and to aid in determining site type as well as the date of occupation of each site.

In addition, each artifact was attributed to a particular functionally related category. The categories used in the present study included: (1) kitchen (tablewares, preserved food containers and associated elements and cooking utensils); (2) household (furniture parts, figurines, lamp parts, mirror fragments, and non-food related bottle and jars); (3) clothing (buttons, snaps, shoe parts, hook-and-eye parts, straight pins and clothing-related military accouterments); (4) personal (pipes, toys, combs, and jewelry); (5) arms (gun parts, ammunition and accouterments); (6) transportation (wagon and carriage parts, harness and saddle parts, horseshoes and farriers nails); (7) architectural (window glass, nails, and hardware); (8) other (items which are potentially identifiable but cannot be identified at the present time); and (9) unidentifiable (all items which are too poorly preserved or too fragmentary to be identified as to function).

Ceramics. The ceramic artifacts were initially identified according to ware type such as whiteware, ironstone, porcelain, and stoneware. These wares are differentiated on the basis of paste color, paste texture, glaze, and decoration, attributes generally recognized as temporal indicators for historic ceramics.

Whiteware and Ironstone. Because of their similar paste composition and glaze color, whiteware and ironstone are often difficult to separate. Therefore, for this analysis ironstone was defined as a highly fired, refined, white-pasted ware. Whiteware, although refined, is fired at a much lower temperature and therefore more porous. Ironstone wares can be easily separated from whiteware by the lack of porosity, indicated in touching the sherd in question to the tongue. Whiteware will stick slightly to the wet surface of the tongue whereas ironstone wares will not.

Porcelain. Porcelain is an extremely hard, fine-grained, nonporous, and usually translucent white ceramic ware which has been fired at high temperatures. Because it is both difficult and expensive to produce, the market for porcelain was relatively small during the early and mid-nineteenth century. It did not become popular in the United States until Germany and Austria began to produce relatively inexpensive porcelain after 1875 (Haskell 1981:23). It finally came into common use after the American porcelain industry began producing even less expensive, and hence, more marketable wares after 1890 (Ketchum 1983:13).

Stoneware. Stoneware is "an ordinary earthenware fired at a temperature high enough to partially vitrify the ingredients and make the ware impervious to liquids" (Hughes 1963:89). The pastes of these wares are generally cream to gray or brown in color although much variation can occur even within a single vessel. This color variation is largely due to

uneven firing within the kiln. Salt was often added during the firing to produce a glaze which gave the surface of a salt-glazed vessel the appearance of a granular texture similar to that of an orange peel. The gloss of the glaze depended on the amount of salt used: the more salt that was added, the higher the shine and vice versa. Various slips were also used to decorate stoneware vessels. These slips were thin mixtures of water and colored clays which when fired imparted a uniform color to the vessel. Two or more slips were often applied to the same vessel to produce a more ornate decoration. Stonewares are generally nondiagnostic as temporal indicators; however, the mass-produced brown Albany and white Bristol slipped stoneware was very popular during the late nineteenth and early twentieth centuries, whereas the locally made salt-glazed wares were increasingly in less demand during the last half of the nineteenth century (Ketchum 1983).

Temporal Indicators. Decorative treatments and motifs also were noted for all the ceramic wares and, where possible, temporal periods were assigned. Mean Ceramic Dates were calculated utilizing South's (1977:217) formula and the temporal ranges (Table 1). This procedure is based on the known period of manufacture of each ceramic type within the sample, with the midpoint between the beginning and the end of manufacture considered as the median manufacture date (South 1977:202). The median date for whiteware and ironstone was adopted from various ceramic studies (Brown 1982; Haskell 1981; Ketchum 1983; Miller 1987; Price 1982; Wegars and Carley 1982) with an adjustment made in the terminal date of these wares. An incinerator was present at Fort Leavenworth by 1930 (Anonymous 1930), and both an incinerator and landfill were in operation by 1937 (Hunt and Lorence 1937). Refuse discarded after these dates would have been transported to the post incinerator; therefore, a terminal date of 1930 was adopted for artifacts with manufacture date ranges which extended beyond the possibility of deposition outside of the post incinerator. In addition, manufacturer information was used in this study in lieu of the mean date for the ceramic type if the date range of the maker's mark was more temporally discrete than the ceramic type date range.

The Mean Ceramic Date for an assemblage is calculated by multiplying the median date of a ceramic decoration by the number of sherds of that type. The sum of all the types present within the assemblage are added together with the summation being divided by the total number of sherds to produce the Mean Ceramic Date (South 1977:217-218).

Glass. Glass artifacts were classified into one of several categories: (1) whole and fragmented bottles and jars; (2) pressed glass which included, in this case, tableware and canning jar lid liners; and (3) miscellaneous categories of glass which included lantern glass and furniture glass.

Table 1. Ceramic Temporal Ranges and Mean Dates.			
ATTRIBUTE	**RANGE**	**MEAN**	**REFERENCE**
Pearlware			
Plain	1780-1830	1805	South 1977
Annular	1790-1820	1805	South 1977
Blue handpainted	1780-1820	1800	South 1977
Black transfer printed	1795-1840	1818	South 1977
Whiteware			
Plain	1830-1930*	1880	Price 1982
Embossed	1850-1900	1875	Price 1982; Wetherbee 1980
Provincial blue	1850-1880	1865	Miller 1987
Bright annular	1855-1880	1867.5	Price 1982
Blue shell edge	1830-1860	1845	Lofstrum et al. 1982
Spongeware	1840-1860	1850	Lofstrum et al. 1982
Blue other decorated	1830-1880	1855	Lofstrum et al. 1982
Floral handpainted	1830-1880	1850	Lofstrum et al. 1982
Transfer Printed			
Black	1830-1850	1840	Majewski & O'Brien 1984
Blue	1830-1860	1845	Majewski & O'Brien 1984
Red	1828-1850	1839	Majewski & O'Brien 1984
Decalcomania	1880-1930*	1915	Haskell 1981

Table 1. Ceramic Temporal Ranges and Mean Dates.			
ATTRIBUTE	**RANGE**	**MEAN**	**REFERENCE**
Ironstone			
Plain	1840-1930*	1885	Wetherbee 1985
Embossed	1840-1907	1873.5	Gates & Ormerod 1982
Provincial blue	1850-1880	1865	Miller 1987
Bright annular	1855-1880	1867.5	Price 1982
Blue shell edge	1840-1860	1850	Lofstrum et al. 1982
Handpainted			
Flow blue	1840-1860	1850	Lofstrum et al. 1982
Tea Leaf	1880-1910	1895	Kamm 1951
Transfer Printed			
Brown (thick walled)	1860-1890	1875	Price 1982
Flow black	1840-1860	1850	Majewski & O'Brien 1984
Gilt	1880-1930*	1905	Miller 1987
Porcelain			
Gilt	1880-1930*	1905	Miller 1987
Decalcomania	1900-1930*	1915	Haskell 1981
Yellow Ware			
Plain	1827-1930*	1878.5	Ketchum 1983; 1987
Slip-glazed (mottled)	1850-1900	1875	Ketchum 1987

Table 1. Ceramic Temporal Ranges and Mean Dates.			
ATTRIBUTE	**RANGE**	**MEAN**	**REFERENCE**
Stoneware			
Albany slip (interior)	1820-1900	1860	Ketchum 1983
Albany slip (exterior)	1850-1920	1880	Ketchum 1983
Bristol slip	1880-1920	1900	Ketchum 1983
Albany/Bristol slip	1880-1920	1900	Ketchum 1983
Salt	1827-1900**	1864.5	Ketchum 1983

* 1930 represents the terminal date for the deposition of refuse outside of the post incinerator/landfill

** 1827 represents the initial occupation of Fort Leavenworth

Bottles and Jars. Bottle glass were analyzed largely according to Deiss's (1981) study of a chronology of American glass and included both intact and fragmented bottles and jars. Bottle glass was further identified as to method of manufacture. Bottle manufacturing methods changed rapidly through the nineteenth and early twentieth centuries, and in many cases the new methods and designs were patented. This enables accurate dates to be assigned to many bottles and jars from an analysis of style and method of manufacture. Table 2 shows temporal ranges presented in a number of sources including Deiss (1981), Lorrain (1968), and Wilson (1981) and mean dates utilized to calculate mean glass dates. Rogers et al. (1988) have adapted South's (1977) ceramic formula to diagnostic elements of whole and fragmentary bottles and jars. Again, this procedure is based on the known period of manufacture of each diagnostic bottle type within the sample, with the midpoint between the beginning and the end of manufacture again being considered as the median date. The mean bottle date for an assemblage is calculated by multiplying the median date of a diagnostic element by the number of fragments of that type. The sum of all types present within the assemblage are then added together with the summation being divided by the total number of items used in the calculation to produce the mean bottle date for that site. Again, an adjustment was made in the date range of those bottle and jar types with terminal dates which extended beyond the possible deposition outside of the post incinerator. In addition, an initial date of 1827 is signed to a small number of bottle attributes with beginning dates which obviously predated the settlement of Fort Leavenworth, which occurred in that year. Initial dates of only two bottle attributes, folded and flanged closures, were modified. It was felt that omitting these attributes from the study would affect the accuracy of the Mean Bottle Date as well as detract from the significance of their presence within the bottle assemblage.

Table 2. Bottle Glass Temporal Ranges and Mean Dates.*		
ATTRIBUTE	**RANGE**	**MEAN**
Closures		
Flanged	1827-1875**	1851
Folded	1827-1875**	1851
Applied tooled cork	1825-1875	1850
Ground rim continuous thread	1858-1915	1886.5
Improved tooled cork	1870-1915	1892.5
Machine made continuous thread	1903-1930***	1916.5
Machine made crown	1903-1930***	1916.5
Machine made lug	1906-1930***	1918
Mold Blown Bases		
Pattern	1829-1850	1840.5
Turn mold	1875-1905	1890
Two piece blowpipe pontil	1818-1860	1846.5
Two piece snap case	1860-1875	1867.5
Three piece plate bottom blowpipe pontil	1858-1860	1859
Three piece plate bottom improved pontil	1858-1875	1866.5
Three piece plate bottom snap case	1860-1915	1887.5
Unidentified snap case	1860-1915	1887.5
Machine made	1903-1930**	1916.5
Body		
Paneled plain	1858-1925	1891.5
Paneled embossed	1867-1925	1896

Table 2. Bottle Glass Temporal Ranges and Mean Dates.*		
ATTRIBUTE	**RANGE**	**MEAN**
Gothic (cathedral) pickle	1940-1890	1865
Pictorial	1840-1875	1857.5
Bitters (french square)	1850-1925	1887.5
Other		
Lantern glass	1860-1898****	1879

* After Deiss 1981; Lorrain 1968; Wilson 1981

** 1930 represents the terminal date for the deposition of refuse outside of the post incinerator/landfill

*** 1827 represents the date of initial occupation of Fort Leavenworth

**** 1898 represents the year Fort Leavenworth was electrified

Glass bottles will be further identified as to functional type such as food preservation and medicine, soft drink, or alcohol containers. Bottle part, color, embossing, and manufacturer's marks were also noted.

Pressed Glass. Pressed glass was analyzed according to Deiss's (1981) study of American glassware especially in regard to nineteenth and early twentieth century manufacturing techniques. Unfortunately, pressed glass has long, nondiscrete known periods of manufacture. Its use is therefore limited as an aid in identifying occupation dates. Pressed glass will be further identified as to functional type (i.e., tableware and lid liners), vessel part (if applicable), and color. This subclass of artifacts, although somewhat temporally diagnostic, was largely used in the identification of site types.

Miscellaneous Glass. In this study, miscellaneous glass includes both lantern glass and furniture glass. As with pressed glass, the long known periods of manufacture and/or use of these artifacts preclude the usefulness of this subclass of artifacts in dating the occupation of a site. The chief value of the identification of functionally related glass such as lantern glass within an assemblage is again as an aid in determining site types.

Metal. Metal artifacts was classified according to material of manufacture (i.e., zinc, aluminum, brass, and iron) and specific function. If pertinent (e.g., military buttons), the method of manufacture also will be noted when possible. Metal artifacts with long known periods of manufacture, such as zinc canning jar lids and square nails, are of little use as temporal indicators. They are, however, useful in determining site type.

Other. As noted earlier, this artifact class will consist of construction materials such as brick, limestone, mortar, slate, and daub. In addition, heating coal and the resultant cinders and clinkers are also considered in this artifact class. Other functionally related artifacts include bone utensil handles (kitchen), bone buttons (clothing), gun flint (arms), and transportation (harness leather). Prehistoric material (if recovered from a historic context) also will be a class.

Task 3 - Report Preparation

Report preparation, format, and scheduling followed the guidelines and schedules presented in Sections 5-7 of the project Scope of Work (Appendix A). Monthly progress reports were submitted to the government during the course of the project. The writing and preparation of the draft report were carried out in accordance with the specifications presented in Section 6 of the project Scope of Work. As noted previously, the chronological periods developed for Ft. Leavenworth (Wagner et al. 1988) and which form part of the historic preservation plan for the installation (Cox et al. 1989) were used rather than those in the Kansas Sate Historic Preservation Plan. This report contains all findings of the field investigations, interpretations and conclusions, field and laboratory methodology, and other supporting data. The results of the field and laboratory investigations will be interpreted in light of the archaeological research problems. This report will include, among other pertinent information, evaluations of the potential eligibility of all tested sites for the NRHP and management recommendations regarding these resources in accordance with Section 7 of the project Scope of Work (Appendix A).

Task 4 - Curation

The recovered artifacts will be curated temporarily at the facilities of American Resources Group, Ltd., in Carbondale, Illinois. This will allow for accessibility to materials during the analysis and report writing phases. In accordance with the project Scope of Work, all materials, maps, field notes, and other documents will be submitted to the Frontier Army Museum, Ft. Leavenworth, Kansas, for permanent curation.

CHAPTER V. RESULTS OF INVESTIGATIONS PROJECT AREAS ONE TO SEVEN

Mark J. Wagner and Frances R. Knight

Introduction

One hundred and fifty seven Historic Building Sites (HBS) were located within Ft. Leavenworth as part of a 1977 cultural resources survey of the installation (Barr and Rowlinson 1977). All of Ft. Leavenworth was assigned a single Smithsonian trinomial site designation--14LV356--by the 1977 investigators. Each HBS site, in turn, represents a demolished structure within site 14LV356 whose location was determined through cartographic and archival research. Although a pedestrian survey of the suspected structure locations was conducted in 1977, this survey was restricted to a surface reconnaissance. Shovel testing, soil probing, or other subsurface investigatory techniques were not used to determine if structures were indeed present at the HBS locations.

Fourteen of the HBS sites located by Barr and Rowlinson (1977) were to be evaluated for National Register of Historic Places (NRHP) eligibility as part of this contract (Appendix A: Scope of Work). Information regarding the suspected or known age and functions of these sites is summarized in Table 3. These sites were located in seven separate project areas within Ft. Leavenworth, with some areas containing up to three HBS sites.

Archival Research

Archival research regarding the 14 HBS sites was conducted at the Frontier Army Museum, Ft. Leavenworth, Kansas, from October 13-20, 1992. Mr. Steve Allie, Museum Director, provided access to 19th and 20th century maps and other documents containing information regarding the 14 HBS sites. Additional research was conducted using historical maps and photographs of the installation contained in published sources (Barry 1972; De Zurko 1947; Hunt and Lorence 1937; Walton 1973).

This research revealed that the 1977 Barr and Rowlinson map contains errors regarding the number, locations, and types of structures at Ft. Leavenworth. The reason for these errors is unclear but it may be that the present survey had access to a greater number

Table 3. HBS Site Information*			
Project Area	**HBS Number**	**Structure Type**	**Date Range**
1	131	Lieutenant's Quarters	ca. 1881-1907
1	132	Lieutenant's Quarters	ca. 1881-1907
1	133	Lieutenant's Quarters	ca. 1881-1907
2	47	Privy Vault	ca. 1871-1905
2	48	Privy Vault	ca. 1871-1905
2	49	Privy Vault	ca. 1871-1905
3	46	Band Quarters	ca. 1871-1905
4/5	39	Dragoon Barracks	ca. 1837-1905
5	10	Dragoon Barracks	ca. 1837-1895
6	40	Officer's Quarters Outstructure	ca. 1871-1905
6	41	Officer's Quarters Outstructure	ca. 1871-1905
7	141	Indeterminate	ca. 1881-1905

*All information is from Barr and Rowlinson (1977)

of nineteenth century maps of the installation than did the 1977 survey. Post historians appear to have acquired additional maps of Ft. Leavenworth from the National Archives since the original 1977 cultural resources inventory. Further information regarding the types of structures present at each HBS site is supplied in the individual site descriptions presented below. Recommendations regarding the need for additional archival research into the locations of the early to mid-nineteenth century post buildings are presented in the final chapter of this report.

Site Descriptions

The following HBS site descriptions are grouped by project area rather than by numerical order. Project area numbers were assigned by the project Scope of Work (Appendix A). These represent areas where new construction that will involve disturbance of the existing ground surface is scheduled to occur (Figure 3).

Project Area 1

HBS Site Number 131-133
Area: 1.61 Acres
Field Conditions: Grass lawn with 0-5% ground surface visibility. Discolored grass areas that represent the locations of structure foundations and sidewalks are visible within the lawn.
Field Methods: Screened shovel tests (1/4 inch mesh) on a 5 m x 5 m grid system.
Archival Research: Barr and Rowlinson (1977:310-315) identified three early twentieth century structures (HBS 131-133) within this area on the basis of archival data and field observations. The three structures were located parallel to each other, facing Kearny Avenue. Barr and Rowlinson's (1977:310-315) descriptions of all three structures are identical:

> This site is grass covered with sidewalks extending north to Oregon Avenue and south to Kearney Avenue. Some grass discoloration may indicate the presence of footing walls. This structure was cartographically referenced in 1905 and 1907, and is absent from the 1881 map. This indicates a construction date between 1881 and 1905 and a demolition date after 1907.

The three structures described by Barr and Rowlinson are also present on the 1908 map of the post. From east to west on this map, the structures are labeled as 32, 33, and 34 (Figure 5). A 1930 map of the post shows two additional structures to the west of structure 34 (Figure 6). In addition, the shape of the structures may have changed from 1908 to 1930. The 1908 maps show structures 32 to 34 as being ell-shaped with a rear addition while the 1930 map shows all five structures as square (Figure 6).

Archival information contained in the files of the Frontier Army Museum from a 1905 survey of Ft. Leavenworth reveal that structures 32 (540 Kearney Avenue), 33 (542 Kearney Avenue), and 34 (544 Kearney Avenue) were built in 1884 (Appendix D). All three structures were non-commissioned officer's quarters at the time of the 1905 survey. The capacity of each building was four, presumably a non-commissioned officer and his family. Each structure had brick and wooden walls, a front porch, and a basement. The floor area of each structure (above the basement) was 1,430 m^2 ft. The main structures measured 24' x 34' while the rear additions measured 22'.

A file was found for one of the two buildings located west of structures 32-34 on the 1930 map. This revealed that the building immediately west of structure 34 was structure 36 (546 Kearney Avenue). The file on this structure was incomplete. Based on a photograph in the file, however, it was similar in appearance and size to structures 32-34, indicating a late nineteenth century construction date. It also was

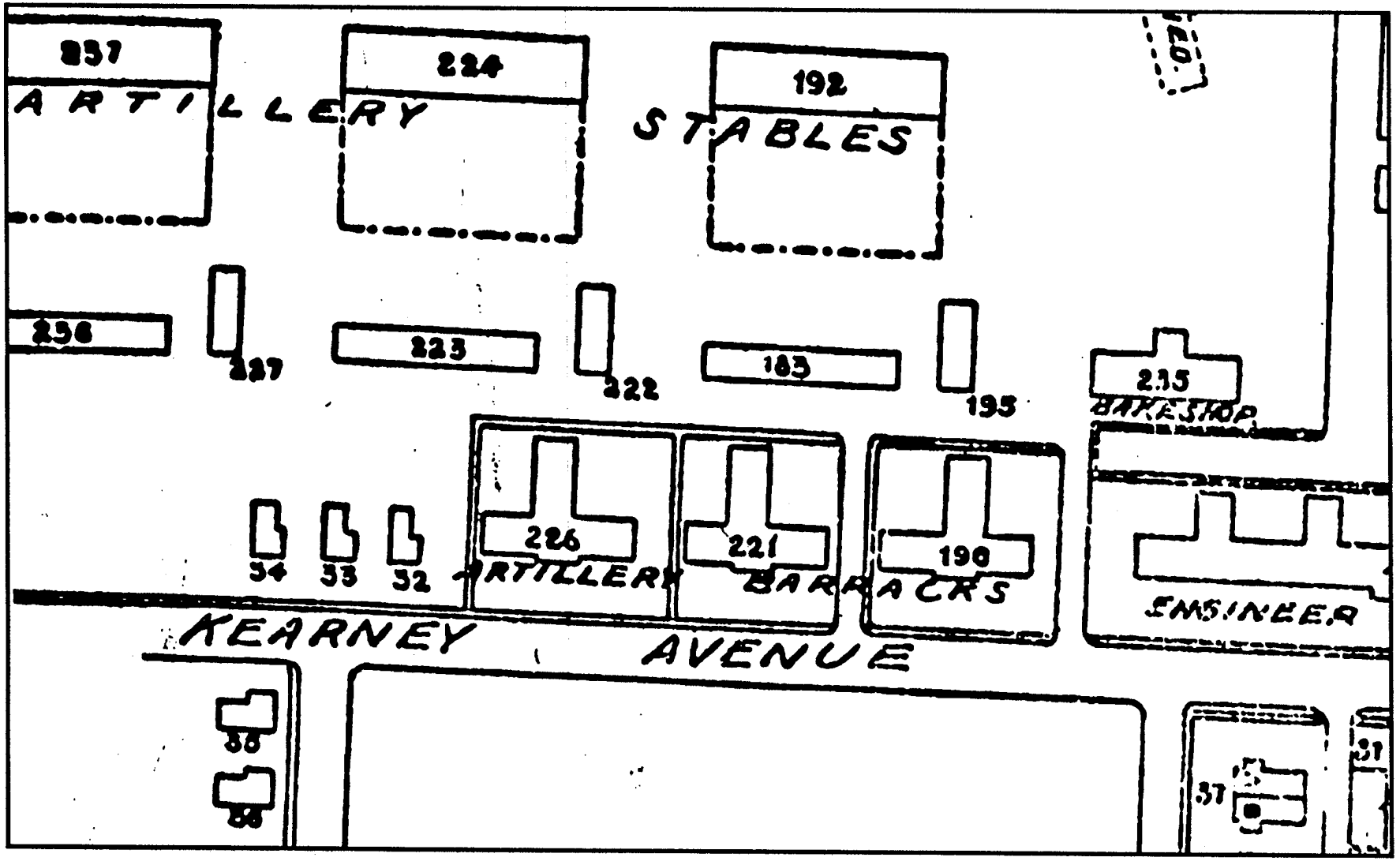


Figure 5. 1908 map showing three structures (32-34) in HBS 131-133 location in project area 1.

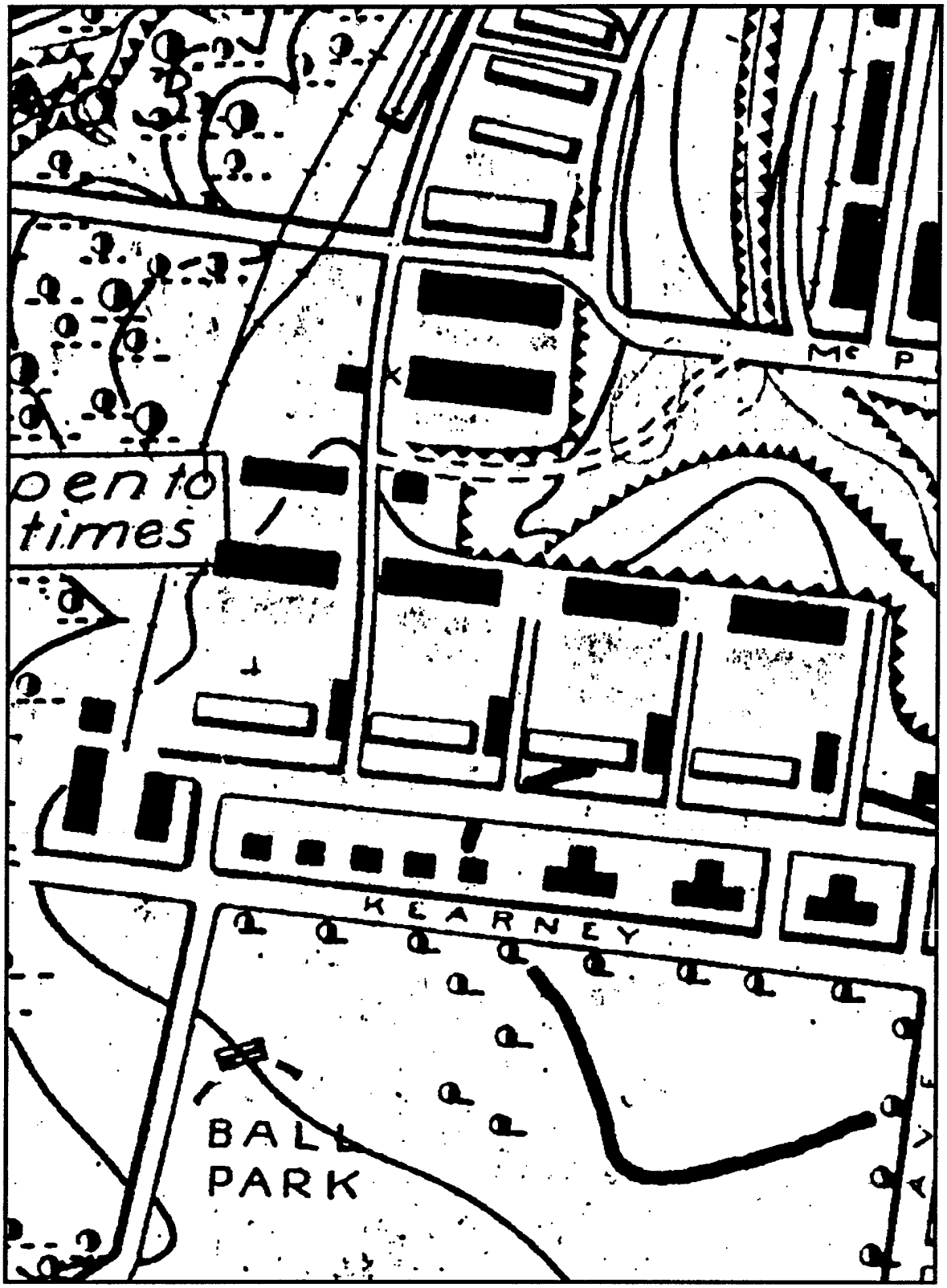


Figure 6. 1930 map showing five square structures in HBS 131-133 location in project area 1.

located immediately in front of the still-existing Lee House which is located at the northwest end of the project area. The last repair work on structure 36 was done in 1940 (Appendix D). In sum, a group of five non-commissioned officer's quarters was present in project area 1 from ca. 1884 to the early 1940s.

Barr and Rowlinson (1977:313) also noted that the late nineteenth/early twentieth century non-commissioned officer's quarters apparently replaced earlier structures in the same locale that had been used as officer's quarters (Barr and Rowlinson 1977:313). Wagner et al. (1989:290) and Wagner and McCorvie (1988) provided the following review of mid-nineteenth construction in this area as part of the 1988 investigations at Ft. Leavenworth:

> The (artifacts recovered from site 14LV358) may have originated from a group of structures labeled as barracks on an 1865 map (Hunt and Lorence 1937:126) located east of Quarry Creek....(These barracks) supposedly included nine buildings in 1865...but the 1875 (Hunt and Lorence 1937:126) and 1876 (Sheridan 1876:118) maps...show only six structures. It is not known which of the maps is correct...On the 1865 and 1875 maps (the buildings east of Quarry Creek) referred to as officers' quarters, while in 1876 they are referred to particularly as Cavalry officers' quarters (Sheridan 1876:118).

A line of six structures also is shown on Campbell (1874) map of Ft. Leavenworth. A line of six structures with what appears to be a row of outbuildings located behind them also are shown on the 1881 "Birds-Eye View" lithograph of Ft. Leavenworth (Hunt and Lorence 1937:133). They also appear on the 1881 map of the post (Figure 7).

Assuming the mid-nineteenth century officer's quarters were demolished shortly before the construction of the non-commissioned officer's quarters in 1884, the archival and map data indicate a date range of 1865 to 1884 for these earlier structures.

Field Investigations: Field investigations in project area 1 were confined to surface reconnaissance and systematic screened shovel tests. The northern boundary of the survey area was formed by an asphalt parking lot; the southern boundary by the sidewalk adjacent to Kearney Avenue; and the eastern boundary by the sidewalk adjacent to an existing building. The western boundary of the project area was based on the limits of the proposed construction.

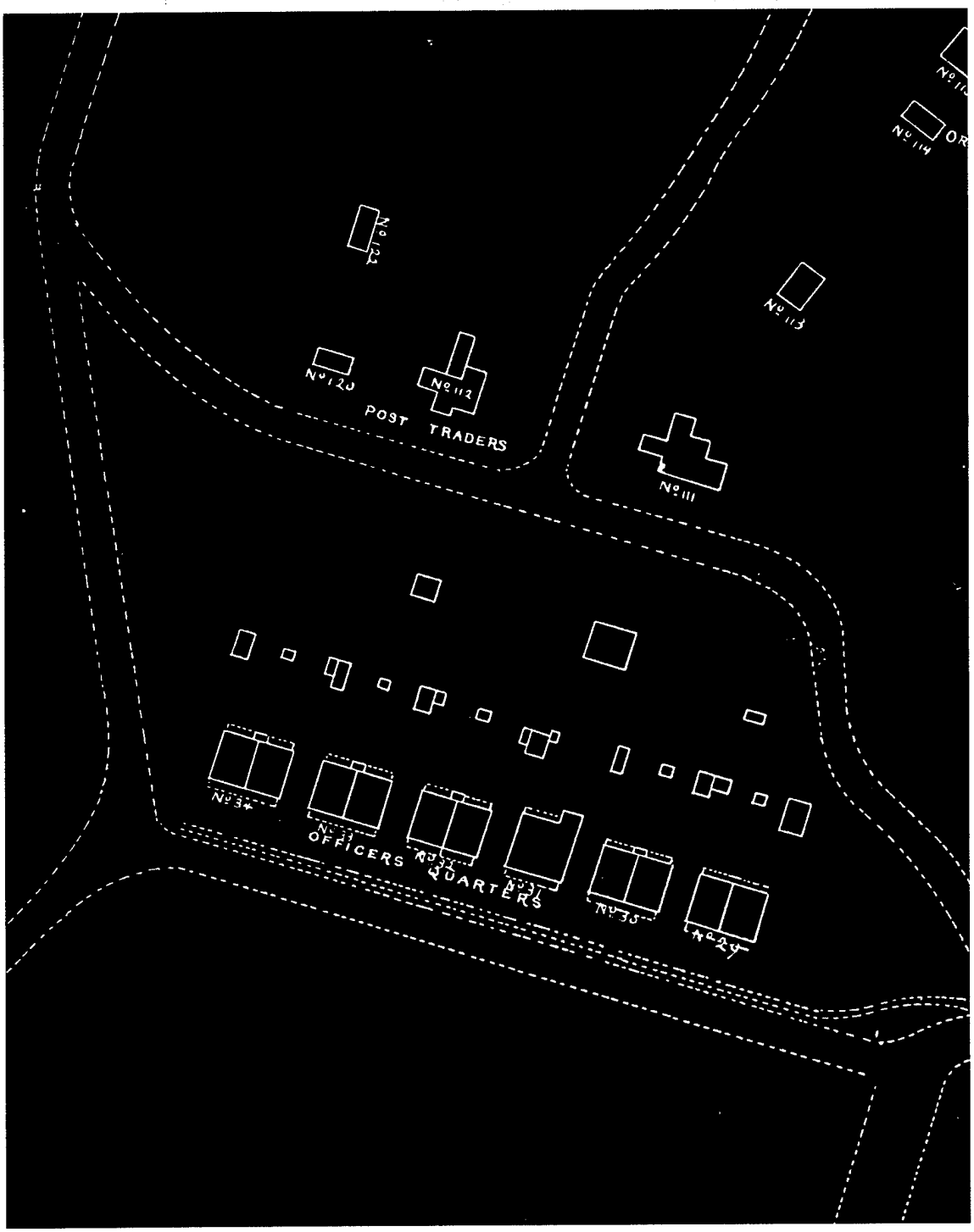


Figure 7. 1881 map showing officer's quarters in HBS 131-133 location in project area 1.

The surface reconnaissance recorded the partial foundations of three structures that correspond to HBS 131-133 or the late nineteenth/early twentieth century non-commissioned officer's quarters (structures 32-34 on the 1930 map). Small sections of the stone foundation walls are visible within the lawn while the outlines of the structures are visible as discolored or dead grass areas within the lawn. Efforts to completely define the structure outlines though soil probing was futile due to the large amount of brick and limestone rubble within the yard.

The dimensions (20 m north-south x 8 m east-west) of the two most eastern foundations generally correspond to those provided for structures 32 and 33, i.e., 34 ft (19.8m) x 24 (7.3 ft). A partial foundation to a fourth structure that may correspond to structure 36 was observed in front of the Lee House immediately beyond the western edge of the project area (Figure 8).

The former locations of front walks to HBS 131-133 are visible as within the lawn as linear depressions within the lawn. These extend from Kearney Avenue to the fronts of the structures (Figure 8). Shovel tests within these areas revealed that the sand and cinder bases that these (presumably) brick walks once rested on are still in place immediately beneath the surface. Linear depressions representing former walkways that extended from the rear of the structure to the present day parking lot that borders the project area to the north also were associated with HBS 132 and 133 (Figure 8). The rear walkway to HBS 131 was not identified.

Shovel tests within all three structures revealed that they contain a dense brick and limestone rubble fill extending to a depth of at least 50 cm beneath the surface. Based on the archival data, cellars were originally located beneath all three of the structures. The heavy limestone and brick rubble fill encountered in the shovel tests suggests that when HBS 131-133 were demolished in the 1940s the structural debris was used to fill in the cellars.

One hundred and thirty nine shovel tests were excavated across the lawn on a 5 m x 5 m grid pattern (Figure 8). An additional four shovel tests were excavated to confirm the suspected subsurface locations of late nineteenth/early twentieth sidewalks. Sixty nine of the shovel tests were positive, producing cultural material other than brick or limestone (i.e. metal, glass, bone, ceramic, and other artifacts; sixty three produced brick or limestone rubble; and seven contained no material (Figure 8). The distribution of positive shovel tests and those that produced only brick and limestone was uniform across the lawn. A pattern was not discernible. Soil horizons within the shovel tests varied greatly. The majority of the tests exhibited evidence of heavy disturbance. Upper soil horizons in the transects excavated through the center of the lawn consisted of a dark brown silty clay that contained structural and other debris from the demolished late nineteenth/early twentieth structures. This was underlain by a brown silty clay that originated at from 30 to 50 cm beneath the

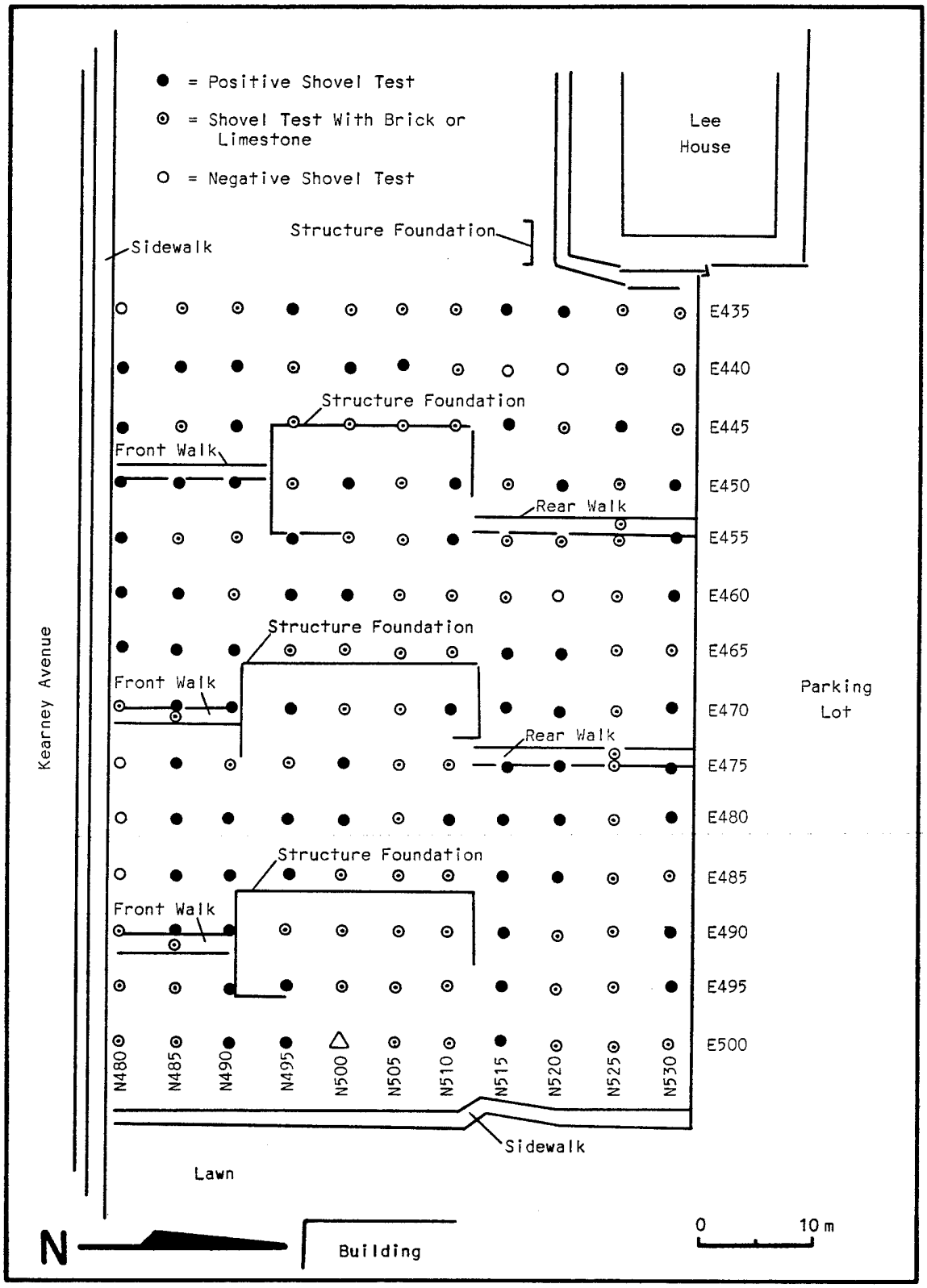


Figure 8. Project Area 1 site plan.

present ground surface. The transects along the southern (N480) and western (E435 and E440) project area boundaries, however, encountered soil horizons that produced artifacts that dated back to the mid-nineteenth century. This was particularly evident in the shovel tests excavated from E440 to E465 on the N480 line (Figure 8). Glass, ceramic, bone, metal, and other artifacts were recovered from a homogenous dark brown silty loam soil in these shovel tests that extended from 45 to 115 cm beneath the ground surface. It should be noted that the base of this deposit was not reached in the shovel test (N480E450) that was excavated to 115 cm. The brick and limestone rubble characteristic of most of the tests in the remainder of the lawn also was noticeably absent in these tests. The depth (30-90 cm bs) of the tests excavated along the E435 and E440 transects generally was not as great as that on the N480 line. A toy gun hammer, however, was recovered from shovel test N495E435.

Artifact Analysis: Historic military, architectural, kitchen, personal, hardware, unidentifiable, and other artifacts (n=171) were collected from HBS 131-133. One prehistoric artifact also was collected (Appendix E, Table 1). The artifacts were separated into two groups for analysis: (1) those from the thicker, more homogenous sediments encountered in the shovel test transects along the southern and western edges of the project area; and (2) those from the disturbed soils covering the remainder of the project area.

Southern and Western Transect Artifacts. The artifacts from the shovel test transects along the southern and western edges of the project area comprise 29% of the site assemblage. Military, kitchen, architectural, clothing, personal, and hardware items were recovered (Appendix E, Table 1). The military accoutrements and all of the ammunition from the site were recovered from this area. One 3-piece brass General Service coat button backstamped "SCOVILL MFG CO WATERBURY" was identified. The symmetrical eagle with long narrow wings and broad lined shield indicates that this is the earlier style button issued between 1854 and 1884 (Herskovitz 1978:39, Figure 12n). The .45-70 caliber ammunition is a copper or brass casing from an externally primed, centerfire rifle cartridge. It is headstamped "9 R 78 B". The "9" and "78" indicate a manufacture date of September, 1878. The "R" indicates it is rifle ammunition. The .38 caliber lead bullet is probably from a handgun. Two .22 caliber pieces of ammunition also were recovered.

Ceramics (n=8), glass (n=5), and faunal remains (n=12) comprise the kitchen artifacts from this area. The ceramics consist of brown transfer printed and embossed creamware sherds (Herskovitz 1978) of unidentified vessels, a possible porcelain lid sherd, a brown annular ware sherd, yellowware, and salt glazed exterior/slipped interior sherds. The mean ceramic date for these artifacts is 1864.17. This date and the range of manufacturing dates for these artifacts suggest that they are associated with the mid-nineteenth century (ca. 1865-1884) officers quarters.

Identifiable glass consisted of wine and beer/ale bottle parts. Unidentifiable bottles and/or jar parts also were present. Embossed sherds were present but were too fragmentary to identify the inscription. Several of the bottle fragments are temporally diagnostic. One wine bottle was manufactured by the turn mold process (1875-1905) while an unidentifiable bottle had a post bottom mold (1860-ca.1915). Brown beer/ale bottles post-date ca. 1873. A mean glass date of 1887.33 was derived from the limited number of specimens. Although this date falls beyond the terminal date (1883) for the earlier officer's quarters in this area, the manufacturing range for these bottles indicates that they could have been associated with that earlier occupation.

The clothing category consists of a 4-hole bone sew-through button (Figure 9). The holes are contained within a recessed panel. A gun hammer comprises the personal category (Figure 9c). This piece is considered a toy based on its soft metal (possibly aluminum), the presence of a mold seam indicating low quality manufacture, and small size. Finally, one piece of wire comprises the hardware category.

Architectural items included machine cut nails (n=11), wire nails (n=2), and flat glass (n=6).

Other Transect Artifacts. The artifacts from the remainder of the site consisted of kitchen, architectural, transportation, and military items (Appendix E, Table 1). Kitchen artifacts included ceramic (n=40), glass (n=12), and faunal remains (n=14). Black transfer printed creamware cup fragments, an undecorated whiteware bowl, and an undecorated octagonal base of a possible teapot were collected. Unidentifiable flatware or vessel fragments of undecorated ironstone, whiteware, porcelain, and salt glazed exterior/slipped interior stoneware also were present as was one porcelain decalcomania sherd. A mean ceramic date of 1868.7 was calculated for these artifacts, suggesting that many of them may be associated with the earlier (ca. 1865-1884) officer's quarters.

Glass objects included fragments of case, wine, and soda bottles and unidentified bottles/jars. One tooled finish bottle neck fragment was present but was too fragmentary to determine if it was improved tool. Tooled finishes date between 1825 and 1915, indicating a mean manufacturing date of 1915. Faunal remains consisted entirely of bone. Mussel shell was not identified (Chapter VIII).

Architectural artifacts (n=59) were the most numerous artifact type from the shovel tests in the disturbed area. Machine cut and wire nails, porcelain insulators, a spike, a brad, and wood fragments were recovered. The presence of both machine cut and wire nails probably represents both the earlier (ca.1865-1884) and later (1884-ca.1943) sets of quarters constructed in this area. One hard paste brick

Figure 9. Metal and bone artifacts, HBS 38,39,131-133.

A. Gold plated penknife, HBS 38, unit C, level 3, layer J

B. Grooved lead disk, HBS 38, unit B, level 2

C. Toy gun hammer, HBS 131-133

D. Bone button, HBS 131-133

E. Tobacco tin, HBS 39, unit B, level 6, feature 1

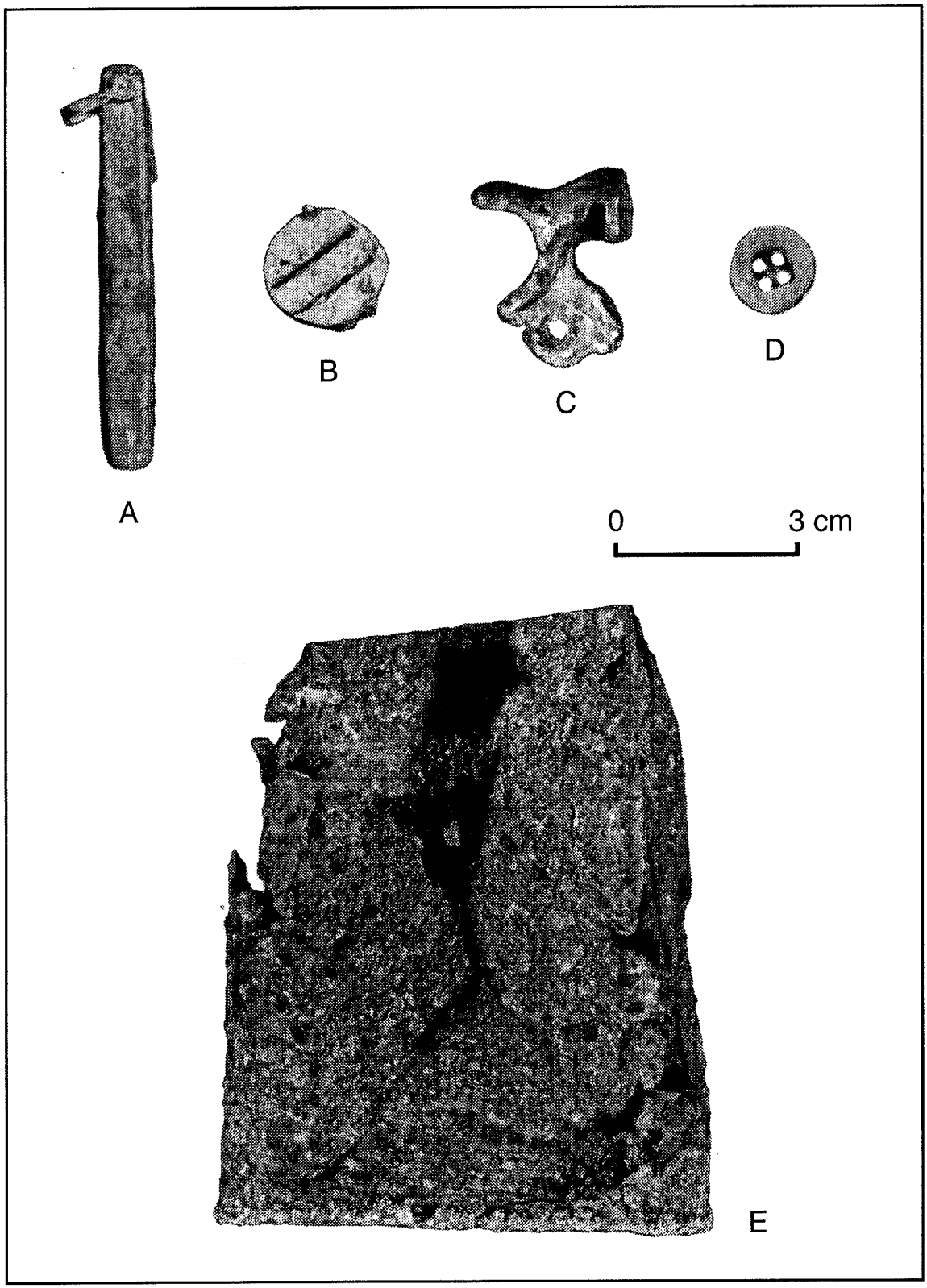


Figure 9. Metal and bone artifacts, HBS sites 38, 39, and 133.

embossed with the fragmentary inscription "COFFEYVILLE VB_TC° was recovered. Hardware consisted of a machine cut bolt, two metal straps, a flexible pipe for a gas appliance hookup, wire, and one unidentifiable object.

Personal artifacts included a porcelain smoking pipe bowl fragment and a bobby pin. Unidentifiable objects included a curved metal rod fragment and an indeterminate object. The other category is comprised of a metal bracket, phonograph record, flower pot fragments, and a clothes pin spring. Artifacts from HBS 131-133 that post-date the 1930 construction date for the post incinerator landfill include the clothespin spring, bobby pin, flexible gas hookup pipe, and phonograph record fragment.

The transportation and unidentifiable classes contained three military-related items. The two identifiable military items were a wagon box spring and harness equipment (Appendix E, Table 1).

Summary: The surface reconnaissance and screened shovel tests at project area 1 revealed that: (1) the structure foundations visible within the lawns represent the remains of three late nineteenth/early twentieth century non-commissioned officer's quarters; (2) the interiors of these structures are filled with brick and limestone rubble associated with the demolition of the structures; (3) the majority of the soil horizons across the lawn exhibit evidence of disturbance associated with the demolition of HBS 131-133; (4) Soil horizons that contain mid-nineteenth century deposits associated with the 1856-1884 officer's quarters are present along the southern and western site margins. In addition, a combination of artifacts that appear to be associated with both the mid to late nineteenth century officer's quarters and late nineteenth to mid twentieth century noncommissioned officer's quarters were recovered from the shovel tests over the remainder of the project area.

Recommendations regarding HBS 131-133 are presented in the final chapter of this report.

Project Area 2

HBS Site Number 47-49
Area: 0.20 Acres
Field Conditions: Grass lawn with 0% ground surface visibility. Modern twentieth-century alterations to the ground surface include a sidewalk, shed, and paved sidewalk and picnic area.
Field Methods: Screened shovel tests (1/4 inch mesh) on a 5 m x 5 m grid system.
Discussion: Barr and Rowlinson (1977:143-147) located three late nineteenth century privy vaults (HBS 47-49) in the west (rear) lawn of building 46 through archival research. Their descriptions of all three privy vault sites are identical:

> This site is located west of building 46, is grass covered, has a north-south sidewalk on its west border, and has no visible remains of a structure. This building is one of ten similar vaults represented on an 1881 map. If cartographic absence on earlier and later maps accurately reflects the vaults construction and removal, then these dates can be set between 1871 and 1881 for erection, and 1881 to 1905 for demolition. This structure is part of the second generation of vaults associated with the barracks on the west side of the main parade.

Barr and Rowlinson's (1977) map indicates that the three 1881-1905 privy vaults were located immediately adjacent to the sidewalk west of building 46. Map research conducted as part of the current project, however, indicates that there may be as many as five 1881-1905 privy vaults beneath the west lawn of building 46, located half way between the existing building and the sidewalk (Figure 10).

Structural remains and artifacts associated with earlier buildings also should be located in this area. A sketch map prepared by Colonel George Croghan, inspector general, in 1828 shows four square structures on the west side of the Main Parade. Croghan described these structures as follows:

> Soldiers Quarters (Completed): one story building 52 by 36 feet; center hall 12 feet wide, two rooms on either side, each 21 by 18 feet; piazzas, front and rear, each 8 feet wide; cellar kitchens.

Hunt and Lorence (1937:269), in reference to the west side of the Main Parade, also note that "the original buildings constructed on this line soon after the post was founded were small one-story houses for non-commissioned officers and civilian employees".

A map from the early 1830s also shows the four one-story structures on the west side of the Main Parade. The map legend identifies these as "Mens Quarters (Frame Buildings)". From south to north, the structures bear legends that identify them as barracks for companies A through D (Figure 11). These structures also appear on a late 1830s map where they are identified as "Old Infantry Quarters". An 1837 map also shows "Four Frame Buildings for Soldiers Quarters" located on the west side of the Main Parade.

Front and end views of the company barracks are provided on the early 1830s map (Figure 12). These show the barracks as being one-story frame structures with two chimneys, porches on the north and south sides, and entrances on at least the north, south, and east sides. The gable ends of these structures faced the Main

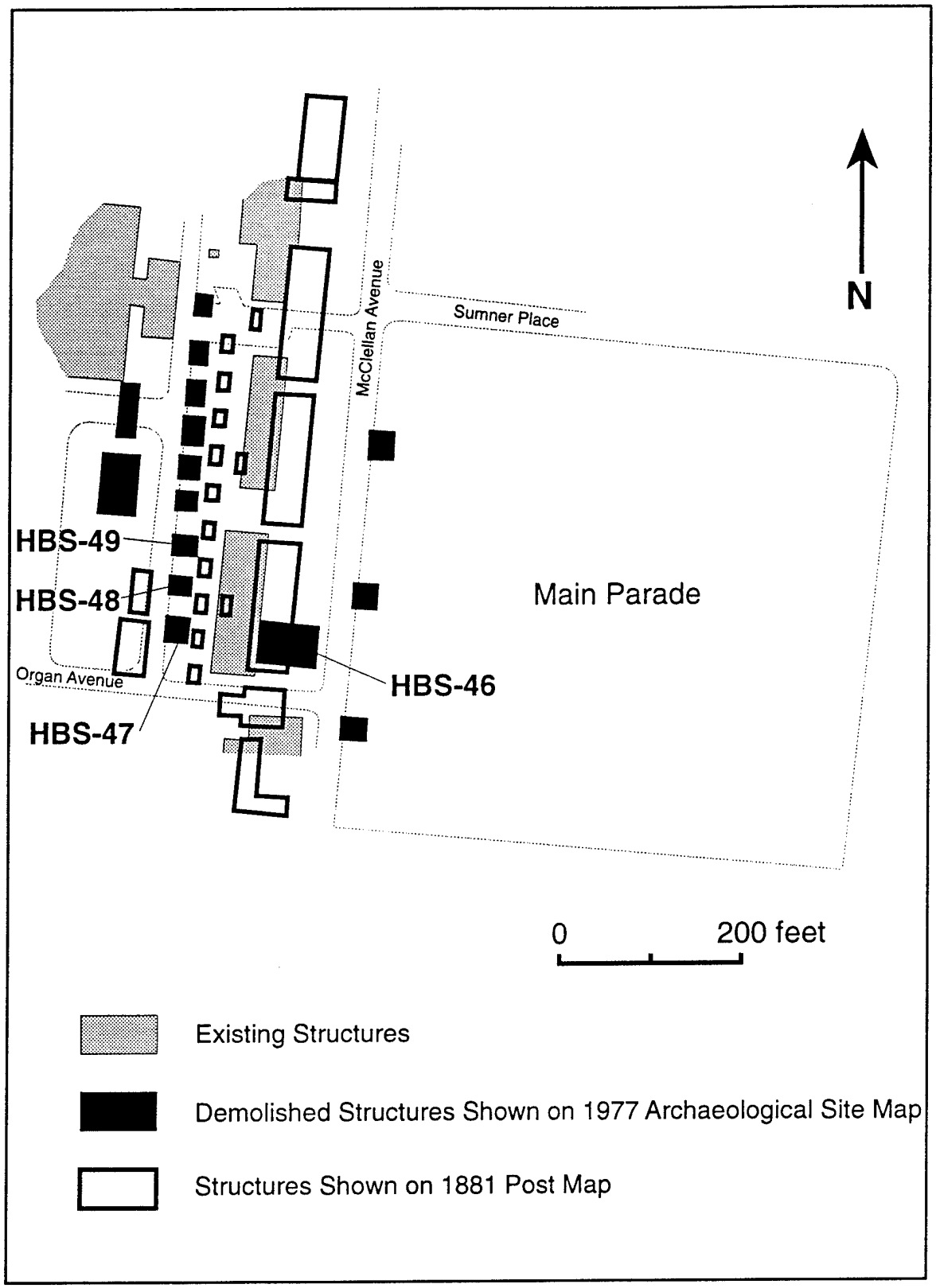


Figure 10. Overlay of 1881 map and 1977 archaeological site map.

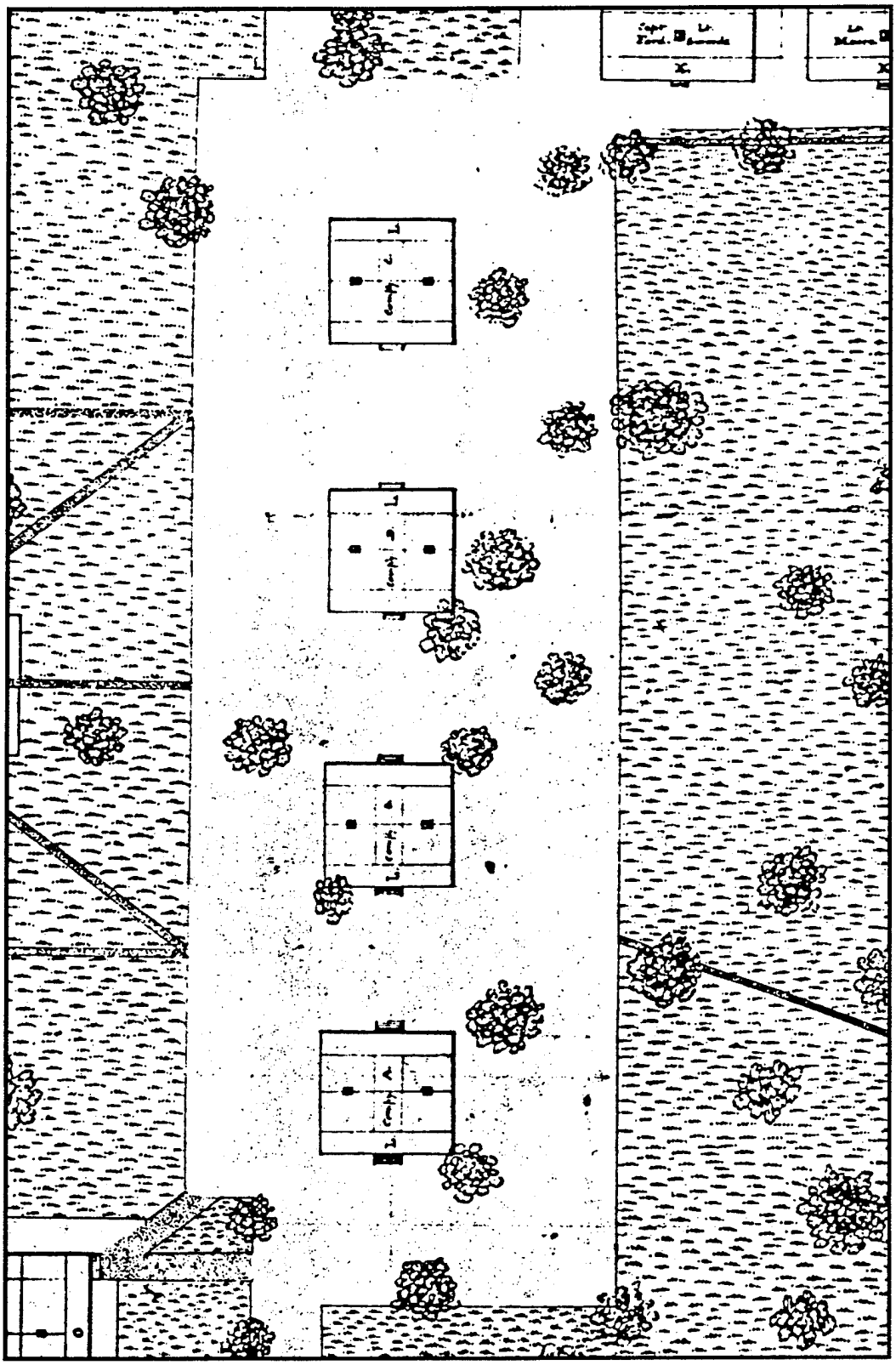


Figure 11. 1830's barracks, west side of Main Parade.

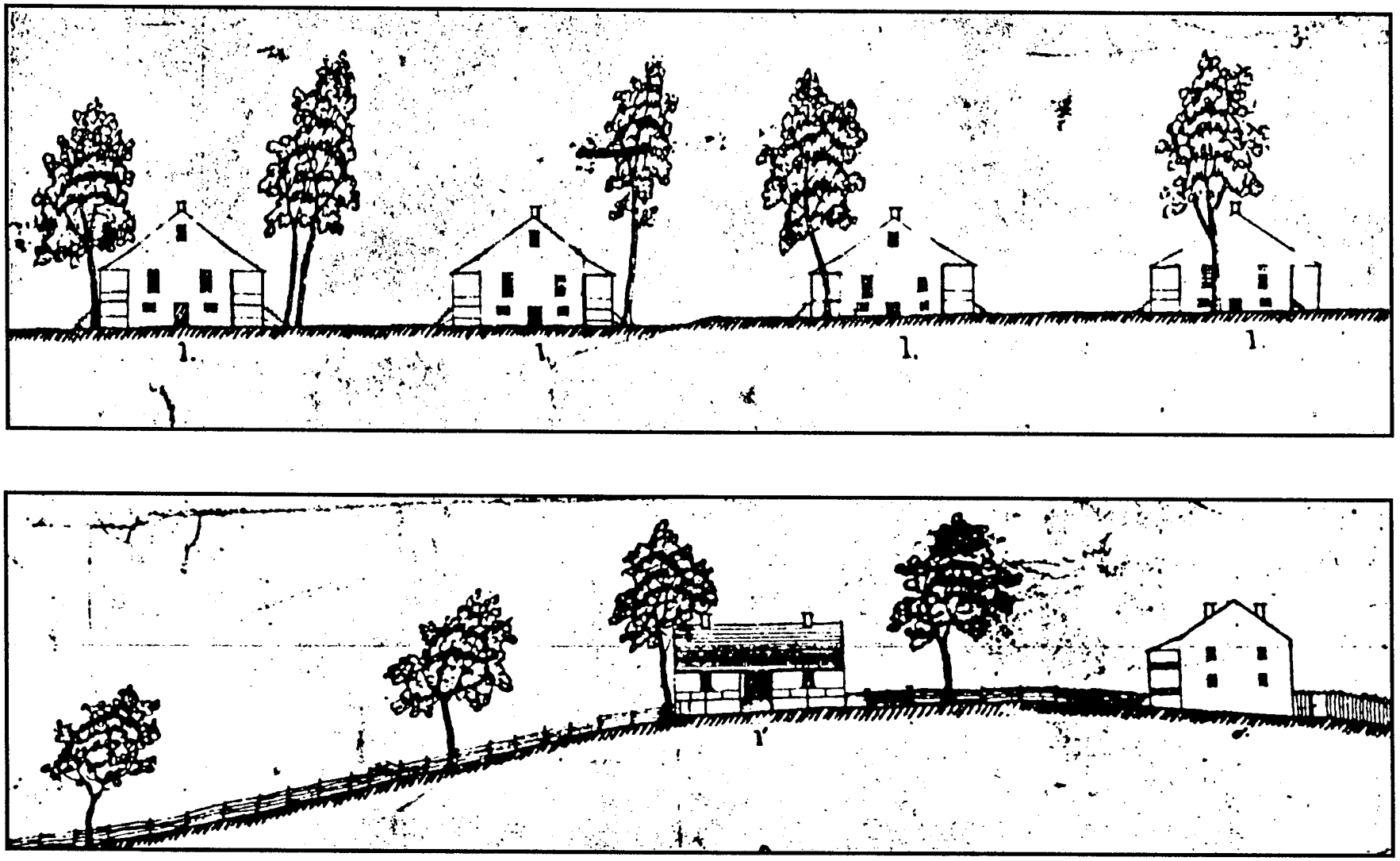


Figure 12. Side and front views of 1830's barracks, west side of Main Parade.

Parade. A large square feature that may represent a common wash house/privy was located approximately 125' behind the center of the row of barracks.

An 1846 account in a St. Louis newspaper noted that the "the west side (of the Main Parade) is not so closely built up" as the other sides (Barry 1972:625). An 1846 sketch by Private Uriah Thomas shows that three square structures labeled "dwellings" were located on the west side of the parade. An L-shaped structure was located at the southwest corner at the present day intersection of Kearney and square structures designated as "soldier's quarters" located adjacent to the west side of the parade (Figure 13). The L-shaped structure at the corner was labeled as "Laundress's Quarters". In describing Ft. Leavenworth in 1849 Percival Lowe described the structures on the west side of the Main Parade as follows:

> West of the parade ground, on what is now McClellan Avenue, fronting east, were four or five one-story and basement buildings, generally used as quarters for soldiers families and citizen employees...at the south end of the west line of buildings stood "Bedlam", a large two story frame building with front and back porches and stone basement. It was the quarters of unmarried officers, with an officers' mess attached (in Hunt and Lorence 1937:72-74).

In 1855 a civilian named E.T. Carr was one of two foremen in charge of new construction at Ft. Leavenworth. Carr (1912:381) noted that "during the spring and summer (of 1856) we constructed six company frame barracks on the west side of the parade. These stand where the brick barracks now stand." Although Carr (1912:381) specifically notes that six frame barracks were constructed, maps from the late 1850s to 1881 consistently show only three buildings located immediately adjacent to the parade (Anonymous n.d.; Anonymous 1866; Anonymous 1875; Anonymous 1881; Mitchell 1866; Sheridan 1876; Hunnius 1871). Floor plans of the buildings from 1866, however, show that each housed two companies. Each of the two companies that shared a building had separate kitchens, messes, and rooms for married men on the ground floor of their building. Living quarters for the single men of the companies were presumably located on the second floor. Each building had two sets of wash houses located behind it, one for each company that shared a building, making a total of at least six (and probably more) wash houses on the west side of the Main Parade during the time these buildings were in use. For example, the 1881 "Birds-Eye View" lithograph of Ft. Leavenworth shows what appears to be a row of 10 wash houses behind the frame barracks. The 1881 map also shows a line of ten buildings, presumably wash houses or privies, located behind the three barracks. In addition, a single small building was located immediately behind each barracks, between the barracks and line of privies or wash houses.

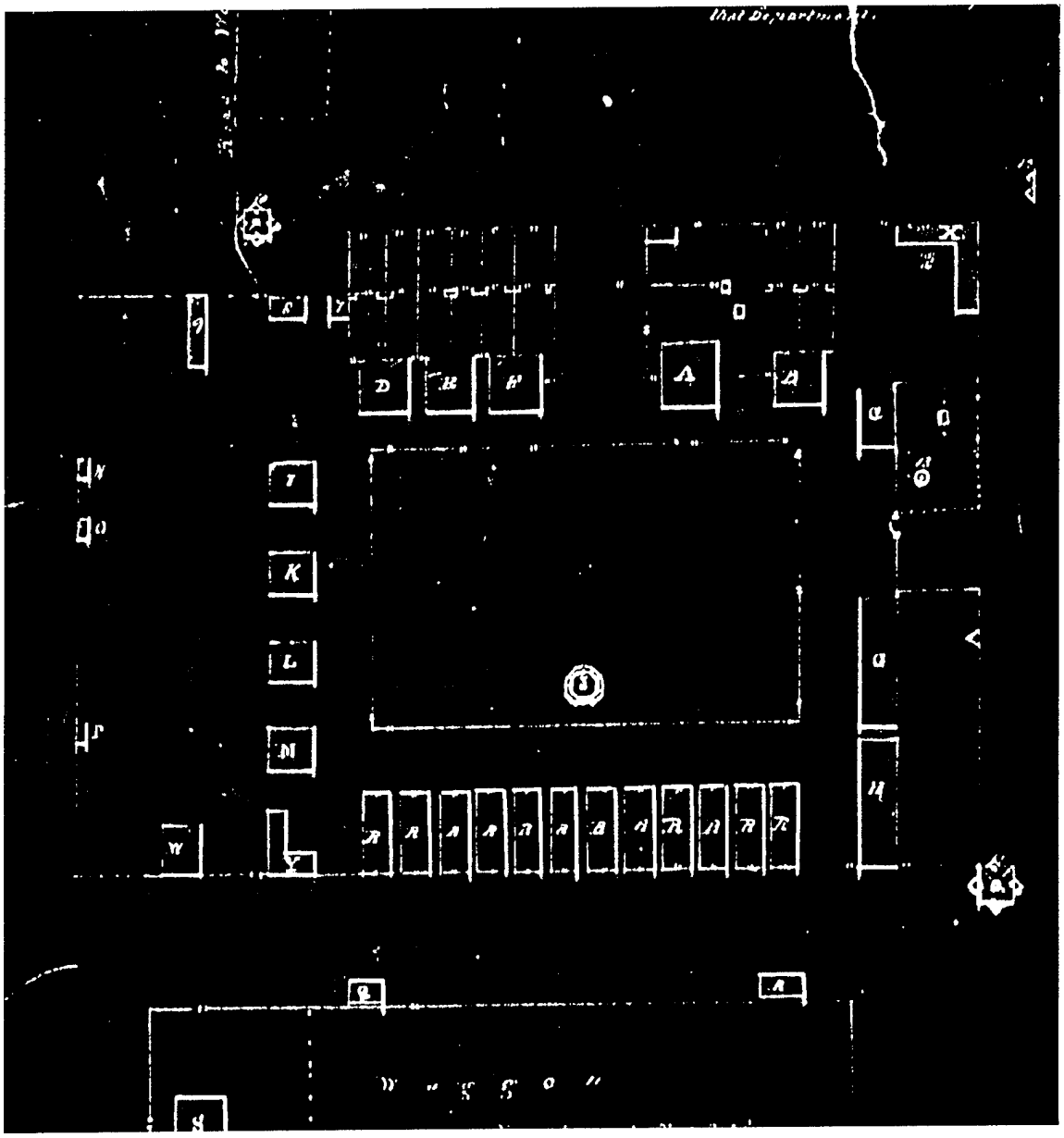


Figure 13. 1848 map showing four "soldier's quarters" (J-M) on west side of Main Parade.

The frame barracks located where present-day building 46 stands burned in 1882, being replaced by a brick barracks (Figure 14). The remainder of the frame barracks were demolished in 1889 and replaced with brick cavalry barracks (Hunt and Lorence 1937:269).

Field Investigations: The project area boundaries were formed by Organ Avenue to the south, by existing building 46 to the east, and by a sidewalk bordering an alley to the west. The northern boundary was formed by the limits of the proposed construction area. Shovel testing was discontinued at the northern edge of the proposed construction area despite the presence of two positive shovel tests in the last row of shovel tests (Figure 15).

Twenty one screened shovel tests were excavated within the lawn at 5 m intervals (Figure 15). Soil horizons in these tests predominantly consisted of a dark brown silty clay that extended from the surface 10 to 35 cm bs underlain by a mottled yellowish brown silty clay that extended to 35 to 44 cm bs. Disturbed soil horizons consisting of mottled fill with limestone gravel inclusions also were encountered in several of the tests. Given the history of construction in this area, this is not surprising. Eight of the shovel tests were positive, four contained only brick or cinders, and eight contained no materials.

Artifact Analysis: Thirty one artifacts were collected from this site (Appendix E, Table 2). Architectural artifacts (nails and flat glass) (n=17) comprise the majority of the assemblage; bottle or jar glass (n=9), faunal remains (n=3), one .50 caliber centerfire brass shell casing, and one piece of clear glazed drainage tile round out the collection. The shell casing is not backstamped, thus the date of manufacture and the manufacturer are indeterminate. Herskovitz (1978:51), however, assigns a date range of 1866-1873 for use of .50 caliber cartridges by the U.S. Army. Machine cut (n=1) and wire nails (n=3) were collected. Wire nails for construction purposes were introduced circa 1860, but were not extensively used for this purpose until the 1880s to 1890s (Nelson 1968).

Although speculative, it may be the window glass and machine cut nails relate to the frame barracks built in this area (Figure 11-12, 15). The wire nails may have been used in the later 1871-1905 privies.

Summary: The archival research indicates that project area 2 potentially contains archaeological remains associated with the 1828-1856 infantry barracks, 1856-1881 barracks, and 1881-1905 privy vaults. The shovel testing methodology utilized at this site indicates that cultural materials contained within both relatively undisturbed and mixed deposits extend to at least 44 cm bs. Structural remains associated with the

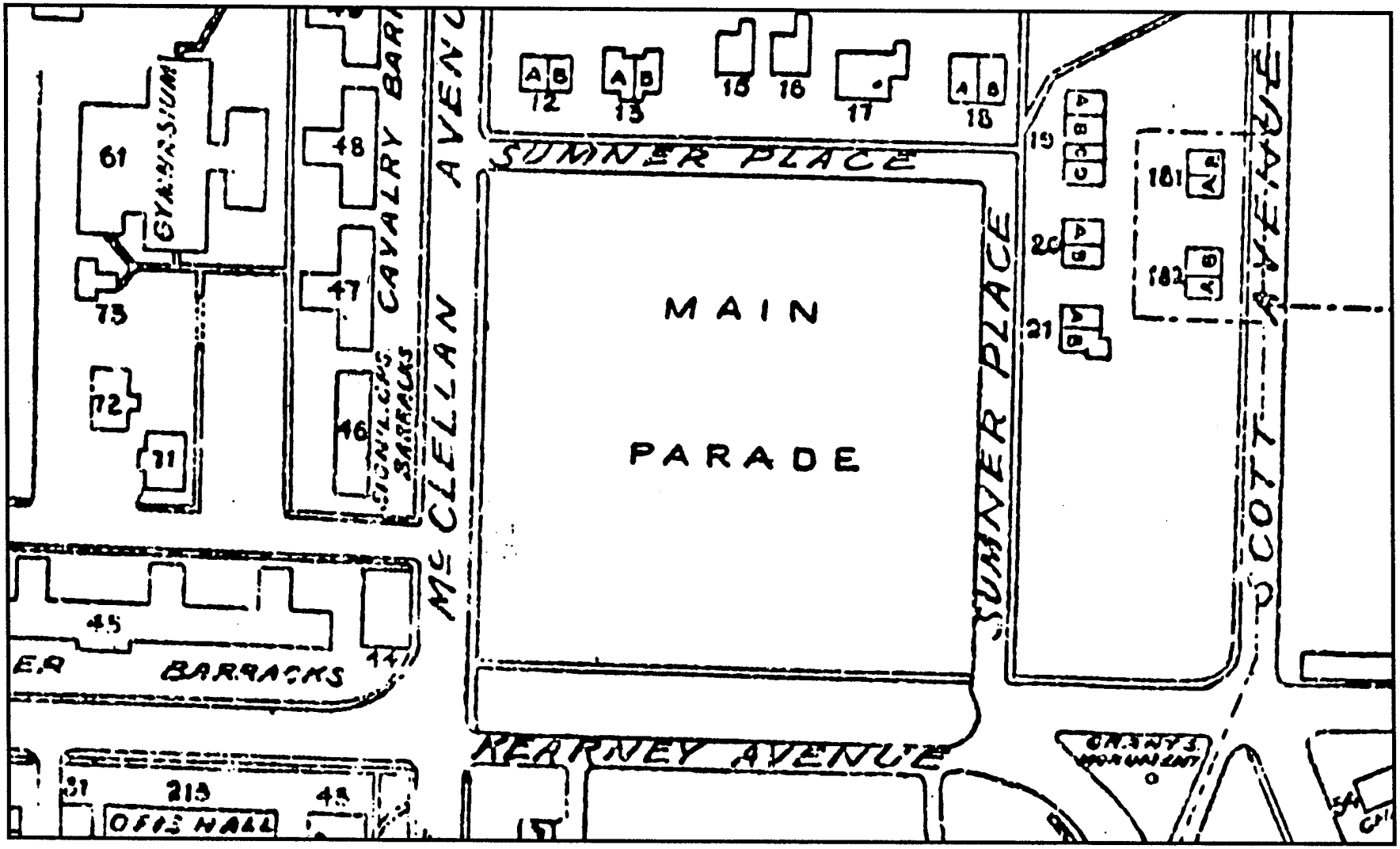


Figure 14. 1908 map showing cavalry and signal corps barracks, west side of Main Parade.

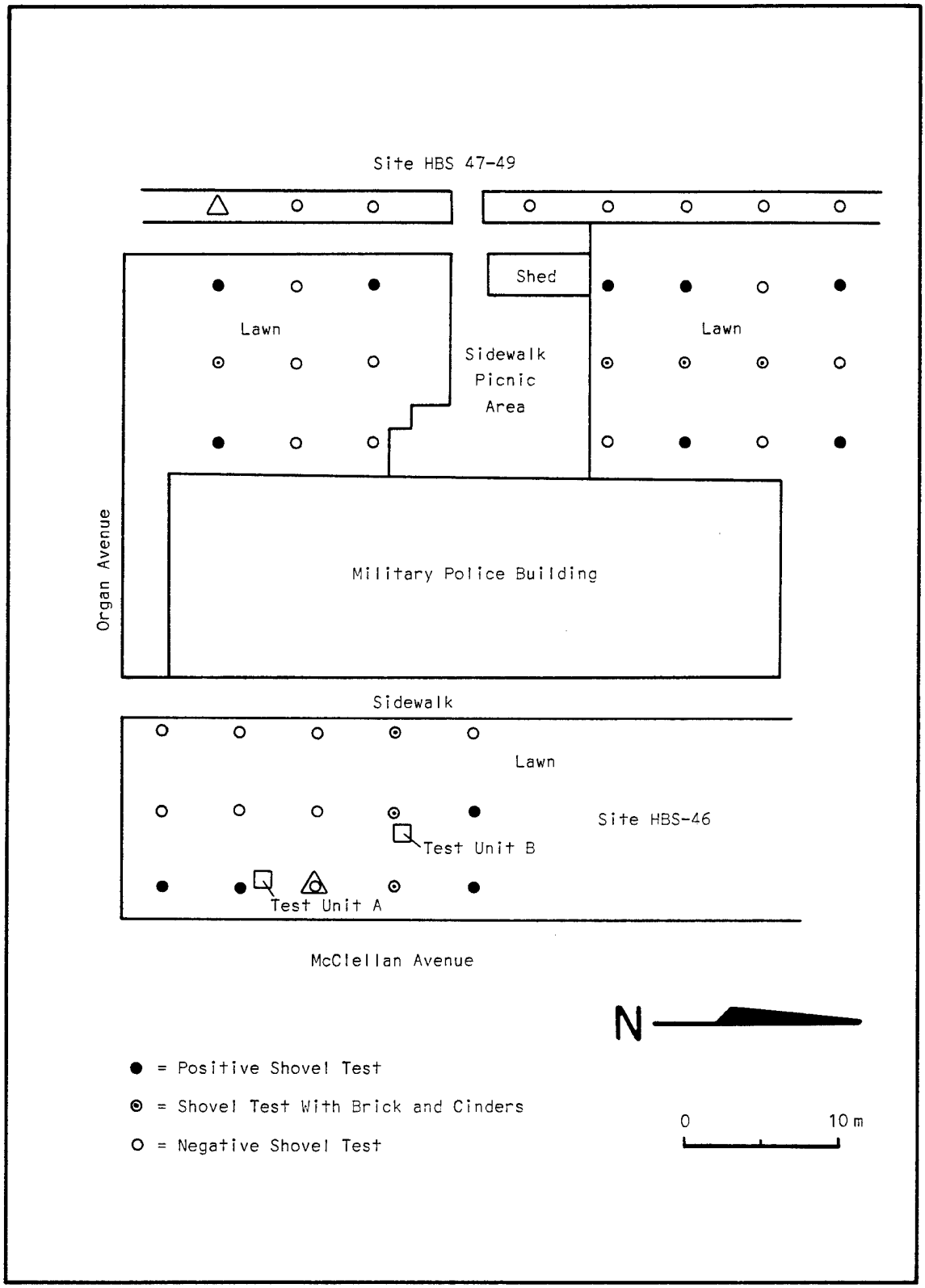


Figure 15. Project Areas 2 and 3 site map.

nineteenth century barracks or privy vaults were not located. Management recommendations regarding this project area are presented in the final chapter of this report.

Project Area 3

HBS Site Number 46
Area:0.08
Field Conditions: Grass lawn, 0 % ground surface visibility
Field Methods: Screened shovel tests (1/4 inch mesh) on a 5 m x 5 m grid system; hand excavation of a 1 m x 1 m excavation unit in 10 cm levels.
Discussion: This project area is located in the front yard of building 46, first constructed as a company barracks in 1882 (Hunt and Lorence 1937:269). A 1908 map of the post reveals that by the early twentieth century building 46 had become a Signal Corps barracks (Figure 14). The building is currently used by the Military Police.

Barr and Rowlinson (1977:140-141) indicate that a structure was present at this location on the 1871 and 1881 maps of the post. They identify it as the first building used solely as band quarters. Although most of this structure was believed to be located beneath existing building 46, Barr and Rowlinson (1977:141) suggested that a section of it may have extended out into the southern portion of the present lawn to building 46.

An overlay of the 1881 map of the post, however, with the 1977 archaeological site map of the post indicates that the band quarters was located south of existing building 46 (Figure 10). Rather than being constructed over the band quarters, it appears building 46 was built behind and partially through the southern most of the line of company barracks (1856-1882) discussed as part of the archival research for project area 2. If the overlay is correct, most of this barracks lies in the front yard of existing building 46.

Six wash houses were located 30 feet behind the rear walls of the company barracks in 1866 (Figure 16). Again, if the overlay is correct, the wash house once located behind the southern most barracks now lie either beneath building 46 or immediately adjacent to its rear wall.

Also as noted during the presentation of the archival research for project area 2, a set of frame infantry barracks (ca. 1828-1856) that apparently were converted to civilian and other uses in the 1840s also were located on the west side of the Main Parade during the early and mid-nineteenth century. Both Building 46 (1882-present) and the earlier (1856-1882) company barracks appear to have been constructed through the two most southern of these barracks.

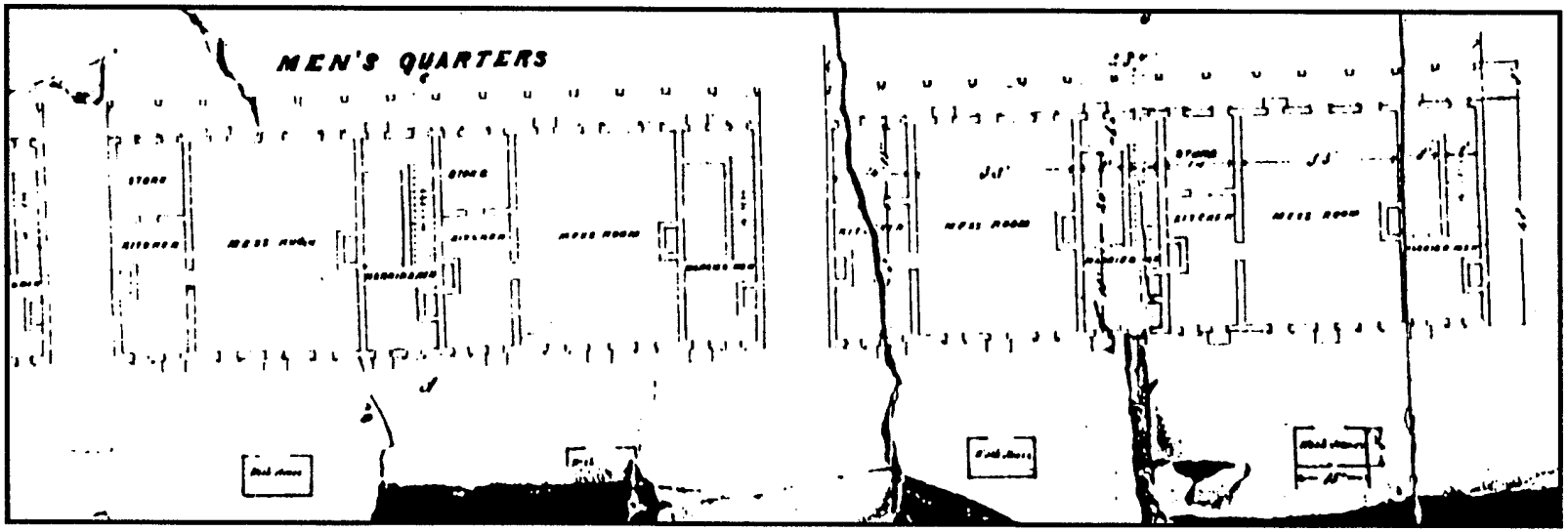


Figure 16. 1866 map showing wash house locations behind barracks on west side of Main Parade.

Field Investigations: The boundaries of this project area were formed by Organ Avenue to the south, McClellan Avenue to the east, and existing building 46 to the west. The northern project boundary was formed by the limits of the proposed construction area (Figure 15).

Fifteen shovel test were excavated across the lawn at 5 m intervals (Figure 15). Four of these were positive, three produced only brick fragments and cinders, and seven were negative. Cultural material in the shovel tests included animal bone, a brass cartridge casing, nails, and bottle glass. Soil horizons within the shovel tests varied, with some containing a homogenous silty clay that extended from the ground surface to a maximum depth of approximately 40 cm while others contained disturbed fill layers that contained gravel and other materials associated with sidewalk and building construction.

Two 1 m^2 units (A and B) were excavated within the lawn following the completion of the shovel testing. Five soil horizons were defined in unit A (Figure 17): (A) humus/grass, 0-3 cm bs; (B) a homogenous 10YR3/2 very dark grayish brown clayey silt, 3 to 15-18 cm bs; (C) a small 10YR6/3 pale brown sand lens in the northwestern corner of the unit, 11-15 cm bs; (D) a 10YR4/3 dark brown clayey silt with 10YR4/4 yellowish brown clay mottles that contained brick and limestone fragments, 15-20 to 36-40 cm bs; (E) the 10YR4/4 yellowish brown culturally sterile subsoil. The soil horizons in unit B were identical to those of unit A with the exception that horizon C was not present in this unit (Figure 18). Cultural features were not identified in either unit.

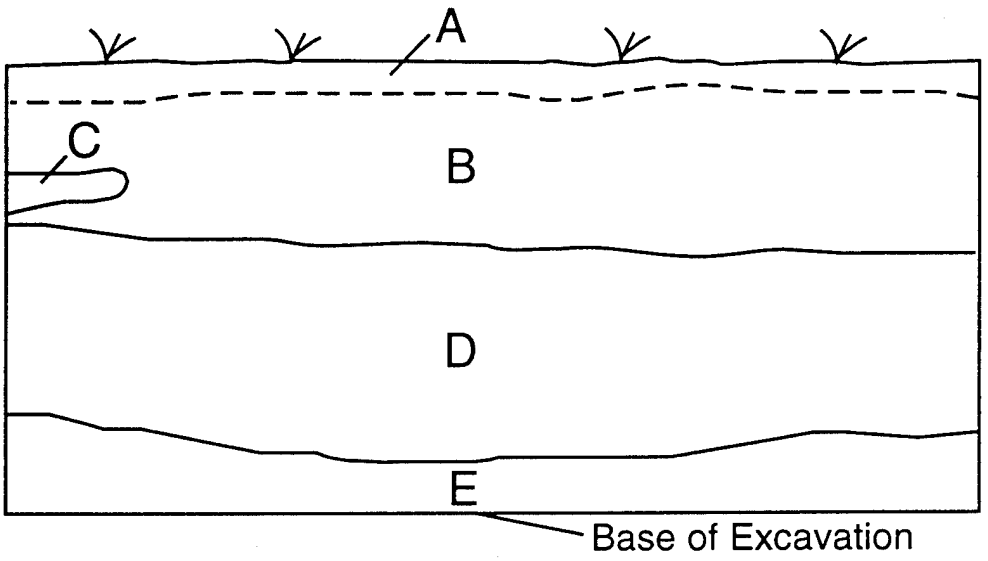
Artifact Analysis: The artifact assemblage (n=66) is dominated by kitchen items (42%) followed by architectural (20%) and military artifacts (12%) (Appendix E, Table 3). Personal items and furnishings and artifacts unidentifiable as to functional type were also present. The military artifacts (n=8) consisted of ammunition and a brass key (Figure 19d). Six of the military artifacts were collected from unit B; one was collected from unit A and one from a shovel test. Five lead balls are present. Four of these are flattened while the fifth is a hemisphere. The remaining ammunition is one .45/70 caliber centerfire rifle cartridge (Figure 19c) and a .46 caliber centerfire shell casing. Neither is backstamped. Herskovitz (1978:50-51) assigns a date of 1873 to 1888 for the manufacture of .45/70 cartridges. The type of lock in which the brass key would have been used is unknown.

The architectural items consisted of ten machine cut nails, one wire nail, one flat glass, and one modern aluminum storm window track fragment. The machine cut nails are pulled and may represent the remains of the earlier company barracks.

Kitchen artifacts included ceramic (n=8), glass (n=13), metal (n=1) and faunal (n=6). These may represent discard from the earlier company barracks which contained kitchens, mess halls, and married mens' quarters. Whiteware (n=6) and

SITE HBS 46
UNIT A

North Wall Profile



A - Humus layer

B - Homogenous very dark grayish brown 10YR 3/2 clayey silt.

C - Pale brown 10YR 6/3 sand.

D - Dark brown 10YR 4/3 clayey silt mottled with yellowish brown 10YR 4/4 silty clay, scattered with small brick fragments and limestone gravel.

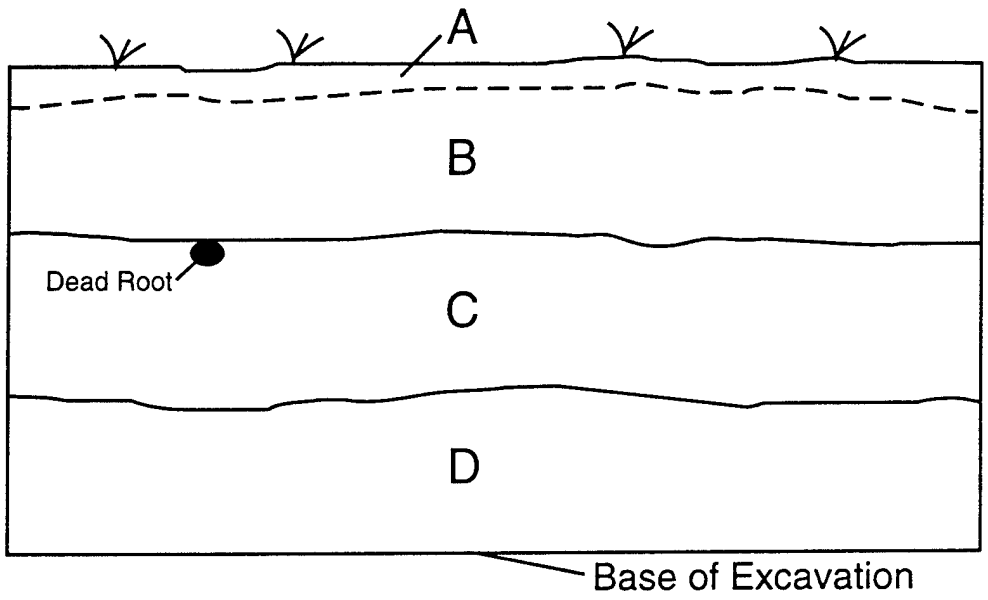
E - Yellowish brown 10YR 4/4 sterile silty clay.



Figure 17. North wall profile, unit A, HBS 46.

SITE HBS 46
UNIT B

East Wall Profile



A - Humus layer.

B - Homogenous very dark gray 10YR 3/1 clayey silt with small roots.

C - Dark brown 10YR 3/3 clayey silt mottled with dark yellowish brown 10YR 4/4 silty clay, scattered brick, limestone gravel, and mortar.

D - Yellowish brown 10YR 5/4 fine silty clay (sterile).



Figure 18. East wall profile, Unit B, HBS 46.

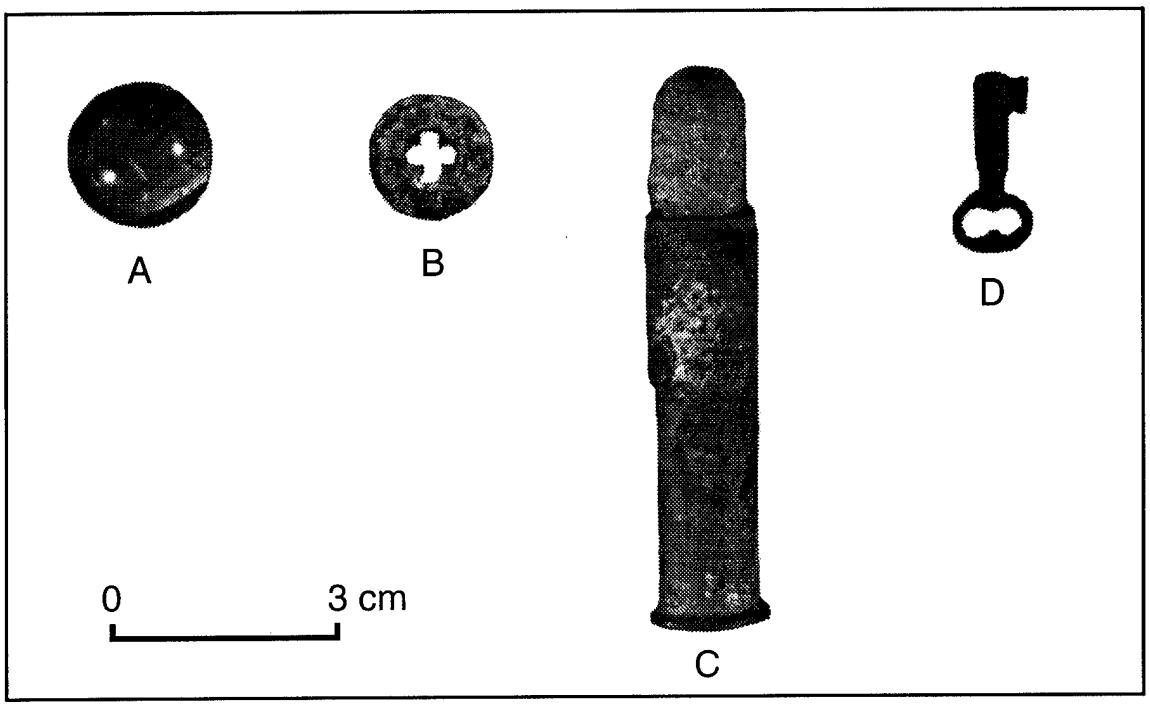


Figure 19. Glass and metal artifacts, HBS 5 and 46. A. Machine made glass marble, HBS 5, unit A, level 11; B. Embossed pewter button, HBS 5, unit B, level 6; C. .45/70 caliber centerfire rifle cartridge, HBS 46; D. Brass key, HBS 46.

and a yellow and red hand painted floral design. Its decoration suggests it was a privately ironstone (n=2) comprise the ceramics. Only one of these specimens was identifiable as to vessel type. It is the rim of a serving bowl decorated with a black transfer print owned piece rather than the undecorated whiteware issued by the military (Herskovitz 1978:100, Figures 48f,g, 49a,b). The piece may suggest the presence of women at the fort, who may have brought non-military domestic goods for the duration of their stay. The remaining sherds were undecorated and were identifiable only as flatware, hollowware, or unidentifiable vessel sherds. Kitchen glass consists of container glass (n=12) plus one unidentifiable vessel lid. Of the container glass, predominantly unidentifiable bottle or jar glass is present; one wine bottle sherd and unidentifiable vessel glass also was recognized. The single metal artifact is a modern aluminum pull tab; these postdate 1962 (Keen 1982). Finally, faunal remains consist of bone and teeth (see Chapter VIII).

A single unglazed and undecorated white clay smoking pipe bowl fragment comprises the personal artifact category. A post-1880 kerosene lamp (Wagner et al. 1989) comprises the single furnishing.

The artifacts unidentifiable as to functional type (n=15) consisted of nine glass fragments recovered from the flotation samples, three sheet metal fragments, slate (n=2), and one fragment of an iron object.

Summary: The archaeological investigations indicated that a low frequency of nineteenth and twentieth century artifacts are present at HBS 46. The recovery of 66 artifacts from the two units provides an artifact frequency of 33 items per 1 m^2. Both units were excavated to 40 cm bs, providing a very low artifact frequency of 8.25 items per 10 cm excavation level. The lead balls and single piece of black transfer printed ceramics could be associated with either the ca. 1828-1856 infantry barracks or 1856-1882 company barracks that once existed in this area. The .45/70 caliber cartridge might also be associated with the later barracks. Recommendations regarding project area 3 are presented in the final chapter of this report.

Project Area 4

HBS Site Number 39
Area: 0.08
Field Conditions: Grass lawn, 0% ground surface visibility
Field Methods: N/A (see below)
Archival Research: This project area was located immediately north of 2 Sumner Place (Figure 3). The northern end of HBS 39, a ca. 1830s-1903 barrack should be located beneath the north side yard of 2 Sumner Place (see project area 5 archival research for information regarding HBS 39).
Field Investigations: Project Area 4 was deleted from investigation during the course of the survey (Appendix C).

Project Area 5

HBS Site Numbers 10, 38, 39
Area: 0.31
Field Conditions: Grass lawn with 0% ground surface visibility.
Field Methods: Screened shovel tests (1/4 inch mesh) on a 5 m x 5 m grid system.
Archival Research: Virtually identical descriptions are provided by Barr and Rowlinson (1977) of HBS 10 and 39. The description of HBS 39 is follows:

> This site is marked by Historical Society place cards as dragoon barracks and is covered with grass and trees. Soft fired brick and limestone constitute building traces although there is no apparent pattern. It is depicted on maps in 1839 although possibly only as a proposed building. It is first positively identified later on maps during 1847, 1865, 1866, 1871, and 1881. Absence of this building on 1837 and 1905 maps indicates that construction occurred between 1837 with demolition between 1881 and 1905. This dates the structure as the earliest known permanent dragoon barracks and completed the first enclosure of the parade ground by buildings Barr and Rowlinson (1977:127).

Hunt and Lorence (1937:51, 266) assign an 1834 construction date for HBS 39, noting that it was one of two brick dragoon barracks built on the east side of Sumner Place to house the 1st Dragoons. It was known during its later period of use as "Thomas Hall". It was demolished in 1903 (Hunt and Lorence 1937:267).

Information contained on the 1830s-era maps of Ft. Leavenworth suggest that the 1834 construction date identified by Hunt and Lorence (1937) may be in error. No structures are present in the present-day location of HBS 39 on a mid-1830s map of Ft. Leavenworth (Figure 20). The barracks eventually would be constructed west of buildings V (gun house) and T (magazine) shown on this map. The presence of the "Rookery", a barracks constructed in 1834 at the northeast corner of the parade (not shown on Figure 20) on this map indicates that it post-dates the 1834 construction date for HBS 39 identified by Hunt and Lorence (1937). Similarly, although an 1837 map of Ft. Leavenworth shows a single long barracks extending from the southeast corner of the parade to the south edge of the "Rookery", this barracks may have been only a proposed structure (Figure 21). HBS 39 first appears on an undated map of Ft. Leavenworth that appears to date from the late 1830s (Figure 22). Additionally, Johnston's 1839 map of Ft. Leavenworth contains a sketch of the post buildings that indicates that the dragoon barracks roofs were still unfinished five years after the construction date proposed by Hunt and Lorence (1937) (Figure 23). The roof rafters of McPherson Hall (HBS 10) are clearly visible while the roof of Thomas Hall (HBS 39) also may be unfinished.

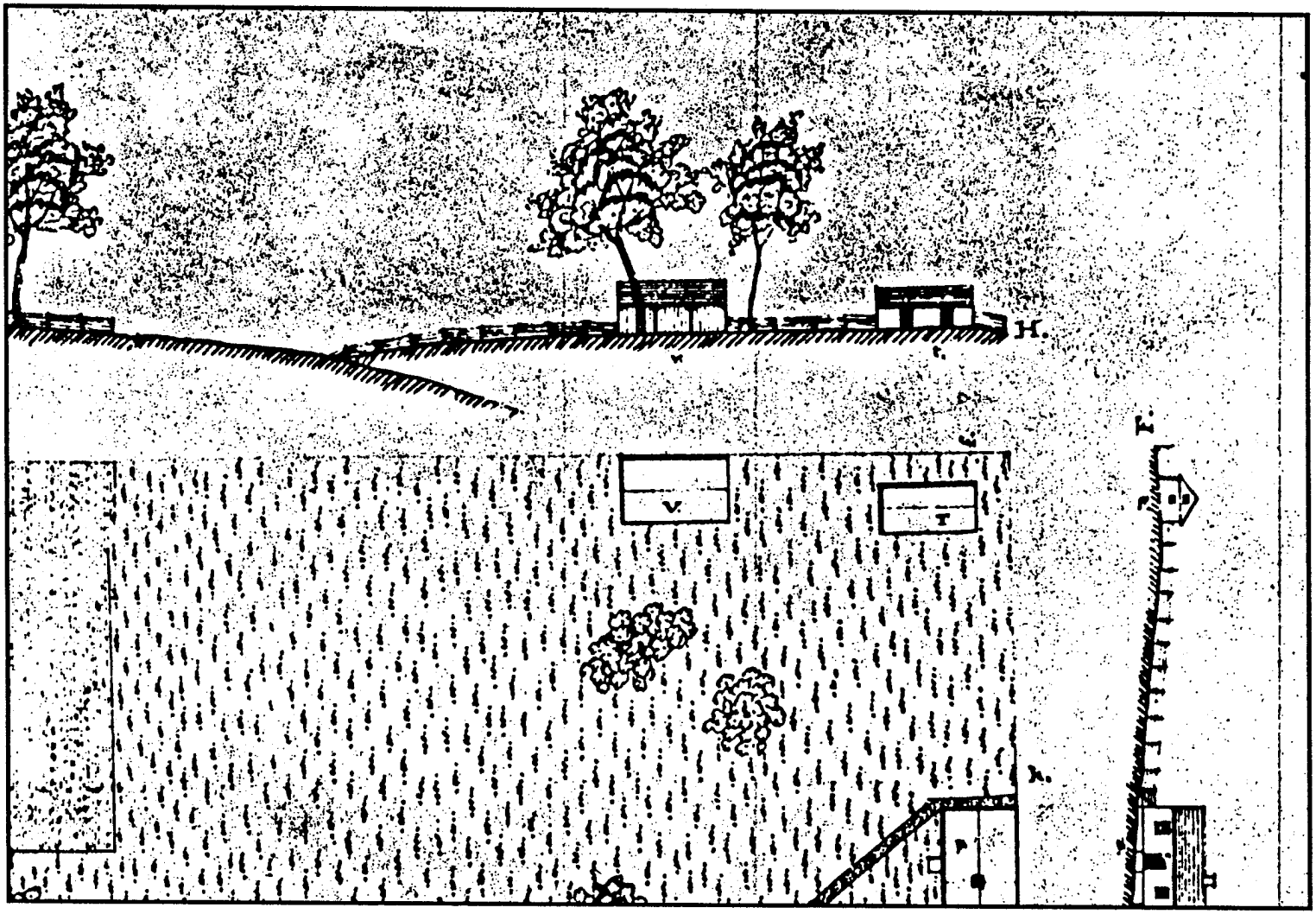


Figure 20. 1830's map of southeast corner of Main Parade showing gun house (building v) and magazine (building t) prior to construction of dragoon barracks.

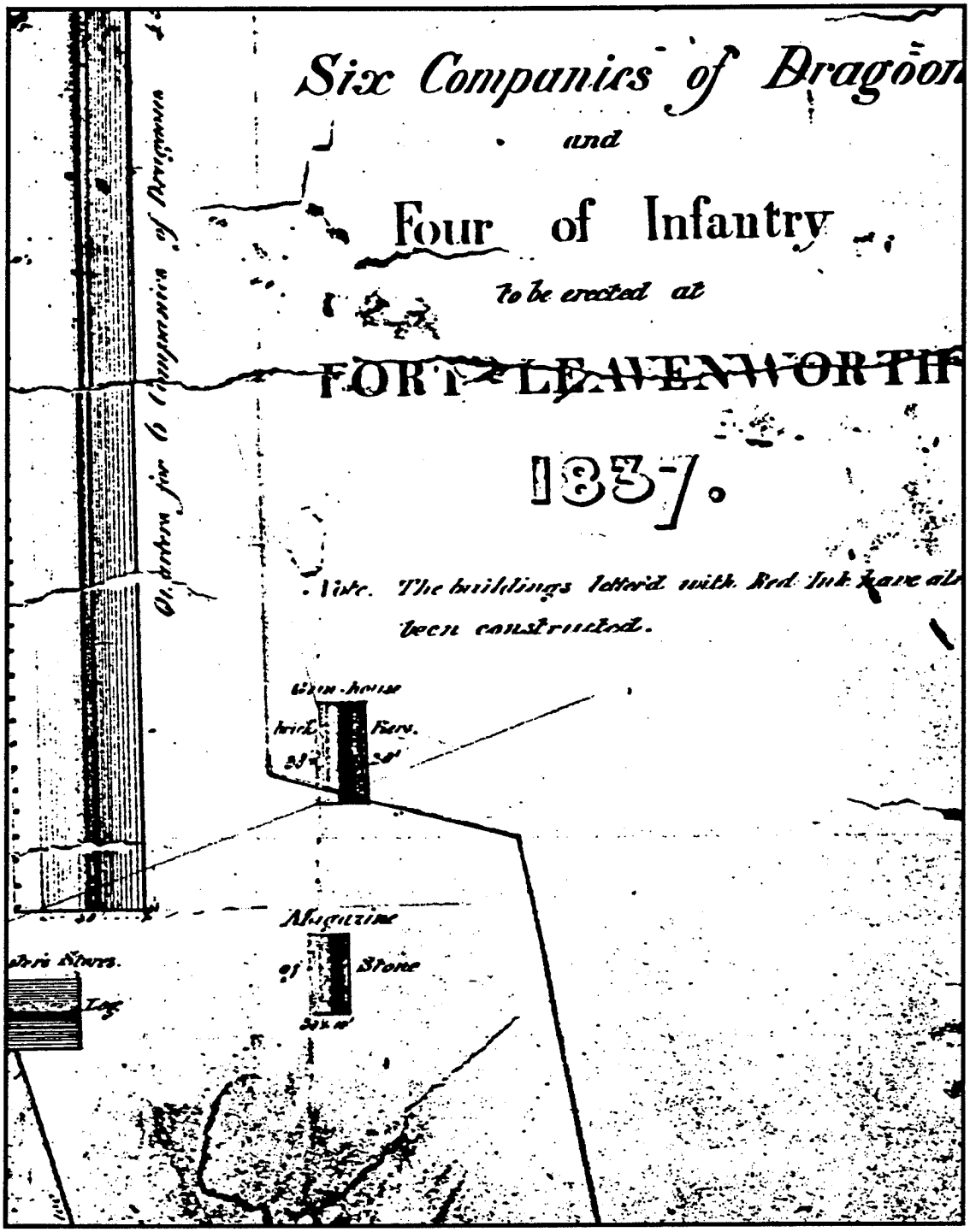


Figure 21. 1837 map of southeast corner of Main Parade showing gun house, magazine, and proposed location of dragoon barracks.

Depictions of HBS 10 and 39 appear in numerous illustrations dating as early as the 1830s. Johnston (1839) depicts the dragoon barracks as two-story structures that faced the Main Parade. A rear view of the building appears in an 1840s era painting depicted in Barry (1972:605). This shows HBS 39 as being a two-story structure with a fenced-in rear yard. Two small structures, presumably company wash houses or privies, are located along the rear (east) fence line. It should be noted that these small structures do not appear on any of the other maps of the installation with the possible exception of the 1881 map. The illustration also shows that a north-south line of four posts with a rope strung along the top that possibly represents a clothes line was located within the back yard of HBS 39 (Barry 1972:605). Rear views of HBS 10 and 39 also are presented in an 1869 sketch of Ft. Leavenworth (Walton 1973). The fences and outbuildings shown to the rear of HBS 10 and 39 in the 1838 painting are not present in this drawing. Outbuildings are not visible behind any of the buildings lining the Main Parade, however, suggesting that the artist simply deleted these structures.

An 1871 photograph of HBS 39 that provides a front view of the structure is contained in Hunt and Lorence (1937:91). This shows HBS 39 as a two story structure that faced the Main Parade. Porches that ran the length of the building were present on both the upper and lower floors.

An 1870 report to the Surgeon General's office by D.L. MacGruder (quoted in Barr and Rowlinson 1977:41-42) provides a first-hand description of both HBS 10 and 39:

> [Thomas Hall; HBS 39] is a large brick building, two stories high and partitioned and divided into twelve sets of officers quarters and beyond this is a similar building [McPherson Hall; HBS 10] intended for quarters for enlisted men, but which is now divided into offices, above and below. This building was used for office purposes, at the time headquarters of the Department of Missouri were at the post. Outbuildings are attached to all officer' quarters, and there is a cistern at the rear of each set.

A first-hand description of the interior and living conditions within HBS 10 in the 1850s also was provided by E.T. Carr in 1912:

> We [the civilian workmen] had been shown our rooms, which were in the brick barracks at the southeast corner of the parade--a building recently torn away. The troops had just vacated it, leaving it in great disorder, with empty bunks, and the whitewashed floors covered with straw and litter. This must all be cleared away, and the place in a manner, made

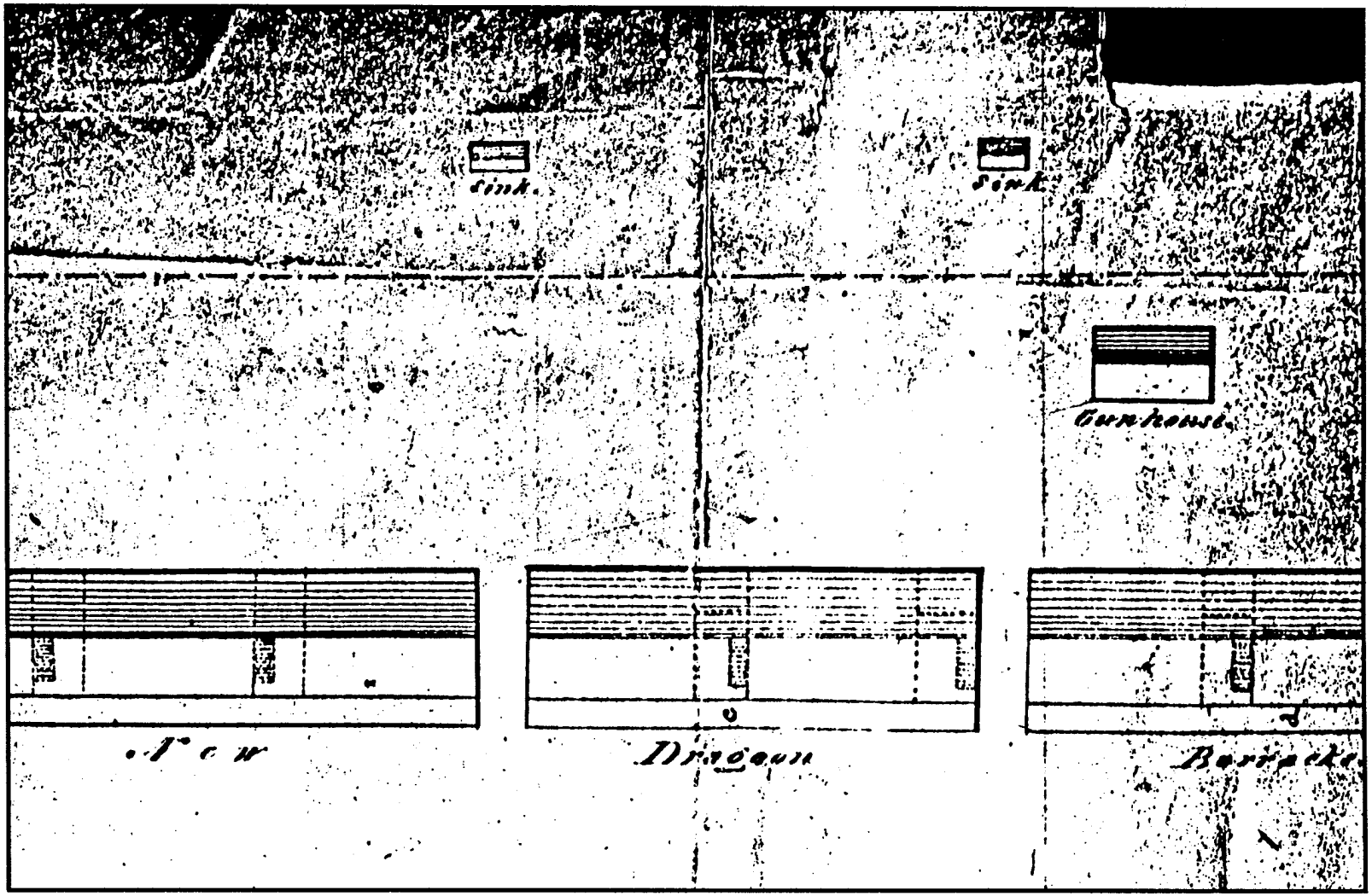


Figure 22. Late 1830's map of southeast corner of Main Parade showing "New Dragoon Barracks", gun house, and sinks.

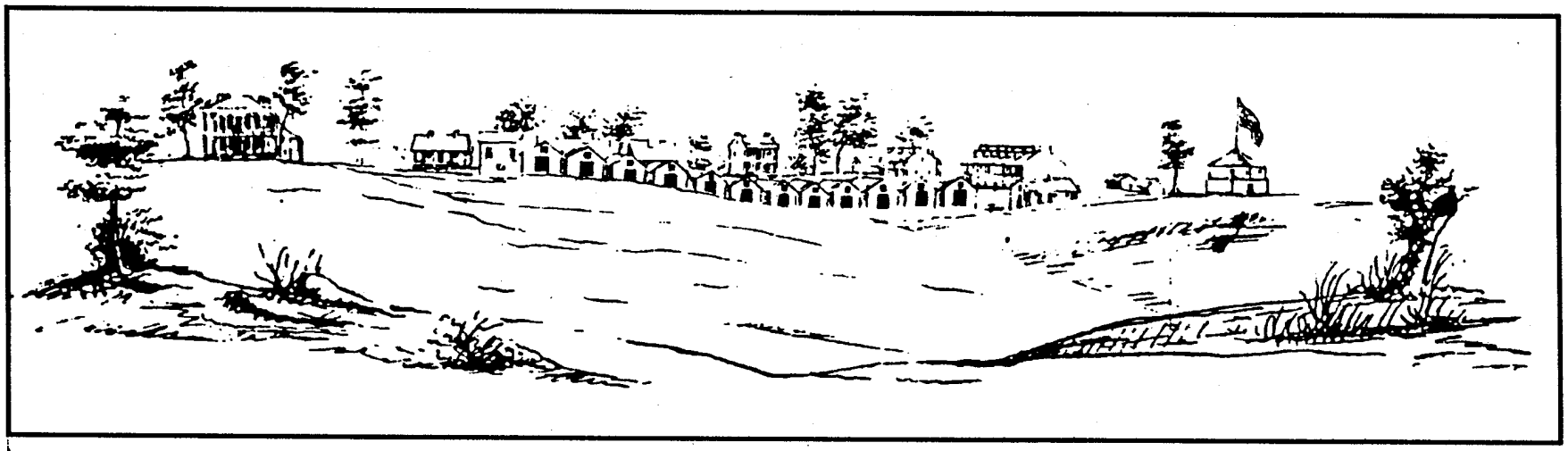


Figure 23. 1839 sketch of Ft. Leavenworth showing roofs of McPherson (HBS 10) and Thomas (HBS 39) Halls under construction.

> habitable....The first night was fast approaching; so some of the party went to scrubbing and cleaning up the barrack, while...a few of us, with the aid of the commissary clerk, managed to draw our first rations, but too late to cook supper, and especially as the cook to be furnished us had not reported....We managed by dint of hard work to make ourselves fairly comfortable for the night, and were given all of the next day to improve our quarters and get settled ready for work (Carr 1912:377).

As noted by Barr and Rowlinson (1977:127), HBS 10 and 39 are represented cartographically on maps dating from the 1830s to 1880s. The most detailed of these is the 1866 Mitchell map which provides floor plans and precise measurements for HBS 10 and 39 (Figure 24). HBS 39 measured 148 ft long while HBS 10 was slightly larger at 158 ft. Both structures measured 40 ft wide with an 8 ft wide porch attached to the front.

The personal sanitation facilities behind the barracks are variously labeled water closets, sinks, and wash houses on the different nineteenth century maps on the post. The number and locations of these facilities apparently changed through time. In his 1870 report on Ft. Leavenworth, D.L. MacGruder noted that both officer's and enlisted men's quarters were supplied with a good cistern. In addition, the sinks throughout the post consisted of "vaults dug in the rear of all the habitable buildings, which when they become too foul, are filled up and new ones dug" (Barr and Rowlinson 1977:42).

The late 1830s map of Ft. Leavenworth shows two small "sinks" as being located approximately 150 ft east of the northeast corners of each of these structures (Figure 22). As noted previously, an 1840s painting of Ft. Leavenworth shows two small wash houses in the rear yard of HBS 39 (Barry 1972:605) in a different location than those shown on the 1830s map. An 1850s era map shows a square (25 ft x 25 ft) central privy as being located approximately 60 ft east of the two structures (Figure 25).

By 1866 a single rear "water closet" was located 60 ft to the east of the rear wall of each of the two barracks (Figure 24). These water closets were located 160 ft from each other. The identification of these smaller (30 ft north-south x 15 ft east-west) structures as water closets is based on the presence of the letters "w" and "c" within the floor plans of structures. Each of the two water closets contained six rooms. The water closet to the rear of HBS 39 was connected to this structure by a series of four sidewalks while a single sidewalk led from HBS 10 to it's water closet. The 1881 map shows a series of small structures as being located along the eastern edge of the back yard of both HBS 10 and 39 (Figure 24). Among these are identical square (20 ft x 20 ft) structures located approximately 100 ft east from the center of

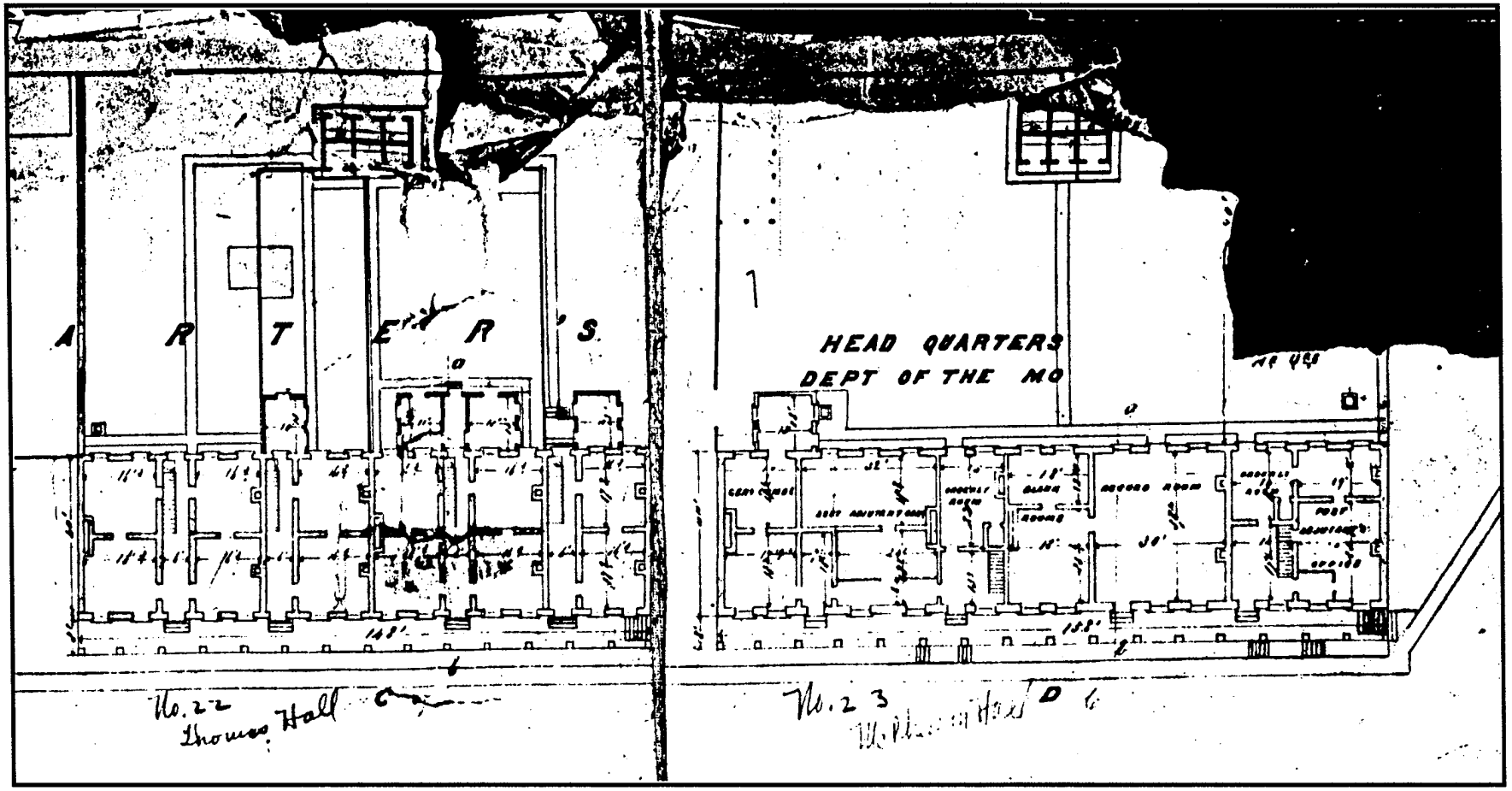


Figure 24. 1866 map showing floor plans of McPherson (HBS 10) and Thomas (HBS 39) Halls and location of water closets.

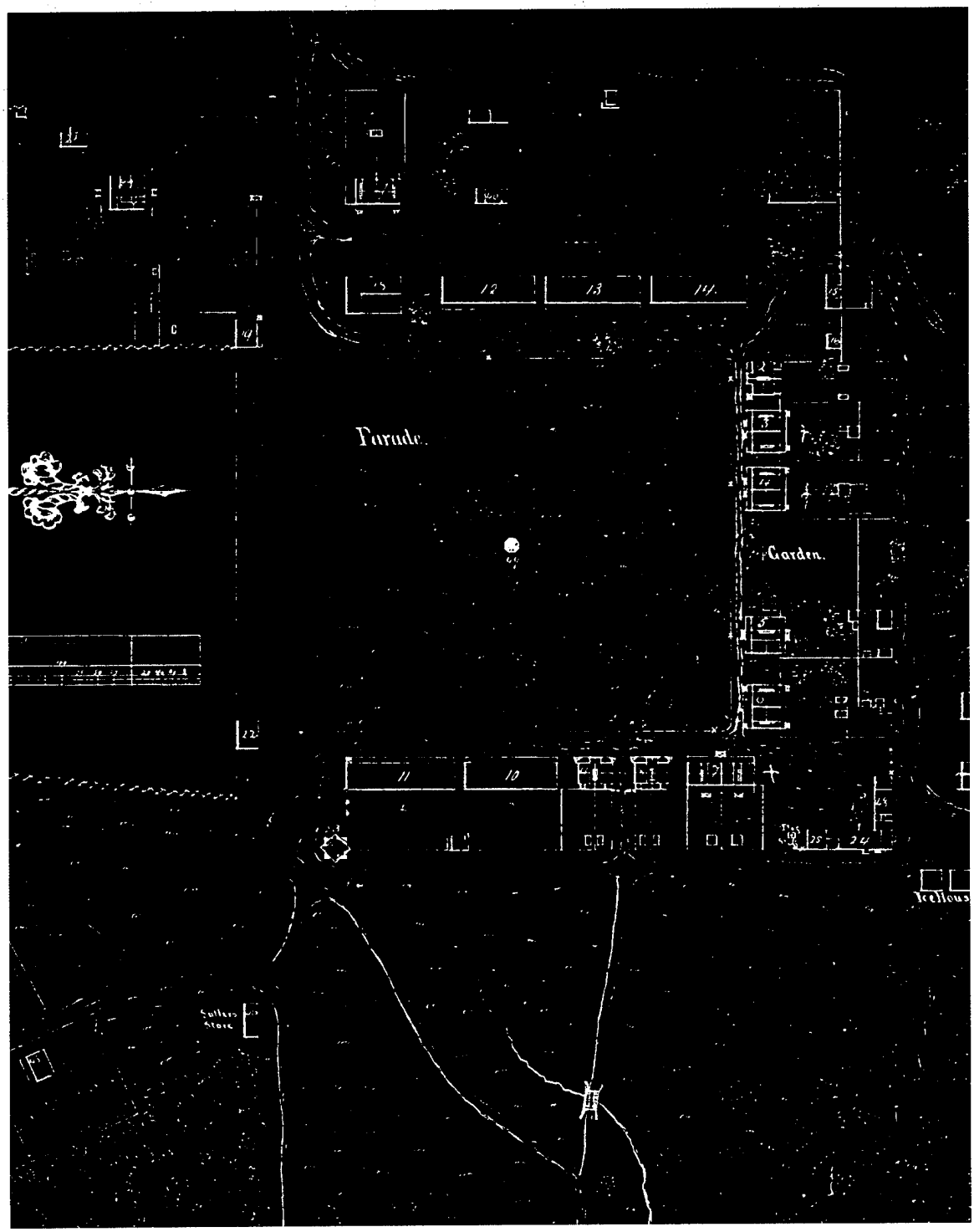


Figure 25. 1850's map of Main Parade.

the rear walls of both HBS 10 and 39. These structures have dashed lines along their eastern and western sides. A similar artistic convention is used to indicate the presence of porches on HBS 10 and 39, suggesting that these smaller structures also had overhanging roofs or porches. Both of these structures quite possibly represent wash houses or sinks.

In sum, the cartographic evidence indicates that there were at least five sets of privies/sinks/wash houses/water closets behind HBS 10 and HBS 39 from the 1830s to the early 1880s rather than just the one set (HBS 5 and 38) defined by Barr and Rowlinson (1977). As the cartographic evidence is incomplete (i.e., the 1870s maps, for example, do not show any facilities behind HBS 10 and 39) it should be expected that additional privy vaults besides the five sets located through the archival research will be present in the former rear yards of HBS 10 and 39.

A gun house and magazine also were located behind HBS 10 and 39 in the 1830s (Figures 21 and 22). The earliest of the 1830s maps shows the gun house and magazine as being located at the southeast corner of the parade prior to the construction of HBS 10 and 39. This location would place these structures in what would become the rear yard of HBS 39 in a few years. The magazine was described as a "stone building" while the gun house was supported on "brick piers". Both were single story structures. Both structures appear on the 1837 map in the same location (Figure 21). The dimensions of the gun house were given as 38 ft x 30 ft on this map while those of the magazine were listed as 30 ft x 10 ft. Although HBS 10 is shown on the late 1830s map, the corner of the map where the magazine would have been located is missing (Figure 22).The west edge of the gun house, however, was located approximately 60 ft from the rear wall of HBS 10. When the gun house and magazine were abandoned is not known. They do not, however, appear on the 1850s map of Ft. Leavenworth.

As noted previously, the 1881 (Figure 26) and the 1881 "Birds-Eye View" of Ft. Leavenworth indicate that a line of structures was located along the eastern edge of the rear yards of HBS 10 and 39 by the early 1880s (Hunt and Lorence 1937; Mitchell 1881). Barr and Rowlinson (1977) recorded two of the structures behind HBS 10 as "officer's quarters outstructures" (HBS 43 and 44). Again, it is not clear which of the structures that are shown behind HBS 10 on the 1881 map that these designations apply to. HBS 44 may be the previously discussed possible privy vault that has dashed lines on it's east and west sides. HBS 44 would then correspond a small rectangular structure located approximately 20 ft to the north on the 1881 map. HBS 45 is identified by Barr and Rowlinson (1977:139) as the post observatory shown on the 1881 map. That map shows the observatory as an L-shaped structure located approximately 75 ft east of the southeastern corner of HBS 10 (Figure 24). An additional small rectangular structure located approximately 10 ft south of HBS 45 was not assigned an HBS designation by Barr and Rowlinson (1977).

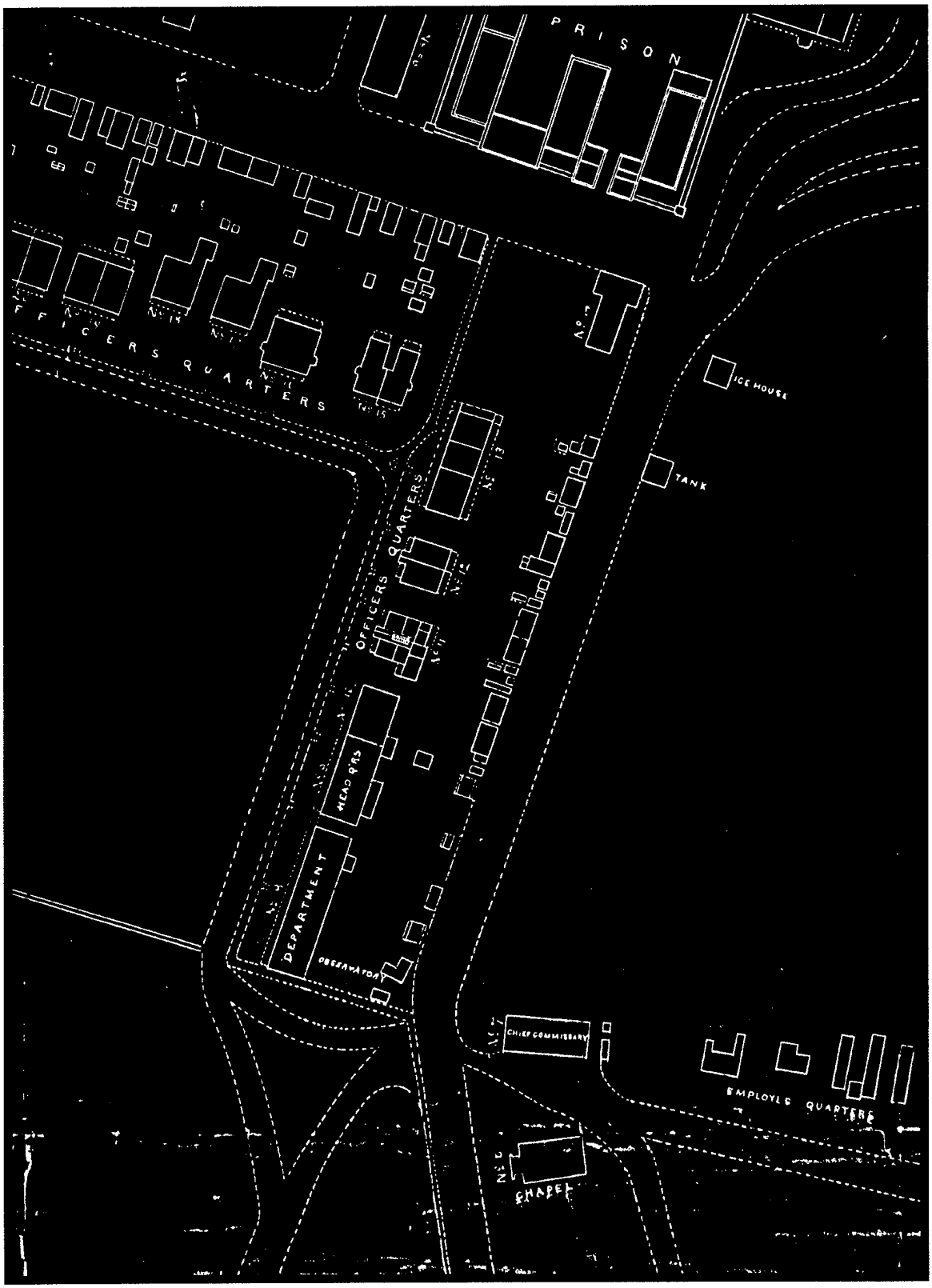


Figure 26. 1881 map showing location of outbuildings behind McPherson (HBS 10) and Thomas (HBS 39) Halls at southeast corner of Main Parade.

Field Investigations: The field investigations within project area 5 were designed to: (1) investigate the proposed parking garage area located south of 2 Sumner Place, i.e HBS 39; (2) locate and test the privy vault (HBS 38) associated with HBS 10.

HBS 10. Archaeological investigations were not conducted at HBS 10 as it lay outside the proposed construction area (Appendix C). The approximate size and location of HBS 10 (based on information from the 1881 post map) in relation to the existing post structures is shown in Figure 27. A single artifact--an empontilled, opaque dark green glass wine bottle base--was found in an eroded area at the base of a tree immediately north of the wall behind Grant's Statue. The "orange peel" surface of the wine bottle suggests it was made in a metal dip mold (Deiss 1981:17). The empontilling suggests a manufacture date prior to 1870.

HBS 38. HBS 38 was located through a combination of field reconnaissance, archival research, and field investigations. First, field reconnaissance of the lawn north of Grant's Statue revealed that a large, roughly rectangular embankment was located within the lawn in the same general area where Barr and Rowlinson (1977) had defined HBS 38 (Figure 28). This embankment was approximately 10-15 cm higher than the surrounding lawn. The embankment varied in width from approximately 1.30 m on its northern side to 2.0 m on the east. The southern and western borders of the embankment were indistinct. The embankment enclosed a rectangular shallow depression that 7.0 m north-south by 2.5 m east-west.

Examination of the 1866 Mitchell revealed that HBS 38 was situated behind the former location of McPherson Hall (HBS 10). This map also showed that a six chambered water closet was located behind McPherson Hall (Figure 24). This structure measured approximately 25 ft north-south x 20 ft east-west. It was located from 65 ft (19.8 m) to 85 ft (25.9 m) east of the rear (east) wall of McPherson Hall.

In order to determine if HBS 38 was the water closet shown, a series of 11 soil probes was excavated at 1 to 2 m intervals along the east-west line through the depression and embankment (Figure 29). These revealed that a dark grayish brown silty clay fill was present within the depression to a depth of at least 50 cm bs. Soil horizons on and outside of the embankment, in contrast, consisted of: (1) grass/humus, 0 to 25-30 cm bs; (2) yellowish brown silty clay, 25-30+ cm bs.

A 1 m x 1 m test square (unit A) was placed 24 m (78.72 ft) east of the former rear wall of McPherson Hall within the depression (Figure 29). Unit B, a 2 m x 50 cm unit, was placed from 25.5 to 27.5 m along the same line to provide a cross-section of the eastern embankment. Finally, a 1.5 m x 50 cm unit (C) was excavated through the northern north embankment to define the northern boundary of HBS 38.

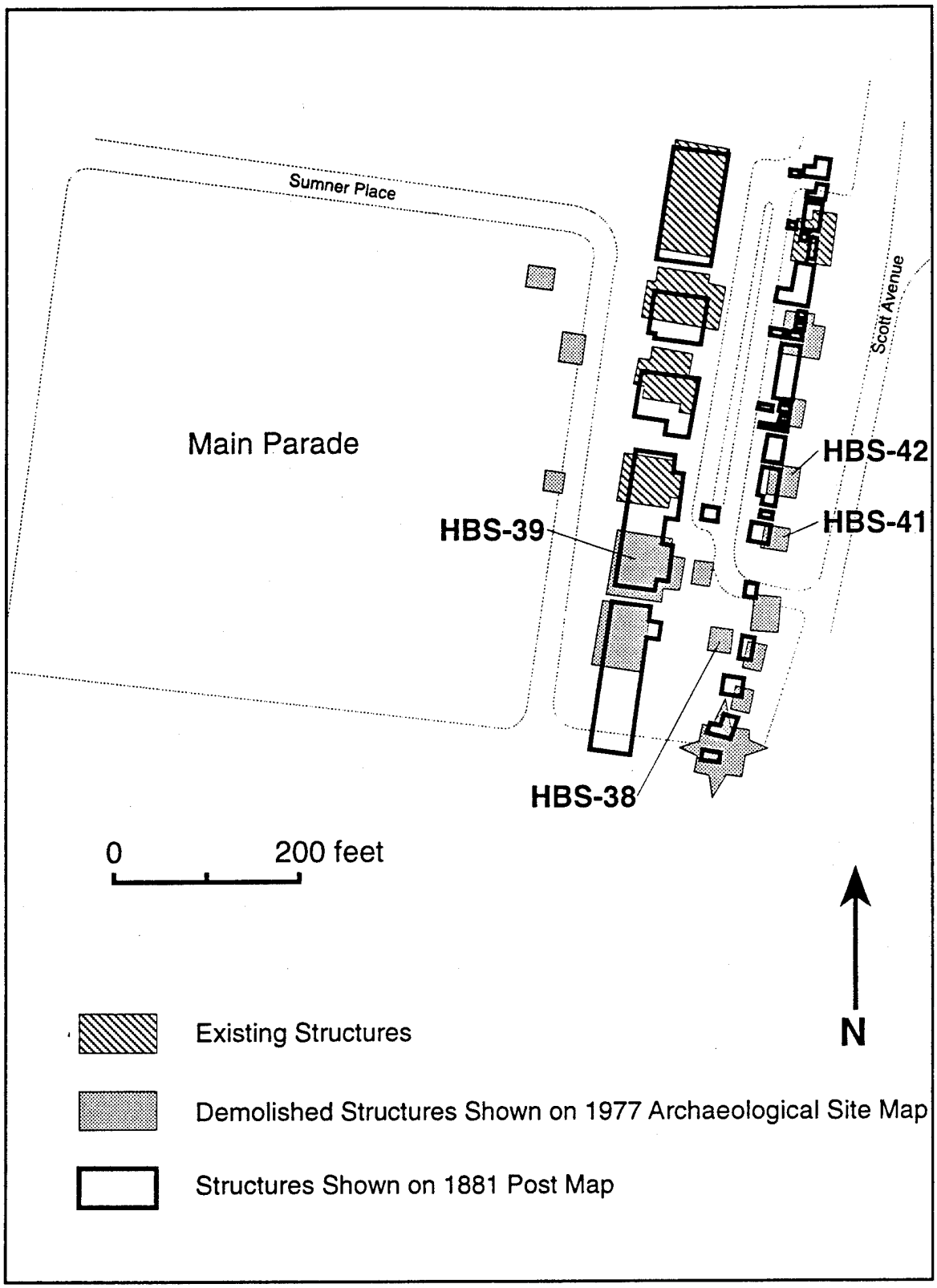


Figure 27. Overlay of 1881 map and 1977 archaeological site map, southeast corner of Main Parade.

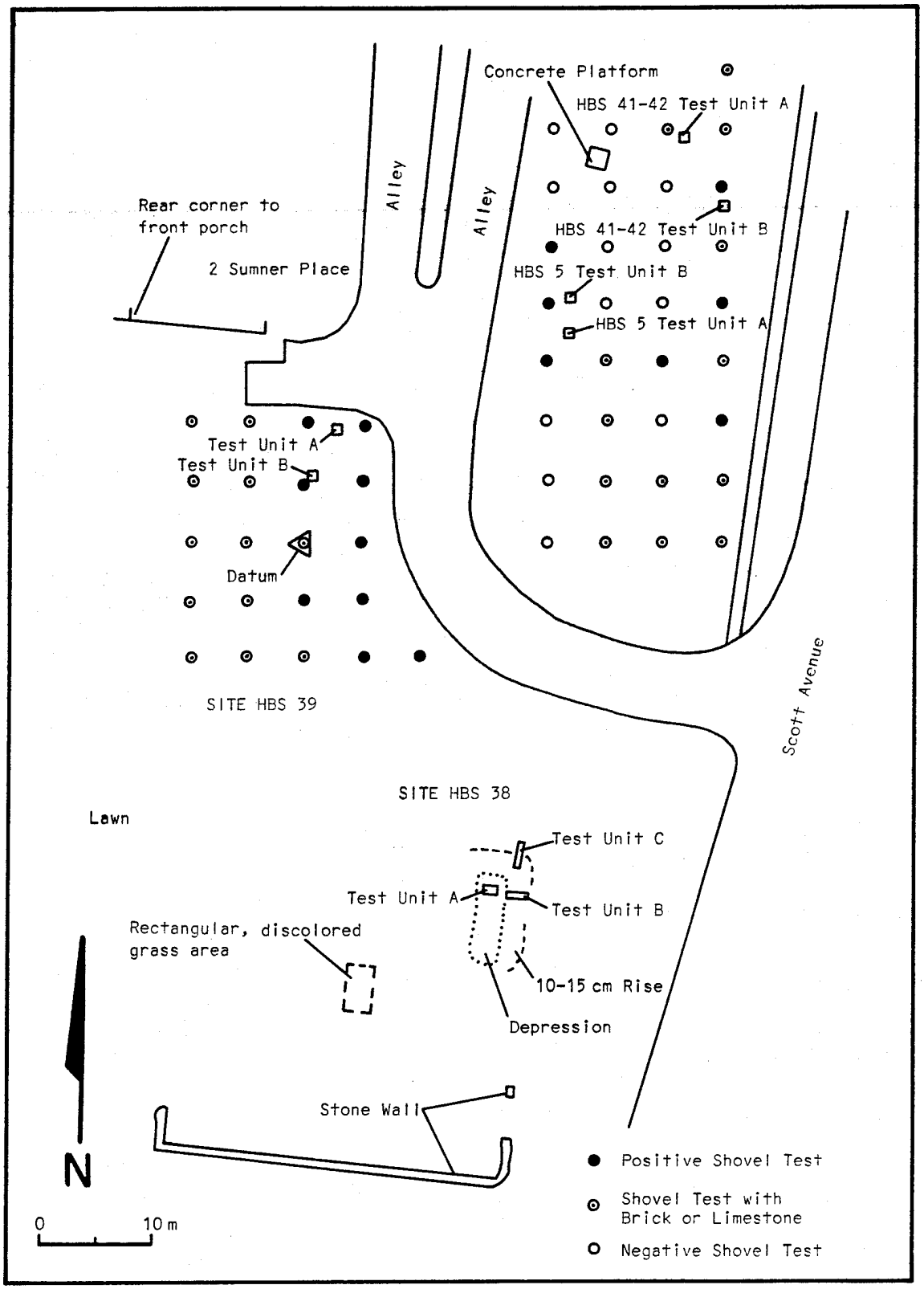


Figure 28. Site map, Project Areas 5 and 6.

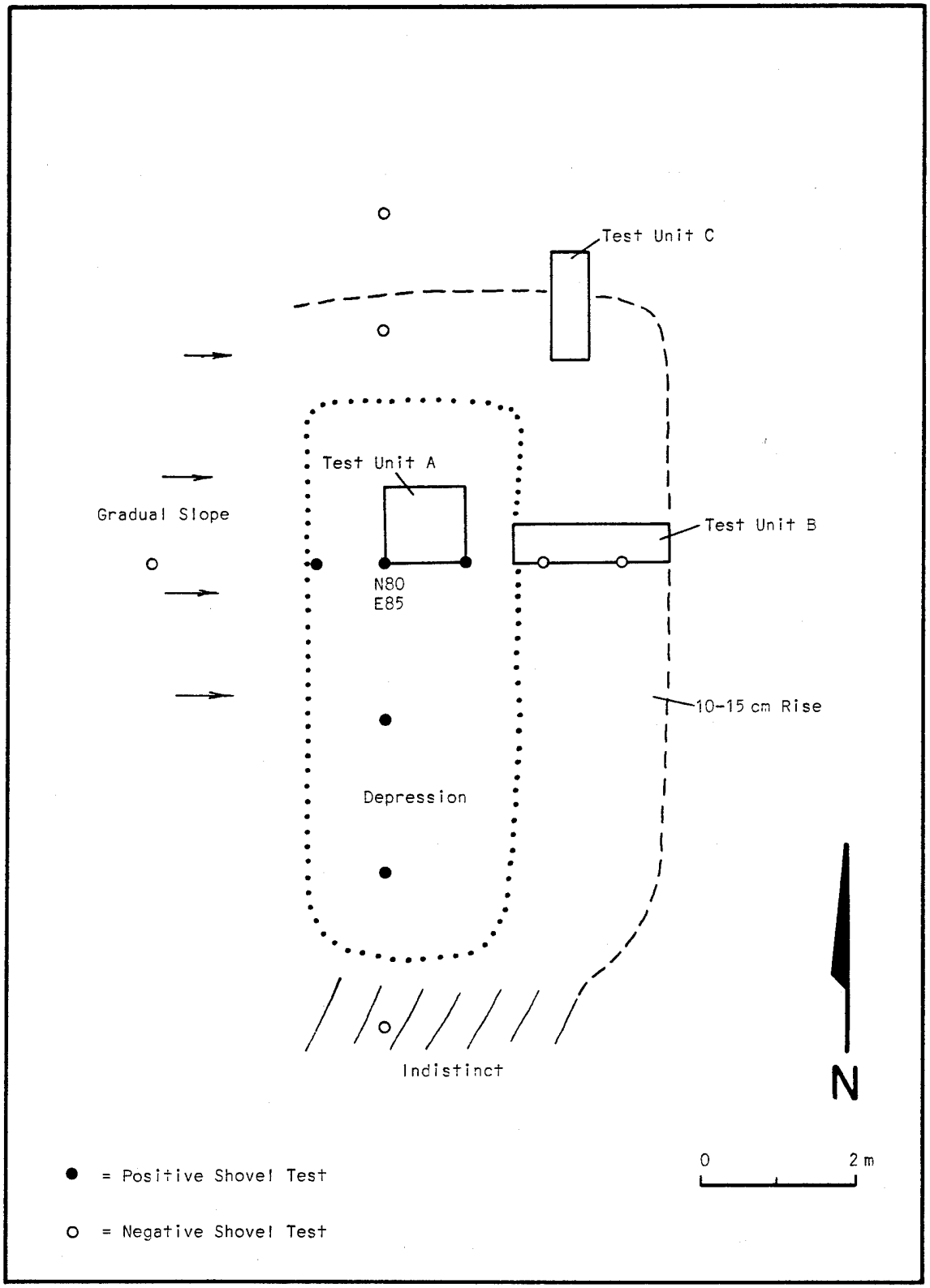


Figure 29. Site plan, HBS 38.

Six soil strata were defined in unit A (Figure 30). Zones A-E (0-40 cm bs) are interpreted as redeposited fill zones deposited over the 1866 privy vault following its abandonment. Zone F (40-90+ cm bs) represents the vault fill. The stone wall to the vault was not encountered, indicating that unit A was contained completely within one of the rear chambers of the water closet.

A Giddings truck-mounted hydraulic soil probe was used to extract a continuous soil column from the vault fill following the completion of the hand excavations (Figure 4). This column extended from 90 to 560 cm bs. Coring operations were stopped at 560 cm bs after the equipment operator concluded that sterile soil had been reached. Examination of the soil column in the laboratory, however, revealed that a large brick fragment was present at 555 cm (18.2 ft) bs indicating that the base of the vault had not been reached (Figure 31). Fifteen separate soil strata were defined in the soil column. These ranged from dark grayish brown zones that contained charcoal, limestone, brick, and mortar to culturally sterile brown clay layers (Figure 31).

Excavation of unit B through the eastern embankment defined the location of the eastern or rear edge of HBS 38 (Figure 32). Similar to unit A, the upper soil strata (A-E) in this unit consisted of redeposited soils that post-dated the 1866 water closet. The 10YR4/2 dark grayish brown silty loam privy vault fill was encountered along the western edge of the unit at 35 cm bs. The vault extended east into the unit for approximately 20 cm. The vault was bordered to the east by a 1.18 m wide 10YR4/4 dark yellowish brown zone of mixed silt and clay (Figure 32). This soil strata (Zone G) possibly represents a builder's trench surrounding the privy vault. It was bordered to the east by the undisturbed 10YR5/4 brown silt subsoil (Zone H).

Excavation of unit C through the northern embankment failed to locate the northern edge of the privy vault (Figure 33). Instead, the upper soil strata (A-E) in this unit consisted of a series of redeposited mixed clay and silt layers that probably post-date the 1866 privy. These were underlain by the 10YR4/4 culturally sterile silty clay subsoil (zone F). The absence of the privy vault within unit C suggest that the northern edge of this feature is probably co-terminus with the interior or southern edge of the northern embankment.

Artifact Analysis: The artifact assemblage (n=174) from HBS 38 (Appendix E, Table 4) consists predominantly of architectural and kitchen artifacts, with small quantities of military, clothing, personal, furnishing, hardware, unidentifiable, and other artifacts. The artifacts were collected from two major depositional zones within the test units: (a) levels 1-4 in units A-C, which represent disturbed fill layers that post-date the privy; (b) levels 5+ in unit A, which represent the undisturbed vault fill.

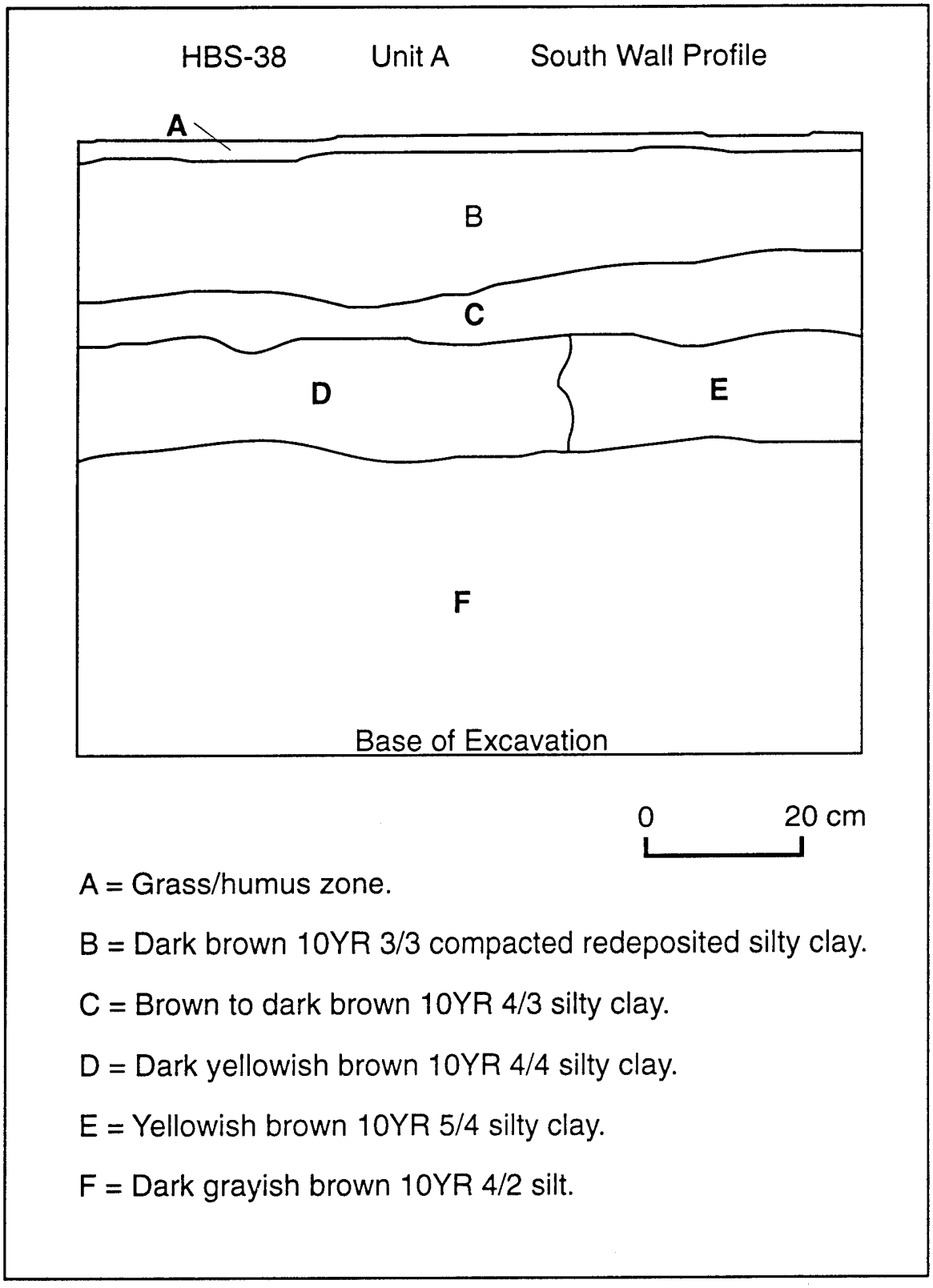


Figure 30. South wall profile, unit A, HBS 38.

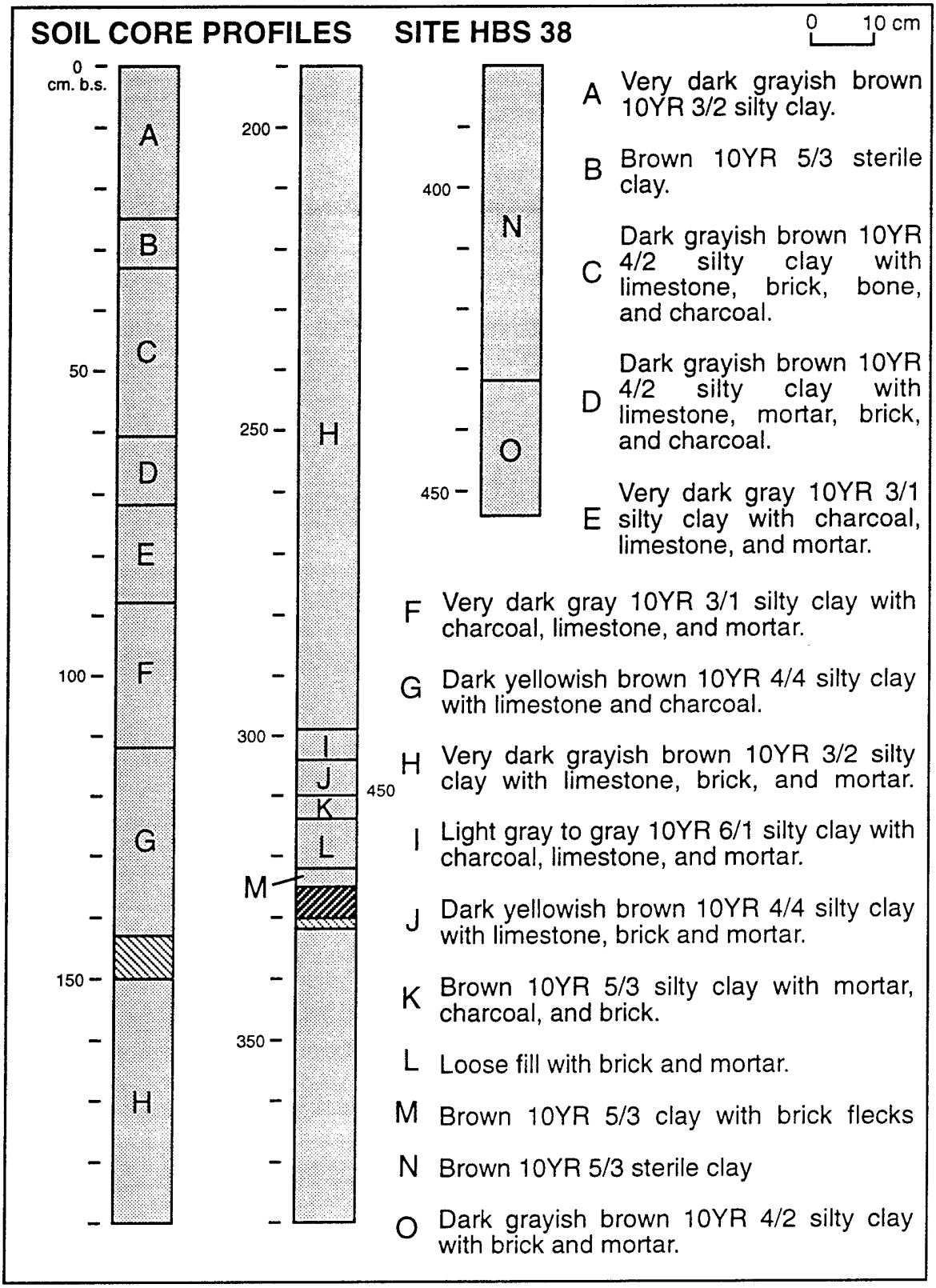
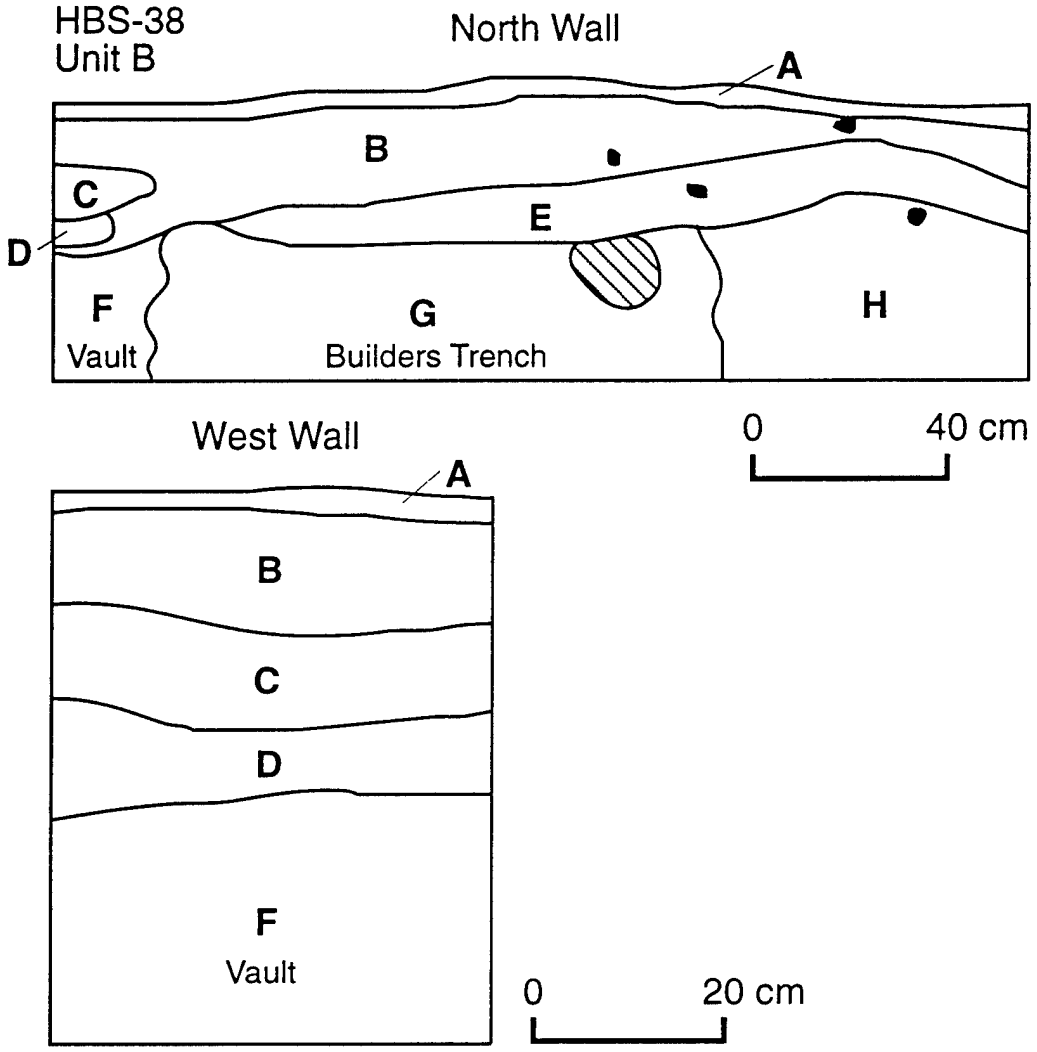


Figure 31. Soil core profiles, Unit A, HBS 38.



A = Grass/humus zone.

B = Dark brown 10YR 3/3 very compact redeposited silty clay.

C = Dark grayish brown 10YR 4/2 silty clay.

D = Light yellowish brown 10YR 6/4 to brown 10YR 5/3 silty clay.

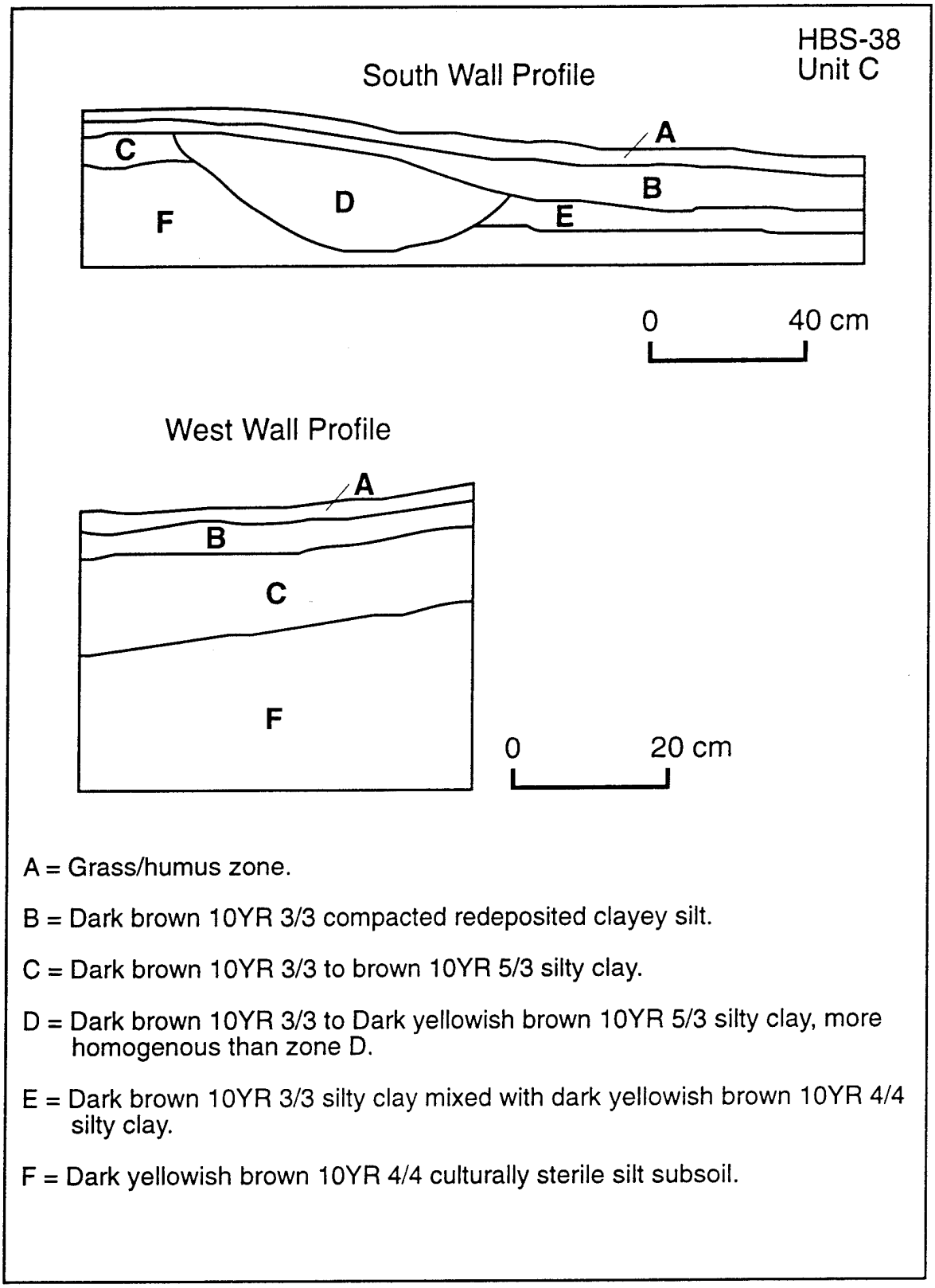
E = Dark brown 10YR 4/3 clayey silt with limestone gravel.

F = Dark grayish brown 10YR 4/2 silty loam (vault fill).

G = Dark yellowish brown 10YR 4/4 silt mixed with clay.

H = Brown 10YR 5/4 silt.

Figure 32. North and west wall profiles, unit B, HBS 38.



A = Grass/humus zone.

B = Dark brown 10YR 3/3 compacted redeposited clayey silt.

C = Dark brown 10YR 3/3 to brown 10YR 5/3 silty clay.

D = Dark brown 10YR 3/3 to Dark yellowish brown 10YR 5/3 silty clay, more homogenous than zone D.

E = Dark brown 10YR 3/3 silty clay mixed with dark yellowish brown 10YR 4/4 silty clay.

F = Dark yellowish brown 10YR 4/4 culturally sterile silt subsoil.

Figure 33. South and west wall profiles, unit C, HBS 38.

Vault Fill. A total of 105 architectural, kitchen, clothing, personal, unidentified, and other artifacts were retrieved from the privy vault (Appendix E, Table 4). Architectural items (n=25) consist of machine cut nails (n=8), predominantly fragments, and flat glass (n=17). Kitchen artifacts (n=64) included a small quantity of ceramics (n=4), container glass (n=47), and faunal remains (n=13). The ceramics contain unidentifiable vessels of whiteware, yellowware, and porcelain. Too few specimens were recovered to obtain a reliable mean ceramic date.

Kitchen container glass vessel types included wine bottles, beer/ale bottles, unidentified bottle, and unidentified jar or bottle. At least 29 of the glass fragments are from a single colorless glass 3-piece plate bottom molded bottle from the lowest level of the hydraulic core sample. The piece was finished with the aid of a snap case which was introduced to the bottle making industry after ca. 1850 (Jones et al. 1985). The mean bottle date for this artifact is 1882.5. A second bottle base from unit A is of unidentifiable manufacturing technique and could not be dated. Brown beer bottles were introduced ca. 1873.

One shell button and five pieces of shoe leather from a single shoe were collected from level 8 of the soil core sample. One decomposed clear glass marble with white, orange, and blue swirls was the only artifact in the personal category. This likely is a machine made marble that postdates 1901 (Randall 1971). Two pieces of slate and glass fragments too small to identify as to function round out the vault fill assemblage.

Redeposited Fill. As the source of the redeposited fill (n=70) is unknown, only the temporally diagnostic artifacts will be examined and used to date the fill. Two full metal copper-jacketed bullets (late 19th to 20th century) were present. Machine cut nails (ca. 1835 to ca. 1890) and two wire nails (introduced ca. 1860, common after 1880) also were present. Datable glass consists of a 20th century machine-made colorless glass bottle and a turn-molded bottle (1880-1905).

Several artifacts post-date the construction of the Fort Leavenworth incinerator in 1930. These include a soda bottle with an enamelled logo that post-dates 1935 (Deiss 1981:95); A Lincoln-head penny and a Jefferson nickel (both dated 1963) were collected as was the metal screw-in base of a lightbulb. The bullets, wire nails, embossed soda bottle, coins, and lightbulb base were all from unit A. Machine cut nails, the turn-molded bottle, and the machine-made bottle were from units B and C.

The recovery of artifacts that date from the late 19th century to 1963 from the disturbed fill layer covering HBS 38 indicates that this zone definitely post-dates HBS 38. The late 19th to early 20th century materials may represent refuse or architectural debris from the barracks originally located west of HBS 38. The

post-1930 artifacts (i.e., coins, bullets, bottles, and a lightbulb) undoubtedly represent casually lost or discarded items.

Two additional artifacts that could not be dated were recovered from the redeposited fill zone. These were a grooved lead disk of indeterminate function and a penknife with an engraved, gold-plated exterior case (Figure 9 a,b). The lead disk is 19.1 mm in diameter and 4.2 mm thick. It has two parallel grooves on one surface.

HBS 39. The proposed parking garage area was investigated initially through the systematic excavation of 21 shovel tests spaced at 5 m intervals (Figure 28). The limits of the tested area were based on the limits of the proposed garage construction area. Nine of the shovel tests produced cultural material in the form of bone, metal, or glass items while 12 produced brick or limestone fragments. None were negative. The shovel tests that contained only brick and limestone clustered at the west edge of the tested area while those that contained additional materials such as glass, metal, etc. clustered at the eastern edge of the area (Figure 28). This pattern corresponds to the suspected location of the rear wall of HBS 39. Those shovel tests that produced only brick and limestone are interpreted as being located within the structure. Those that contained additional historical artifacts appear to have sampled the former rear (east) yard of the structure. Only a single soil horizon--a dark brown silty clay that extended to at least 35 cm bs--was identified in the shovel tests.

Two 1 m^2 units (A and B) were excavated in the yard following the completion of the shovel tests (Figure 28). These units were placed within the eastern portion of the project area from which the glass, metal, and ceramic artifacts were recovered. Unit A contained three horizons: (1) a 10YR3/3 dark grayish brown humus/grass zone, 0-2 cm bs; (2) a 10YR3/2 very dark grayish brown silty clay, 2-25 cm bs. Bone and cinders were present as inclusions within this horizon (Figure 34). A cinder lens also was present within this horizon; (3) the 10YR5/4 dark yellowish brown culturally sterile clay. Cultural features were not present within the unit.

In contrast to A two cultural features--a cement slab (feature 1) and the corner of a brick cistern (feature 2)--were defined in unit B at depths of 60 and 82 cm bs, respectively (Figure 35). The soil horizons above these features (A and B) consisted of highly disturbed fill layers (Figure 36). Zone A consisted of a 10YR3/3 very dark grayish brown silt with 10YR4/3 medium brown clay mottling. This zone appears to have originated through landscaping activities as soil was brought in and the ground leveled. Zone B consisted of a 10YR4/3 medium brown clayey silt with 10YR4/3 medium brown clay mottling. This zone contained a high frequency of brick and mortar fragments that appear to be associated with the demolition of HBS 39. At the base of this zone was a very large thick (30 cm) cement slab. This slab may represent either a broken section of steps or a porch to HBS 39. Feature 1 partially overlaid feature 2, the brick cistern, suggesting that it also could represent a cap for

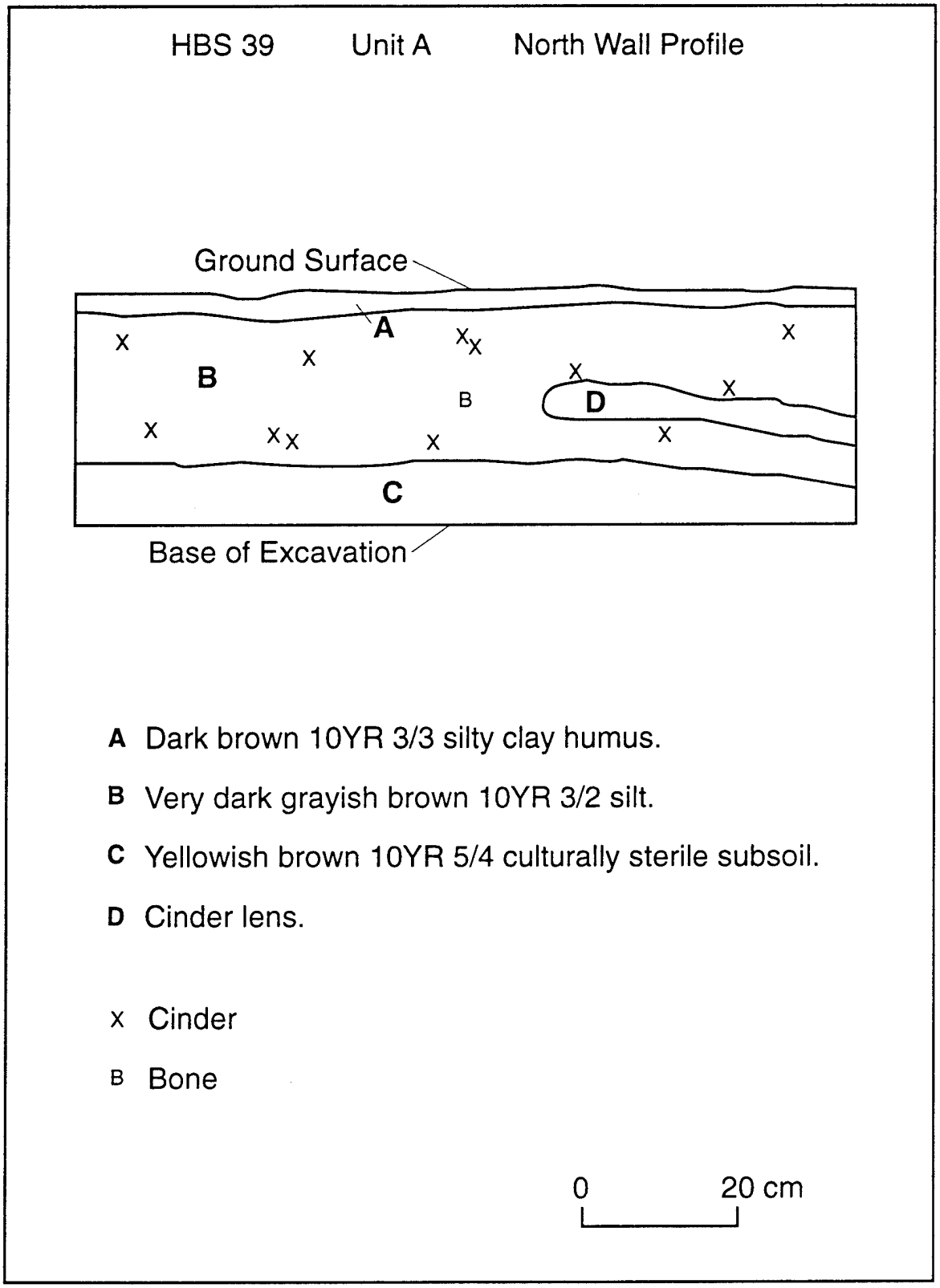


Figure 34. North wall profile, unit A, HBS 39.

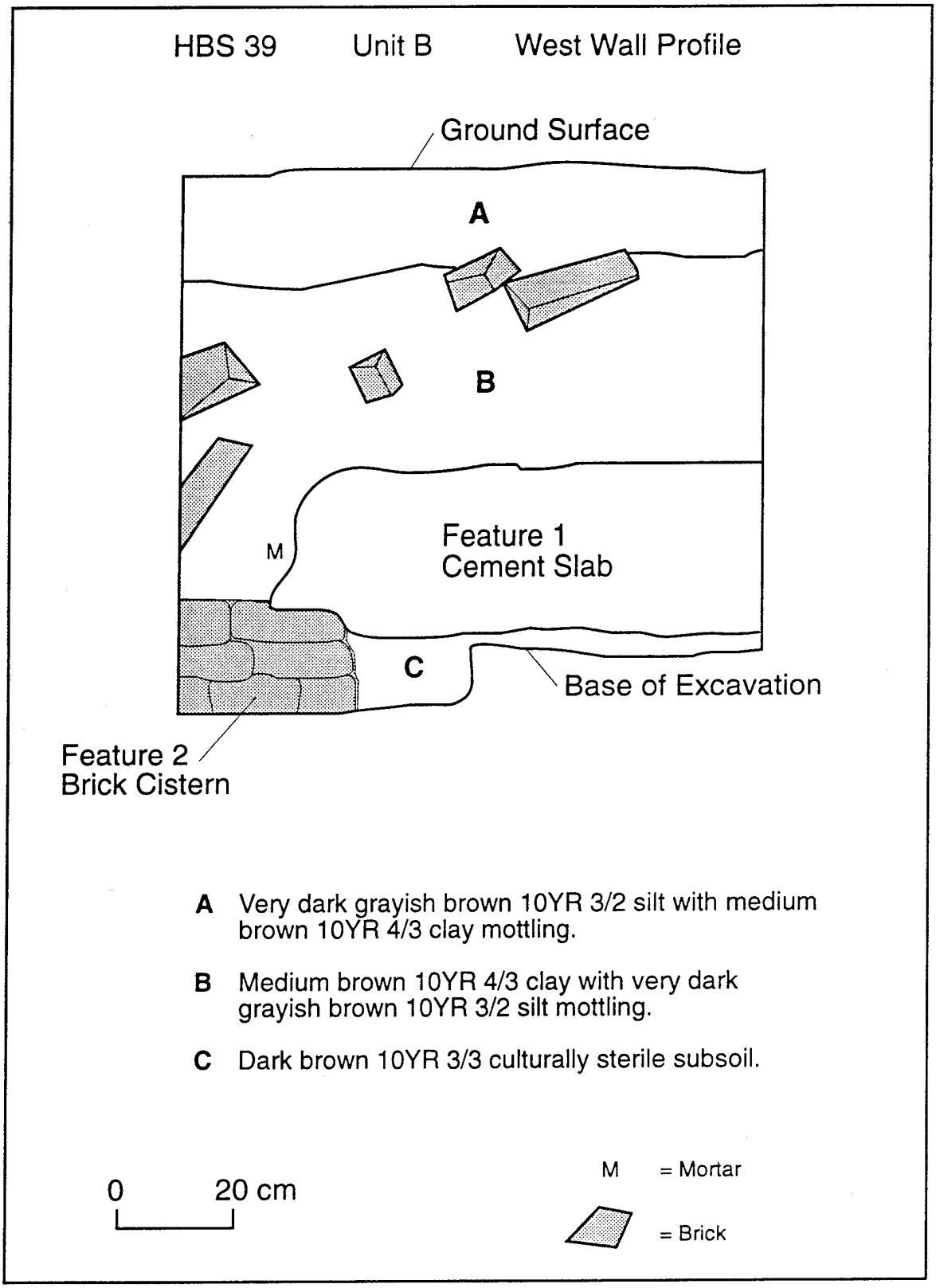


Figure 35. West wall profile, unit B, HBS 39.

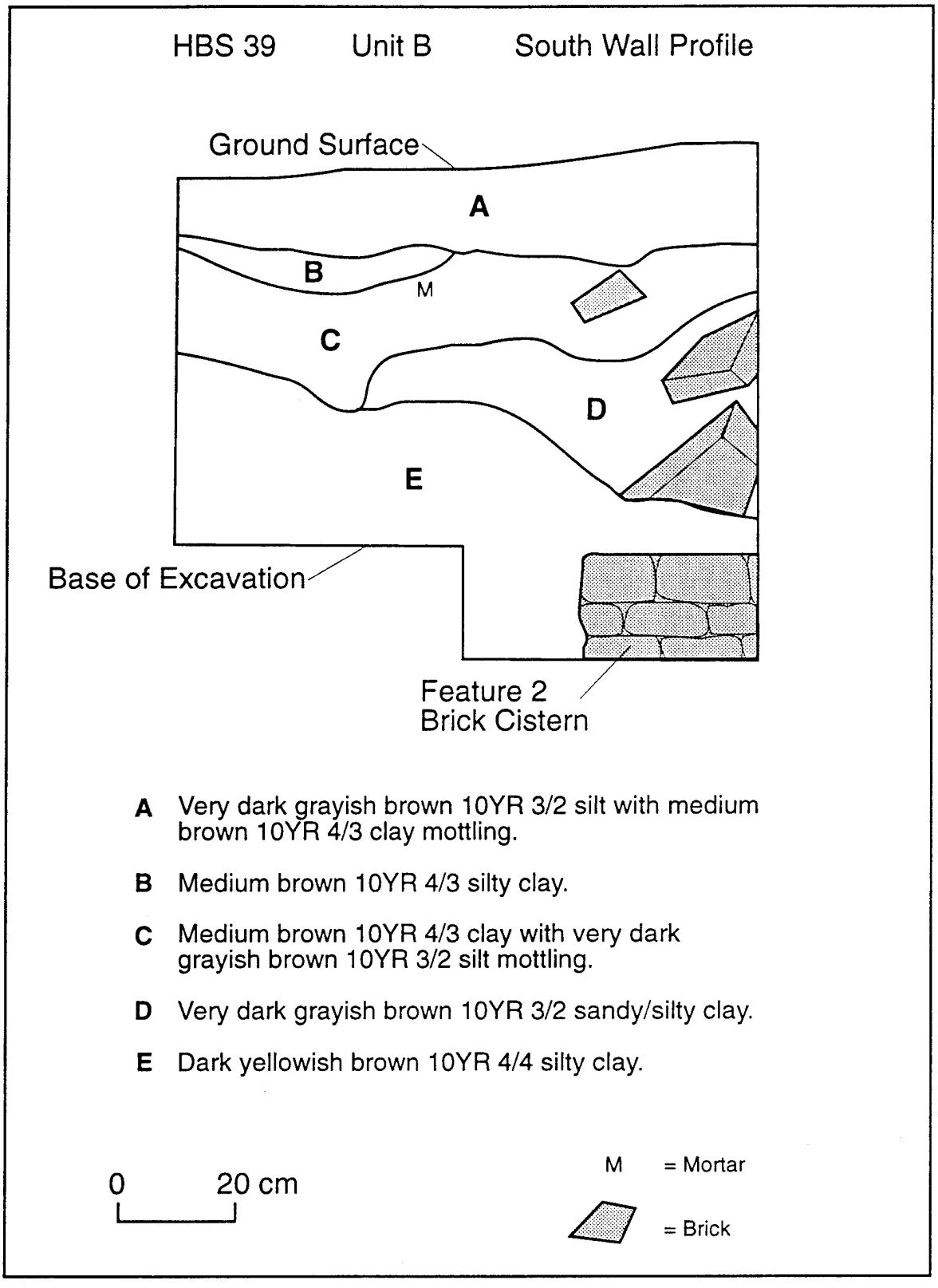


Figure 36. South wall profile, unit B, HBS 39.

that feature. Feature 2 was the very edge of a brick cistern that extended approximately 30 cm into the southeast corner of unit B (Figure 35). The feature originates at the base of zone B at 82 cm bs. Three courses of the curving brick wall of the cistern were exposed.

Based on its location, feature 2 is interpreted as a brick cistern originally located off the southeast corner of HBS 39. In his 1870 report to the Surgeon General, D.L. MacGruder noted that "there is a cistern in the rear of each set...of officer's quarters" (Barr and Rowlinson 1977:42). At the time MacGruder conducted his inspection in 1870, HBS 39 was being used as officer's quarters.

Artifact Analysis: The assemblage (n=235) from HBS 39 consists of military, kitchen, architectural, clothing, personal, furnishings, hardware, unidentifiable, and other artifacts (Appendix E, Table 5). These were recovered from two contexts: (1) shovel tests and a unit (A) excavated in the former rear yard of HBS 39; and (2) landscaping and disturbed fill layers overlying a nineteenth century cistern in unit B). The artifacts will be discussed based on this distinction.

Rear Yard. A total of 136 artifacts were recovered. Five of the six military artifacts found at HBS 38 were identified in this area. These include one brass hinged lid, two .30 caliber full metal copper jacketed bullets, one piece of buckshot, and an unidentified brass object. The hinged lid is approximately .94 by .87 inches, with a hinge on one edge and a clasp on the edge opposite it. Jacketed bullets became common in the late 19th century.

Twenty two ceramic items were recovered from the test unit. Refined ceramics (n=19) consisted of undecorated whiteware (n=14), ironstone (n=2), porcelain (n=2), or yellowware (n=1). Stoneware (n=3) consisted of a salt glazed handle, a ginger beer bottle fragment, and a slipped hollowware fragment. A mean ceramic date of 1869.97 was obtained for unit A.

Identifiable container glass (n=31) vessel types included alcoholic beverage (beer or ale, wine bottle, whiskey flask) and druggist bottles. Unidentifiable bottle and/or hollowware also was present. Several specimens were embossed, but the embossing was too fragmentary to identify. The tooled finish on one druggist bottle suggests a date between 1870 and 1915. All but four glass items were from test unit A.

Machine cut nails (n=15), mostly fragments, one wire nail, and flat glass (n=16) comprise the architectural category. Nails were contained in five of the eight positive shovel tests and in the test unit. Only one positive test produced flat glass with the remainder recovered from the test unit.

The single personal artifact consisted of porcelain smoking pipe bowl fragment. One sanitary tile object and a machine cut tack comprise the furnishings and hardware categories. A lead spacer bar used in setting lead type is of note, especially since no documentary evidence for a printing press at Ft. Leavenworth was found. Additional artifacts are a piece of copper wire, seven pieces of slate, and a piece of exterior/interior slipped drainage tile. The unidentifiable artifacts are glass fragments too small to identify (n=19).

Unit B. Ninety nine artifacts were recovered from unit B. The majority of the artifacts and the greatest diversity of artifact types was from above level 6 (0-60 cm bs). Although all of the ceramics and most of the container glass from unit B was collected above level 6, architectural items predominate. Machine cut nails and flat glass are most common; a machine cut spike, a wire nail, and a wire brad also were recovered. The ceramic assemblage includes one fragment of lustreware (1875-1900) and one fragment of Bristol glazed stoneware (post 1880). Unidentified vessel types of undecorated and annular decorated whiteware and embossed ironstone also are present. Container glass includes a case bottle fragment, unidentified bottles or jars, and unidentified hollowware. Personal items collected are a fragment of a stoneware smoking pipe and a 1982 penny; additional artifacts are a straight pin, melted glass, indeterminate glass, gilded sheet metal fragments, slate, and faunal remains.

Including and below level 6, only two pieces of container glass, one tobacco tin (Figure 9e), plus small quantities of architectural items (machine cut nails and flat glass), drainage tile, slate, and fragments of glass too small to identify as to function were present. A mean ceramic date of 1873.61 and a mean bottle date of 1869.5 were generated for unit B.

Summary: The field investigations confirmed that archaeological deposits associated with both Thomas Hall (HBS 39) and the 1866 privy (HBS 38) located to the rear of McPherson Hall (HBS 10) are located within project area 5. Although few in number, the temporally diagnostic artifacts (i.e., machine cut nails, a snap case bottle base, brown beer bottle fragments) date to the post-Civil War era and prior to the turn of 1900, supporting the interpretation of HBS 38 as the ca. 1866 privy vault. Unit B at HBS 39 (Thomas Hall) encountered an intact brick cistern that was located off the southwestern corner of Thomas Hall during the nineteenth century. Recommendations regarding project area 5 are presented in the final chapter of this report.

Project Area 6

HBS Site Numbers 5, 40-41
Area: 0.41 Acres
Field Conditions: Grass lawn, 0% surface visibility

Field Methods: Screened shovel tests (1/4 inch mesh) on a 5 m x 5 m grid system; hand excavation of four units, excavation units totaling 4 m_2 in arbitrary 10 cm levels; hydraulic coring of privy vault.

Archival Research: Barr and Rowlinson (1977:57) identify HBS 5 as a "dragoon vault". Their description of it is as follows:

> This site is evidenced by a grass covered depression, possible footings, and fragments of limestone, glass, and metal. The only cartographic reference to this structure is in 1881. It may be possible that it was present during other cartographic periods yet not depicted on maps because its function as a latrine may not have been considered of sufficient importance to warrant its inclusion.

As noted in the discussion of project area 5, there are a series of structures shown behind the dragoon barracks (HBS 39) on the 1881 map. It is not clear which of these structures Barr and Rowlinson (1977) defined as HBS 5 or what the basis was for identifying it as a privy. HBS 5 may be the single central structure shown as located behind HBS 39 on the 1881 map but this is not certain. Further, even if HBS 5 is the central feature behind HBS 39, the location provided for this feature on the 1977 archaeological site map is incorrect because Barr and Rowlinson (1977) have HBS 39 located incorrectly (Figure 27). Further, a depression was not present at the location shown for HBS 5 on the 1977 site map. One possibility is that any depression at this location may have been filled in through landscaping activities since the 1977 survey. Because of these difficulties, the present investigations defined HBS 5 as the privy shown behind HBS 39 on the 1866 map (Figure 25). This feature was located precisely 160 ft north of the privy (HBS 38) located behind the southern dragoon barracks (HBS 10).

Barr and Rowlinson (1977) identify two other structures--HBS 40 and 41--within project area 6 as "officer's quarters outstructures". The description of HBS 40 presented below is virtually identical to that of HBS 41:

> This site is grass covered and contains slight depressions which may indicate the presence of an early structure. The building appears only on the 1881 map and its absence from maps in 1871 and 1905 indicate a construction date between 1871 and 1881 and a demolition date between 1881 and 1905. However, the function of the structure may not have been considered sufficient reason to include it on large maps and if this is the case in 1871 and 1905, then the building may have been present longer than is cartographically indicated (Barr and Rowlinson 1977:129).

The 1977 archaeological site map shows HBS 40 and 41 as being located east of building 330 (2 Sumner Place), between the alley running behind building 330 and Scott Avenue. Building 330 was built in 1911 (Hunt and Lorence 1937:275) in the former location of HBS 39 which variously functioned as a dragoon barracks, officer's quarters, and student officer's quarters from the early 1830s to 1903.

It is unclear why Barr and Rowlinson show only two structures in this area when the 1881 map from which they drew their information shows numerous additional structures (Figure 24). At least 33 outbuildings and other structures are shown as being located to the rear of the buildings that lined the eastern side of the Main Parade in 1881. Barr and Rowlinson (1977), in contrast, assigned only eight HBS site numbers in this area. It also is unclear which of the structures shown on the 1881 map that HBS 40 and 41 correspond to.

Field Investigations: The initial stage of the field investigation in area 6 involved the excavation of 35 shovel tests at 5 m intervals (Figure 26). The limits of the shovel tested area were based on the limits of the proposed construction. Seven of the shovel tests were positive, fifteen contained either brick or limestone fragments, and thirteen contained no material. The majority of the shovel tests contained a dark brown silty clay that extended to at least 50 cm bs. The culturally sterile subsoil was not reached in any of the tests.

Four 1 m x 1 m test units were excavated in project area 6 following the completion of the shovel tests. Two of these were placed in the approximately locations of HBS 40 and 41 shown on the 1977 archaeological site map. The other two were placed over the suspected location of HBS 5.

HBS 5. The location of HBS 5 was determined through archival research. The 1866 Mitchell map shows that a separate water closet was located behind Thomas (HBS 39) and McPherson (HBS 10) during that time. As noted in the project area 5 discussion, each of these water closets had six separate rooms. The map also shows that the southern edge of the Thomas Hall water closet was located precisely 160 ft north of the northern edge of the McPherson Hall water closet. Once the location of the HBS 39 water closet (HBS 38) had been determined, a theodilite was set up over unit A within the center of HBS 38. A line was then run north for 160 ft from this point to what--assuming the information on the 1866 map was correct--should have been the approximate center of the Thomas Hall water closet. A 1 m x 1 m test unit (unit A) was then placed over this location.

Excavation of unit A revealed that it was located over one of the chambers of a water closet or privy vault (Figure 37). The three upper most strata (A, A', and B) in the unit represented late nineteenth/twentieth century disturbed fill layers that post-dated the privy. Zone A (0-15 cm bs) was a mixed yellowish brown to grayish brown clay layer that is apparently associated with landscaping activities in this area.

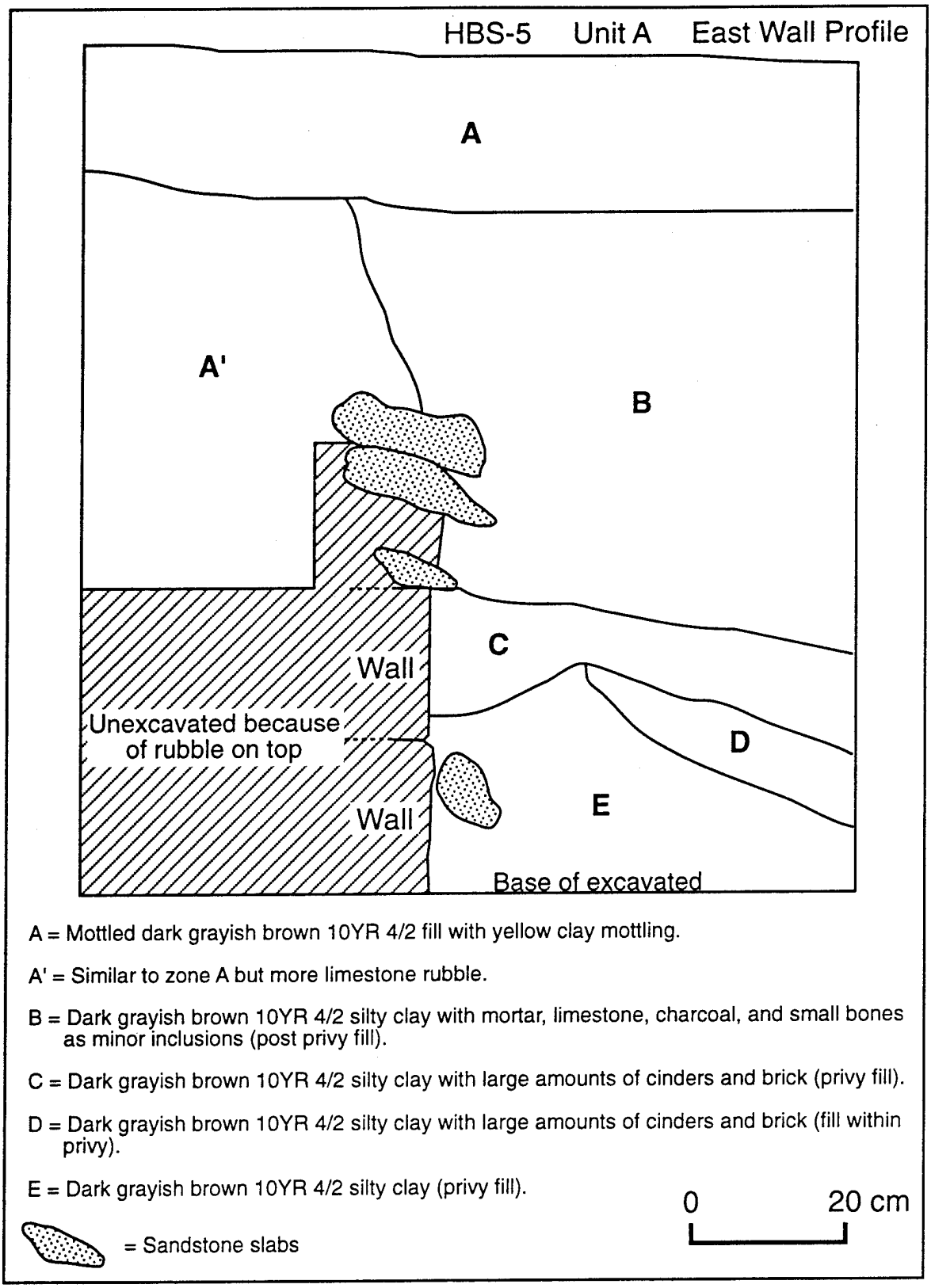


Figure 37. East wall profile, unit A, HBS 5.

Zones A' and B originated at 15 to 21 cm bs. These two zones appear to represent the badly disturbed upper portion of the privy. Zone A' contained a mixed fill that was similar in texture in color to zone A but contained large limestone slabs and rubble throughout. This zone is interpreted as representing the badly disturbed upper section of one of the chamber vault walls. The limestone rubble and slabs within this zone represent portions of the vault wall that were broken and displaced during the demolition of the above ground part of the water closet. Zone B, located south of zone A' and originating at approximately the same depth below surface, is interpreted as representing the disturbed upper portion of the privy vault fill. Located within this zone were limestone, mortar, small animal bones, and charcoal. The intact stone foundation wall (feature 1) to one of the six chamber vaults was encountered at 70 cm bs (Figure 37). The top of the wall was covered by an approximately 20 cm thick layer of limestone rubble (Figure 37). It was not possible to clean off the top of the wall as many of the slabs extended into the wall of the unit. Two courses of the wall were exposed, however, during the partial excavation of the privy vault to the south of the wall (Figure 38). This revealed that the vault wall was comprised of 20 cm thick cut limestone block.

A sample of the vault stratigraphy and contents was obtained through the hand excavation of the top 40 cm of the vault fill. Three soil strata were defined. All were 10YR4/2 dark grayish brown silty clay layers that varied subtlety in shade and texture. Large amounts of brick and cinders were recovered in the upper two horizons (C and D). Artifact frequency in all three layers was very low.

Following the hand excavations, a Gidding soil probe was used to extract a soil column to the base of the vault (Figure 4). The soil samples in this column were removed in approximate 3' sections. Information regarding soil color and texture was recorded for each sample to provide information on the vault fill stratigraphy. Each of the samples was then floated to recover artifactual, botanical, and faunal information.

Fifteen soil strata were defined in the soil column (Figure 39). A culturally sterile 10YR5/3 brown clay that may represent the base of the vault was encountered at 4.20 m below the base of the last hand excavated level (or 5.40 [17.2 ft] bs). Limestone, wood, brick, charcoal, and artifacts were scattered throughout the column. A clear bottle base was contained in the center of the soil column at 5.2 m (17 ft) bs.

Excavation of unit A was discontinued following the excavation of the soil probe. Unit B was then excavated 4 m south of unit A in an attempt to find the outer of south wall of the water closet. Such a stone wall, however, was not present. Instead, unit B appears to have fallen completely within one of the vaults of the water closet. Four soil strata were defined (Figure 40): (A) a disturbed 10YR4/2 dark grayish brown with light yellowish brown clay mottling, 0-55 cm bs. Brick,

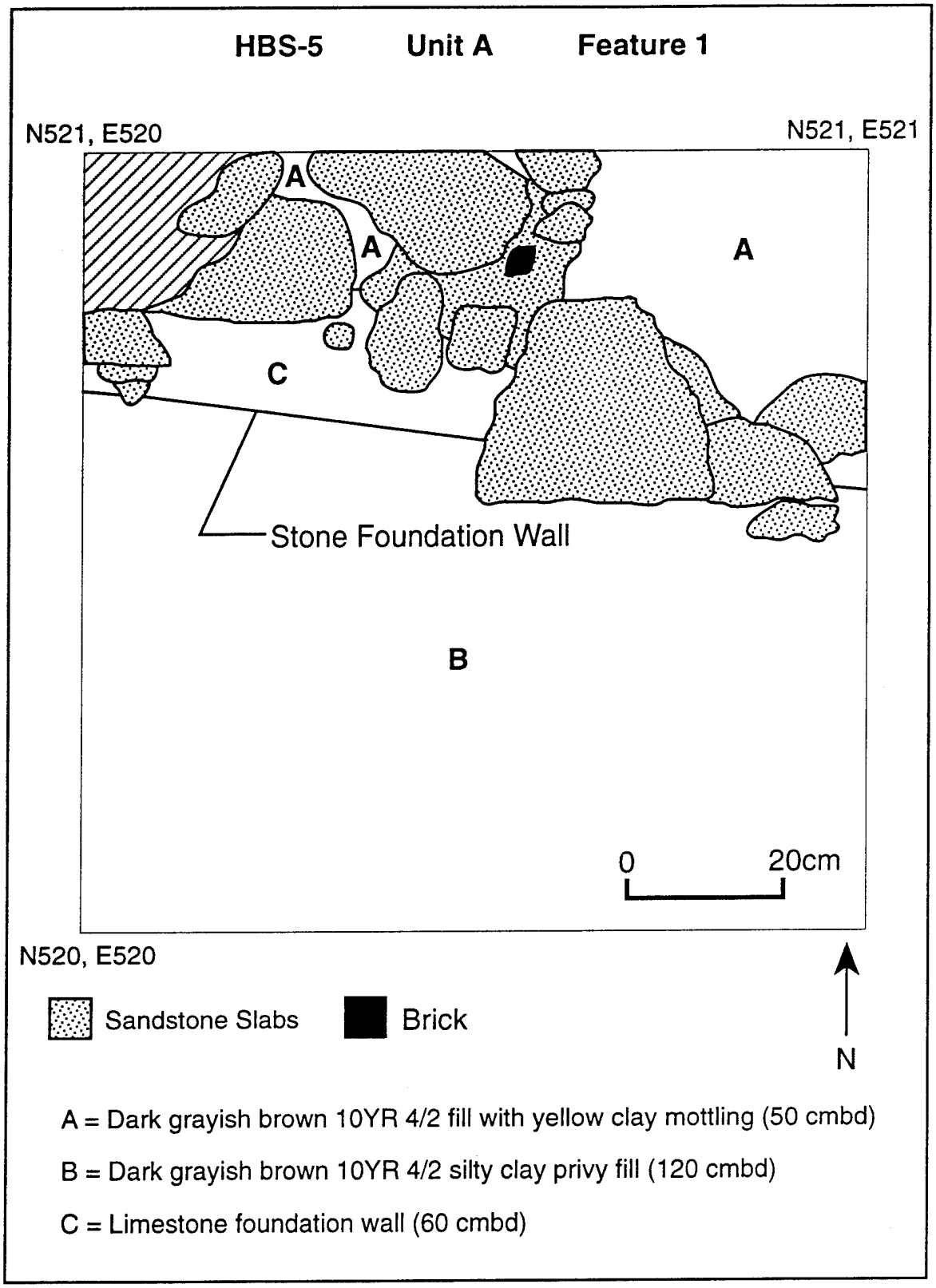


Figure 38. Plan view, unit A, HBS 5.

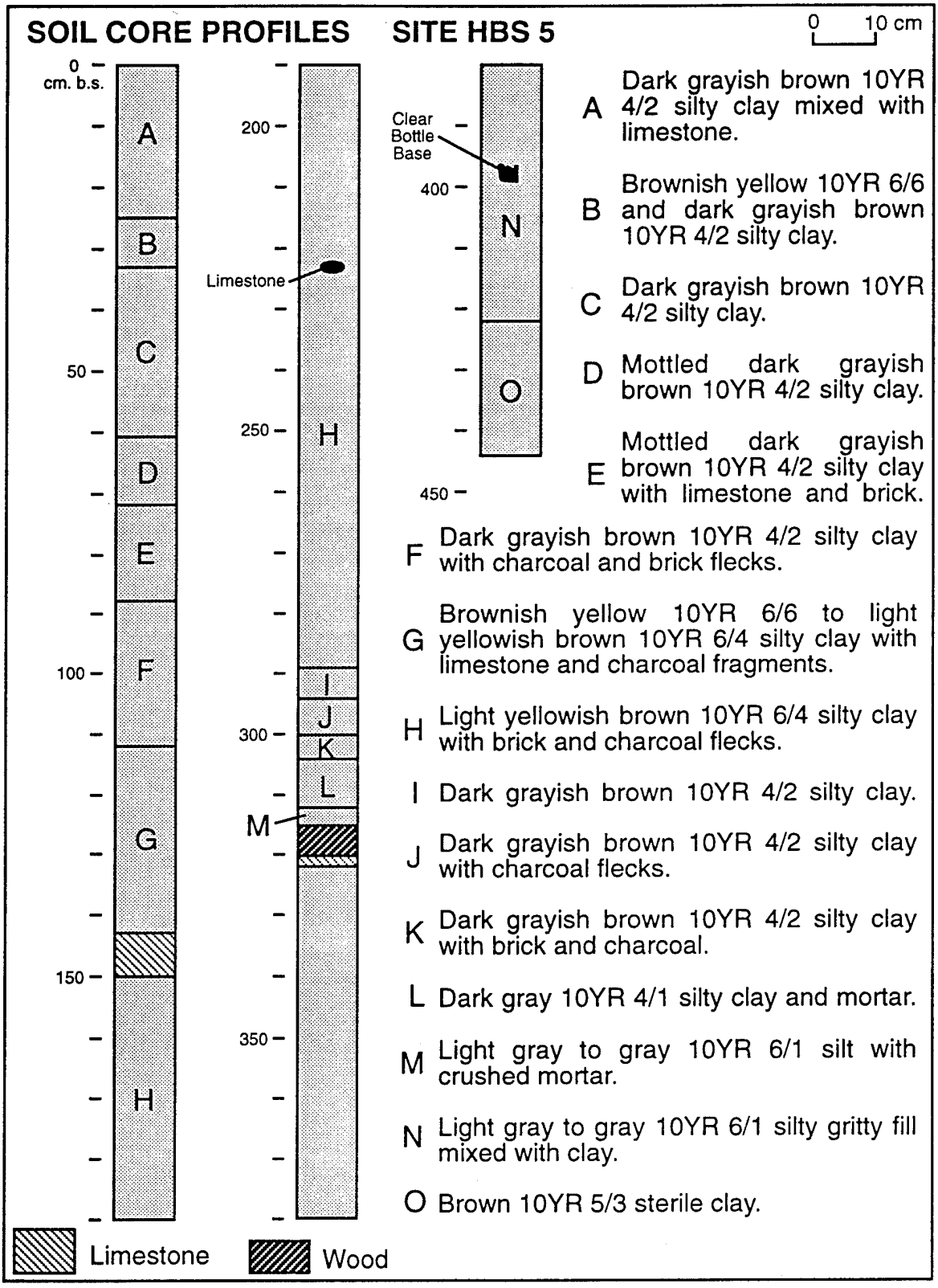
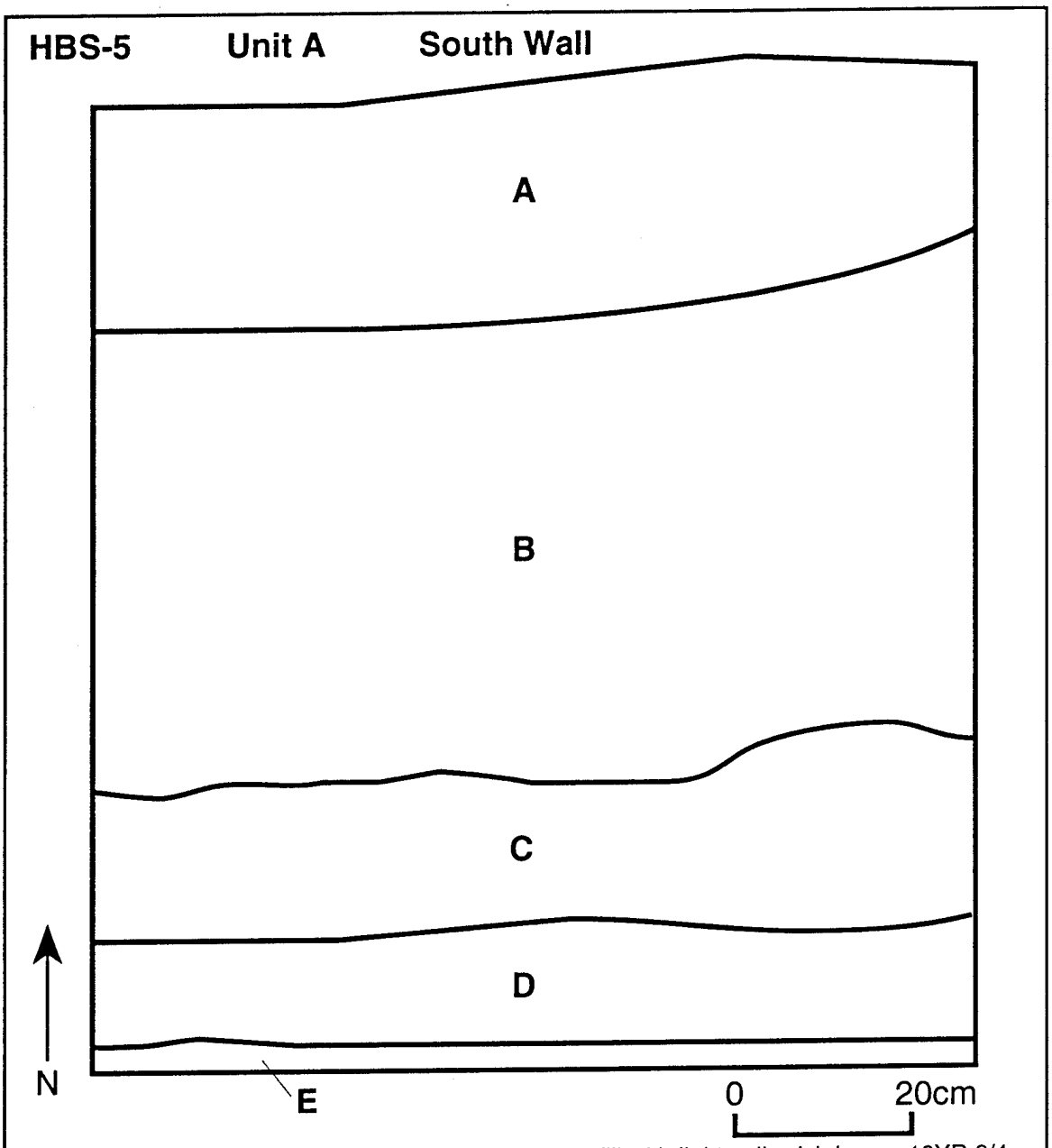


Figure 39. Soil core profile, unit A, HBS 5.



A = Disturbed, mottled dark grayish brown 10YR 4/2 fill with light yellowish brown 10YR 6/4 clay mottles, limestone and brick inclusions.

B = Dark grayish brown 10YR 4/2 silty clay. Mortar, limestone, charcoal, and small bones as very minor inclusions. Undisturbed fill that may post-date privy.

C = Dark grayish brown 10YR 4/2 silty clay with large amount of cinders and brick (fill within privy).

D = Slighty darker than zone C. Laminated soils at base suggesting washed in soil (privy fill).

E = Dark grayish brown 10YR 4/2 silty clay (privy fill).

Figure 40. South wall profile, unit A, HBS 5.

limestone, and mortar were present as inclusions. Similar to unit A, this layer represented disturbed fill from landscaping activities; (B) an almost solid, dense layer of brick limestone, mortar, and cinders 55 to 60-65 cm bs; (C) a layer of brick, mortar, limestone, and cinders that was similar to zone B but which contained less materials, 60-65 to 70-80 cm bs. The bricks throughout most of this level were jumbled and formed no discernible pattern. In the southeastern corner, however, extending 40 cm into the unit was a double layer of unmortared bricks. It is unclear what this arrangement of bricks represents. Although it could represent a sidewalk, the fill beneath the bricks (zone D; 65-75 cm to 100+ cm) was not sterile clay. Instead, it was similar in appearance and texture to the privy fill in unit A. The bottom of this zone was not reached. If the brick arrangement in level C is part of a sidewalk, it appears to have been laid over the privy fill in HBS 5 after the vault was abandoned. More possibly, given the disordered arrangement of the bricks throughout most of the level, the bricks may represent part of the superstructure of the water closet that fell or was discarded into the top of the vault during demolition.

Artifact Analysis: The artifact assemblage (n=335) from HBS 5 (Appendix E, Table 6) consists predominantly of kitchen and architectural artifacts, with small quantities of military, clothing, personal, furnishing, hardware, unidentifiable, and other artifacts. Artifacts were collected from strata interpreted representing in situ vault deposits as well as from fill disturbed possibly during demolition activities and a cap of sediment deposited during post-abandonment landscaping activities (levels 1-9). The assemblage will be discussed based on this distinction.

Vault Fill. A total of 169 architectural, kitchen, clothing, personal, unidentifiable, and other artifacts were retrieved from the privy vault. Architectural items (n=26) are machine cut nails (n=10) and flat glass (n=16). Kitchen artifacts (n=91) are a small quantity of ceramics (n=3) and larger quantities of container glass (n=50) and faunal remains (n=38). The ceramics include unidentifiable vessels of brown transfer printed and undecorated whiteware and salt/slip glazed stoneware. Too few ceramics were recovered for the calculation of a meaningful mean ceramic date. Brown transfer printed ceramics, however, have a date range of ca. 1830-1850 (Table 1).

Kitchen container glass included footed vessel, wine bottle, unidentified bottle, and unidentified jar or bottle types. Most of the glass fragments were from a single colorless glass, 3-piece plate bottom molded bottle recovered from the lowest level of the core sample. This specimen also lacked a pontil mark. The mean bottle date for plate bottom molded vessels is 1882.5. It was not possible to determine whether the bottle had a tooled or machine made finish which would have allowed calculation of a more precise date. This bottle is identical to the bottle from HBS 38. Also present were unembossed recessed panels from paneled bottles. Recessed panels of this type were introduced after 1858.

Two straight pins and one faceted glass bead comprise the clothing items. One reddish-brown and colorless layered glass machine made marble (Figure 19a) was the single personal item collected from the undisturbed fill. Machine made glass marbles postdate 1901 (Randall 1971). Glass fragments too small to identify as to function (n=46) comprise the unidentifiable glass. This indeterminate glass was collected predominantly from flotation samples and comprises 27 percent of the undisturbed assemblage. A metal rod and a glass rod, both of indeterminate function, round out the undisturbed vault fill artifact collection.

Post-privy fill. Given that the disturbed and landscaping fill above HBS 5 fill is redeposited from an unknown source, only the temporally diagnostic artifacts that can be used to date the fill are discussed in the following section. Information regarding the remainder of the artifacts from this provenience is presented in Appendix E, Table 6. Two full metal copper-jacketed bullets were identified. Full metal jackets were introduced in the late nineteenth century and extend into the twentieth century. Machine cut nails (ca. 1835-1890) and wire nails (introduced ca. 1860, common after 1880) also were present. Datable glass consisted of a post bottom mold (post 1860) wine bottle, an improved tooled finish (1870-1915) bottle, and a machine-made colorless glass bottle (20th century). One colorless glass bottle body sherds embossed "..EADE &.." refers to Meade & Baker, who advertised their product (carbolic mouthwash antiseptic gargle) between 1891 and 1930 (Fike 1987:173). A post-1935 soda bottle with an enamelled logo (Deiss 1981:95) also was recovered. The inclusion of the embossed bottle and enamelled soda bottle indicate a late 19th to 20th century date for the disturbed fill zones. One military item, a pewter button, embossed "U.S. AR.." (U.S. ARMY) was collected from the disturbed fill (Figure 19b).

HBS 40 and 41. Two 1 m x 1 m units were excavated in the approximate location of HBS 40 and 41 as shown on the 1977 archaeological site map (Barr and Rowlinson 1977). Unit A was excavated to a depth of 1.67 m below the present ground surface. This revealed that: (1) strata representing ten separate fill episodes were present; (2) that the original fill layers in the western half of the unit had been removed by a backhoe during the placement or repair of a water line found at the base of the unit (Figure 41). Of the ten fill strata, zone A represented the humus/grass layer, 0-10 cm bs; zones B (10-28 cm bs) and C (28-53 cm bs) were silty clay layers.

The soil profile in the western half of the unit consisted of a single highly disturbed soil zone that extended from the surface to 115 cm bs. A water line was found at the base of the excavation (Figure 41). Post workmen who came by during the course of the excavations stated that they had broken during the middle of the night.

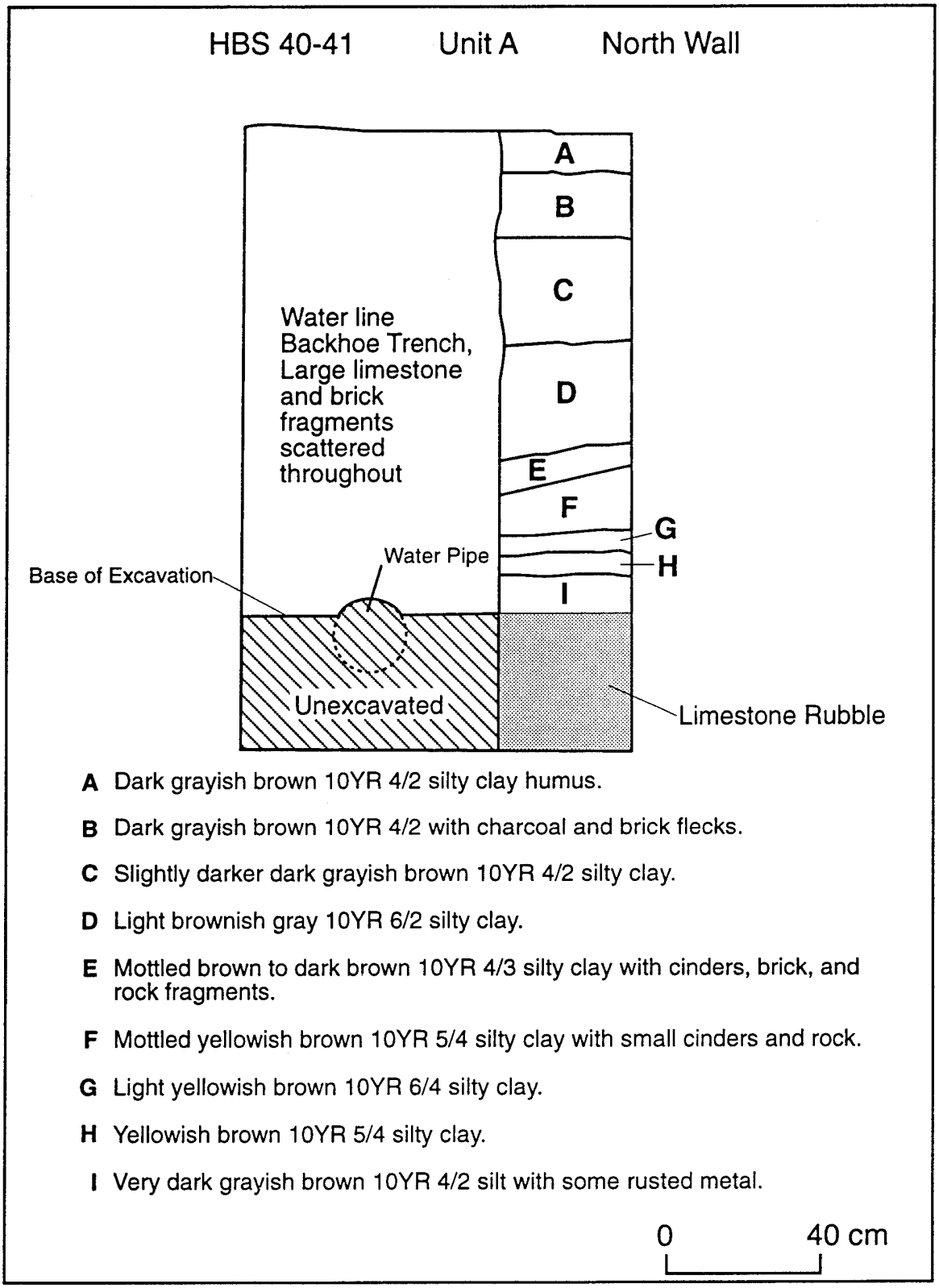


Figure 41. North wall profile, unit A, HBS 40-41.

Unit B was excavated to 120 cm bs (Figure 42). Seven strata were defined within this unit; (1) humus/grass zone, 0-4 cm bs; (2) a dark grayish brown clayey silt that contained a small amount of cultural material including limestone and brick, 4-22 cm bs; (3) a dark yellowish brown clayey silt layer (22-48 cm bs) that contained a large amount of mid-nineteenth century artifacts. Among the items recovered were a partial black transfer printed soup tureen, glass and ceramic bottles, and faunal remains. This zone appears to have formed through the dumping or discardment of objects that possibly originated at one of the barracks located on the east side of the Main Parade during the mid-1800s; (4) a very dark grayish brown to brown silt clay that contained a small amount of cultural material, 48-64 cm bs; (5) a homogenous very dark grayish brown silt, 64-77 cm bs; (6) a layer of limestone rubble, 77-105 cm bs. This layer was similar in appearance to the basal limestone layer encountered in unit A to the north; (7) a compact yellowish brown silty clay, 105-120 cm bs. The top (105-110 cm bs) of the layer contained a small amount of gravel, brick, and limestone. The remainder of the layer was culturally sterile.

Artifact Analysis: The artifact assemblage from HBS 40-41 (Appendix E. Table 6) is noteworthy for the quantity (n=352), diversity, and types of artifacts. Kitchen artifacts comprise the majority (56%) of artifacts, followed by architectural items (20%). Military, clothing, and personal items, as well as furnishings, unidentifiable, and other artifacts also are present. The majority of the artifacts (n=279; 79%) were recovered from unit B, which also exhibited a high diversity of artifact types.

Three military artifacts were recovered: a 12-gauge Lefaucheux pinfire brass shotgun shell base with paper interior (Figure 43a), a 10-gauge centerfire brass shotgun shell base, and a .45/70 caliber rifle bullet. The pinfire shotgun shell was not headstamped, thus the manufacturer and date of production could not be identified. The Lefaucheux pinfire cartridge was patented in France in 1835 and exported in limited quantities to the United States, where it received only minor use during the Civil War (Herskovitz 1978:51). However, pinfire cartridges were still advertised in the 1897 Sears-Roebuck catalog (Israel 1976). Pinfire cartridges have been recovered from Fort Bowie (Herskovitz 1978:51, Figure 15D) and Old Fort Scott (Reynolds 1983:88). The .45/70 cartridge was used by the U.S. Army in the 1870s and 1880s. The 10-gauge shotgun shell is headstamped "U.S. SECOND QUALITY No. 10".

The suite of architectural artifacts (n=72) is comprised predominantly of 63 aqua flat glass less than 3 mm thick, followed by machine cut (n=6), wire (n=1), and unidentified (n=1) nails and one metal eye fragment of indeterminate function. The presence of a wire nail in unit B indicates deposition after ca. 1860 and possibly after ca. 1880 (Nelson 1968).

The kitchen assemblage from HBS 40-41 (n=197) consists of ceramic (n=75) and glass (n=97) artifacts and faunal remains. Whiteware was the most frequent

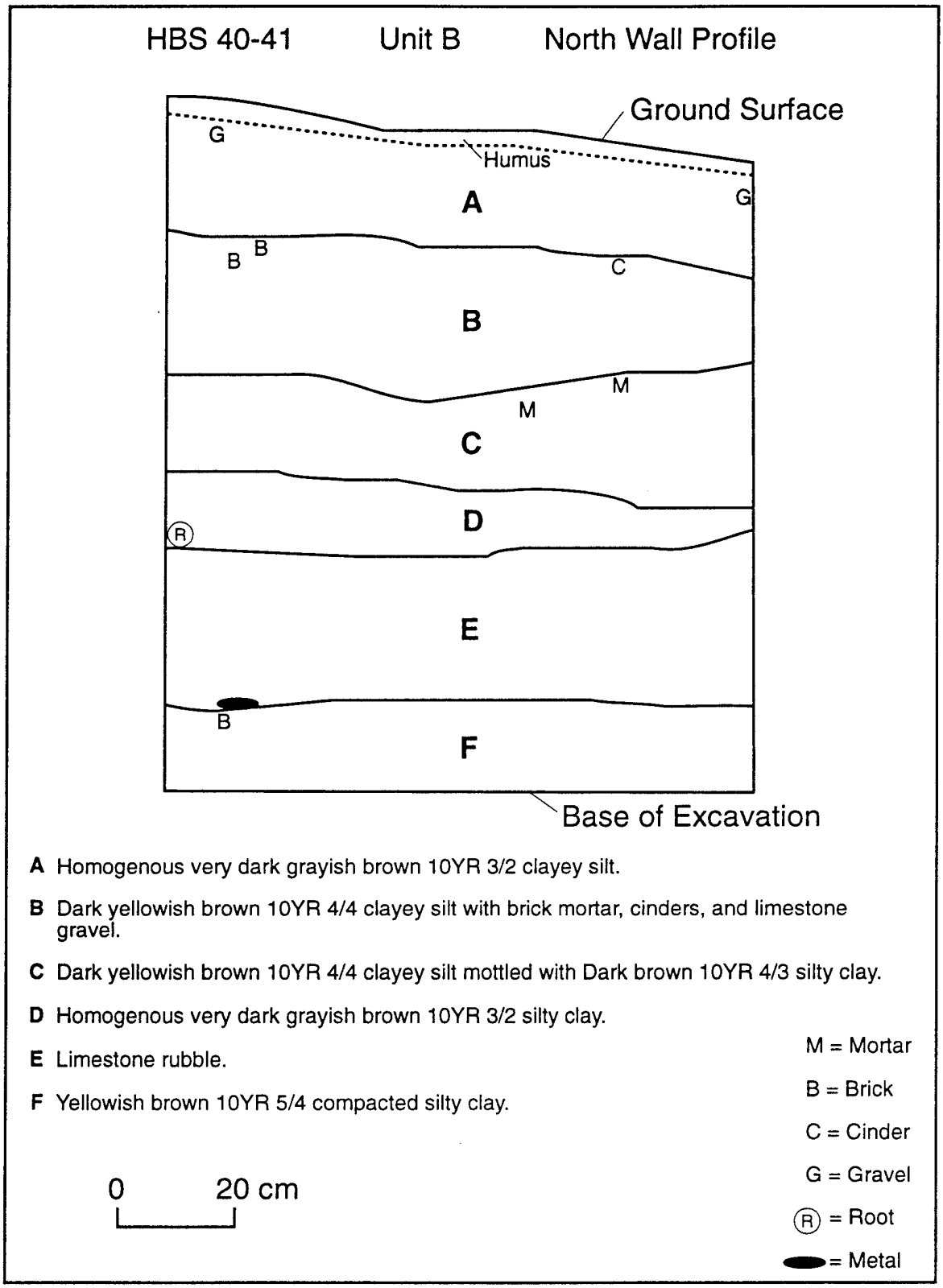


Figure 42. North wall profile, unit B, HBS 40-41.

Figure 43. Metal and ceramic artifacts, HBS 40-41.

A. Lefaucheux pinfire shotgun shell, unit B, level 4

B. Flow black, tureen and cover, unit B, levels 4,5,6, 7,8,9,10

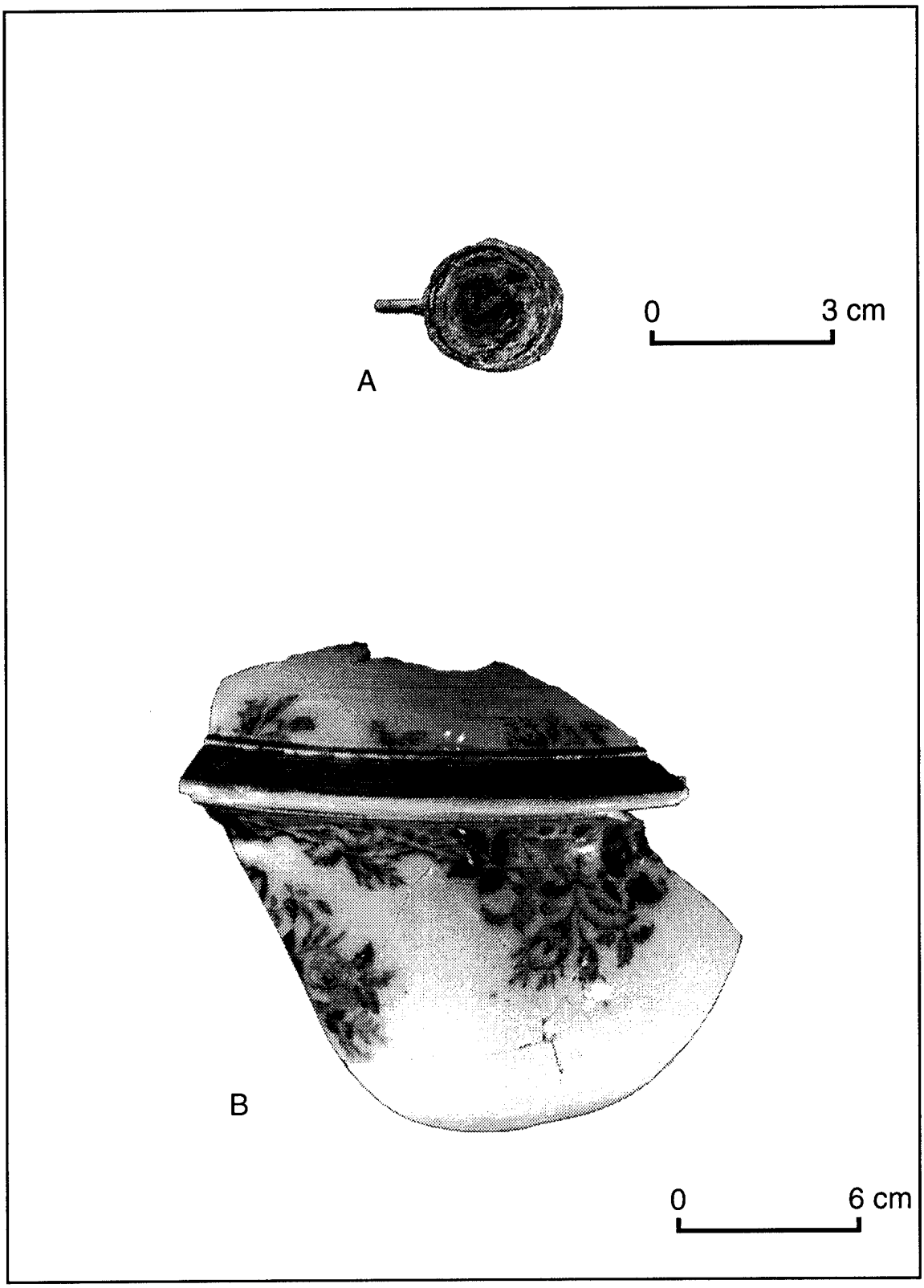


Figure 43. Metal and ceramic artifacts, HBS 40-41.

ware at HBS 40-41 (n=44). A black flow soup tureen with matching cover (Figure 43b) and a brown annular bowl fragment were recovered from unit B. Additional black flow hollowware sherds were recovered that probably represent pieces of the tureen and cover. Flow decoration was produced on whiteware between 1840 and 1860. Plate, cup, individual bowl (Figure 44a-b), and handle forms were recognized among the undecorated whiteware. One piece each of hand painted, brown transfer, and blue transfer from unidentifiable vessels also were recovered. The remainder of the assemblage is undecorated unidentified vessels and flatware (Appendix E, Table 6). Two whiteware pieces were marked. The plate base is printed "HENRY ALCOCK & C°". This manufacturer was in production between 1861 and 1910 in Cobridge, Staffordshire, England (Godden 1964). The absence of an identifying mark indicating country of origin suggests this piece was made prior to the McKinley Tariff Act of 1890. The bowl exhibits a partial printed mark that was too fragmentary to identify.

All of the porcelain sherds (n=22) except one were undecorated. The exception was an overglaze decalcomania sherd. None of the pieces are marked. Decalcomania, however, was manufactured between 1880 and 1920. Identifiable vessels included a plate, bowl, and cup. Unidentifiable flatware, holloware, and vessel sherds round out the porcelain artifacts.

Ironstone (n=3) consists of a handle fragment, probably from a pitcher, as well as unidentified holloware and vessel fragments. One piece of blue and white annular decorated yellowware bowl was recovered. Two fragments of unidentifiable stoneware (n=2) vessels also were recovered. Each is glazed differently. One has a salt glazed exterior and a slipped interior while the other has a salt glazed exterior and unglazed interior. Three fragments unidentifiable as to ware type were collected from flotation samples. A mean ceramic date of 1861.36 was obtained on the ceramics assemblage.

Identifiable vessels among the kitchen glass included alcoholic beverage containers, tableware, and an extract bottle. Two colorless glass, improved tooled, shoo-fly liquor bottles, one complete (Figure 45a) and one fragmentary, were collected. Improved tooled finishes and the undecorated shoo-fly shape were common after ca. 1870 (Deiss 1981). Additional alcoholic beverage vessel forms included two turn-molded wine bottle bases with inverted kickups (Figure 45b) and an embossed beer or ale bottle base. Turn-molding was used after 1875 and until 1905 (Lorrain 1968). The embossing on the beer/ale bottle base was too fragmentary to identify or date. Brown bottles for pasteurized beer, however, were introduced ca. 1873 (Wagner et al. 1989). An undecorated bowl and base of a stemmed, colorless, pressed glass goblet (Figure 46a,d); the base of a colorless fluted pressed glass tumbler, and the handle of a colorless glass pitcher comprise the tableware. The extract bottle is

colorless glass with three recessed panels and is embossed "..S ..S ..XTRACTS" on the recessed face. The mark could not be identified from the sources consulted. A modern soda bottle fragment was collected from the uppermost level of unit B.

The remainder of the kitchen glass consists of wine and beer/ale bottle body sherds, accompanied by unidentified bottle or jar body fragments and a small amount of unidentified hollowware and vessel sherds.

No machine-made bottle glass was identified in the assemblage. This manufacturing technique began in the last few years of the 19th century but became common in the 20th century. The earliest manufacturing dates for the kitchen glass are ca. 1870, with turn-molding post 1875. A mean glass date of 1887.5 was obtained for the assemblage.

The kitchen faunal assemblage consists entirely of bone and teeth; shellfish was not represented (Chapter VIII).

Buttons (n=4), one glass seed bead, and a brass grommet comprise the clothing category (n=6). Each of the buttons is manufactured from a different material. Three are of sew-through variety: one is an undecorated four-hole, white glass button; another is an undecorated two-hole porcelain button, and the third is a two-hole shell button. In each, the holes are contained within a recessed panel. The fourth button is an undecorated metal three-piece button minus the shank. The seed bead is pink. It may have been used for trade with Native Americans or as decoration on clothing. The grommet is .56 inches in diameter, with an opening .2 inches in diameter.

The personal category (n=5) is represented by four artifact types. All four were present in unit B. These included an undecorated white clay marble .57 inches in diameter, one undecorated porcelain toy teacup base (Figure 46b), and a slate pencil. As a group, these artifacts are indicative of the presence of children in this section of Ft. Leavenworth. The fourth personal artifact type consisted of two bone toothbrush handles, one from each of the test units. The handle from unit B (Figure 46c) is nearly complete and is incised "IMPORTED BY T. MARTIN DRUGGIST OMAHA SILVER WIRE" surrounding a logo. Four or five rows of offset holes are drilled into the fragmentary head. The other specimen consists of an unmarked handle fragment.

The furnishings category (n=18) consists entirely of colorless kerosene lamp chimney glass. All but two specimens are from unit B. Although kerosene lamps were available after ca. 1860, they were not issued in the military until after 1880 (Herskovitz 1978:72).

Figure 44. Refined earthenware ceramics, HBS 40-41.

A. Whiteware bowl, unit B, level 4

B. Porcelain plate, unit B, levels 4 and 5

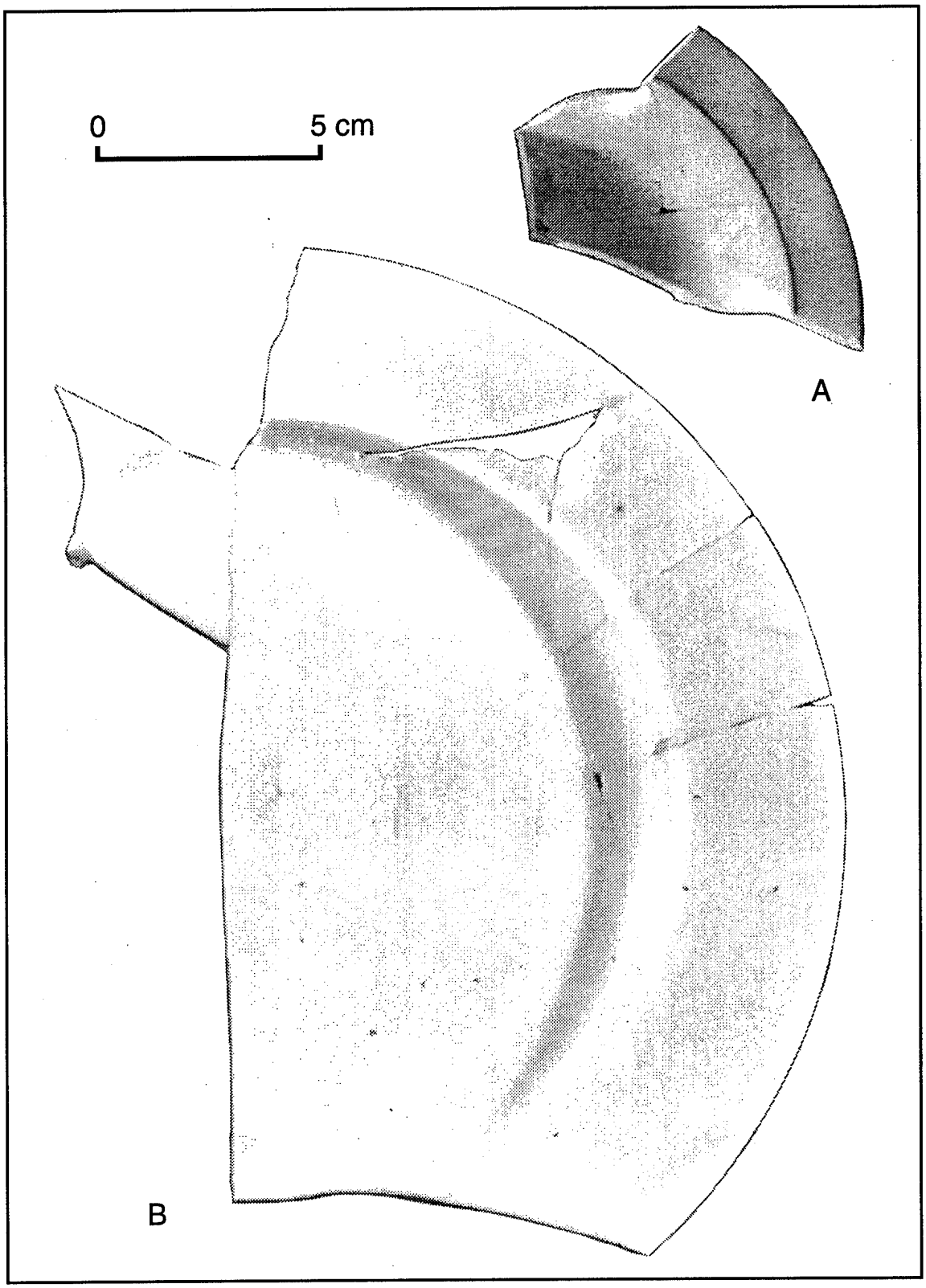


Figure 44. Refined earthenware ceramics, HBS 40-41.

Figure 45. Bottles, HBS 40-41.

A. Shoo-fly flask, shovel test N530E535

B. Turn mold wine bottle, unit B, level 4

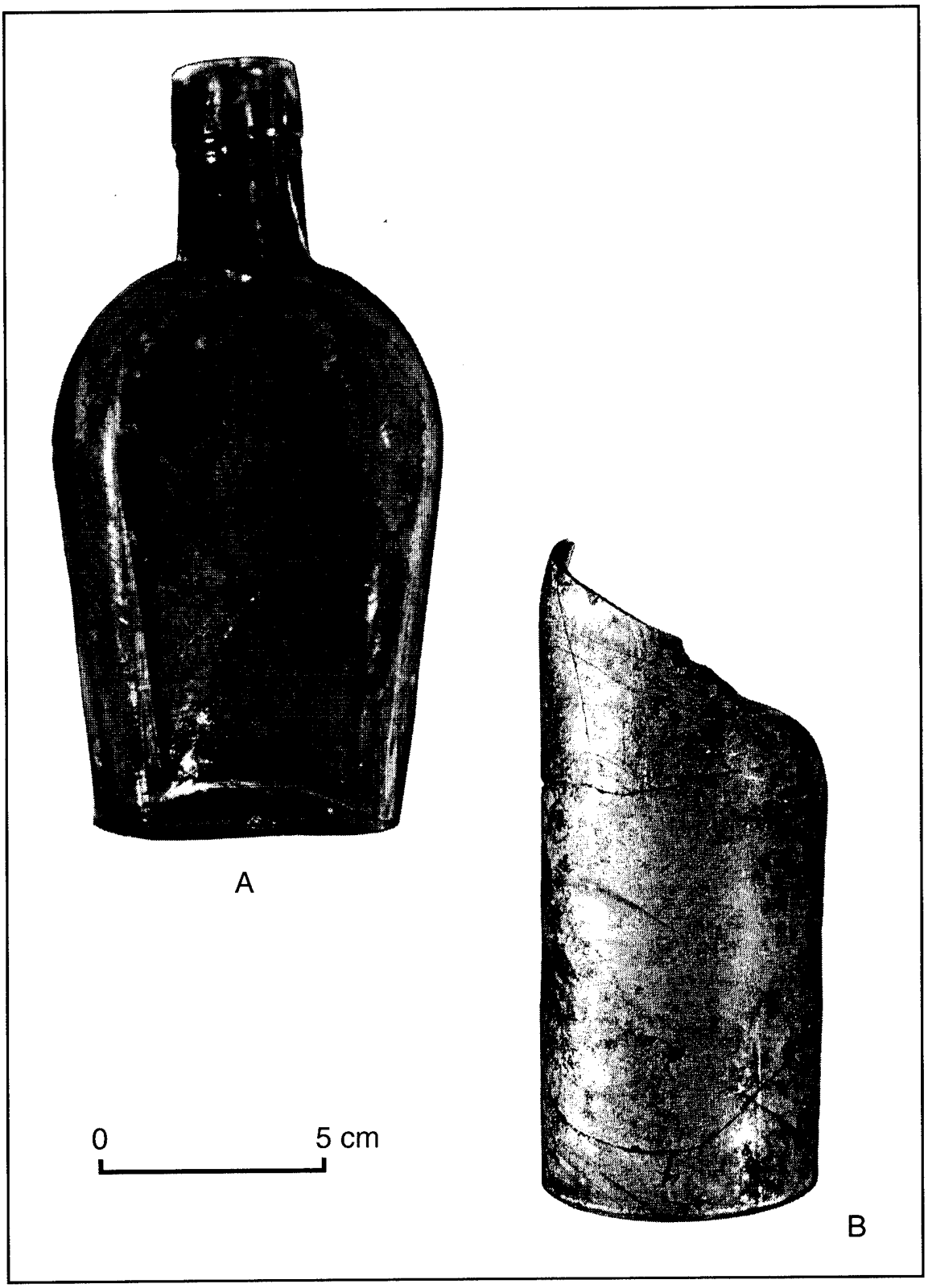


Figure 45. Bottles, HBS 40-41.

Figure 46. Glass, ceramic, and bone artifacts, HBS 40-41.

A. Glass goblet, unit B, level 5

B. Toy porcelain teacup base, unit B, level 3

C. Bone toothbrush, unit B, level 5

D. Glass syringe plunger, unit B, level 4

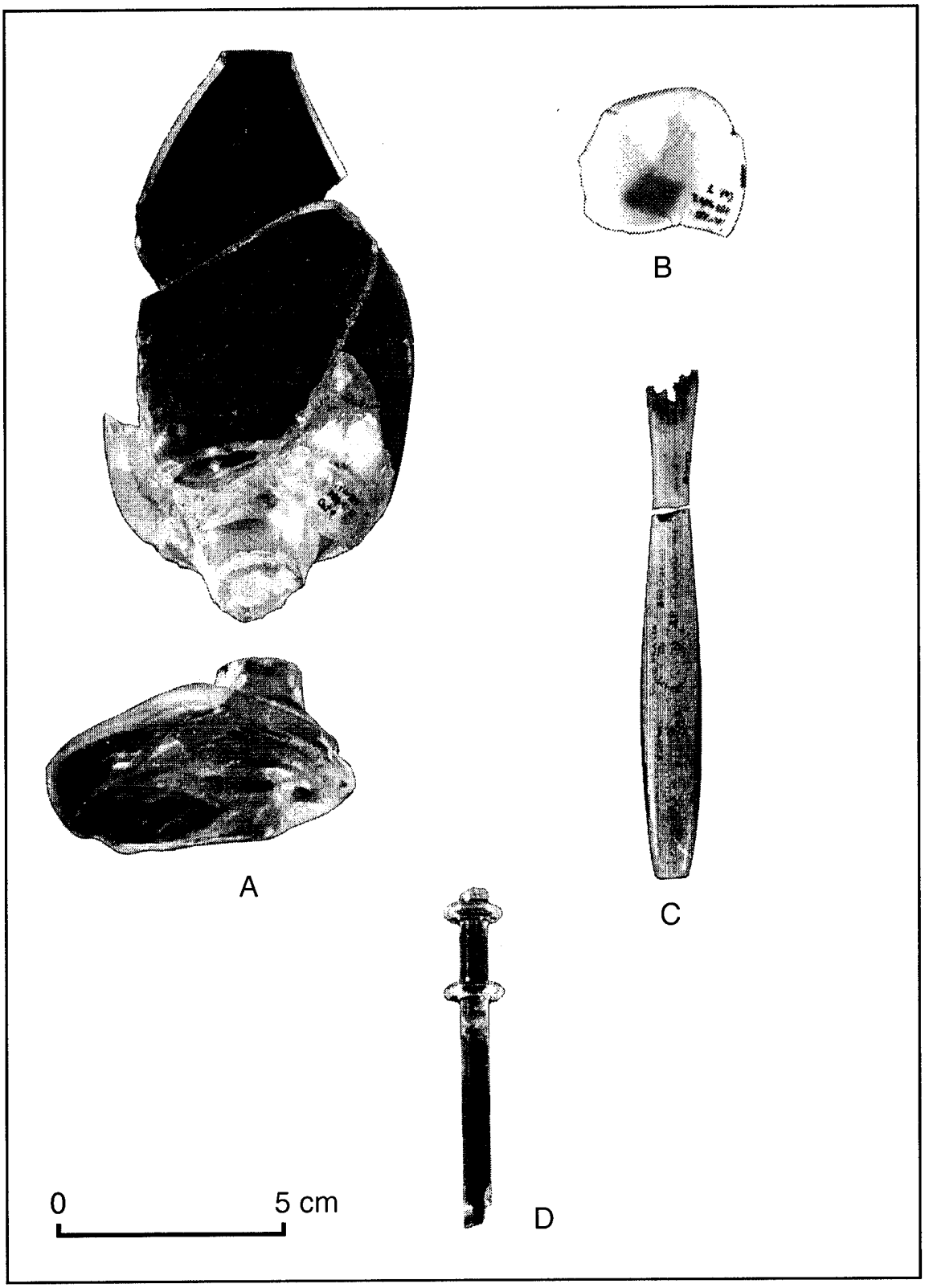


Figure 46. Glass, ceramics, and bone artifacts, HBS 40-41.

The unidentifiable category (n=41) consists of melted glass (n=2), one sheet metal fragment, and glass fragments too small to identify as to functional type (n=38). Most of the indeterminate glass fragments are from flotation samples.

Ten other artifacts complete the HBS 40-41 assemblage. One glass syringe plunger (Figure 46d), one unidentified plastic object, six pieces of slate, one terra cotta flowerpot fragment, and one piece of wire comprise this category. The syringe plunger is solid colorless glass; a truncated glass rod extends beyond the head of the plunger. Glass syringe plungers have been found at Ft. Bowie, but differ from that found at Ft. Leavenworth in having textured heads (Herskovitz 1978:32; Figure 8f). The plastic object is black, flat, and narrow. It is broken at one end but comes to an asymmetrical rounded point at the unbroken end. Heavy polish is present on the edges as they taper to the point; this may be from use or the manufacturing process used to produce the point. Parallel striations, produced during the manufacturing process, are visible on both surfaces. The piece is 25.4 mm long, 2.6 mm wide, and .08 mm thick. It may be part of a piece of clothing or a personal item.

The decorated ceramics, porcelain, stemware, and variety of alcoholic beverage bottles suggest high status objects that may have been used by officers rather than enlisted men (Scott 1989). They also may have been privately owned pieces rather than military issue. The marble, slate pencil, and toy teacup base suggest the presence of children, and indirectly, women in this section of the post.

Manufacturing dates for the artifacts from HBS 41-42 range from 1840 to approximately the beginning of the 20th century. However, the presence of decalcomania and datable makers' marks indicates that the date of deposition is probably after 1880 but prior to the turn of the century. The mean ceramic (1861.36) and glass (1887.5) dates diverge by more than 25 years. An explanation for this discrepancy may be that many of the ceramics are heirloom pieces that were curated long after their date of manufacture and were discarded with later manufactured items.

Summary: The investigations within project area 6 revealed that: (1) the intact remains of mid-nineteenth century structural features still exist beneath the present ground surface along the western edge of the project area adjacent to the alley that runs behind Sumner Place. The privy vault (HBS 5) located and cored by the present investigations is interpreted as representing the vault shown behind Thomas Hall (HBS 39) on the 1866 map of the post. As was noted in the discussion of project area 5, it should be expected that additional privy vaults that pre- and post-date the 1866 vaults also will be located behind the former location of Thomas Hall.

The excavation of units A and B at HBS 41 and 42 revealed that the level ground surface in the eastern half of project area 6 has been created through

intentional filling. The original ground surface is located between 1.20 to 1.67 m below the present ground surface.

Based on an overlay of the 1881 map with the modern post map, the section of project area 6 sampled by units A and B appears to have been located behind or east of the row of outbuildings associated with the dragoon barracks (HBS 39) shown on that map (Figure 26). Illustrations of this area on early maps of the post indicate that a large ravine was located in this area (Figure 20). This ravine still exists to the east of Scott Avenue (Figure 2). The presence of a series of fill zones extending approximately 70 cm beneath the base of the late nineteenth century dump/discard zone (22-48 cm bs) in unit B indicates that the head of this ravine was intentionally filled during prior to the mid-1800s. Although a large amount of the cultural material within the fill in units A and B consisted of brick and limestone rubble, the presence of the mid-nineteenth century dump/discard layer in unit B indicates that concentrations of artifacts associated with the early history of Ft. Leavenworth may be present within this area. Recommendations regarding project area 6 are presented in the final chapter of this report.

Project Area 7

HBS Site Number 141
Area: 0.30
Field Conditions: Grass lawn, 0% surface visibility
Field Methods: Screened shovel tests (1/4 inch mesh) on a 5 m x 5 m grid system.
Discussion: Barr and Rowlinson (1977:331-332) identified one site within this area. This structure was present on the 1905 map and absent from the 1881 and 1907 maps, suggesting a construction date between 1881 and 1905 and a demolition date between 1905 and 1907 (Barr and Rowlinson 1977:331-332). The structure also was not present on the 1908 map of the post examined by the present survey. The structure function was indeterminate. The sloping terrain of the project area would appear to be an unlikely location for a permanent structure, suggesting that either the 1905 map is in error or that HBS 141 was a temporary building.
Field Investigations: Thirty seven shovel tests were excavated at 5 m intervals across the grass covered lawn that contains site HBS 141 (Figure 47). The soils in all of the shovel tests consisted of a homogenous brown to dark grayish brown silty clay that extended from the surface to 35 cm bs. Eight shovel tests were positive while six produced only brick fragments. The remainder were negative.
Artifact Analysis: Only 19 artifacts were collected from HBS 141 (Appendix E, Table 7). Machine cut nails, wire nails, flat glass, sheet metal fragments, and faunal remains are represented by more than one artifact. Undecorated whiteware, bottle glass, a metal fence post fragment, and unidentifiable metal were represented by one artifact each.

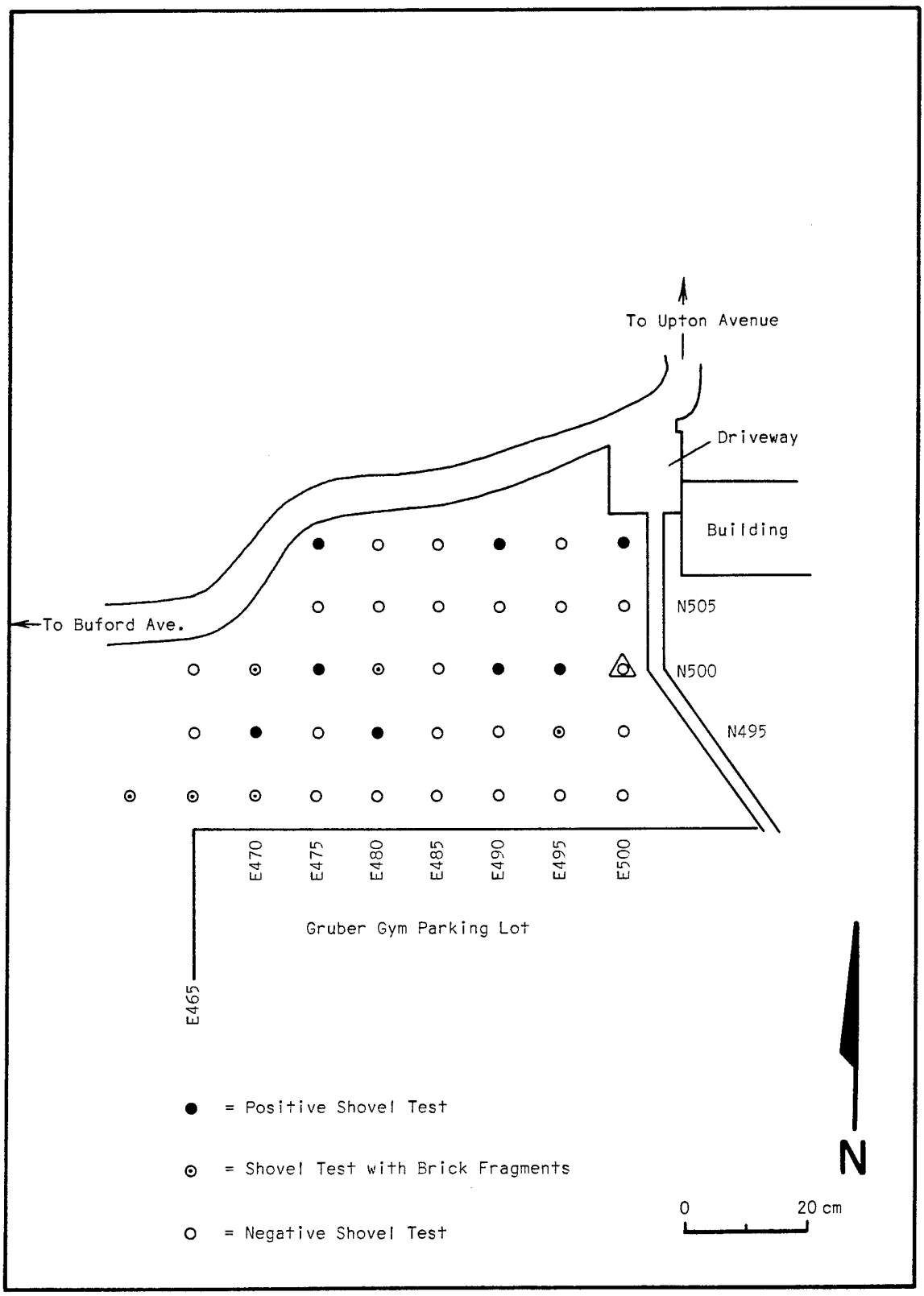


Figure 47. Project Area 7 site map.

Summary: The very small amount of structural debris (i.e., window glass, nails, and brick) recovered from the shovel tests is interpreted as representing materials associated with the maintenance or repair of existing structures. The remaining artifacts are interpreted as representing casually discarded or lost artifacts associated with the utilization of existing structures located adjacent to the project area. The light nature of the artifact scatter within project area 7 suggests that no structure was ever located in this section of Ft. Leavenworth. Recommendations regarding project area 7 are presented in the final chapter of this report.

CHAPTER VI. RESULTS OF INVESTIGATIONS FINCHER SITE (14LV358)

Tracey Sandefur, Frances R. Knight, and Mark J. Wagner

Introduction

The Fincher site (14LV358), a nineteenth century enlisted men's dump/discard site, initially was located by Barr and Rowlinson (1977) who observed brick, mortar, stone, and iron on the site surface. In May, 1988, American Resources Group, Ltd., conducted test excavations in the three spatially discrete dump/discard areas (14LV358-881, -882, and -883) that comprise the Fincher site. These investigations determined the site contained early to late nineteenth century midden deposits associated with early Fort Leavenworth (Wagner et al. 1989).

The project Scope of Work (Appendix A) defined three goals for the 1992 investigations: (1) to recover information on subsurface cultural artifact density; (2) to determine if any areas of the site could reasonably be considered non-significant due to lack of materials and/or prior destruction by intrusive activities; (3) to determine appropriate mitigation strategies if the site should be returned to horse pasture.

In addition, the following instructions were received from the Contracting Officer's Representative--Mr. Berkely Bailey--during field meetings at Fort Leavenworth: (1) that the horizontal limits of site 14LV358-881 be determined; (2) that site 14LV358-882 be relocated through shovel testing and that the spatial boundaries be defined.

Field Investigations

Site 14LV358-881

Introduction. Field investigations at site 14LV358-881 were carried out from November 9-14, 1992 (Figure 48). The site surface was covered with tall grass and weeds with 0% ground surface visibility.

Efforts to locate the 1988 datum were unsuccessful. A new datum was established at grid point N500E500. An initial east-west baseline that extended from N500E195 to

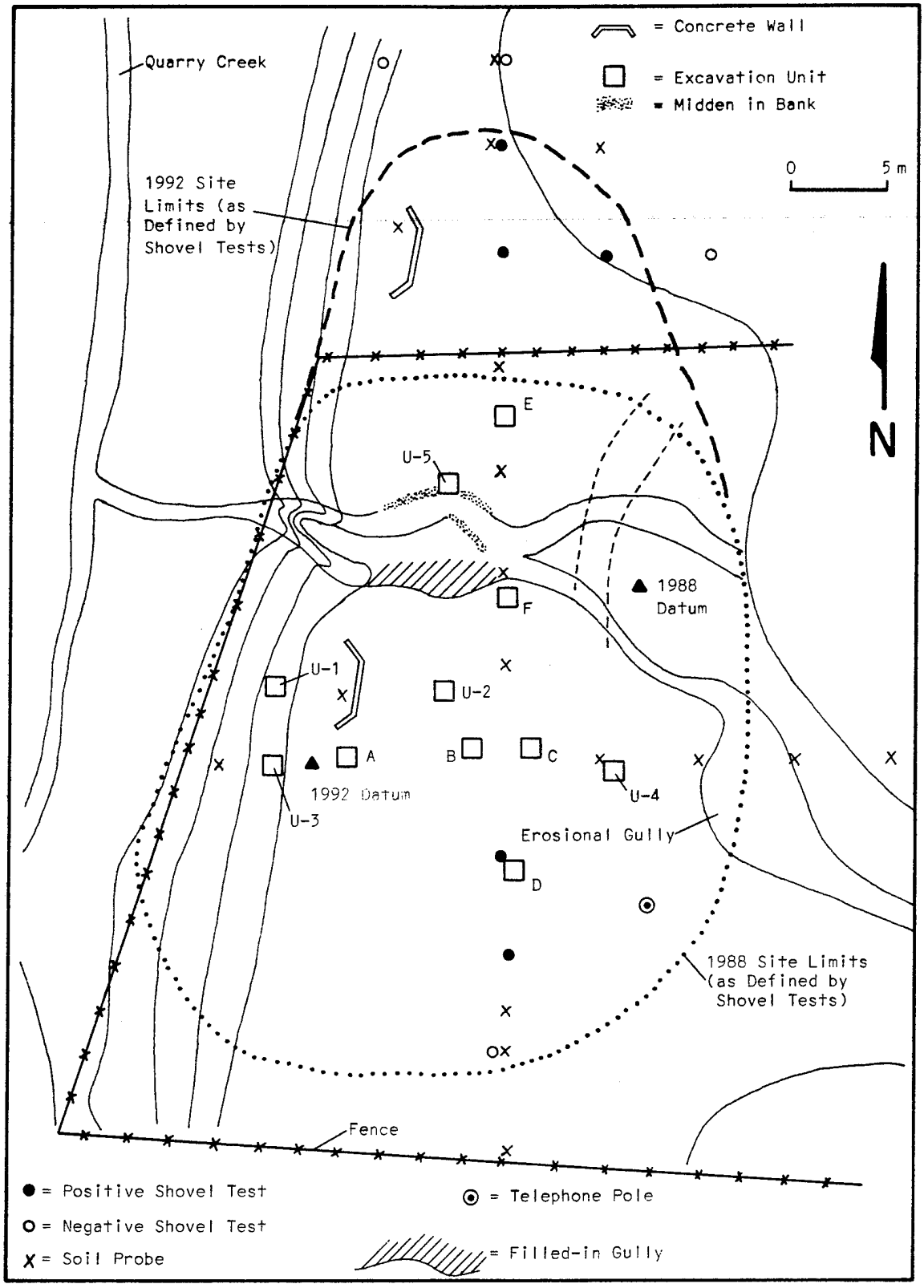


Figure 48. Location of investigations, site 14LV358-881.

N500E530 was laid in from this point using a theodolite. Using N500E510 as a secondary datum, a north-south baseline was established perpendicular to both sides of the east-west baseline, creating a cross pattern. The north-south baseline extended from N480E510 to N520E510. Grid points were then established on both baselines at 5 m intervals. This was achieved by using 50 m tapes held between two major grid points. The tape was tautly stretched with crew members placing a pin flag at each 5 m interval between the two grid points.

The locations of the two concrete "winged" walls also were recorded. These two features also had been mapped during the 1988 investigations, making it possible to determine the location of the 1988 units in relation to the 1992 grid and units (Figure 48).

Definition of Site Limits. Shovel tests and soil probes excavated in a cross pattern at 5 m intervals revealed that the 1988 investigations incorrectly defined the northern site boundaries. The dark brown midden characteristic of site 14LV358 was encountered in shovel tests and soil probes for a distance of approximately 10 m north beyond the archaeological site boundary fence (Figure 48). The remainder of the site limits were found to be correct. As currently defined, site 14LV358-881 measures approximately 45 m north-south by 30 m east-west (Figure 48). In addition, a buried gravel lens covered by slope wash was encountered along the north-south (N510) baseline. The lens originated at 3-25 cm bs. This gravel layer also was encountered during the 1988 investigations at the Fincher site, at which time it was interpreted as representing the remains of a gravel access road leading to the two concrete walls (Wagner et al. 1989).

Excavation Units. Six excavation units were placed in a cross pattern to further provide information about the depth, types, and distribution of cultural deposits present across the site. Units A, B, and C were placed along the east-west baseline and units D, E, and F were placed along the north-south baseline.

Unit A (N500E500) was the westernmost unit. Six soil strata were defined: (1) a layer of 10YR4/3 brown silty clay slope wash that contained a small amount of nineteenth century materials, 0 to 6 cm bs; (2) a 26-28 cm thick 10YR2/1 homogenous black silty clay nineteenth century midden zone with the heaviest amount of artifacts recovered from the unit. Artifacts recovered included whiteware, yellowware, ironstone, bottle glass (including a pontil marked base), machine-cut nails and plate glass, two doll parts, an undecorated stoneware pipe stem, faunal material and 2 glass seed beads; (3) a 16-18 cm thick 10YR2/1 black mottled with a 10YR4/3 brown silty clay midden zone which contained a heavy amount of material similar to zone 2 with the addition of a bone tooth brush handle, a kaoline pipe bowl stem and a brass dragoon button; (4) a 2 cm thick 7.5YR2/0 black cinder lens contained only within the north half of the unit. Evidence of in situ burning in the form of burned red soil was not present, suggesting the burning probably occurred elsewhere with the cinders then discarded at site 14LV358-881; (5) a 6-12 cm thick 10YR4/3 silty clay midden zone with a considerable decrease in the amount of artifacts recovered compared to layers 3 and 4; and (6) a culturally sterile 10YR3/3 dark brown clay (64-73+ cm bs)

interpreted as representing a culturally sterile zone beneath the base of the midden (Figure 49).

In contrast to unit A, unit B (N500E508) did not contain the charcoal lens and had only four soil strata (Figure 50): (1) a 10YR5/2 grayish brown (0 to 14-16 cm bs) silt interpreted as slope wash. Very few artifacts were recovered from this layer; (2) a 22-26 cm thick 10YR3/2 dark grayish brown silty clay midden zone with mid-nineteenth century artifacts. Kitchen items including ceramics and bottle glass were recovered as well as architectural items including machine-cut nails, limestone, and brick. Military items included an infantry button and a conical bullet; (3) a 18-22 cm thick 10YR3/2 dark grayish brown silty clay mottled with 10YR4/4 dark yellowish brown silty clay midden with charcoal and a redeposited brick concentration. Artifactual material in this level included limestone and nails; personal items (4 pipe fragments); kitchen related items; military items consisting of a General Service button, an Infantry button, accouterments, and bullets; and transportation related artifacts; and (4) a culturally sterile 10YR4/3 brown to dark brown clayey silt subsoil (58-72+ cm bs).

Unit C (N500E511) was located only 4 m east of unit B and contained the least amount of material (Figure 51). Unlike unit B, however, unit C contained a total of six soil strata with a limestone gravel layer. The strata included: (1) a 10YR3/3 dark brown silty clay layer (1 to 10-23 cm bs) interpreted as slope wash. Only a very small amount of artifacts were recovered including glass and limestone; (2) a limestone layer 5-19 cm thick which may represent a gravel access road to the site. This limestone layer was also present in units D, E, and F, all of which were placed on the same north-south line (E510). A similar layer was also found in units 4 and 5 which were previously excavated by Wagner et al. (1989); (3) a 4-9 cm thick 10YR3/3 dark brown redeposited silty clay that contained a small amount of nineteenth century glass and ceramics, a porcelain pipe bowl fragment with gilt decoration, nails, brick and limestone; (4) a 11-15 cm thick 10YR3/2 very dark grayish brown midden zone. Artifacts recovered included a whole glass bottle dating between 1858-1895 as well as other mid to late nineteenth century bottle fragments, ceramics, nails and military clothing and accessory items; (5) a 6-15 cm thick 10YR3/3 dark brown midden zone that contained similar material to layer 4; and (6) a culturally sterile subsoil (60-70+ cm bs).

Unit D (N494E510) was the southernmost unit with soil strata similar to unit C (Figure 52). Five soil strata were defined in this unit: (1) a thin 10YR3/3 dark brown silty clay slope wash only 2 cm thick; (2) a limestone layer roadbed 6-14 cm thick similar to that identified in unit C; (3) a 13-20 cm thick 10YR3/2 very dark grayish brown midden zone. Cultural remains from within this early to mid-nineteenth century midden zone were considerably high and consisted of kitchen related items such as glass which included 8 whole bottles (seven of which had pontil marks on their bases), whiteware which included shell edge, sponge/scatter, annular transfer printed and hand painted decorated, as well as yellowware, porcelain and stoneware and finally kitchen utensils; architectural items consisted of nails, bricks, limestone and plate glass; personal items were represented by two pipe fragments; military items consisted of a General Service button and numerous .22

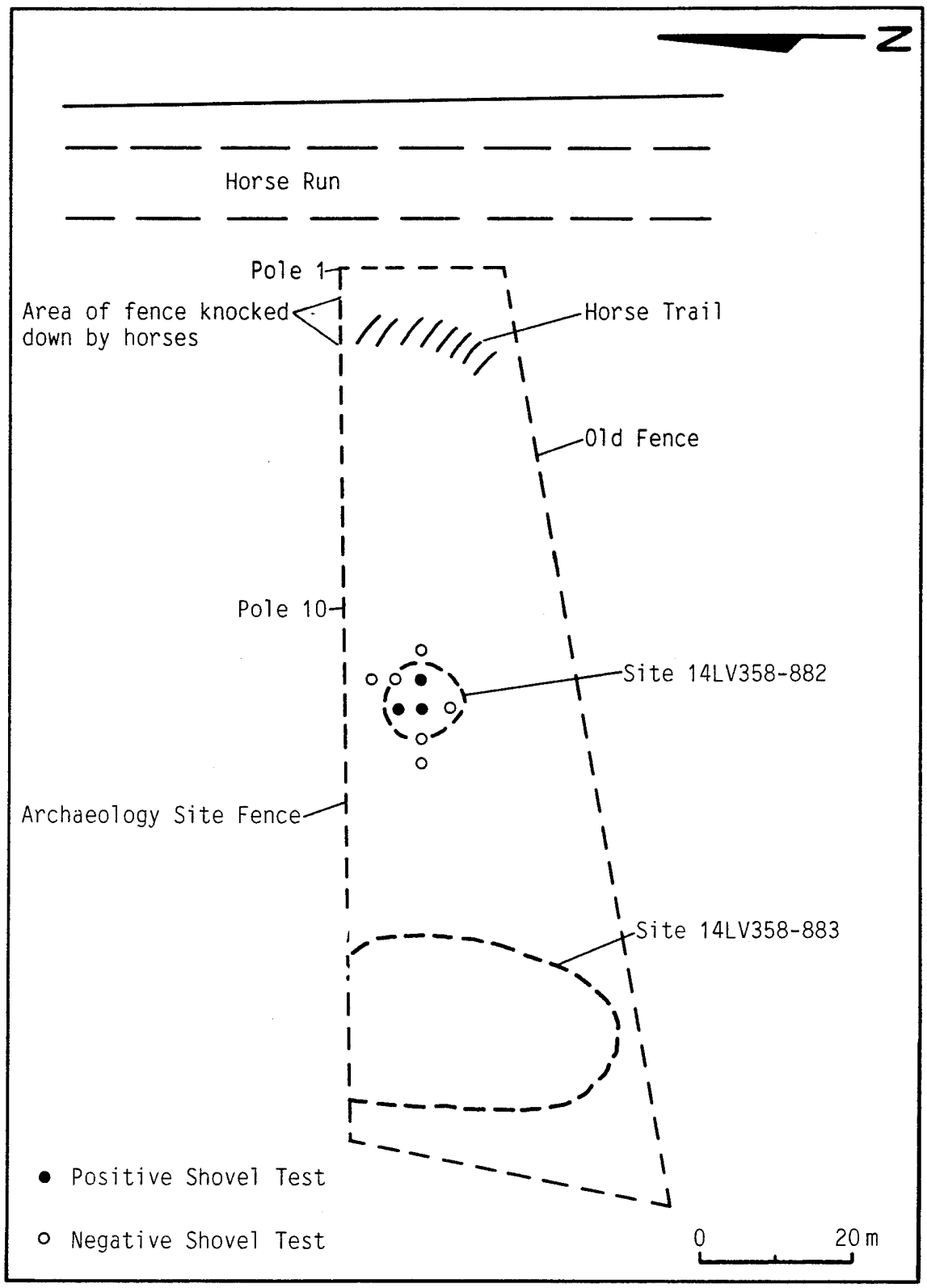
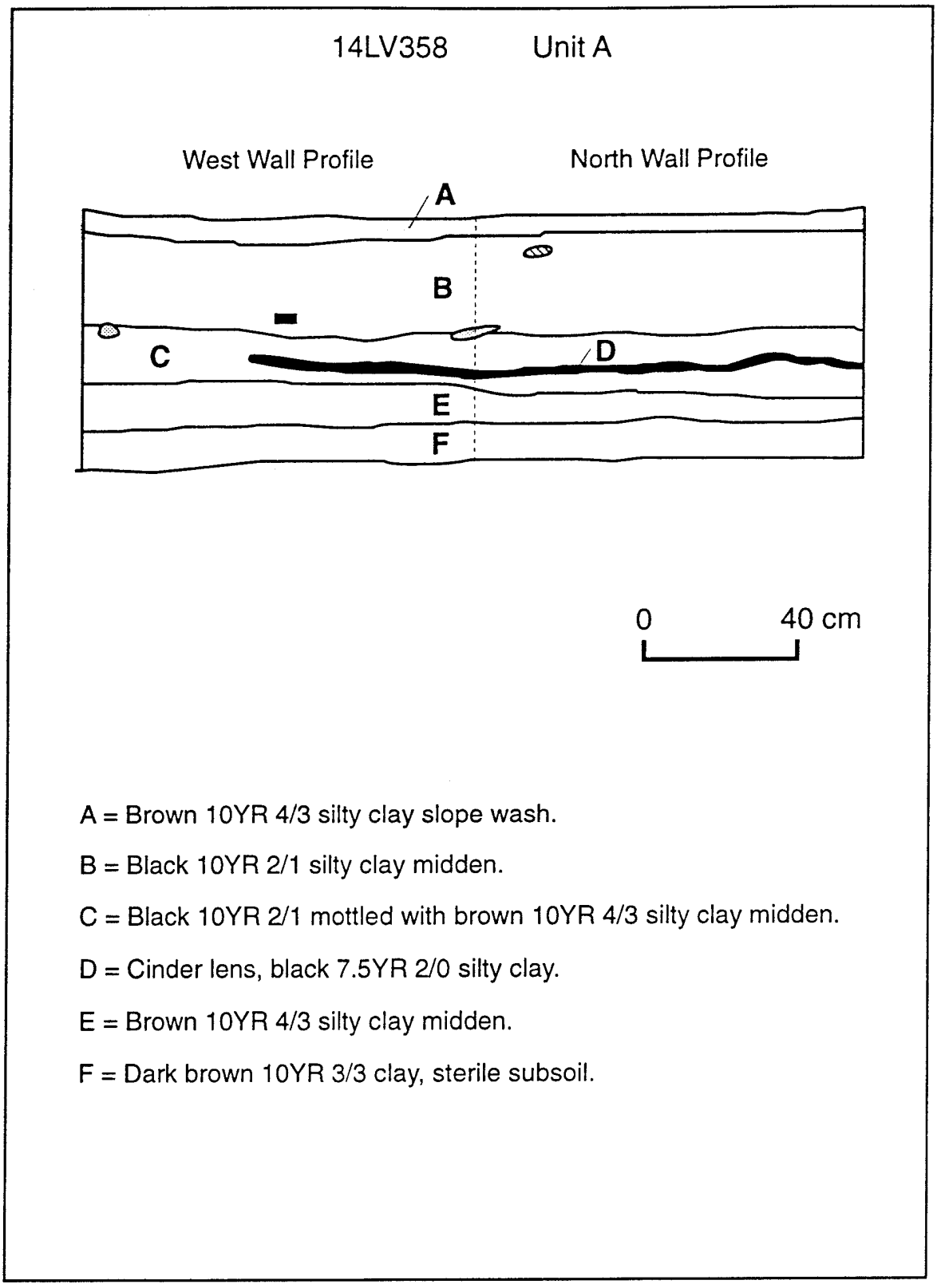


Figure 49. Location of investigations, site 14LV358-882.



A = Brown 10YR 4/3 silty clay slope wash.

B = Black 10YR 2/1 silty clay midden.

C = Black 10YR 2/1 mottled with brown 10YR 4/3 silty clay midden.

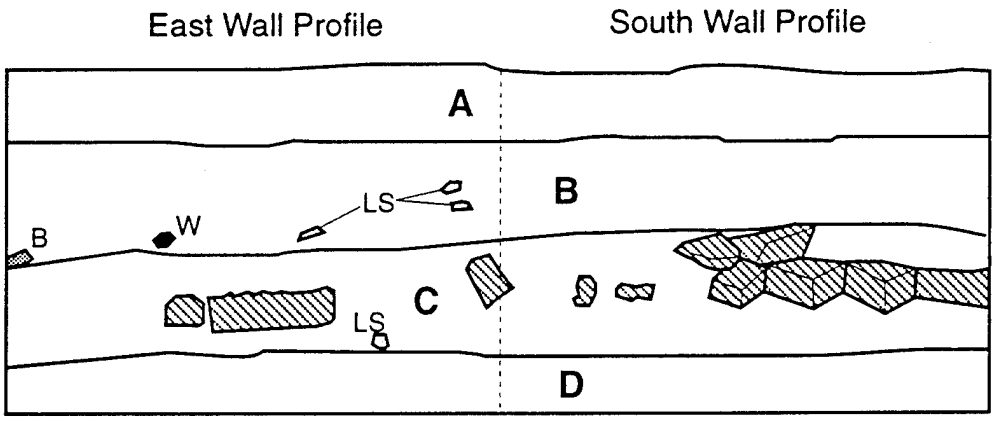
D = Cinder lens, black 7.5YR 2/0 silty clay.

E = Brown 10YR 4/3 silty clay midden.

F = Dark brown 10YR 3/3 clay, sterile subsoil.

Figure 50. North and west profiles, Unit A, site 14LV358.

14LV358 Unit B



A = Grayish brown 10YR 5/2 silt slope wash.

B = Dark grayish brown 10YR 3/2 silty clay midden.

C = B mottled with dark yellowish brown silty clay midden with charcoal and brick.

D = Brown to dark brown 10YR 4/3 clayey silt subsoil.

B Bone

W Wood

LS Limestone

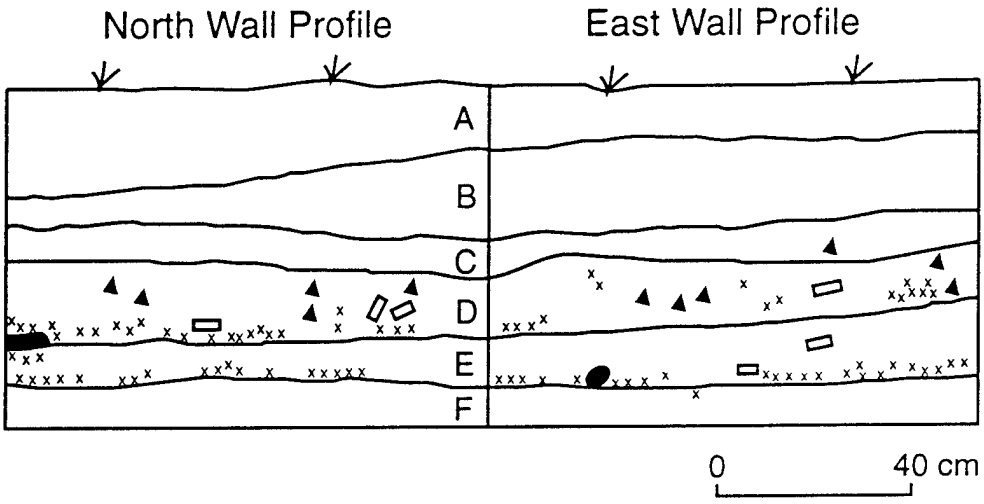
Brick

0 40 cm

Figure 51. East and south wall profiles, Unit B, site 14LV358.

Site 14LV358

UNIT C



A - Dark brown 10YR 3/3 silty clay slope wash

B - Limestone layer

C - Dark brown 10YR 3/3 redeposited silty clay

D - Very dark grayish brown 10YR 3/2 midden

E - Dark brown 10YR 3/3 midden

F - Brown 10YR 5/3 sterile clay subsoil

Bone

Brick Fragment

Charcoal

Limestone

Metal

Figure 52. North and east wall profiles, Unit C, 14LV358.

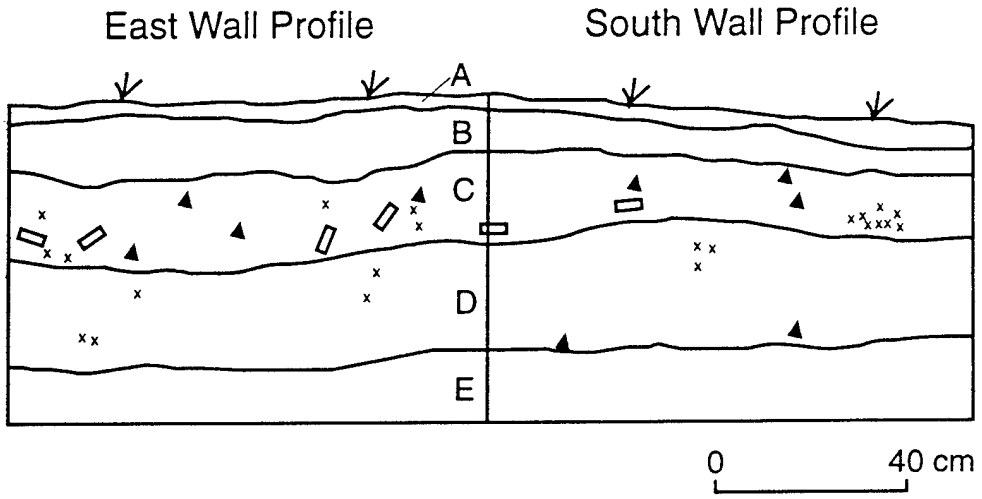
caliber bullet casings; finally, charcoal and other cultural material were also recovered; (4) a 20-27 cm thick 10YR3/3 dark brown midden zone. Cultural remains recovered from this midden included a lesser amount of ceramics, glass with the addition of a possible poker chip made from bone and other material. Brick charcoal and faunal remains were also recovered, but in considerably less amounts than the midden layer above; and (5) a culturally sterile subsoil (43-66+ cm bs).

Unit E (N517E510) was the northernmost unit at site 14LV358-881. This unit exhibited the most complex stratigraphy by any unit at the site with nine horizons defined. All depth estimates and discussion of strata are based on the north wall profile of the unit (Figure 53). The nine soil strata are as follows: (1) a 13-15 cm thick 7.4YR3/2 dark brown silt slope wash that contained a small amount of kitchen related items such as ceramics, bottle glass and faunal material; architectural plate glass, limestone, and brick fragments; (2) a 11-13 cm thick 10YR3/2 very dark grayish brown sandy silt slope wash. The amount of material collected from this layer was similar to the layer above with the addition of a brass scales epaulet fragment; (3) a 10-14 cm thick limestone gravel layer (road) mixed with a 10YR4/3 brown to 10YR5/3 light brown silty clay. Only limestone was collected from this zone; (4) a 3-8 cm thick 10YR4/3 medium brown clayey silt slope wash that was void of material; (5) an 8-11 cm thick 10YR3/1 very dark gray silt mottled with a 10YR2/1 dark grayish brown silt. A small amount of whiteware, glass, limestone and a shotgun shell were recovered from this layer; (6) a 5-8 cm thick 10YR3/1 very dark gray clayey silt that contained mid-nineteenth century artifacts. Kitchen related items included whiteware, ironstone, yellowware (Ferromang decorated), porcelain and stoneware ceramics; bottle glass; and faunal material (including a mussel shell); architectural items consisted of machine-cut nails, plate glass, brick and limestone; and military items consisted of a Sanders style brass button; (7) a 14-17 cm thick 7.5YR black loose clayey silt that contained the highest amount of artifacts in the unit. Artifacts recovered from this zone were similar to those of the above layer but were twice as frequent. In addition, three pipe fragments and a brass General Service button were also collected; (8) a 3-8 cm thick 10YR4/2 dark grayish brown clayey silt that contained only one whiteware and one ironstone sherd, a small amount of kitchen glass, nails and plate glass. Faunal material, however, remained significantly high in this layer; and (9) a culturally sterile 2.5YR dark grayish brown fine sandy silt subsoil (10-18+ cm thick). Coring of the base of the unit floor revealed that the sandy silt subsoil extended for at least another 50 cm.

Unit F (N508E510) was located between units B, C, and E. This unit contained eight soil strata (Figure 54): (1) a slope wash that consisted of a 23-28 cm thick 10YR3/2 very dark grayish brown silt mottled with a 10YR4/3 medium brown silt; (2) a second slope wash zone that consisted of a 5-12 cm thick 10YR4/4 dark yellowish brown clayey silt. Both of these layers contained very few artifacts; (3) a 16 cm thick limestone layer mixed with a 10YR3/1 very dark gray silt. This limestone layer was slightly different than the layers found in units C, D, and E. Little to no artifacts were found in the other units' limestone layers. The limestone layer in unit F, however, contained heavy amounts of brick and mortar fragments. A relatively moderate amount of kitchen items and architectural items were

Site 14LV358

UNIT D



A - Dark brown 10YR 3/3 silty clay slope wash

B - Limestone layer

C - Very dark grayish brown 10YR 3/2

D - Dark brown 10YR 3/3 midden

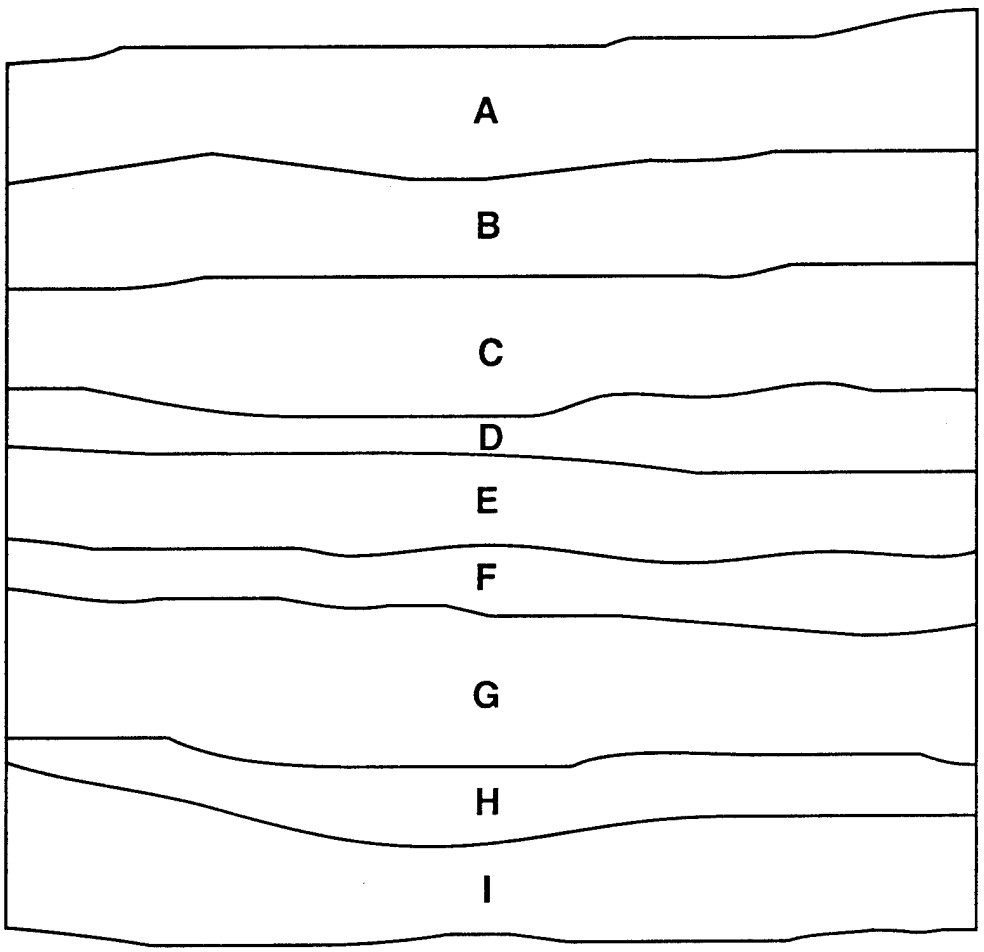
E - Grayish brown 10YR 5/2 sterile clay

Bone

Brick Fragment

Charcoal

Figure 53. East and south wall profiles, Unit D, site 14LV358.



A = Dark brown 7.5YR 3/2 silt slope wash.

B = Very dark grayish brown 10YR 3/2 slope wash.

C = Limestone gravel road/parking lot mixed with brown to light brown 10YR 4/3 to 10YR 5/3 silty clay.

D = Medium brown 10YR 4/3 clayey silt.

E = Very dark gray 10YR 3/1silt mottled with dark grayish brown 10YR 2/1 silt.

F = Very dark gray 10YR 3/1 clayey silt.

G = Black 7.5YR loose clayey silt with high artifact frequency.

H = Dark grayish brown 10YR 4/2 clayey silt with light artifact frequency

I = Dark grayish brown 2.5YR fine sandy silt subsoil.

Figure 54. North wall profile, Unit E, site 14LV358.

recovered from this layer along with an iron key and three buttons; (4) a 10YR2/1 black charcoal lens. Similar to unit A, the charcoal was probably redeposited in the unit as evidenced by a lack of burned soil surrounding the charcoal; (5) a 7-14 cm thick 10YR3/2 very dark grayish brown clayey silt that contained the highest frequency of cultural material of any level in the unit. These included annular and transfer print decorated whiteware and salt glazed stoneware ceramics; a two-piece molded bottle with a pontil marked base as well as a high amount of wine bottle fragments; faunal material; metal utensils; architectural items including machine-cut nails, plate glass, and brick fragments; personal items consisting of a kaolin pipe bowl and three buttons; and a metal key; (6) a 2-14 cm thick 10YR4/3 medium brown silt mottled with a 10YR3/2 very dark grayish brown silt that contained a considerable drop in cultural material from the level above. The recovered artifacts, however, included a bone toothbrush handle and a gilt artillery (Sanders) button were recovered from this layer; (7) an 8-12 cm thick 10YR5/2 grayish brown very fine sandy silt that was culturally sterile; and (8) a culturally sterile 10YR5/2 grayish brown very fine sandy silt subsoil with a small amount of clay and mineral staining.

Site 15LV358-882

Introduction. Field investigations at site 14LV358-882, located on the hillside east of site 14LV358-881, were conducted on November 11, 1992) (Figure 55). The 1988 investigations defined site 14LV358-882 as an approximate 20 m northwest-southeast by 10 m northeast-southwest midden area. Excavation of a single test unit within this area revealed that cultural deposits extended from the surface to approximately 23 cm bs (Wagner et al. 1989:217-219).

Definition of Site Limits. Ground surface visibility was 0% at the time of investigations. The datum (N500E500) for site 14LV358-881 was used in the test excavation of site 14LV358-882, similar to the 1988 test excavation (Wagner et al. 1989). The site boundaries were redefined by excavating a series of nine shovel tests at 5 m intervals in a cross pattern through the site area (Figure 55). Only three of nine shovel tests were positive. Material from the tests consisted of undecorated whiteware and glass fragments. The site limits were defined as measuring approximately 11 m north-south by 8 m east-west, slightly less than the 1988 investigations.

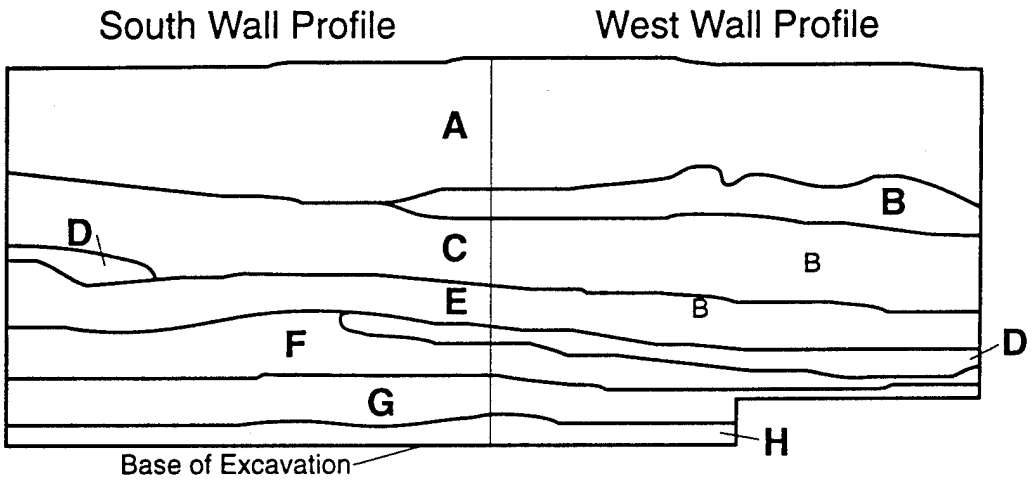
Artifact Analysis

14LV358-881

The six test units at the Fincher site yielded 5428 artifacts from screened and floated sediment (Appendix E, Table 8).

Kitchen (n=2061).

14LV358 Unit F



A Very dark grayish brown 10YR 3/2 silt mottled with medium brown 10YR 4/3 silt slope wash.

B Dark yellowish brown 10YR 4/4 clayey silt slope wash.

C Limestone lens with brick and mortar, mixed with very dark gray 10YR 3/1 silt.

D Black 10YR 2/1 charcoal lens.

E Very dark grayish brown 10YR 3/2 clayey silt.

F Medium brown 10YR 4/3 silt mottled with very dark grayish brown 10YR 3/2 silt.

G Grayish brown 10YR 5/2 sterile fine sandy silt subsoil.

H Grayish brown 10YR 5/2 sterile fine sandy silt with some clay soil.

0 40 cm

B = Bone

Figure 55. South and west wall profiles, Unit F, site 14LV358.

Ceramics (n=606). Whiteware, ironstone, porcelain, yellowware, and stoneware comprise the kitchen ceramics.

Whiteware (n=368). The majority of ceramics (60 percent) collected at 14LV358-881 is whiteware. A narrow range of vessel types was identified; these are restricted to plates/platters, bowls (serving and individual), cups, saucers, handles, and possibly a covered sugar bowl. Additional vessel types may be represented in the unidentified flatware, hollowware, and vessel forms. Most of the whiteware is undecorated. Only 70 specimens are decorated; transfer printed, embossed, and annular decorations are most common. Shell edged, hand painted, and sponge decorated pieces also occur. The shell edged, hand painted, sponge, and transfer decorated pieces are mid nineteenth century vintage. These decorations occur on plates/platters, teaware cups and saucers, and serving bowls. The undecorated and embossed pieces (Figure 56a,c) date to the later nineteenth century (Wagner et al. 1989:222). These vessels generally are thicker-walled than the decorated pieces. Identifiable vessel types that are undecorated or embossed are plates/platters, cups, saucers, individual bowls, handles, and the covered bowl.

Only four whiteware specimens are marked; all are undecorated plates/platters. All the marks are a variation of the lion and unicorn motif (the royal arms), however, the manufacturers' names are either too fragmentary for identification or are missing.

Ironstone (n=40). All but one piece of ironstone are undecorated; this single piece is embossed. As with the undecorated and embossed whiteware, vessels generally are thick walled. Vessel types also parallel the whiteware types; plate/platter, cup, and individual bowl forms occur, as do unidentified hollowware and vessel forms. Individual ironstone bowls (Figure 56b), possibly military issue, resemble St. Dennis bowls from Fort Bowie. At that location, one bowl bore the printed stamp of the Quartermaster's Department (Herskovitz 1978:97, 99).

Mean Ceramic Date. Mean ceramic dates were obtained for each unit at 14LV358-881, as well as an overall mean ceramic date for the site (Table 4). Following the 1989 procedure, only whiteware and ironstone were used in obtaining the date. Unit dates vary between 1871.57 (unit D) and 1882.8 (unit E), with an overall mean ceramic date of 1875.78. This compares favorably with the previously reported date of 1871.86 for the site (Wagner et al. 1989:226).

Porcelain (n=36). In contrast to the 1988 field season, all the porcelain sherds reported here are undecorated. Plate/platter, cup, handle, and cover forms are represented, as are unidentified flatware, hollowware, and vessel forms. The porcelain sherds generally were thin walled, also in contrast to the 1988 season when generally thick-walled porcelain was recovered.

Table 4. Mean Ceramic and Bottle Dates, 1993 Season, 14LV358-881.		
	Mean Ceramic Date	**Mean Bottle Date**
Unit A	1877.75	1866.67
Unit B	1874.41	1883.12
Unit C	1876.06	1869.75
Unit D	1871.57	1867.48
Unit E	1882.8	1869.29
Unit F	1876.54	1869.7
Overall 1993	1875.78	1871.11
Overall 1988	1871.86	1874.19

Yellowware (n=107). Clear-glazed undecorated yellowware and that glazed with a ferromanganiferous (mottled brown) slip was recognized in the assemblage. This pattern parallels that observed in 1988. Yellowware generally was used in food preparation and service. Bowl and plate forms were identified; bowl sherds comprise 64 percent of the yellowware while only a single rim sherd identifiable as a plate was recognized. Unidentified hollowware and vessel forms also are present and may represent additional vessel types.

Stoneware (n=55). Only two vessel forms, crock and bottle, were recognized among the stoneware vessels; unidentified hollowware and vessel forms also are present. Contrary to the 1988 season, when the majority of stoneware sherds were bottles, only 16 percent of the 1992 stoneware sherds are from bottles. Both wheel-thrown and machine-made vessels are present in the stoneware assemblage; these are illustrated by the crocks in Figures 57a,b. All non-bottle stoneware sherds are coated with some combination of salt and slip glazes, or may be unglazed on one surface. As with the 1988 stoneware assemblage, non-bottle forms lack a Bristol glaze, indicating a pre-1880 manufacturing and probably discard date for these artifacts. Bottles exhibit a characteristic grayish-white body; they are coated on the interior and exterior with a Bristol glaze. Of the stoneware bottle sherds one is a neck and lip (Figure 58h), the remainder are body or neck fragments. The neck/lip and neck fragments exhibit a dark yellow to gold glaze on their exteriors; on the neck/lip this extended to the interior of the finish. Stoneware bottles might contain one of a variety of refreshing beverages such as ginger beer, beer, ale, or mineral water.

Figure 56. Refined earthenware ceramics, site 14LV358-881.

A. Embossed, scalloped whiteware, plate/platter, unit A, level 2

B. Undecorated ironstone bowl, unit E, level 7

C. Shell edge, embossed plate/platter, unit D, level 1

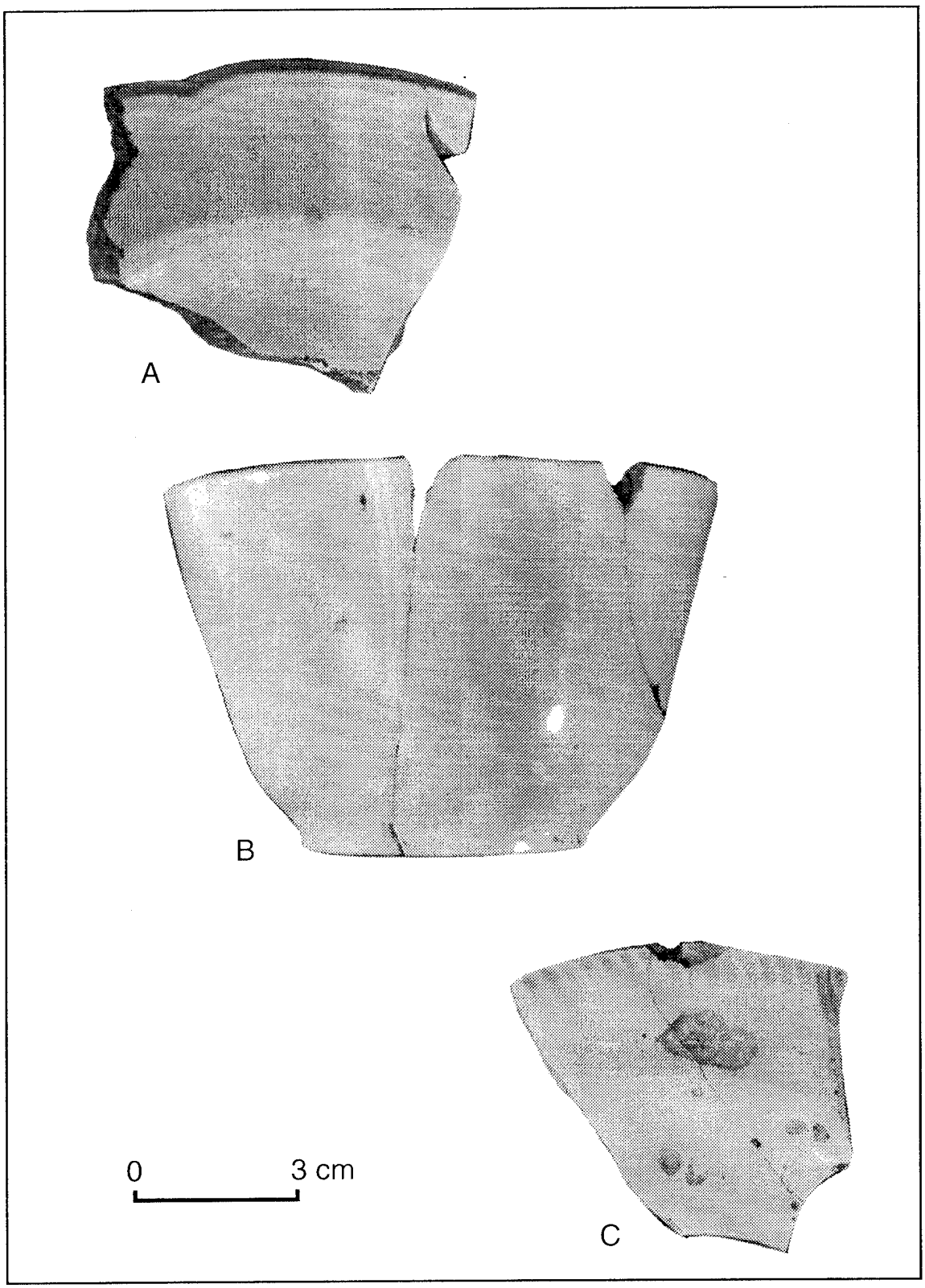


Figure 56. Refined earthenware ceramics, 14LV358-881.

Figure 57. Stoneware crock rims, site 14LV358-881.

A. Jolly/jiggered, salt glazed exterior and slipped interior, unit D, level 1

B. Wheel thrown, salt glazed exterior with handle and slipped interior unit F, levels 3 and 4

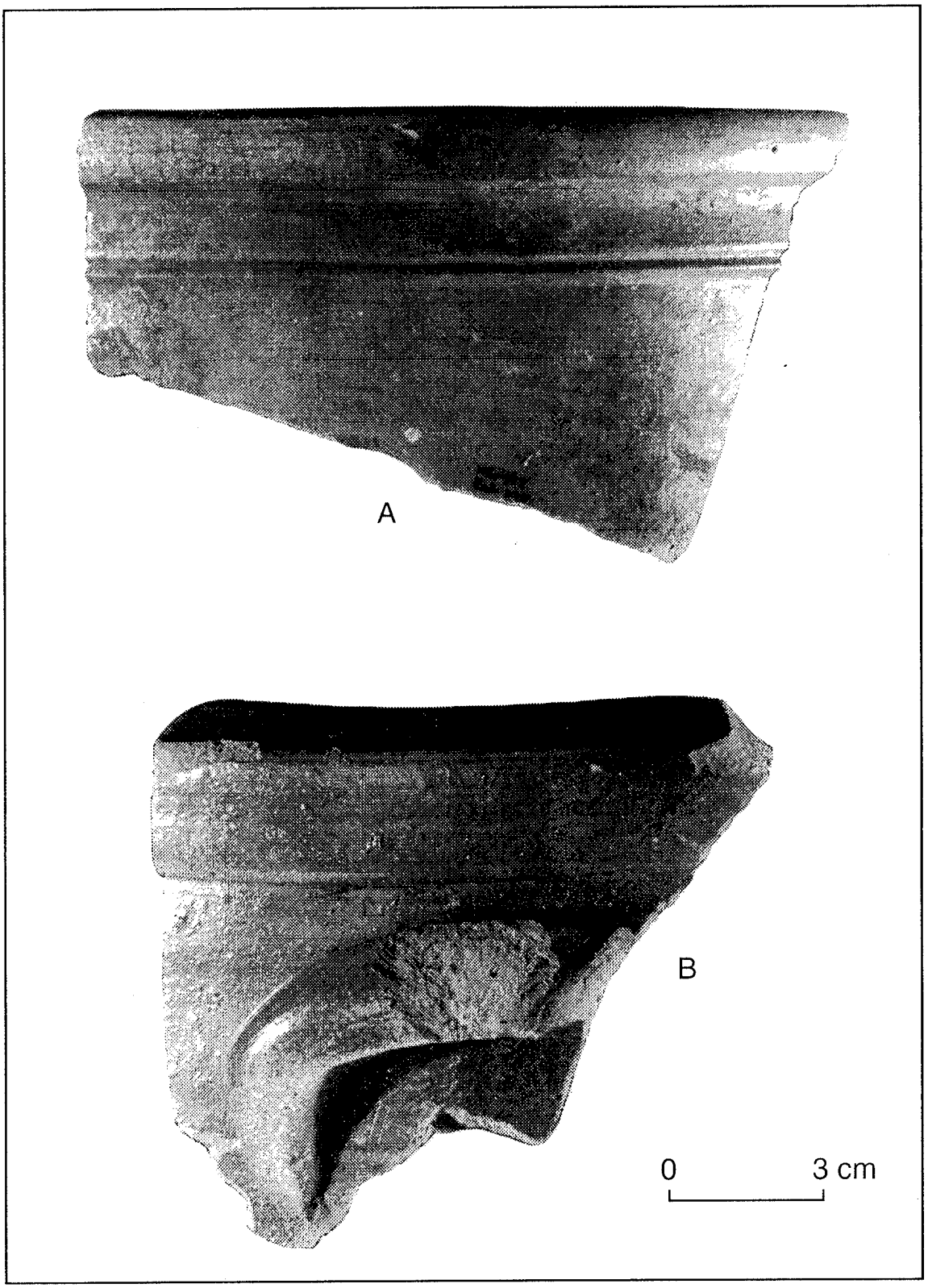


Figure 57. Stoneware crock rims, site 14LV358-881.

Figure 58. Glass container finishes, site 14LV358-881.

A. Green wide mouth, foodstuff bottle, applied tooled finish, unit C, level 5

B. Aqua unidentified bottle, applied tooled finish, unit D, level 1

C. Brown beer/ale bottle, improved tooled finish, unit D, level 1

D. Green collared wine bottle unit B, level 3

E. Aqua wide mouth, foodstuff bottle with improved tooled finish, unit F, level 6

F. Aqua medicine bottle with applied tooled finish, unit B, level 3

G. Aqua unidentified bottle, applied tool finish, unit A, level 4

H. Stoneware bottle, Bristol interior and exterior, unit E, level 7

I. Aqua glass stopper embossed LEA & PERRINS, unit B, level 5

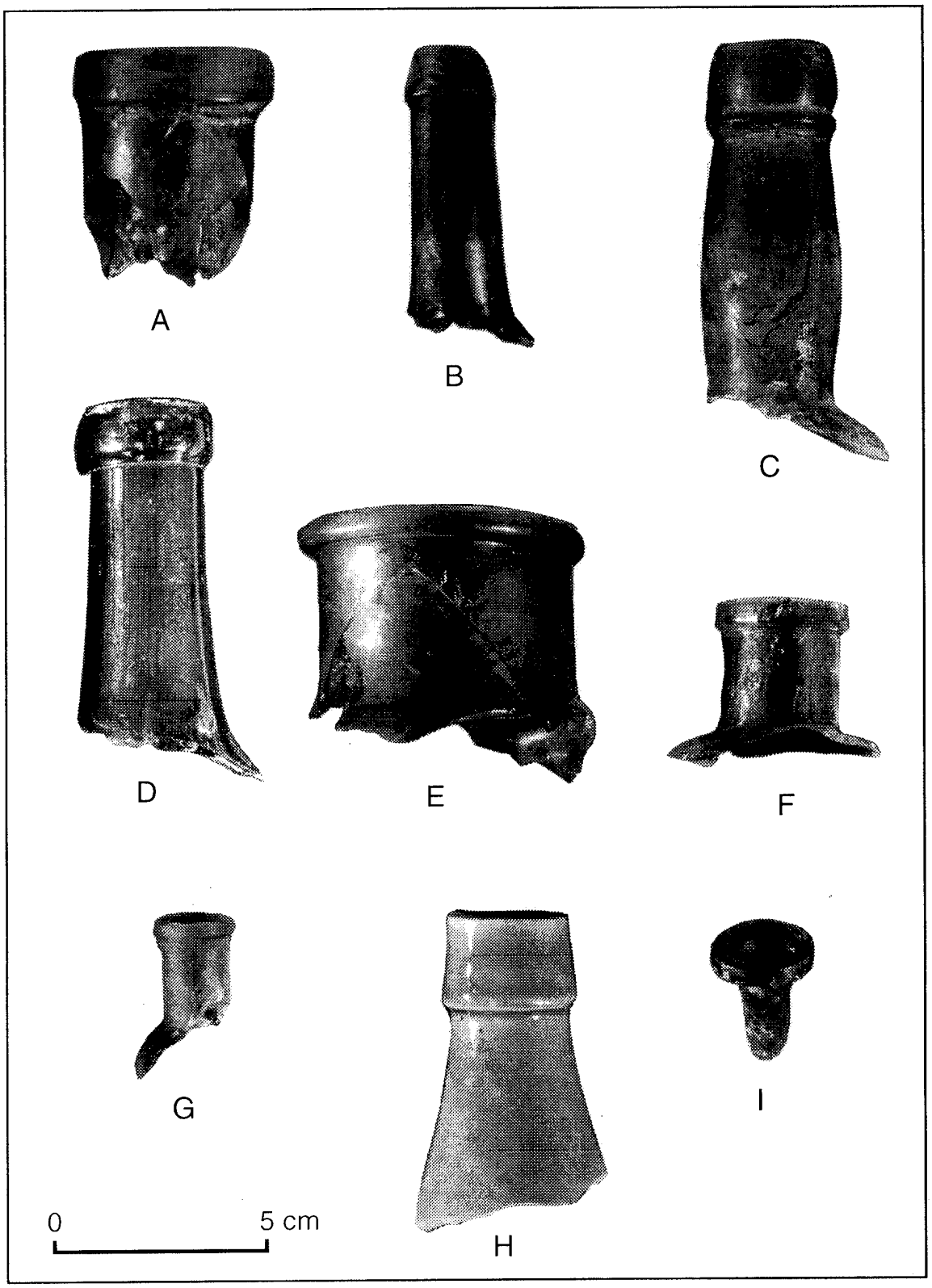


Figure 58. Glass container finishes, site 14LV358-881.

Glass (n=480). The kitchen glass may be divided into bottle and tableware forms. Bottle glass comprises the vast majority of the assemblage.

Bottles (n=469). This category is overwhelmingly composed of alcoholic beverage bottle sherds (n=435); foodstuff bottle sherds are in weak competition (n=34).

Alcoholic beverages are represented by wine, case, and beer/ale bottles and liquor flasks. Wine bottle sherds predominate (n=341) and are almost always the dark olive green variety. None of these are embossed. Bases generally manifest a high, inverted kick. Finishes are commonly applied tooled collars (Figure 58d) but include examples of applied tooled lips. Case bottle sherds (n=16) were identified as dark olive green flat panels. These frequently were embossed with letters but no embossing was complete enough to identify words. Beer and ale bottles (Figure 58c) are represented by 53 dark brown and occasionally amber sherds. Dark brown bottles were used for pasteurized beer after 1873. Twenty five liquor flask sherds consisting of 24 scroll flask sherds (Figure 59a) and one pictorial flask sherd (Figure 59b) were recognized. Both the aqua and olive green varieties of scroll flasks are present; the pictorial flask is a brownish olive green. Brandy frequently was bottled in these vessels, which were common between 1840 and ca. 1875 (Deiss 1981:65).

Five neck/lips from wide mouth bottles such as Gothic- or cathedral-style bottles were identified (Figure 58a,e), as were 26 sherds with embossed patterns suggesting they represent bottles such as these. Wide mouth bottles would have held foods such as pickles, honey, tamarinds, or brandied fruits (Switzer 1974). Two additional neck/lips are sauce bottles finished for glass stopper closures. One of these was recovered with the glass stopper, embossed with the Lea & Perrins logo (Figure 58i), in place.

Not surprisingly, bottle manufacturing techniques mirror those described for the 1988 glass artifact assemblage. Only one vessel, a wine bottle, is free blown; the only other technique identified is mold blown. All of the bottle finishes and the glass stopper are hand done; none are machine made. In general, this indicates the bottles predate the introduction of the automatic bottle making machine in 1903.

Basal sherds manifest several manufacturing techniques, some useful for dating. Two- and three-piece molds and the turn mold process were used to produce these bottles. Two-piece molded items generally are slightly earlier in time than three-piece molded items. The two-piece molded specimens are liquor flasks and generally manifest a blowpipe or improved pontil scar. These were phased out at slightly different dates, however, empontilling in general was discontinued by 1875. The three-piece molded specimens lack pontil scars, indicating they were finished with the aid of a snap case, in common use by 1860 but discontinued after the introduction of the automatic bottle making machine. The turn mold process is represented by many of the wine bottles; this technique was used between 1875 and ca. 1905 (Lorrain 1968) to produce seamless bottles.

Kitchen bottle finishes predominantly are tooled; both applied and improved tooled examples are present. Applied tooled finishes precede the improved tooled variety in time and consist mostly of strings or collars placed at or near the neck opening and then smoothed and shaped. The improved tooled technique was introduced in the early 1870s (Deiss 1981:59). Only one example of the manipulation of the existing glass was identified among the kitchen glass. This occurred on a liquor flask and consisted of minimal fire polishing of the cracked-off edge of the neck to produce a semi-smooth finish.

Tableware (n=11). Tableware glass sherds are mostly tumblers (n=8); one goblet and two stemmed vessel fragments complete the assemblage. Both fluted or otherwise patterned tumblers are present (Figure 60b) as are undecorated specimens. The goblet (Figure 60c) is fluted, with a faceted stem. One stemmed vessel is a bowl that is faceted below and molded in a faceted diamond pattern above (Figure 60a). The other stemmed vessel sherd is a base fragment.

Metal and Bone (n=41). Metal kitchen-related items consist of can parts (n=30), tableware utensils (n=8), spider (dutch oven) fragments (n=2), and an aluminum pop-top tab from slopewash overlying unit B. Most of the can parts are plain metal, however, two pieces, probably from the same item, are lid fragments with stamped brass labels. One (Figure 61e) is embossed "DIEU.." inscribed in a banner, "E..", and "MET ..". The other (Figure 61f) has a unicorn from a lion and unicorn motif plus the text "LONDON", "..ROI" inscribed in a banner below the unicorn, and "..D". Unfortunately, the mark was not identifiable. As discussed in Wagner et al. (1989), canned foods were prized as supplements to the daily, often unpalatable, military food. Utensils consist of an iron two-tined fork (Figure 61a), knife with a fragment of bone handle (Figure 61c), and tablespoon, and a silver plated tablespoon (Figure 61g). Additional utensils are undecorated and crosshatch-incised bone handles (Figure 61b) and an iron handle from an unspecified utensil. The illustrated bone handle encompasses the iron tang of a utensil, probably a fork or spoon. Finally, one cooking vessel, a single cast iron spider composed of the two identified pieces (Figure 61d), was recovered.

Faunal Remains (n=934). Bone, tooth, and shell faunal remains were collected from this site. They are discussed in Chapter VIII.

Botanical Remains. A small quantity of botanical remains were recovered from flotation samples from 14LV358. These are quantified and discussed in Chapter VII.

Household (n=867).

Ceramics (n=4). Ceramics considered household furnishings are two porcelain toiletry jars, one whiteware jar, and one porcelain unidentified hollowware sherd. One toiletry jar (Figure 62c) is a shallow oval and is embossed with a vine and bead motif above the base. It may have been a personal possession. The other is represented by a rim fragment with a shelf for a lid. The whiteware jar (Figure 62a) is undecorated, cylindrical,

Figure 59. Glass liquor flask bases, site 14LV358-881.

A. Olive green, embossed scroll flask, unit A, levels 4 and 5

B. Olive green pictorial flask, unit C, level 6

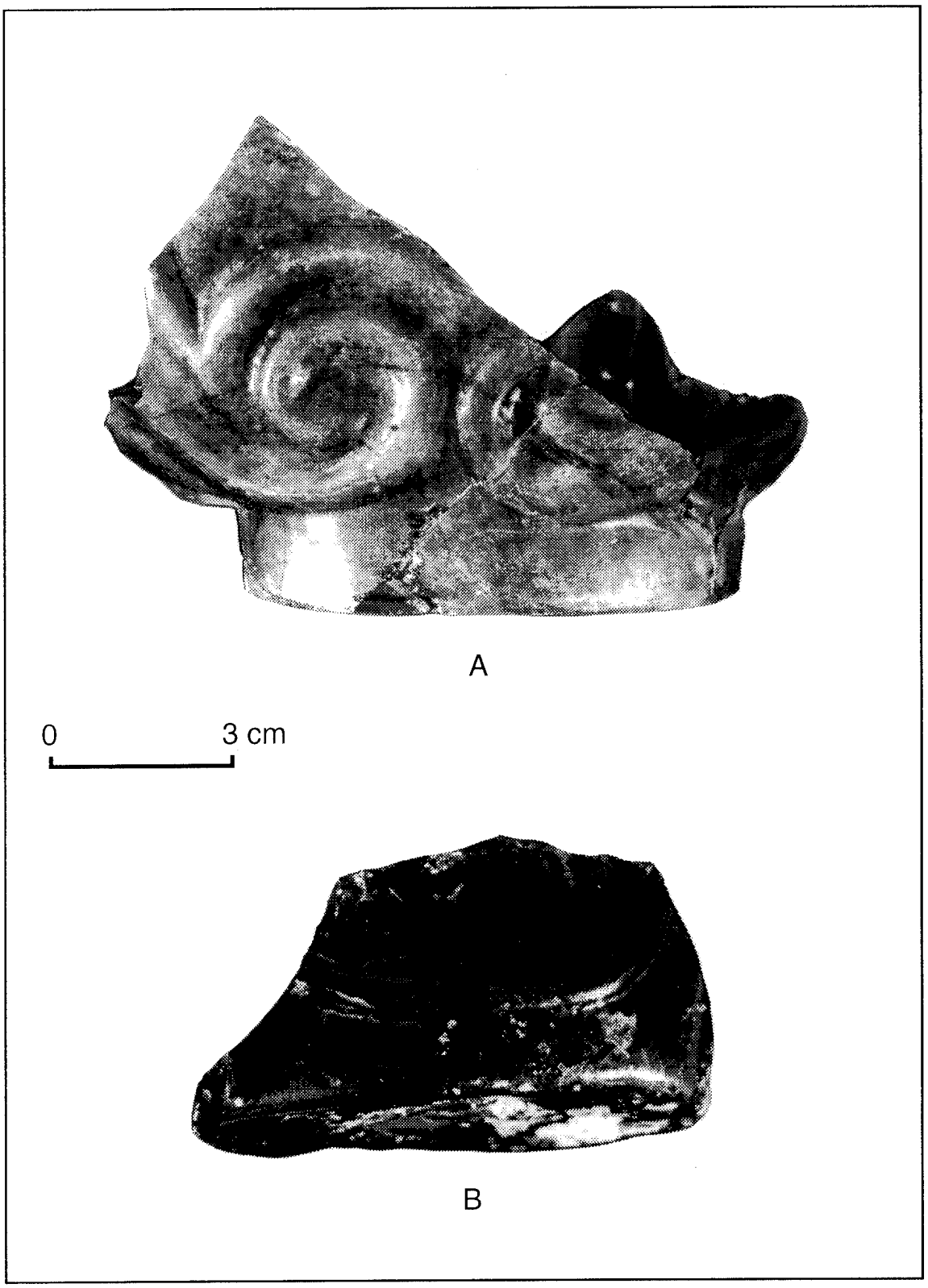


Figure 59. Glass liquor flask bases, site 14LV358-881.

Figure 60. Glass tableware, site 14LV358-881.

A. Clear molded stemmed vessel, unit A, level 4

B. Manganese fluted tumbler, unit D, level 1

C. Clear stemmed goblet, unit D, level 1

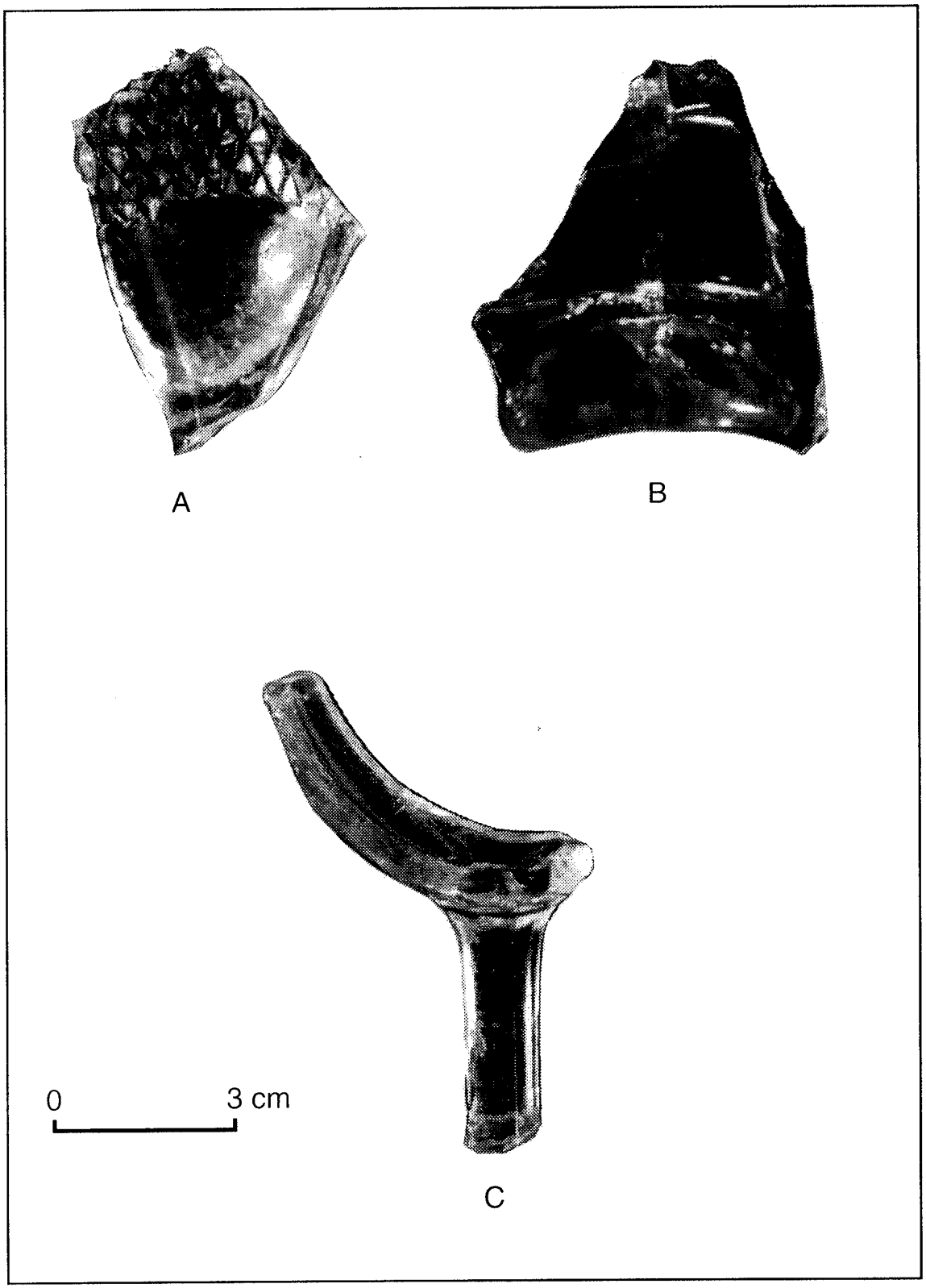


Figure 60. Glass tableware, site 14LV358-881.

Figure 61. Metal kitchen artifacts, site 14LV358-881.

A. Iron fork, unit F, level 6

B. Iron utensil with bone handle, unit F, level 6

C. Iron knife with bone handle, unit B, level 4

D. Iron cooking spider, unit E, level 7

E. Can lid covered with a brass label, unit B, back dirt

F. Can lid covered with a brass label, unit B, level 5

G. Silver plated tablespoon, unit C, level 6

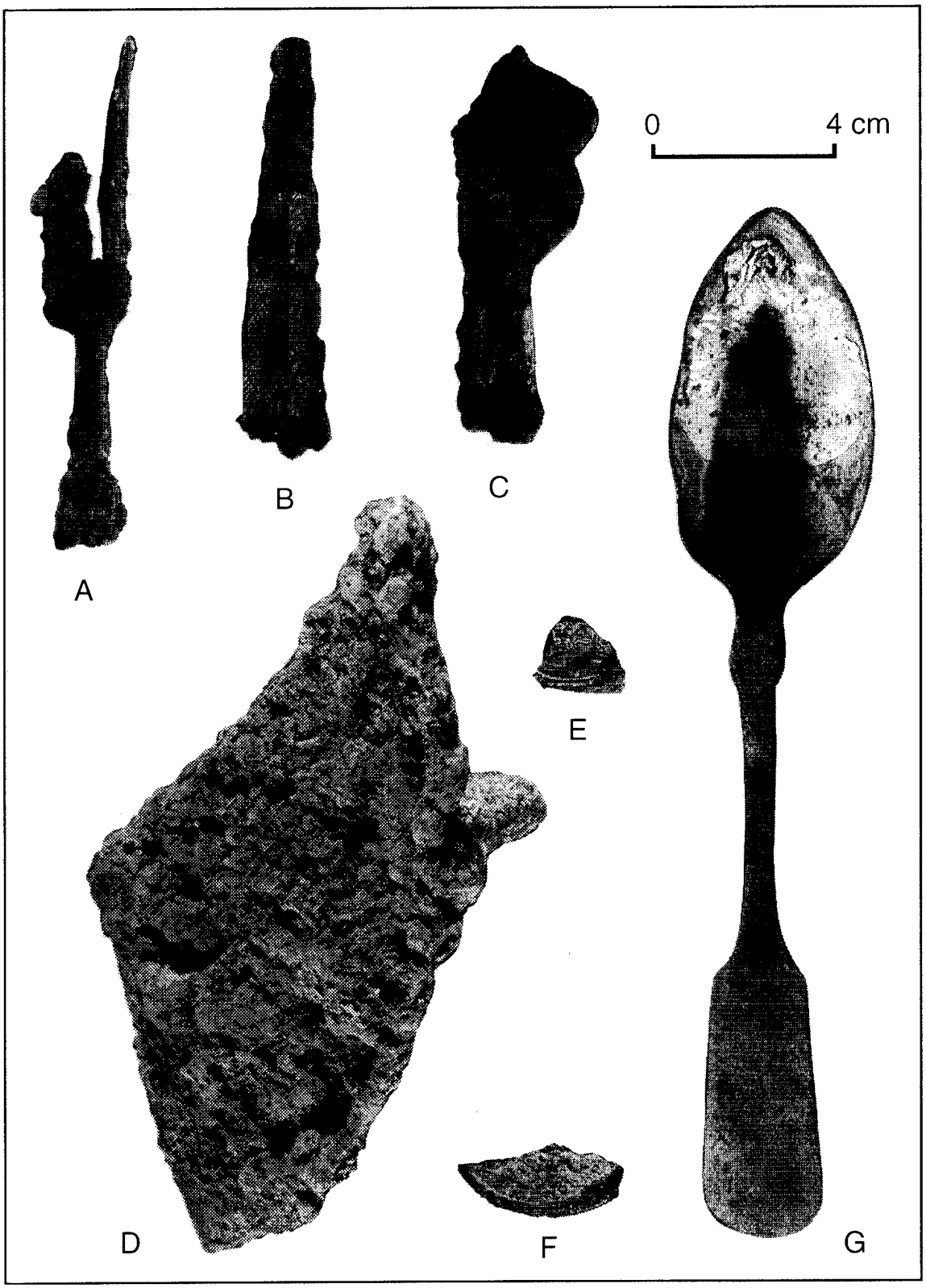


Figure 61. Metal kitchen artifacts, site 14LV358-881.

Figure 62. Furnishings, site 14LV358-881.

A. Whiteware jar, unit C, level 6

B. Opaque white glass toiletry jar, unit B, levels 4 and 5

C. Porcelain toiletry jar, embossed, unit C, level 5

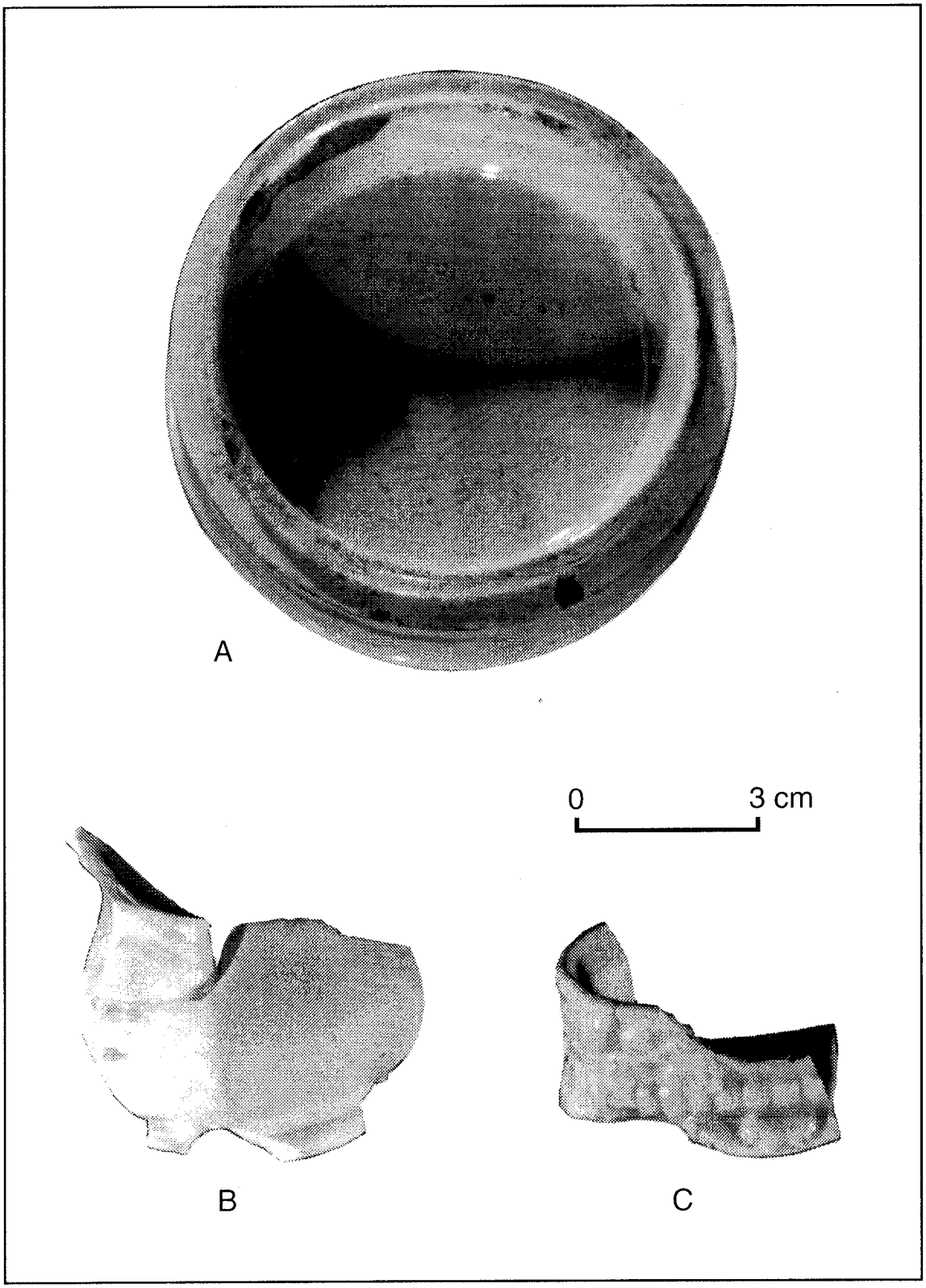


Figure 62. Furnishings, site 14LV358-881.

shallow, and wide-mouthed, with a shelf for a lid. Lidded earthenware jars similar to these were recovered from the hospital privy at Fort Bowie; it is inferred they may have held medicines or hospital supplies (Herskovitz 1978:113, Figure 57e). A lidded milk glass specimen was recovered from Fort Scott; salve or powder likely was contained in this vessel (Carlson 1979:217, Plate 69A). Furthermore, a similar lidded vessel marked as containing a shaving accoutrement and interpreted as a shaving soap dish is known from a site in Georgia, 9CO297 (Garrow and Stoops 1993). Although placed in the household category, the function of the jar recovered from Fort Leavenworth is problematical. It may have been a household item, or may have been for hospital use and contained salves or medicine.

Glass (n=839). Almost all the household glass consists of bottles and jars, hollowware, and unidentifiable vessels that cannot be positively attributed to kitchen use (n=834). The remaining sherds (n=5) are household furnishings.

Bottles/Jars (n=719). Fourteen specimens were identified as medicine bottles. The first of these is a complete bluish-green bottle embossed "E R SQUIBB" (Figure 63a). This mark was used by Edward R. Squibb between 1858 and 1895, when his sons took over the business and changed the logo (Toulouse 1971:482). A second, nearly complete, medicine bottle is embossed "RRR RADWAY & Co NEW YORK" on one face, "ENT^{D} ACCOR^{D} TO" on one side panel, and "ACT OF CONGRESS" on the other side panel (Figure 63d). This logo stood for Radway's Ready Relief, an anodyne and painkiller, and was used between 1847 and 1877 by John and Richard Radway (Fike 1987:74). Three basal sherds representing two partial aqua bottles of different sizes represent the same manufacturer; both bottles were found in the same test unit. The smaller bottle is embossed "... UEL ...L^{A}" (Figure 63b). The larger bottle is embossed "J. HAUEL PHILADELPHIA" (Figure 63c). This mark represents J. Hauel of Philadelphia who between 1828 and ca. 1865 marketed hair dye, balm, and miscellaneous products (Fike 1987:20, 62, 165). Five neck/lip sherds with applied tooled or improved tooled finishes are considered medicine-related based on their squared-off finishes (Figure 58f). Four embossed body sherd recessed panels are considered medicine bottles.

The remaining 705 sherds belong predominantly to unidentified bottles; a small quantity of body sherds are unidentified bottles/jars. In general, body sherds were considered as bottles rather than bottles/jars since only bottle necks and finishes were identified. Although included as household items, the vessels described here could have held any one of a number of products such as various medicines, sauces, oils, extracts, toiletries, or mineral waters.

Fifty base sherds were recognized. A variety of three-piece molds are represented by the specimens; a single example of a two-piece mold occurs. Empontilled bases occur but are infrequent compared to those held by a snap case for finishing. Some bases exhibit embossed marks but these were either too fragmentary for identification or were not included in the standard sources consulted.

Twenty two bottle finishes are included here. All are narrow necked and mouthed (Figure 58b,g), indicating they held liquids rather than foodstuffs (Fike 1987:14). Manipulation of existing glass as well as applied finishes are represented. Earlier fire polished, folded, rolled, and flanged lips are each represented by a single specimen. Nine examples each of applied tooled and the slightly later improved tooled finishes occur.

The remaining specimens number 633; this count includes all bottle and bottle/jar body sherds plus 19 neck sherds lacking finishes. Curved pieces are more common (n=527) than recessed panel fragments (n=106). Of the body pieces, only 41 are embossed. As usual, however, the embossing is either too fragmentary or generic (such as New York, Cincinnati, Lowell Mass.) to provide identifying proprietary marks.

Mean Bottle Date. A mean bottle date based on diagnostic attributes of the kitchen and household bottles was generated for each unit and for the entire assemblage (Table 4). Mean bottle dates vary between 1866.67 (unit A) and 1883.12 (unit B), although all but unit B cluster between 1866.67 and 1869.75. The overall mean bottle date is 1871.11, slightly earlier than but comparable with the date of 1874.19 reported for the 1988 season for 14LV358-881 (Wagner et al. 1989:235). With the exception of unit B, the mean bottle date for each unit is earlier than its comparable mean ceramic date, as is the overall mean bottle date.

Unidentified Hollowware (n=92). This category consists of non-bottle/jar hollowware sherds that are unidentifiable as to specific function or vessel type. One base of pressed glass is present. Twelve lips were identified; one of these is ground, eleven are fire polished. One of the fire polished specimens is very thin, with an incised design below the lip. The remaining 79 sherds are body sherds. Twelve of these have a pressed pattern, 66 are plain, and one is painted red on one surface.

Unidentified Vessels (n=23). These sherds are fragments of curved glass indeterminate as to vessel type.

Furnishings (n=5). Glass sherds recognized as furnishings are kerosene lamp chimney sherds (n=2) and white glass toiletry jar sherds (n=3) that comprise one footed, octagonally faceted vessel (Figure 62b). This fancy jar was probably for personal, rather than military, use and may have been a woman's possession. Far fewer lamp chimney sherds are recognized here than were identified in the 1988 assemblage.

Metal (n=24). Metal household items consist of rolled rims (n=20), keys (n=2), one escutcheon, and one decorative bracket. The rolled rims are iron and were formed by wrapping an edge of sheet metal around a piece of wire to produce a finished edge. The rims could represent a variety of household or possibly kitchen vessel types such as camp kettles, mess pans, washtubs, baking pans, coffeepots, pails, basins, etc. Two iron keys (Figure 64a,b), probably for door locks, were recovered. The escutcheon is brass; it is 1.45 inches in diameter, with an opening of 0.4 inches. One small hole on each side of the

Figure 63. Medicine bottles, site 14LV358-881.

A. Green medicine bottle "E R SQUIBB", unit C, level 4

B. Aqua medicine bottle, "UEL LA", unit A, level 4

C. Aqua medicine bottle "J. Hauel Philadelphia", unit A, level 5

D. Aqua medicine bottle "RRR Radway & Co. New York", unit B, level 3

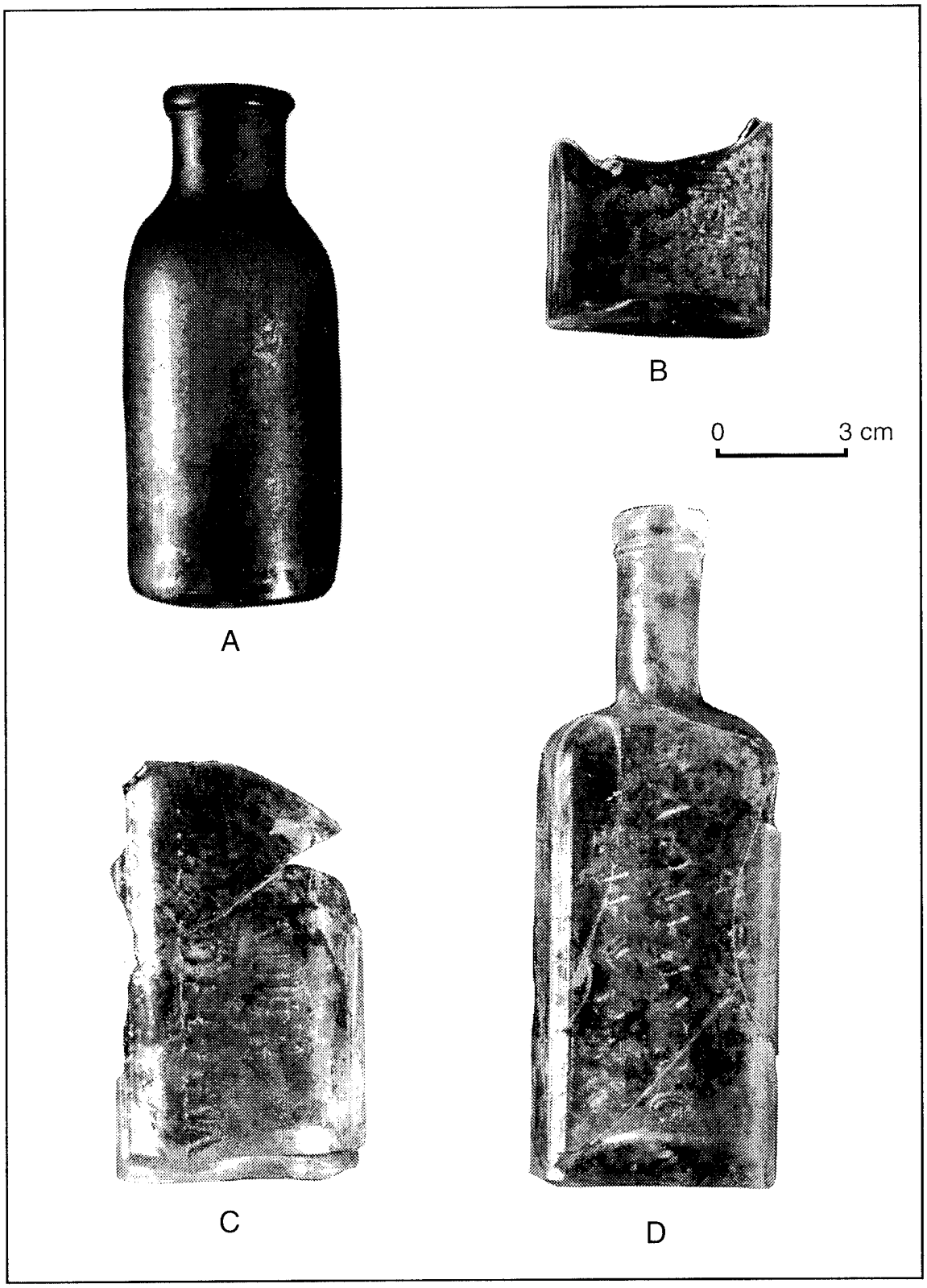


Figure 63. Medicine bottles, site 14LV358-881.

Figure 64. Clothing furnishings, accoutrements and other artifacts site 14LV358-881.

A. Key, unit F, level 6

B. Key, unit F, levels 3 and 4

C. Celluloid plastic object, unit F, levels 3 and 4

D. Brass object, unit D, level 1

E. Three piece brass button, wolf head design, unit F, level 5

F. Pewter button, unit A, level 3

G. Opaque white glass button, unit A, level 4

H. Opaque white glass button, unit A, level 3

I. Four hole brass suspender button, unit A, level 3

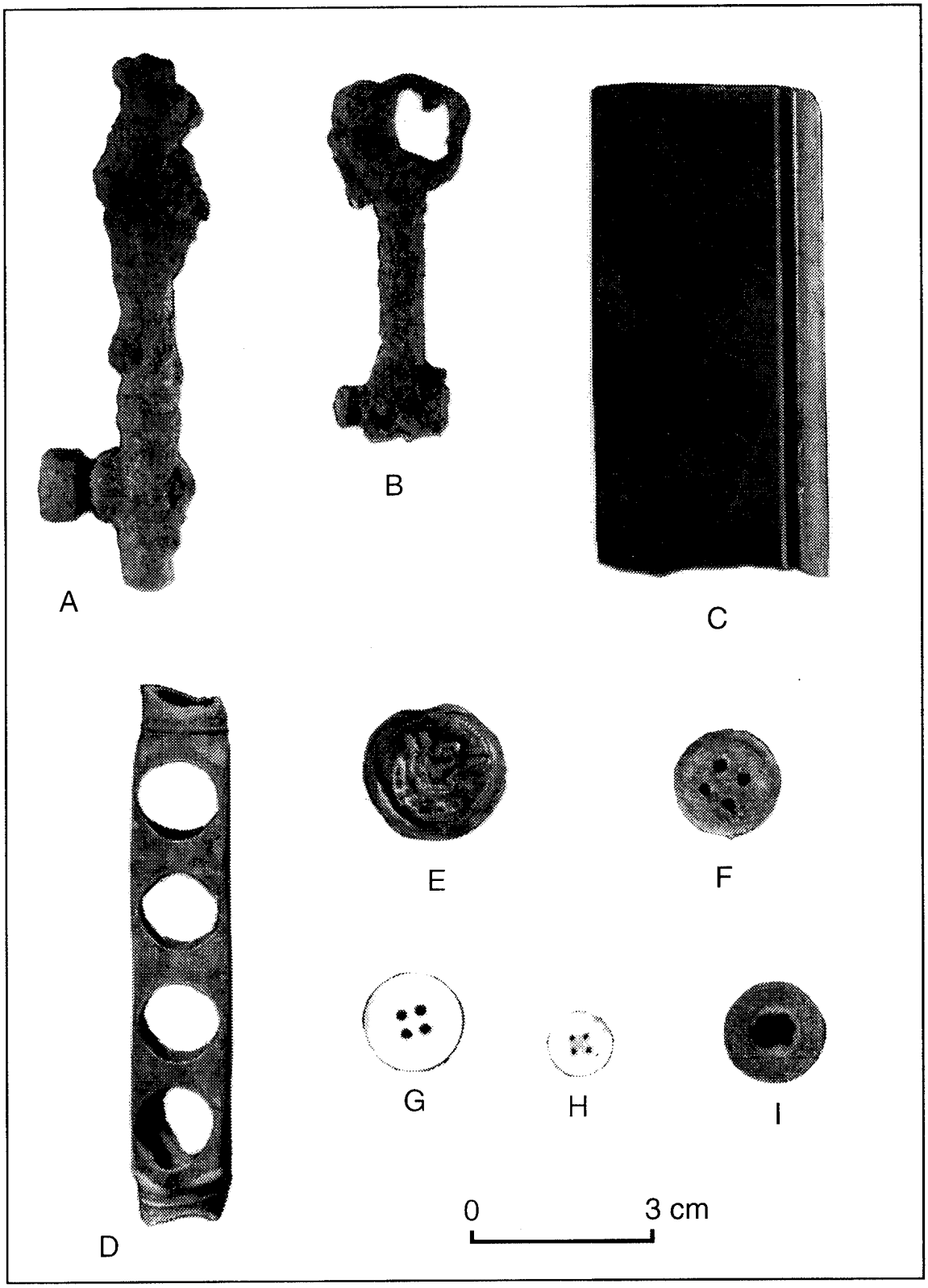


Figure 64. Clothing, furnishings, and other artifacts, site 14LV358-881

opening is present for attachment to a larger object. The escutcheon's precise function is unknown. It may have finished the opening of a lock, or may have been the finishing piece through which the spindle of a doorknob passed. The latter function seems less likely due to the small size and light weight of the escutcheon. Also, given the piece is brass, it may have been used on a military item rather than as a household item. The decorative bracket is cast iron; it would have been used for one of a variety of purposes such as supporting a flowerpot or shelf.

Clothing (n=46). Clothing items are predominantly square shoe nails, followed by civilian buttons, straight pins, a suspender buckle, and a glass sphere. These clothing items are generally similar to those recovered during the 1988 field season. The shoe nails (n=22) are all between 1.7 and 2.2 cm in length and were used to attach the soles to the uppers. A variety of civilian (n=15) sew-through and shanked white glass, brass, iron, and shell buttons were recovered. Most of these are the size of shirt or dress buttons (Figure 64g,h); the brass and 3-piece buttons may have been used on coats or heavier articles of clothing. Only two specimens are decorated. One white glass button has a molded design while the brass button is stamped with a wolf's head (Figure 64e). A rivet rather than a shank is attached to the button back. A similarly embossed button is known from Fort Bowie (Herskovitz 1978: Figure 12f). The wolf's head button can be considered a sporting button (Luscomb 1967:186). According to this source, sporting buttons were manufactured from the eighteenth to the twentieth century; however, most date to the nineteenth century.

Seven straight pins and an iron suspender buckle were identified in the assemblage. An olive green glass sphere approximately the size of a seed bead is included with the clothing items. However, its function is unknown; it may have been an inlay piece for clothing, jewelry, or furnishings.

Accoutrements (n=41). A variety of military accoutrements was recovered, however, except for buttons, few specimens of any one type occur. With the exception of buttons, many of the accoutrements were not previously recovered from 14LV358-881.

Military buttons (n=22) consist of eleven three-piece, one two-piece, and nine sew-through specimens, plus part of one indeterminate type of brass button. Eight larger sized three-piece buttons are coat buttons; three smaller buttons are cuff or vest buttons (Herskovitz 1978:40). Five buttons indicate a service branch; two each of these indicate Dragoons (Figure 65m) and Infantry, one indicates Artillery. Four pieces are General Service buttons (Figure 65n), while one remaining piece is illegible due to extreme wear or perhaps mutilation of the shield and one piece is a back and shank only. For the Dragoon buttons, asymmetrical and symmetrical eagles are represented, indicating both early and later styles of Dragoon buttons (Wagner et al. 1989:260). Both styles predate 1861, when the Dragoons were reclassified into the Cavalry. The eagles on all the remaining buttons are symmetrical, indicating manufacture after 1854 and prior to 1884 (Herskovitz 1978:41) or possibly as early as ca. 1847 (Wyckoff 1984:88).

The two-piece button (Figure 65l) differs from those identified in 1988. It is a .58 inch brass General Service button embossed with an eagle, wreath, and "U.S" and backstamped "UNITED STATES". Buttons with identical front surface embossing were identified at Fort Atkinson, Nebraska (Carlson 1979:54, Plate X.5, X.6). Wyckoff (1984:85), following Albert (1973), identifies these as "great coat buttons" and assigns a temporal range of 1820 to ca. 1840.

The sew-through variety of button is represented by eight pewter 4-hole shirt buttons (Figure 64f) and one 4-hole brass suspender button (Figure 64i). A summary of the brass military button characteristics is presented in Table 5. At least three different manufacturing companies are represented by the backstamps.

One incomplete brass shoulder epaulet composed of four overlapping, riveted scales and bearing an Artillery-designating, three-piece button (Figure 65a) was recovered. The button manifests an embossed symmetrical eagle with an "A" on the shield; the shank extends through the epaulet to its underside for attachment to the uniform. This style of button dates between ca. 1845 and ca. 1880; furthermore, after 1854 only officers wore this type of button (Wyckoff 1984:44). Epaulets were omitted from the uniform after 1873 (Brinkerhoff 1972:31; Chappell 1972:9). Thus, this epaulet should date between ca. 1845 and 1873 and may have been worn by an officer. Shoulder scales were recovered in 1988; however, those specimens are enlisted mens' accoutrements and are fragmentary.

Two brass adjustment hooks of different sizes were identified. One is 8.8 cm long and 1.4 cm wide, with three rivets for attachment to a strap. The other is 4.8 cm long and 0.7 cm wide with two rivets. The precise function of these two hooks is problematical. Hooks such as these but of different dimensions were used to adjust haversack straps and shoulder straps of saber belts (Herskovitz 1978:36, Figure 11d-i; Reynolds 1983:93). Although the dimensions of the recovered hooks differ from known examples, it is likely they were used for similar functions.

One saber belt hook (Figure 65e) was identified. It is made from stiff wire (similar to a modern wire coat hanger) bent into shape and has a black japanned(?) coating. These hooks were used to attach the scabbard to the saber belt. Saber belt hooks attached to rings were used from ca. 1841 to 1873, when they were replaced by saber belt slides (Herskovitz 1978:36). Examples are known from Fort Bowie (Herskovitz 1978:36, Figure 11j).

One brass aglet (Figure 65d) was recovered from 14LV358-881. Its interior dimension is .4 inch wide and .29 inch high. The interior edge is slightly toothed for gripping a strap, probably cloth. Aglets may have been used on suspender, haversack, or other equipment strap ends.

Figure 65. Military accoutrements, site 14LV358-881.

A. Epaulet, unit E, level 2

B. Medal buckle, unit C, level 6

C. Medal buckle, unit C, level 6

D. Aglet, unit C, level 5

E. Saber belt hook, unit C, level 6

F. Brass slide, unit C, level 5

G. Brass slide, unit E, level 7

H. Two-pronged uniform buckle, unit B, level 5

I. Brass medal, unit F, level 5

J. Brass buckle, unit D, level 2

K. Brass buckle, unit F, level 7

L. Brass, two-piece General Service button, unit E, level 7

M. Brass, three-piece (Sanders) Dragoon button, unit A, level 4

N. Three-piece (Sanders) General Service button, unit B, level 5

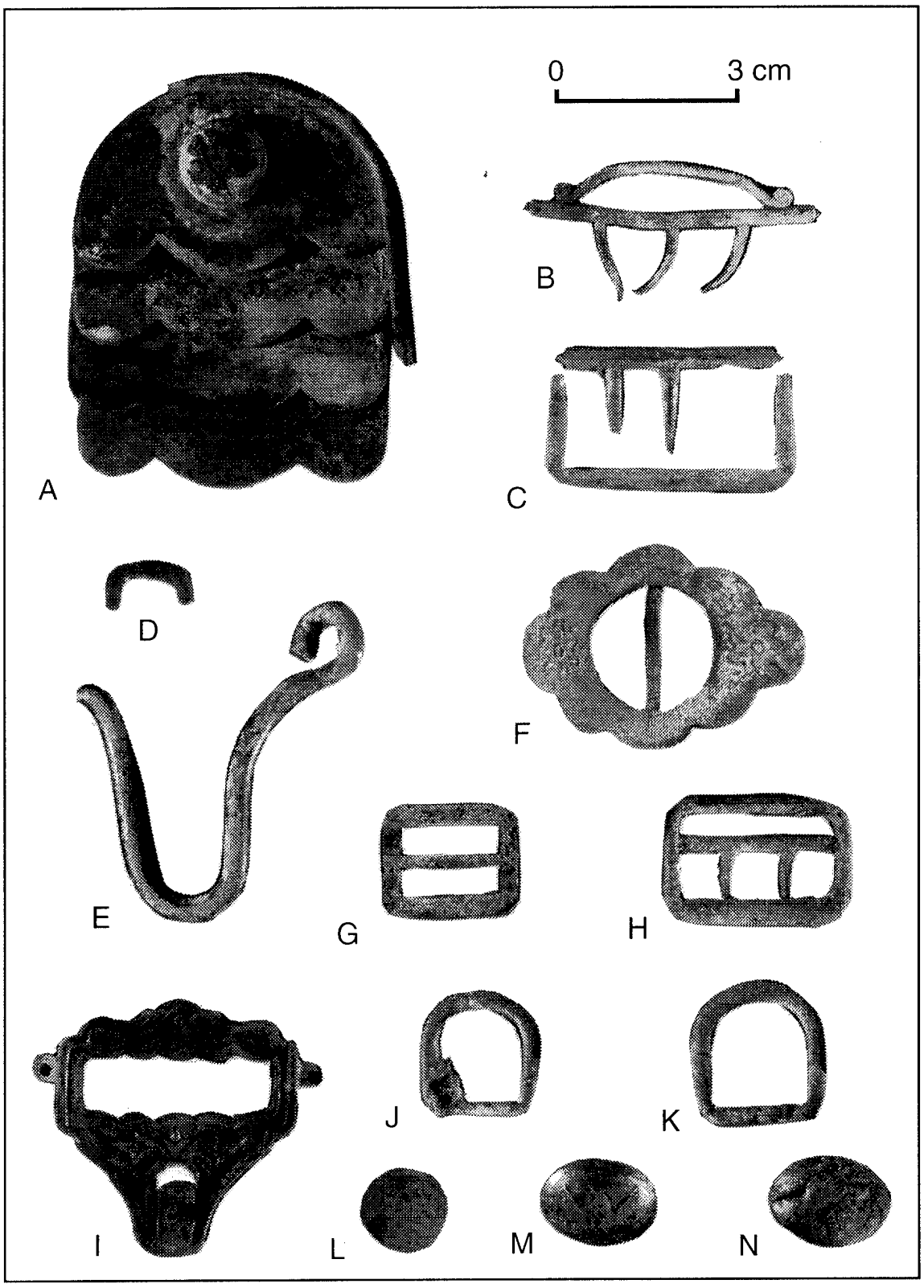


Figure 65. Military accoutrements, site 14LV358-881.

Table 5. Brass U.S. Military Buttons, Site 14LV358-881.

Provenience	Construction(a)	Eagle(b) Type	Shield'(d) Device	Service Branch	Size (mm)	Date	Backstamp	Garment
Unit A Level 3	1-Pc(4H)	---	---	---	16.4	---	Terry & Downs,NY	Suspender
Unit A Level 4	3-Pc	Sym	D	Dragoon	19.5	ca. 1845-1861	Scovills & Co. Wataerbury	Coat
Unit B Level 3	3-Pc	Sym	I	Infantry	19.5	ca. 1851-1880	Scovills & Co. Superfine	Coat
Unit B Level 4	3-PcG?	Asym	D	Dragoon	19.7	ca. 1840-1845	Scovills Waterbury	Coat
Unit B Level 4	3-Pc	Sym	I	Infantry	19.6	ca. 1851-1880	Scovills & Co. Superfine	Coat
Unit B Level 4	3-Pc	Sym	Unk	Unk	14.3	---	Scovills & Co. Extra	Cuff or Vest
Unit B Level 4	3-Pc	Sym	Lined	General	14.6	ca. 1847-1883	Scovills & Co. Extra	Cuff or Vest
Unit B Level 5	3-PcG	Sym	Lined	General	19.6	ca. 1847-1883	Scovills & Co. Superfine	Coat
Unit D Level 2	3-Pc	Sym	Lined	General	19.5	ca. 1847-1883	Horstmann & Allien NY	Coat
Unit E Level 6'(c)	3-Pc	---	---	---	18.8	---	NL	Coat
Unit E Level 7	2-Pc	---	---	General	14.8	ca.1820-1840	United States	Great Coat
Unit F Level 5	3-Pc	Sym	Lined	General	20	ca. 1847-1883	Scovill Mfg. Co. Waterbury	Coat
Unit F Level 7	3-PcG?	NL	A	Artillery	15.4	---	NL	Vest

Key:(a)=1Pc(4H)=One Piece Four Hole;2Pc=Two Piece;3-Pc=Three Piece;3-PcG=Three Piece Gilt;
(b)=Asym=Asymmetrical;Sym=Symmetrical;NL=Not Legible;'(c)=Back Plate Only;'(d)=Unk=Unknown

One implement was identified as an iron canteen stopper pull (Figure 67c) based on its similarity to this item illustrated from Fort Bowie (Herskovitz 1978:35, Figure 10c). The stopper pull would have extended through the axis of a cork which would have been inserted into the mouth of the canteen.

Two brass slides are identified in the collection. One is an arched, scalloped oval with a floral design stamped at opposite ends (Figure 65f). The other is rectangular and plain (Figure 65g).

Several types of buckles were recognized from 14LV358-881. Three brass D-buckles of two sizes (Figure 65j,k) are present. Each buckle is missing its tongue. Three pronged buckles were identified; each differs from the others. One, a brass two-pronged buckle (Figure 65h), is 1.23 inches by 0.84 inches. It fits the description of buckles used on trousers, overalls, and drawers (United States 1986:108). The second buckle (Figure 65c) is three-pronged and appears to be gilded or gold plated. It is 1.6 inches by 0.78 inches. The third (Figure 65b) is brass. This piece is the buckle crossbar only and contains three prongs; it has a decorative filigree on the crossbar. It is 1.9 inches long. A final buckle (Figure 65i) is brass (gold plated?) stamped with a floral design. It has two appendages containing holes through which a pin or crossbar would pass and has a hook on its distal end. It is 1.92 inches wide across the appendages. The assumed function of these last three buckles is as a base for military medals.

Finally, the military assemblage contains one brass belt keeper, one brass sheet metal hasp, and one brass ring that is 0.7 inches in diameter. Belt keepers were used to guide and neaten up belts. The hasp could have been used to lock any one of a variety of objects. Rings also were used on a variety of objects.

Personal (n=30). The personal category of artifacts is somewhat limited in diversity, consisting predominantly of smoking pipe bowls and stems followed by beads, grooming items, a bone handle, one eyeglass lens, two porcelain doll fragments comprising the partial head and braided hair of a single specimen (Figure 66d), an iron toy wheel, and an incised bone disk. Examples of white (Figure 66g) and brown clay, stoneware (Figure 66f), and porcelain (Figure 66e) pipe bowls were recovered. The white and brown clay pipes are unglazed and undecorated. The stoneware pipes are either salt glazed or unglazed and are undecorated. The porcelain pipe is spurred, with four or five concentric incised rings circling the mouthpiece. It is glazed, and a remnant of gilding encircles the bowl near the juncture with the mouthpiece. All the pipe stems are manufactured from white clay. Three hollow cane seed beads and a larger hollow cane bead are present; the seed beads are red, blue and turquoise while the larger bead is white. The beads may have been used to decorate clothing or for trade with Native Americans (Wagner et al. 1989). The grooming items are two bone toothbrushes. One is the head portion of a toothbrush and has four rows of 24 to 25 parallel holes (Figure 66h). The other is a handle portion and is incised "N" (?) on one surface, apparently with a knife, and may represent the owner's initial. The additional bone

Figure 66. Personal and other artifacts, site 14LV358-881.

A. Bone handle, unit C, level 6

B. Bone disk, unit D, level 4

C. Toy wheel, unit B, level 7

D. Porcelain doll's head, unit A, level 3

E. Footed porcelain smoking pipe, unit C, level 4

F. Brown stoneware smoking pipe, unit A, level 2

G. Unglazed, undecorated, white clay smoking pipe bowl, unit A, level 4

H. Bone toothbrush handle, unit A, level 4

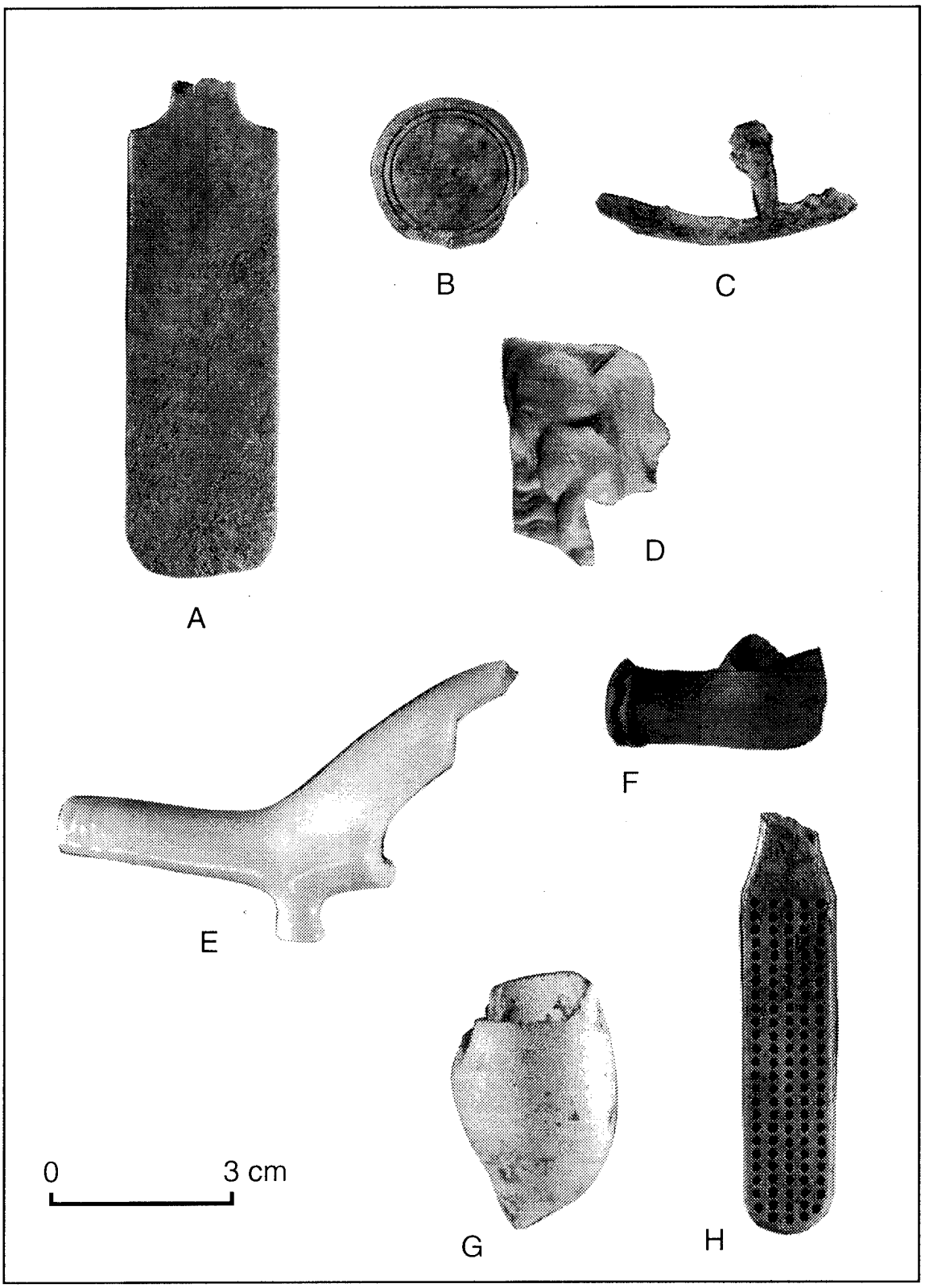


Figure 66. Personal and other artifacts, site 14LV358-881.

Figure 67. Military artifacts, site 14LV358-881.

A. Brass buckle with leather harness strap, unit E, level 5

B. Leather harness strap, unit E, level 5

C. Iron canteen stopper pull, unit A, level 3

D. Twelve gauge brass shotgun shell base, centerfire, unit E, level 5

E. .58 caliber Sharps, unit A, Level 4

F. .58 caliber Minie, unit A, level 4

G. Iron bridle bit, unit D, level 4

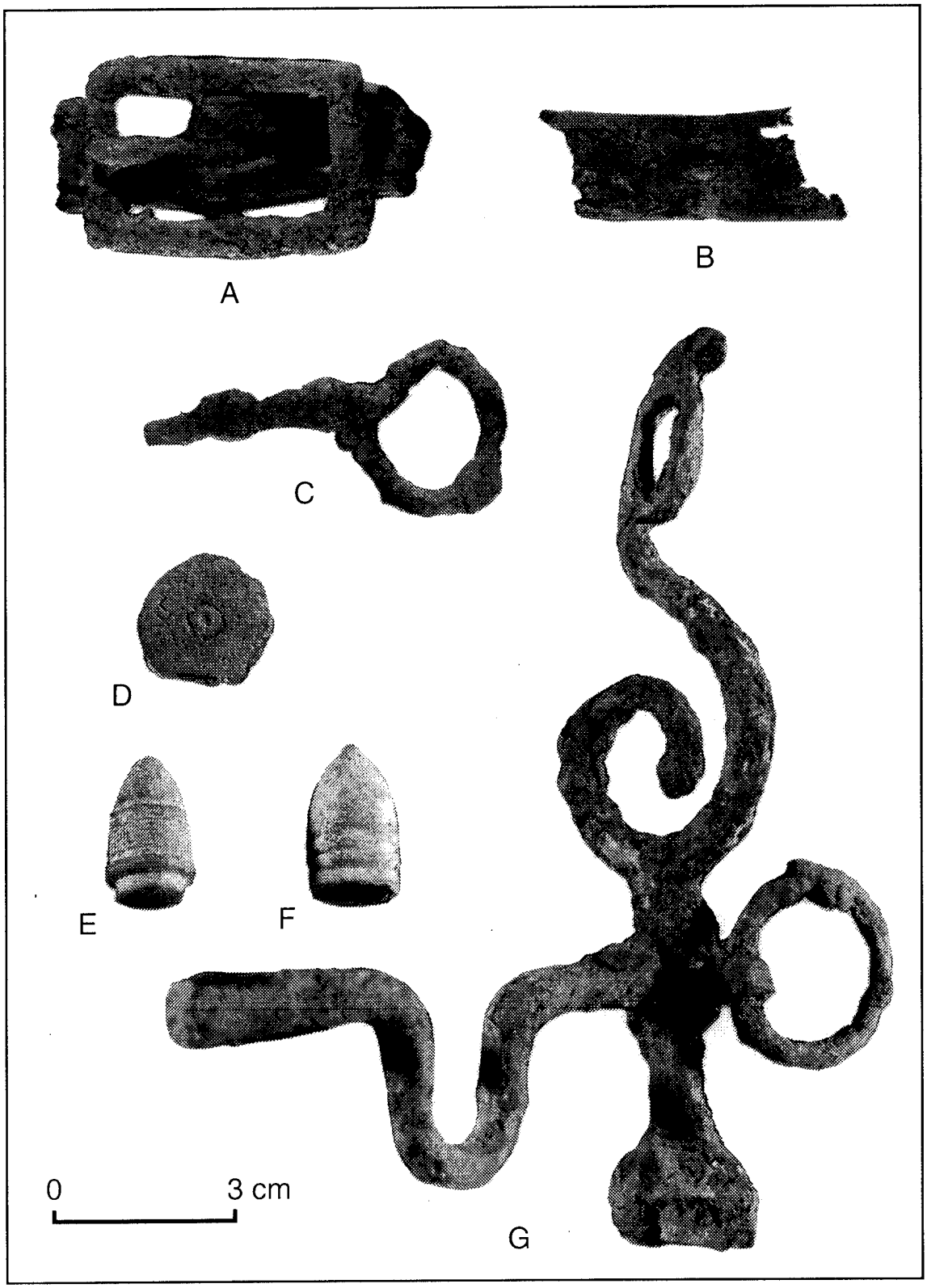


Figure 67. Military artifacts, site 14LV358-881.

handle is wide and thin (Figure 66a). It is incised with overlapping "V"s on one surface that form "M"s or "W"s and may represent the owner's initials. Its function is unknown, but it does not appear to represent a table utensil. The toy wheel is spoked (Figure 66c) and is 3 inches in diameter; its rim is flat. The wheel resembles those recovered from Fort Bowie (Herskovitz 1978:78, Figure 33.o). Herskovitz indicates spoked iron wheels were found on doll carts and were moderately common during the late 19th century. The bone disk (Figure 66b) is 1 inch in diameter and is .1 inch thick. It has two concentric incised rings on one surface; its edge also is incised and may be a threaded edge. The piece may be a poker chip or perhaps a threaded inlay piece.

Arms (n=83). The arms category is limited to ammunition; no gun parts were identified. Only small arms are represented. Shell casings (n=70), lead bullets, balls, and shot (n=11), one shotgun shell, and one percussion cap were recovered. All but two of the shell casings are from level 1 of unit D, while all but two of the lead items plus the percussion cap are from the central levels of unit B.

The shell casings all are .22 caliber shorts rimfire brass shell casings with the headstamp "U". Rimfire cartridges were introduced in 1866 and are still manufactured today (Logan 1959:8). These cartridges may have been used in revolvers or rifles.

Four calibers of ammunition are represented among the lead items. Single examples of .52 caliber and .56 caliber solid lead conical bullets were identified. The .56 caliber specimen probably was used in an Enfield rifle (James Snyder, personal communication 1993). A second .52 caliber specimen is a Sharps bullet. This type actually measures .54 inches and was used in the Model 1859 Sharps breech loading percussion military rifle and carbine (Logan 1959:14, cited in Reynolds 1983:89). Four .58 caliber bullets were recovered. Three of these are Minie "balls" (Figure 67f), one is a Sharps bullet (Figure 67e). The .58 caliber Minie balls were intended for the 1855 Springfield rifle-musket (Herskovitz 1978:52); production of .58 caliber Minie balls was discontinued in 1865 (Smith 1960:236, cited in Reynolds 1983:89). Finally, three .65 caliber lead balls were identified. One piece of buckshot completes the lead bullets, balls, and shot category.

The base of a paper-cased 12-gauge centerfire brass shotgun shell was identified (Figure 67d). The headstamp on this piece exclaims "U No 12 S ...". The stamp indicates the U.S. Cartridge Company, founded in 1864 and marketing under this name until the late 1920s (Vinson 1968:92-93, cited in Herskovitz 1978:51).

As with the 1988 season, the single percussion cap reported here is the ground edge variety. Ground edge percussion caps were interchangeable among weapons (Herskovitz 1978:52), thus the type of weapon in which this specimen was used is indeterminate.

Transportation (n=7). All the transportation-related items but one are made out of iron/steel; the exception is a brass buckle. All but one item are horse-related equipment;

the remaining item is a hook or staple that probably is wagon-related. Horse-related equipment consists of two horseshoes, a horseshoe nail, two tack or harness buckles, one with a leather strap attached (Figure 67a,b), and a bridle bit (Figure 67g). The bridle bit is a curb-style riding bit; it is manufactured from iron and is coated with bright sheet metal.

Architecture (n=1364).

Metal (n=829). Architectural metal consists mostly of nails (n=784); all but one nail, manufactured of brass, are iron/steel. The majority of these (n=748; 95.5 percent) are whole or fragmentary machine cut nails; within this category are included three spikes. Small quantities of wire nails (n=14), including two finishing nail fragments, and fragments of nails unidentifiable as to manufacturing type (n=22) also are present. Machine cut nails are present in all six test units. Wire nails occur in four of the six text units; seven of the fourteen wire nails are from unit C. The presence of clinched and fragmentary machine cut nails suggests the discard of parts of demolished buildings constructed at Fort Leavenworth prior to ca. 1880. The presence of wire nails suggests deposition continuing after ca. 1880, when wire nails came into common use (Nelson 1968).

The remaining architectural metal consists of tacks (n=4), multi-strand cable (n=4), iron rings (n=4), screws (n=9), staples (n=2), wire (n=17), and single specimens each of butt hinge, bolt, nut, angle iron, and washer. The washer is brass and is interpreted as a military item; the other items are manufactured from iron/steel.

Glass (n=534). Architectural glass consists entirely of flat (window) glass. Most pieces are aqua in color (n=523), the remainder (n=11) are clear glass.

Ceramic (n=1). One ceramic architectural item, an agateware doorknob fragment, was collected.

Other (n=70). Artifacts represented in the Other category are potentially identifiable, but unknown as to function at this time. Metal is the most common material represented (n=39), followed by ceramic (n=20), slate (n=7), plastic (n=3), and graphite (n=1).

The metal artifacts consist of strap metal (n=26), brass items considered to have an unknown military function (n=8), metal disks (n=2), one rod, one bar, and one metal closure with crimped edges. Strap metal items are narrow, rectangular pieces of iron/steel sheet metal with finished long edges. These probably are straps that encircled wooden pails, kegs, barrels, and the like. The brass military items are, first, a hollow rectangular object with four holes each on opposite surfaces (Figure 64d). Bent fittings, presumably once attached to a larger object, are at each end. Second, a bullet shaped brass rivet contains a fragment of leather. Third is a narrow piece of sheet brass with three parallel small holes at each narrow edge for attachment to a larger object. The object is arched in profile; the piece may have served as a guide for a strap or another piece of metal. These last two items may be from military accoutrements, or the rivet may be from harness. Fourth is a squashed

object composed of sheet brass encompassing another piece of sheet brass. Finally, four pieces of brass sheet metal round out the brass Other objects. The metal disks are each dissimilar. One is probably manufactured from lead; most of its center forms a slightly recessed panel. The other disk is manufactured from white metal; it has a beaded decoration on one surface that follows the edge of the piece. The closure is aluminum and is enamelled with the logo "HANDY FUEL".

Ceramic artifacts are represented mostly by unglazed terra cotta flower pot fragments (n=17), followed by drainage tile (n=2) and one fragment of a porcelain object. Several flower pot fragments have a rolled lip. The slate pieces are too fragmentary to determine whether they are structural, personal (drawing board), or naturally occurring. Of the plastic, one item made from celluloid (Figure 64c) is extremely problematical. It is rectangular, thin, and one end is broken off. The long edges are alternately beveled, with a groove on each surface paralleling the bevel. The color of the piece is mottled/swirled gold and brown. Wolfe (1945:15) dates celluloid objects imitating tortoise shell between 1868 and 1920. Completing the plastic category are a plastic utensil handle and a molded plastic ring. These were collected from redeposited slope wash and appear to be fairly recent in age. Finally, a graphite battery rod approximately .22 inches in diameter was recovered.

Unidentifiable (n=854). The majority of unidentifiable artifacts consist of metal (n=622). Glass is the second most represented (n=228) followed by plastic (n=4).

Metal artifacts are iron/steel; most are fragments of sheet metal (n=586). Some of these were recovered from proveniences containing rolled rims; it is likely at least some of the sheet metal fragments are the remnants of vessels such as washtubs, pails, basins, etc. Cast iron fragments (n=4) and unidentifiable objects or fragments (n=32) complete the metal category. Unidentifiable glass consists of melted glass (n=17) and fragments of glass, generally recovered from flotation samples, too small to identify as to function (n=211). Finally, four fragments of colored plastic were collected; all are from sediment identified as slopewash.

Prehistoric (n=5). Pottery (n=1) and chipped stone (n=4) artifacts were collected from this site. The single sherd is polished and contains fine grit inclusions; it is unclear if the grit is an intentional tempering agent or is an accidental inclusion. The sherd varies between 3.2 and 3.5 mm thick. Although the absence of shell tempering may be problematical, the polished surface of this sherd suggests it is the Steed-Kisker Variant of the Middle Ceramic Period, which dates between A.D. 1000 and 1250 (Brown and Simmons 1987:XIV-33). One biface fragment, two flakes, and one piece of shatter comprise the chipped stone. At least three chert types are represented, a white and light grayish-tan mottled fine-grained type, a pinkish-gray medium fine-grained type, and a dark gray fine-grained type with fine-grained white inclusions.

Summary

The artifact assemblage from 14LV358-881 collected during the 1993 field season is in generally similar to that reported for the 1988 season. Ceramic and glass tableware and kitchen/household bottles reflect forms and functions previously identified. A silver tablespoon, a two-tined fork, decorated bone handles, and a cooking vessel (a spider) add to the kitchen assemblage. Additional household artifacts are at least two toiletry jars and rolled metal rims representative of household or possibly kitchen items such as pails, mess pans, or washtubs. Architectural artifacts reflect those previously recovered.

In contrast, several types of military items are here reported. An Artillery epaulet (possibly an officer's), an early great coat button, adjustment hooks, a saber belt hook, brass slides, a belt keeper, and medal-related buckles add to the clothing-related inventory. An aglet, canteen stopper pull, a hasp, a ring, and unidentified military-related objects are additions to equipment-related items. One transportation related item not previously recovered is a curb bit for a riding bridle. A gilded porcelain smoking pipe, eyeglass lens, toy wheel, a possible poker chip, and a wolf's-head button add to personal and clothing items not previously recovered.

Mean ceramic and bottle dates range between the late 1860s and early 1880s. Overall dates fall within the early to mid 1870s and are comparable with those reported for the 1988 field season. Inclusion of small amounts of wire nails and manganese (solarized) glass indicate use of the dump after ca. 1880; the absence of machine made bottles suggests deposition ceased by ca. 1900.

CHAPTER VII. BOTANICAL ANALYSIS

Kathryn E. Parker

Methods of Botanical Analysis

During site excavation, 5.0 liter flotation samples were collected from each 10 cm level of all 1 m units. In addition, samples were taken from hydraulic cores used to investigate two privy vaults (HBS 5 and HBS 38). Samples were processed via a water agitation method of flotation (Dye and Moore 1978). After drying, botanical materials from the processed flotation samples were extracted and placed in labelled plastic bags.

Floral materials in each flotation sample were separated into two size fractions using a No. 10 geological sieve (2 mm mesh). Using a standard binocular microscope at low magnification (10x), all carbonized materials in the large fraction (>2 mm) were extracted and sorted into categories (e.g. wood, nutshell, maize). Each category was subsequently weighed, and the number of items in each counted. An attempt was made to identify all nutshell, maize remains and the first 20 randomly selected wood fragments in the large fraction. Wood charcoal and nutshell counts and weights are based on materials from the large fraction only.

In this analysis, wood charcoal fragments examined but found to be identifiable at least to family were grouped into one of three categories: ring porous hardwood, diffuse porous hardwood and unidentifiable. Ring porous woods may be from any one of several commonly occurring tree taxa, including oak (Quercus spp.), hickory (Carya spp.) and ash (Fraxinus spp.). Diffuse porous pieces may represent taxa such as maple (Acer spp.) and willow (Salix spp.). Fragments in which all distinctive morphological traits were distorted or destroyed during carbonization were classified as unidentifiable.

The small fraction (<2 mm) was examined carefully at 10-30x for seeds and maize fragments. Any observed were removed, identified and counted.

Identifications were made with the aid of standard texts (Core, Cote and Day 1979; Martin and Barkley 1961), and when necessary by comparison with a referenced collection of modern carbonized and archaeological specimens. Genus level identifications were made if possible. Species identifications were attempted if morphological comparisons ruled out

other members of a genus (i.e. Ulmus thomasii). Scientific nomenclature follows Gleason and Cronquist (1991).

Results of Discussion

Site 14LV358

The contents of 45.0 liters of flotation samples taken from nine test unit proveniences yielded 8.30 g of carbonized floral material (Table 6). Wood charcoal comprised 98.9 percent by weight of the material recovered. Other identified remains included a few fragments of nutshell, maize and two seeds. A minimum of nine tree taxa were represented in the 73 identified wood charcoal fragments, including in descending order of abundance: pine (Pinus spp.), oak of the red subfamily (Quercus subf. Erythrobalanus), oak (Quercus spp.), hickory (Carya spp.), elm family (Ulmaceae), sycamore (Platanus occidentalis), oak of the white subfamily (Q. subf. Lepidobalanus), black locust (Robinia pseudoacacia), walnut/butternut (Juglans sp.), rock elm (Ulmus thomasii), and ash (Fraxinus sp.). The wood identified from 1992 excavations included two taxa not present in the 1988 assemblage, walnut/butternut and rock elm. Poplar/willow, identified in wood from the 1988 excavations was not present in this year's assemblage.

A total of four nutshell fragments were recovered; two thick-shelled pieces identifiable only as hickory/walnut family (Juglandaceae) and one each of hickory (Carya sp.) and hazelnut (Corylus americana). These taxas were present in larger numbers in samples from 1988 excavations. Although nuts would have provided some dietary diversity for civilian and military personnel at the post, it is unlikely that they were regarded as more than incidental items.

Carbonized seeds consisted of two fragmented oats (Avena sativa), the probable remains of grain fed to horses. Maize (corn) was better represented, with four fragments including an intact cupule and kernel, as well as two cob segments, each consisting of three cupules and attached glumes. The single large kernel is tall in relation to width, 10.0 mm (h) x 6.0 mm (w). The cob segments and cupule exhibit angles of 70 degrees, and are fairly narrow, having widths ranging from 7.2 mm to 8.5 mm. Although there is some possibility of distortion, it is likely that these fragments represent cobs of at least ten rows. Like the oat grains, these maize remains are likely the residues of livestock feed.

HBS 5

Two 10.0 liter flotation samples collected from this 1866 privy vault contained eight carbonized wood fragments with a combined weight of 0.28 g. Identifiable wood included three fragments of rock elm, two of elm family and one of black cherry (Prunus serotina). A flotation sample from the 3 inch diameter core inside the privy vault also yielded 11 wood

Table 6. Plant Remains Recovered by Flotation From Site 14LV358 at Fort Leavenworth, Kansas.

Unit Number and Level	B,6	C,5	C,6	D,2	D,4	E,6	E,7	E,8	F,6	
Sample Number	AS21	AS13	AS15	AS22	AS24	AS36	AS37	AS39	AS38	TOTALS
Sample Volume (l)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	45.0
Total Wood (N)	11	137	24	44	6	11	57		78	
Total Wood Wt. (g)	0.26	1.57	0.36	1.08	0.14	0.19	1.61		3.00	8.21
Breakdown by taxon (N)										
Carya spp. (hickory)	1	1	4			3	2			11
Fraxinum sp. (ash)			1	1						2
Juglans sp. (walnut/butternut)							5			5
Pinus spp. (pine)		2		10			1		2	15
Platanus occidentalis (sycamore)									7	7
Quercus spp. (oak)	1	3		2	1		4			11
Q. Erythrobalanus (oak, red subgroup)		5	1		1	1	1		4	13
Q. Lepidobalanus (oak, white subgroup)				4	2					6
Robinia pseudoacacia (black locust)		2	1				2		1	6
Ulmaceae (elm family)			4	3					2	9
Ulmus thomasii (rock elm)			1						2	3
Diffuse porous	5	2							1	8
Ring porous		3	7		1	5	2		1	19
Unidentifiable	4	2	1			2	3			12
Total Nutshell (N)		2					2			4
Total Nutshell Wt. (g)		0.04					0.05			0.09
Breakdown by taxon (N)										
Carya sp. (hickory)							1			1
Corylus americana (hazelnut)							1			1
Juglandaceae (hickory/walnut)		2								2
Total Seeds (N)		2								2
Avena sativa (oats)		2								2
Total Maize (N)							2	1	1	4
Cob segment							1	1		2
Kernel									1	1
Cupule							1			1

charcoal fragments totaling 0.43 g. Wood taxa represented were rock elm (6), sycamore (4), and ash (1). Small coal and clinker fragments were also present.

HBS 39, HBS 38, HBS 40-41

Flotation samples from these locations yielded only recent insect parts, insect egg cases and crushed pokeweed (Phytolacca americana) seeds.

The floral assemblage from various proveniences discloses little about mid-nineteenth century use of plant products. Most of the identified tree taxa may have grown in the vicinity of Fort Leavenworth. However, it is likely that the diverse wood assemblage also includes lumber imported for construction purposes, as well as residues from local clearing and burning of brush. Coal rather than wood provided the principal fuel for the post, as evidenced in coal fragments, cinders and clinkers appearing in most flotation samples. The few nutshell fragments may reflect human use of hazelnut and hickory, but do not suggest a major dietary role for nuts. The crop items, oats and corn, are almost certainly remains of livestock food.

CHAPTER VIII. FAUNAL REMAINS

Terrance J. Martin and J.C. Richmond

Introduction

A total of 1,082 animal remains were obtained during investigations at Fort Leavenworth in 1992. More than 85% of the specimens from these assemblages by count and by weight were recovered from the Fincher site, 14LV358, in a location that corresponds to an early and mid-nineteenth century enlisted men's discard area in Area 881 (Wagner et al. 1989). The remaining 147 faunal remains are from 14LV351 and reflect refuse discarded in post-Civil War privy vaults (HBS 5 and 38) behind Thomas (HBS 39) and McPherson (HBS 10) Halls, the back yard of Thomas Hall (HBS 39), a mid-nineteenth century dump in a ravine that was probably associated with Thomas and McPherson Halls (HBS 40-41), a series of early to late nineteenth century barracks (HBS 46 and HBS 47-49), a late nineteenth century officer's/twentieth century non-commissioned officer's quarters (HBS 131-133), and an unidentified early twentieth century structure (HBS 141). In addition to providing information on animal exploitation patterns, the contrast between enlisted men's quarters at 14LV358 and officer's quarters at 14LV351 offered the potential of revealing different meat consumption patterns between officers and enlisted men at Fort Leavenworth during the nineteenth century. The recovery of additional faunal data from area 881 at 14LV358 also provided the opportunity to test earlier impressions (Wagner et al. 1989:277-286) with a larger sample.

Methods

The faunal assemblages were analyzed at the Illinois State Museum Research and Collections Center in Springfield where identifications were facilitated by the use of modern skeletons in the extensive zoology collection. The following information was recorded on tags and on a dBase III Plus computer file: provenience, class of animal, taxon to finest level possible, anatomical element, side, portion of element, completeness, cultural and natural modifications (e.g., burning, cut marks, and damage by carnivores and/or rodents), weight of the specimens in grams, and count. Animal remains recovered by flotation were scanned for unique taxa that were not encountered in the macrofaunal remains. Except for the presence of very small bird eggshell fragments, the material from flotation samples did not

contribute additional animal taxa that were not already represented among the macrofaunal remains.

Summary calculations include the numbers of specimens (NSP) and identified specimens (NISP), minimum number of individuals (MNI) per taxon, total weight of specimens per taxon in grams, and (for 14LV358) estimates of biomass in kilograms for each taxon. Two or more specimens were counted as one if they were elements that could be refitted. Estimates of MNI were calculated from the sites at large (the minimum distinction approach; see Grayson 1973) and were based on element, symmetry, portion, individual age, and body size. For site 14LV358, evaluation of relative importance was also attained by the use of allometric scaling, which provides an estimate of the amount of edible meat obtained from the various animals represented at the site. As described by Reitz and Scarry (1985:18), "the weight of the archaeological bone is used in an allometric formula to predict the quantity of biomass for the skeletal mass recovered rather than the total original weight of the individual animal represented by the recovered bone." This approach avoids the problems of determining whether the meat from entire animals was consumed at the site from which the archaeological sample was collected. Biomass estimates for 14LV358 were calculated from the total weight of bones of a taxon at each site using formulas provided by Reitz and Scarry (1985:67). Because animal remains from 14LV351 consists of eight discrete deposits ("Historic Building Sites"), the samples from the individual deposits were too small for biomass estimates to be meaningful.

Animal remains from domestic mammals were also tabulated according to the butchering units represented by the identified animal remains for cattle (Schulz and Gust 1983:48) and sheep (Lyman 1979:541), and the skeletal portions of swine (Price 1985:47).

Findings of the Faunal Analysis

Fincher Site, 14LV358

A total of 935 animal remains, having a total weight of approximately 8,000 g, were recovered from 6 units and one shovel test at 14LV358 (Table 7). Represented are mammals, birds, fish, and a bivalve, and their occurrence by unit and levels within units are provided in Tables 8-13. Approximately 30% of the assemblage by count were identified, but these account for 80% by weight. Consistent with the collection obtained from Area 881 in 1988, domesticated species dominate the assemblage with cattle representing 56.3% of the identified specimens and 84.6% of the biomass calculated from the identified remains. Based on the recovered bones, pork was of secondary importance. Just over 75% of the cattle bones consist of rib and vertebra fragments, but bones representing all of the beef butchering units were recovered (Table 14). Cattle and pig skull fragments are restricted to two molariform teeth from cattle in unit A. This along with the complete absence of cattle foot bones indicates that this area received only food refuse and not butchering waste. A total of 51 cattle bones were sawed, and an additional 19 had been chopped by a hatchet

Table 7. Species composition of animal remains from 14LV358 (NISP, Number of Identified Specimens; MNI, Minimum Number of Individuals).

	NISP	MNI	Wt (g)	Biomass
MAMMALS				
Cottontail, Sylvilagus floridanus	2*	1	2.0	.049
Canid, Canis sp.	1	1	.3	---
Horse, Equus caballus	2	1	120.0	1.956
Pig, Sus scrofa	60	2	308.8	4.578
Sheep, Ovis/aeries	5	2	155.9	2.475
Sheep/Goat, Ovis/Capra	4	---	89.9	1.508
Cattle, Bos taurus	153	2	5650.7	62.646
Unidentified Large Mammal	653	---	1584.5	19.948
BIRDS				
Duck sp., Subfamily Anatinae	1	1	.4	.009
Turkey, Meleagris gallopavo	3	1	7.3	.125
Chicken, Gallus gallus	34	5	43.5	.632
Chicken/Turkey, Gallus/Meleagris	1	1	.3	.007
Unidentified Medium Bird	5	---	1.8	.035
FISH				
Buffalo, Ictiobus sp.	5	1	2.4	.060
Unidentified Fish	5	---	.7	.022
BIVALVES				
Giant Cockle, Family Cardiidae	1	1	.3	---
Total Number of Specimens	935		7,968.7	94.050
Total Number of Identified Specimens	272	18	6,381.7	74.045

*Includes one bone from the shovel test at N525/E510.

Table 8. Distribution of Animal Remains (NISP) by Level in Unit A at 14LV358.

Taxon	LV 1	LV 2	LV 3	LV 4	LV 5	LV 6	TOTALS:	NISP	Wt.
MAMMALS									
Cottontail	---	---	---	---	1	---		1	1.4
Sheep	---	---	---	1	---	---		1	71.3
Sheep/Goat	---	---	---	2	---	---		2	71.0
Cattle	1	3	7	29	1	2		43	1817.4
Unid. Lg. Mammal	---	23	93	69	14	---		199	442.6
BIRDS									
Chicken	1	---	1	17	---	---		19	22.5
Unid. Med. Bird	---	---	---	2	---	---		2	.8
FISH									
Buffalo	---	---	2	1	2	---		5	2.4
Unid. Fish	---	---	---	2	3	---		5	.7
Total NSP	2	26	103	123	21	2		277	
Total Wt. (g)	91.7	258.4	419.0	1169.6	59.0	432.4			2430.1

Table 9. Distribution of Animal Remains (NISP) by Level in Unit B at 14LV358.

Taxon	LV 1	LV 2	LV 3	LV 4	LV 5	LV 6	TOTALS: NISP	Wt.
MAMMALS								
Pig	---	---	---	13	3	1	17	83.8
Sheep	---	---	1	---	---	---	1	24.8
Cattle	---	---	3	22	6	2	33	1322.4
Unid. Lg. Mammal	---	---	21	121	38	9	189	391.0
BIRDS								
Duck Sp.	---	---	1	---	---	---	1	.4
Turkey	---	---	---	---	2	---	2	6.1
Chicken	---	---	2	4	5	2	13	17.1
Chicken/Turkey	---	---	---	1	---	---	1	.3
Unid. Med. Bird	---	---	---	---	3	---	3	1.0
Total NSP	0	0	28	161	57	14	260	
Total Wt. (g)	0	0	143.2	1287.1	291.2	125.4		1846.9

Table 10. Distribution of Animal Remains (NISP) by Level in Unit C at 14LV358.

Taxon	LV 5	LV 6	TOTALS: NISP	Wt.
MAMMALS				
Canid	1	---	1	.3
Pig	---	1	1	3.1
Sheep	1	---	1	16.0
Cattle	1	9	10	1428.1
Unid. Lg. Mammal	14	17	31	164.1
BIRDS				
Chicken	---	1	1	2.3
Total NSP	17	28	45	
Total Wt. (g)	117.2	496.7		2613.9

Table 11. Distribution of Animal Remains (NISP) by Level in Unit D at 14LV358.

Taxon	LV 1	LV 2	LV 3	LV 4	TOTALS: NISP	Wt.
MAMMALS						
Pig	2	6	2	---	10	44.1
Sheep	1	1	---	---	2	43.8
Sheep/Goat	2	---	---	---	2	18.9
Cattle	12	5	3	---	20	1784.4
Unid. Lg. Mammal	17	33	15	1	66	206.9
Total NSP	34	45	20	1	100	
Total Wt. (g)	520.4	506.8	69.5	1.4		1098.1

Table 12. Distribution of Animal Remains (NISP) by Level in Unit E at 14LV358.

Taxon	LV 2	LV 6	LV 7	LV 8	TOTALS: NISP	Wt.
MAMMALS						
Horse				2	2	120.0
Pig		1	23	7	31	171.6
Cattle	1	1	24	11	37	979.9
Unid. Lg. Mammal		5	68	69	142	255.4
BIRDS						
Turkey				1	1	1.2
BIVALVES						
Giant Cockle		1			1	.3
Total NSP	1	8	115	90	214	
Total Wt. (g)	12.6	20.6	853.1	642.1		1528.4

Table 13. Distribution of Animal Remains (NISP) by Level in Unit F at 14LV358.

Taxon	LV 3	LV 5	LV 6	LV 7	TOTALS: NISP	Wt.
MAMMALS						
Pig	--	--	1	--	1	6.2
Cattle	1	1	7	1	10	318.5
Unid. Lg. Mammal	3	5	17	1	26	124.5
BIRDS						
Chicken	--	1	--	--	1	1.5
Total NSP	4	7	25	2	38	
Total Wt. (g)	23.9	64.7	304.6	57.5		450.7

Table 14. Butchering Units of Beef (NISP) and Skeletal Portions of Pigs (NISP) Represented at 14LV358 by Excavation Unit.

	A	B	C	D	E	F	TOTALS: NISP	%
BEEF								
Short Loin	4	4	--	2	2	--	12	7.8
Sirloin	3	3	--	4	3	--	13	8.5
Rib*	25	16	3	9	22	4	79	51.6
Round	--	2	--	--	--	--	2	1.3
Rump	--	2	2	--	1	1	6	3.9
Chuck	1	1	1	--	--	3	6	3.9
Arm	1	--	--	--	3	--	4	2.6
Neck	--	2	4	1	3	1	11	7.2
Foreshank	2	--	--	--	1	--	3	2.0
Hindshank	4	1	--	4	2	1	12	7.8
Cranial fragments	2	--	--	--	--	--	2	1.3
Foot bones	--	--	--	--	--	--	0	--
Indeterminate	1	2	--	--	--	--	3	2.0
Totals	43	33	10	20	37	10	153	99.9
PIG								
Skull	--	--	--	--	--	--	0	--
Isolated teeth	--	--	--	--	--	--	0	--
Proximal forequarter	--	--	--	2	6	1	9	15.0
Vertebrae	--	3	1	2	20	--	26	43.3
Ribs	--	10	--	3	4	--	17	28.3
Innominate bone	--	1	--	--	1	--	2	3.3
Proximal hindquarter	--	2	--	1	--	--	3	5.0
Feet	--	1	--	2	--	--	3	5.0
Totals	0	17	1	10	31	1	60	99.9

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*"Rib" includes ribs and thoracic vertebrae from the chuck as well as ribs from short rib, cross rib, short plate, and brisket.

or a cleaver. Only two of the pig bones were sawed, however, and seven had been chopped. An unexpected finding was a .62 caliber lead ball inside a cattle humerus that was recovered from Unit A. Horse remains occurred only in unit E and consisted of a molar and a maxilla fragment. Bones diagnostic of sheep consist of three radii (one sawcut and one chopped), a femur, and a chopped distal tibia. Elements that represent either sheep or goat include a scapula, two innominate bones, and a proximal tibia. Other mammal elements include a canid incisor from unit C and two eastern cottontail bones (an innominate bone fragment from a shovel test and a humerus from unit A). Domesticated birds are also prevalent at the site in the form of chicken with turkey and an unidentified species of duck also present. Aside from duck, aquatic fauna is limited to fish bones in unit A, five of which represent a minimum of one individual buffalo. An imported marine bivalve shell fragment encountered in unit E is from a giant cockle.

HBS Sites

Only small collections of animal remains were recovered from the eight Historic Building Sites at Fort Leavenworth (14LV351). The species compositions of the various assemblages are presented in Table 15. Unit A at HBS 5 is unique in yielding the only bivalves. Both the eastern oyster and the quahog are marine species that were imported to Kansas from either the Atlantic Coast or the Gulf of Mexico. Table 16 shows butchering units of cattle and skeletal portions of swine. Similar to the Fincher site, there is little evidence for butchering activities.

Conclusions

Faunal assemblages from 14LV358 and the HBS sites reveal the importance of domesticated animal species, especially cattle, at Fort Leavenworth. The only diversity from beef, pork, and chicken came by way of occasional servings of sheep, turkey, and waterfowl. Evidence for fish in the diet is limited to buffalo at 14LV358. Oysters and quahog were imported to the post, but the significance of a single fragment of a giant cockle shell at 14LV358 is difficult to evaluate. Attention to the composition of skeletal remains at these sites suggest that butchering occurred elsewhere, and, consistent with previous findings at Fort Leavenworth (Wagner et al. 1989:284), soups, stews, and roasts provided most often along with a variety of rib cuts. Perhaps larger samples of faunal remains from various HBS sites at Fort Leavenworth (14LV351) would reveal differences in diet between officers and enlisted men, but the present data will not support such conclusions at this time.

Table 15. Species Composition of Animal Remains From 14LV351 (NISP, Number of Identified Specimens) by Historic Building Site.

HBS Number:		5		38			39			40-41			46			47	131	141	TOTAL	TOTAL
Unit:	A	B	A	B	Core	A	B	ST	A	B	ST	A	B	ST		ST	ST	ST	NISP	Wt. (g)
MAMMALS																				
Pig, Sus scrofa	--	--	--	1	--	1	1	--	--	2	--	--	--	1		--	1	--	7	34.3
Sheep/Goat, Ovis/Capra	1	1	--	--	--	--	--	--	--	1	--	--	--	--		--	--	--	3	8.6
Cattle, Bos taurus	2	3	1	1	--	3	--	--	1	6	--	--	--	--		1	5	--	23	954.0
Unidentified Large Mammal	16	6	8	6	--	6	3	1	2	6	2	2	2	--		2	18	4	84	297.5
BIRDS																				
Turkey, Meleagris gallopavo	--	--	--	--	2	--	--	--	--	--	--	--	--	--		--	--	--	2	4.9
Chicken, Gallus gallus	1	1	--	--	--	--	--	--	--	2	--	--	--	--		--	--	--	4	3.3
Unidentified Large Bird	--	--	--	--	3	--	--	--	--	--	--	--	--	--		--	--	--	3	2.0
BIVALVES																				
Oyster, Crassostrea virginica	20	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	20	36.7
Quahog, Merceneria merceneria	1	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	1	6.3
Total NSP	41	11	9	8	5	10	4	1	3	17	2	2	2	1		3	24	4	147	
Total Wt. (g)	144.0	83.7	29.2	34.5	5.1	262.0	11.8	2.2	29.2	300.6	7.5	10.2	3.3	2.6		15.4	397.8	6.7		1345.8

Table 16. Butchering Units of Beef (NISP) and Skeletal Portions of Pigs (NISP) Represented at 14LV351 by Historic Building Site.

	5	38	39	40-41	46	47	131	141	TOTALS: NISP	%
BEEF										
Short loin	2	---	---	2	---	---	---	---	4	17.4
Sirloin	1	---	---	---	---	---	---	---	1	4.3
Rib*	1	2	2	3	---	1	2	---	11	47.5
Round	---	---	1	---	---	---		---	1	4.3
Rump	---	---	---	---	---	---	1	---	1	4.3
Chuck	---	---	---	---	---	---	1	---	1	4.3
Arm	---	---	---	---	---	---	---	---	0	---
Neck	1	---	---	---	---	---	---	---	1	4.3
Foreshank	---	---	---	1	---	---	1	---	2	8.7
Hindshank	---	---	---	1	---	---	---	---	1	4.3
Cranial fragments	---	---	---	---	---	---	---	---	0	---
Foot bones	---	---	---	---	---	---	---	---	0	---
Totals	5	2	3	7	0	1	5	0	23	99.4
PIG										
Skull	---	---	---	---	---	---	---	---	0	---
Isolated teeth	---	---	---	---	---	---	---	---	0	---
Proximal forequarter	---	---	---	---	---	---	---	---	0	---
Vertebrae	---	---	---	2	---	---	---	---	2	28.6
Ribs	---	1	1	---	---	---	---	---	2	28.6
Innominate bone	---	---	---	---	---	---	---	---	0	---
Proximal hindquarter	---	---	1	---	---	---	---	---	1	14.3
Feet	---	---	---	---	1	---	1	---	2	28.6
Totals	0	1	2	2	1	0	1	0	7	100.1

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*"Rib" includes ribs and thoracic vertebrae from the chuck as well as ribs from short, rib, cross rib, short plate, and brisket.

CHAPTER IX. EVALUATION OF RESEARCH PROBLEMS

Mark J. Wagner

Introduction

Five specific research hypotheses regarding nineteenth-century dietary patterns, military social relations, material culture, temporal change, and functional activity areas that could be tested with the data from the 1992 investigations were presented in the project proposal (Appendix B). These research hypotheses were developed based on the anticipation that a large sample of cultural material sufficient to address such questions would be recovered from all of the project sites. As noted in Chapter IV, however, a decrease in the level of effort prior to the start of field work, as well as changes in the locations and types of investigations during the course of the project (Appendix C) greatly reduced the ability of the project to address these problems. None the less, the research questions are examined in the following section to the extent that the data permit.

Research Hypotheses

(1) A variance in dietary pattern existed between officers and enlisted men in the nineteenth century Army. This pattern is characterized by access to a wider range of floral and faunal species and more expensive meat cuts by officers in comparison to enlisted men.

This research hypothesis was based on the following premises: (1) that intensive hand excavations would recover large amounts of faunal remains at the two privy vault sites (HBS 5 and 38); (2) that the two privy vaults were in use from ca. 1830 to 1883 when the post sewage system was installed; (3) that the vaults would contain stratified deposits associated with the change of McPherson (HBS 10) and Thomas (HBS 39) halls from enlisted dragoon barracks (ca. 1830-1856) to officer's quarters (Thomas Hall, ca. 1866-1903) and the Headquarters of the Department of the Missouri (McPherson Hall, ca. 1866-1890); and (3) that a large sample of faunal remains would be recovered from the enlisted men's dump (14LV358-881). Only premise three proved to be correct. The decrease in the level of effort at HBS sites 5 and 38 resulted in very small faunal samples being recovered from these two sites (Chapter VII). As noted in that chapter:

> Perhaps larger samples of faunal remains from various HBS sites at Ft. Leavenworth...would reveal differences in diet between officers and enlisted men, but the present data will not support such conclusions at this time.

In addition, rather than being associated with both enlisted personnel and officers, the two privy vaults date only to the mid-1860s when McPherson and Thomas Halls functioned as department headquarters and officers quarters, respectively. Additional limited data regarding the diet of late nineteenth century officers at Ft. Leavenworth was provided by the discovery of a buried dump/discard area at site HBS 40-41 that possibly originated from Thomas Hall (HBS 39) during the latter part of the nineteenth century. Although the types of data needed to fully address the hypothesis regarding variances in dietary patterns between officers and enlisted men were not recovered, some general observations are presented below using site 14LV358-881 and the limited data from HBS sites 5, 39, and 40-41.

Historic accounts indicate that often inedible or insufficient amounts of pork, beef, bread, and coffee formed the main part of the company rations issued to enlisted men from the early to late nineteenth centuries (Rickey 1963; Coffman 1986). Boiling was the most common way of preparing these rations. Beef, soups, vegetables, beans, stews, bacon, and salt pork were prepared by boiling and simmering. Boiling killed parasites and made otherwise inedible or ancient meat safe to eat (Rickey 1963:121-122). In order to supplement their diets, enlisted men had to use their own or company funds to purchase milk, butter, eggs, and other items from sutlers or townspeople (Coffman 1986:341).

The numerous nineteenth century accounts by enlisted men attesting to the inadequacy of their rations stand in marked contrast to the absence of officer's writing on this subject. This suggests that officers had access to a wider variety and more adequate supply of food than enlisted men. Although histories of the nineteenth century military are silent on this subject (Coffman 1986; Rickey 1963), it would appear logical that their superior positions in relation to enlisted men would have provided officers with access to more and better food than enlisted men at the same post. Officers also were able to supplement their diet through hunting. Although enlisted men also formed hunting parties, this apparently was only with the permission of their officers to provide food for the entire garrison (Rickey 1963:120).

The 1988 data from site 14LV358-881 (Wagner et al. 1989) as well as that recovered by the present investigations (Chapter VIII) indicate that meat from domesticated animals--primarily pigs, cows, and chickens--formed the bulk of the diet of nineteenth century enlisted personnel at Ft. Leavenworth. Meat cuts were indicative of the preparation of stews, soups, and hash. The presence of egg shells within the assemblage also indicates that some men purchased non-issue eggs to supplement their diet (McCorvie and Wagner 1993).

The predominance of domesticated animal remains and the high proportion of soup and stew cuts at site 14LV358-181 contrasts markedly with the faunal data from officer's row at Ft. Towson in southeastern Oklahoma (Martin 1987). Wild animal species including rabbits, squirrels, white-tailed deer, and raccoon were well-represented at Ft. Towson while the beef butchering units consisted of a balance of high and middle value cuts (Martin in Wagner et al. 1989:286). In an analysis of faunal remains from a late nineteenth century officer's privy at Ft. Larned, Kansas, Scott (1989:29) similarly found that 66.6% of the bovine remains consisted of high value cuts while 33.3% consisted of medium value cuts. The presence of whole or nearly whole chicken and turkey bones also indicated platter served meats as opposed to stews. Catfish, which is not generally considered a stew dish, also was recovered (Scott 1989:29).

Although faunal remains were recovered from three officer-related sites at Ft. Leavenworth (HBS sites 5, 38, and 40-41), the combined assemblage from these sites totals only 96 bones (Chapter VIII). This contrasts markedly with the almost 8,000 specimens recovered by the present investigations alone at site 14LV358-881. Animal remains from these sites included beef, pork, sheep/goat, chicken and two species of marine shellfish. As noted in Chapter VIII, the faunal assemblage from the HBS sites is simply too limited to draw conclusions regarding officers' diets at Ft. Leavenworth at this time.

The presence of a dietary pattern centering on soups and stews similar to that documented at site 14LV358-881 also has been documented at African-American slave and white middle-class overseer households at Cannon's Point Plantation in Georgia (Otto 1980). Faunal remains from these sites indicated that a variation in food consumption patterns between the slaves and overseers on the one hand and planters on the other with slave and overseer sites producing a high frequency of cleaved bones while the remains from the planter sites were sawn. This variance was interpreted as reflecting the consumption of boiled stews and soups by the low class slaves and middle class overseers while the upper class plantation families consumed steaks. As noted by Otto (1989:11) these "food preparation and consumption habits of the plantation inhabitants reflected the elite and subordinate status" of the three groups.

Alternatively, Baker (1980) and Otto (1980) also have suggested that low proportions of sawn animal bones from African-American sites may be indicative of a distinctive food pattern involving the use of soups and stews. Martin (1988:145-156), however, also found a very low proportion of sawn animal bones in the faunal assemblage from the late nineteenth/early twentieth century Fair View Farm site, an Upland South white farmstead in southern Illinois (McCorvie et al. 1988). Rather than being indicative of the consumption of liquid-based foods, McCorvie et al. (1989) interpreted this pattern as indicative of a reliance upon home-killed cleaved meats as opposed to store-bought sawn meats that reflected the low socioeconomic status of the site occupants due to the poor economic conditions that prevailed in the Shawnee Hills of southern Illinois during the early twentieth century (McCorvie et al. 1988:209).

The high proportion of cleaved stew and soup cuts at site 14LV358-881 supports McCorvie et al.'s (1989) interpretation that this type of pattern reflects socioeconomic status rather than ethnicity (Wagner et al. 1988). In the case of the nineteenth century United States Army, the subordinate status of enlisted men was reinforced by an unequal food distribution system that limited their access to certain types of food in contrast to officers. Scott (1989:29) similarly interpreted the presence of high and medium cost meat cuts at Ft. Larned as an indicator of the higher socioeconomic status of officers in relation to enlisted men noting that "Officers usually had first choice on butchering day, and, because of their higher level of purchasing power due to their rank and status, acquired the best cuts of meat for themselves".

(2) The artifact assemblage will reflect the transition of Ft. Leavenworth from a frontier to garrison post during the nineteenth century. This transition will be marked through a change in the proportion of functional artifact categories through time.

This hypothesis was developed based on two premises: (1) that HBS 5 and HBS 38 represented the privy vaults for McPherson (HBS 10) and Thomas (HBS 39) Halls from when these two buildings were constructed (ca. 1830) until when the post sewage system was installed (1883); (2) that the privy vaults would contain temporally discrete deposits that would be sampled during the hand excavation of the features. Both of these premises proved to be incorrect. As noted in regard to hypothesis #1, archival and map research revealed that HBS 5 and 38 represent a set of 1860s privy vaults rather than spanning the entire period from ca. 1830s to 1883. Rather than the single set of privies shown behind HBS 10 and 39 on the 1977 archaeological site map, a series of privies appear to have been constructed in various locations behind these two barracks at approximate 10 year intervals from ca. 1830 until the post sewage system was constructed in 1883 (Hunt and Lorence 1937:239). Second, the decrease in the level of effort at these sites (Appendix C) from that originally required in the project Scope of Work (Appendix A) resulted in the recovery of only a small sample of hand-excavated materials from upper levels of the two vaults.

In order to adequately address this hypothesis as it was originally proposed, it would be necessary to locate and sample all of the privies located behind McPherson (HBS 39) and Thomas (HBS 10) Halls. If these privies were constructed and abandoned at approximate 10 year intervals, they possibly would contain the types of temporally discrete deposits needed to examine the hypothesis. The partial hand excavation and coring of HBS 5 and 38, however, revealed a surprisingly light artifact frequency in these facilities in comparison to that encountered by excavators of nineteenth century privies at other military installations (O'Brien 1985). This suggests that the privies at Ft. Leavenworth (or at least those on the east side of the Main Parade) were not being routinely used for refuse disposal. The identification of a dump/discard area (HBS 40-41) by the present investigations in the ravine formerly located behind HBS 5 suggests that refuse may have been discarded in to this ravine instead of the nearby privies. The proximity of the Missouri River to HBS 5 and 38 also may account for the low artifact frequency within these two privies. In an 1870

report the post surgeon D.L. Magruder noted that "All refuse at the post is carted about a mile from the Garrison and thrown into the Missouri River" (Hunt and Lorence 1937:286).

(3) Differences in artifact patterning will occur among the various functional site types.

Based on information contained in the project Scope of Work (Appendix A) the functional site types to be investigated by the 1992 investigations included dump/discard areas (14LV358-881), privy vaults/water closets (HBS 5 and 38), dragoon barracks (HBS 10 and 39), lieutenant's quarters (HBS 131-133), band quarters (HBS 46), late nineteenth century privy vaults (HBS 47-49), officer's quarters outbuildings (HBS 40-41), a building of unknown function (HBS 141), and a dump/discard site (14LV358-881) (Table 3). Archival research conducted as part of the current project, however, revealed that many of the HBS sites were the scenes of multiple, functionally diverse occupations rather than being associated with a single activity (Chapter V). In addition, the remains of outbuildings were not encountered at sites HBS 40 and 41 (although a dump/discard area was); the band quarters (HBS 46), one of the dragoon barracks (HBS 10), and the late nineteenth century privy vaults (HBS 47-49) were not sampled by the current investigations; a structure does not appear to have been present at the HBS 141 location; and HBS 131-133 contained both nineteenth century officer's quarters and nineteenth to mid-twentieth century non-commissioned officer's quarters.

Adequate artifact samples that can be used in the comparison of artifact patterns from the various functional site types were recovered from HBS sites 5, 38, 39, 41, and 46 and site 14LV358-181 (Table 17).

Known activities at these locations include late nineteenth century personal sanitation and refuse disposal (HBS 5 and 38), refuse disposal (HBS 41 and site 14LV358-181), and habitation (HBS 39 and 46).

The kitchen, household, and architectural groups formed the majority of the functional artifact categories at all sites. The highest proportions of kitchen artifacts (45.7% and 39.3%) were recovered from sites HBS 40-41 and 14LV358-881, respectively (Table 17). Both sites are interpreted as dump/discard sites that originated through the disposal of refuse and the high proportion of kitchen artifacts at these two sites may be a signature of this type of activity. The highest proportion of architectural items (37.0%) was found at site HBS 39 which represents the remains of an early nineteenth to early twentieth century barracks and officer's quarters (Thomas Hall). The next highest proportion of architectural remains (24.7%) occurred at the enlisted men's dump (14LV358-881), however, indicating that the proportion of architectural remains may not be an accurate indicator of site function at Ft. Leavenworth. In this case, portions of demolished structures appear to have been hauled to the enlisted men's dump and discarded. The two mid-nineteenth century privies (HBS 5 and 38) had virtually identical proportions (25.59% and 25.29%) of kitchen artifacts. A variance was evident, however, in the proportions of household and architectural

Table 17. Functional Artifact Patterns

	HBS 5		HBS 38		HBS 39		HBS 40-41		HBS 46		14LV358-881	
Kitchen	86	25.59	47	26.55	63	27.04	161	45.74	15	23.08	2061	37.97
Household	77	22.92	50	28.25	30	12.87	54	15.34	14	21.54	867	15.97
Architectural	69	20.54	53	29.94	87	37.34	72	20.45	13	20.0	1364	25.13
Transportation	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	7	0.13
Personal	4	1.19	4	2.26	4	1.72	5	1.42	1	1.54	30	0.55
Clothing	6	1.79	7	3.96	1	0.43	6	1.70	0	0.00	46	0.85
Accoutrements	1	0.30	0	0.00	2	0.86	0	0.00	0	0.00	41	0.76
Arms	1	0.30	2	1.13	4	1.72	3	0.86	7	10.77	83	1.53
Other	25	7.44	5	2.83	16	6.87	10	2.84	2	3.07	70	1.29
Unidentified	67	19.94	9	5.08	26	11.16	41	11.65	13	20.00	854	15.73
Prehistoric	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	5	0.09
Total	336	100.00	177	100.00	233	100.00	352	100.00	65	100.00	5428	100.00

items with HBS 38 containing higher proportions of these artifact groups on comparison to HBS 5 (Table 17). As both of these sites are functionally and temporally identical, this variance may reflect the small size of the artifact sample from the two sites. Somewhat surprisingly, given the continuous use since 1827 of Ft. Leavenworth as a military installation, arms-related artifacts comprised a very small proportion of the artifact assemblages at all sites with the exception of HBS 46 (Table 17). The relatively high proportion (10.6%) of arms-related artifacts at this site may reflect the use of this section of the installation as a barracks from the early 1830s to the early twentieth century. Transportation artifacts were not recovered from any of the sites with the exception of 14LV358-881 where they comprised slightly more than one-tenth of one percent of all material recovered (Table 17). The low proportion of transportation items at the Ft. Leavenworth sites is surprising given the presence of numerous dragoon and cavalry units at the post throughout the nineteenth and twentieth centuries. This suggests that transportation-related equipment was being discarded elsewhere at the post, possibly at the "dead animal dump" (present location unknown) that was present at the post in the 1850s (Carr 1912:383).

Ball (1984) defined four artifact patterns indicative of different functional site types: open refuse, sealed refuse, architectural, and residential. The open refuse pattern was marked by high frequencies of ceramic serving vessels and glass containers associated with secondary deposits of household debris such as sheet middens or dump/discard sites; the sealed refuse pattern was comprised of secondary refuse deposited in privies, pits, cellars, or other subsurface features; the architectural pattern was formed by de facto and primary refuse found adjacent to structures and within builders trenches; and the residential pattern was comprised of kitchen and activity-related materials recovered from house sites including foundations, builder's trenches, and yard areas (Ball 1984:29). In terms of Ball's (1984) definitions, sites HBS 5, 38 and 40-41 would be considered sealed refuse sites; site 14LV358-881 would be an open refuse site; and the remaining sites (HBS 39, 46) would be either architectural or residential sites.

Ball's (1984) functional artifact categories and those used by the present investigations differ in the types of material contained within the various categories, making a direct comparison of the two data sets difficult. Some general observations, however, can be drawn using those functional artifact categories such as the kitchen group which appear to be comprised of similar materials. Both the open and sealed refuse patterns are characterized by very high proportions (75%+) of kitchen artifacts.

Site 14LV358 conforms to Ball's (1984) definition of an open refuse pattern. The proportion (39.3%) of kitchen artifacts at this site, however, is less than the lower end of the range (45.49-85.56%) for this pattern as delineated by Ball (1984:30). The proportion of kitchen artifacts within the assemblage may be somewhat deflated due to the high frequencies of household (15.5%) and architectural (24.7%) artifacts from the site. Both of these latter frequencies exceed the high end of the range for these artifact categories (0.46% and 19.27%, respectively) as defined by Ball (1984:30). The much higher proportion of these

artifact categories at site 14LV358-881 may reflect the numerous building and demolition episodes that have occurred at the post since the foundry of Ft. Leavenworth.

HBS sites 5, 38, and 40-41 conform to Ball's (1984) definition of sealed refuse sites. HBS sites 5 and 38 were privies while unit B at site 40-41 contained relatively large sections of plates, bottles, and other breakable items, a characteristic that Ball (1984) associates with materials that have been covered over quickly. The proportions of kitchen artifacts at HBS sites 5 and 38 (25.6 and 25.3%, respectively) fall well below the lower end of the range (45.5%) for this artifact type as defined by Ball (1984). HBS 40-41, however, falls just within this range at 45.7%. The variance in the proportion of kitchen artifacts between the sealed refuse deposit in a ravine and the two privies may indicate that the dumping of kitchen refuse within the privies was discouraged in order to keep these facilities in use as long as possible. The proportion of architectural artifacts at the three Ft. Leavenworth sites (Table 17) falls within the range (10.38-44.70%) that Ball (1984) defined for this category. The household or furnishings class at all three sites (Table 17), however, greatly exceeds the range for this class (0.00-1.02) as defined by Ball (1984). This undoubtedly reflects the large amount of furnishings that would have been required in the Department Headquarters (McPherson Hall) and officer's quarters (Thomas Hall) associated with the two privies and dump/discard site in the mid-1860s.

The proportions of kitchen and architectural artifacts at the two barracks sites (HBS 39 and 46) fall within the range for these artifact categories (kitchen = 34.9-60.9; architectural = 33.7-63.4%) as defined by Ball (1984). Similar to the sealed refuse sites, however, the proportion of furnishings or household artifacts at these sites greatly exceeds the range (0-2.84%) identified by Ball (1984). Again, this probably reflects the high number of furnishings that would have been required in structures that housed entire companies as opposed to a domestic site housing a single family.

(4) Ceramic and other material culture indicators of status will indicate that enlisted men were of lower socio-economic status than officers or contemporary civilian groups.

(5) Enlisted men occupied a subordinate social position within the nineteenth century Army, one which was characterized by unequal access to social and economic power in comparison to officers. This subordinate role will be reflected in variations in the types and quantities of material goods associated with the two classes in the archaeological record.

Hypotheses #4 and 5, although worded slightly differently, both postulate that the subordinate or lower socio-economic relationship of enlisted men to officers will be definable in the archaeological record on the basis of variations in the material culture associated with these two classes. Two sites--HBS 41 and site 14LV358-881--produced sufficient samples of ceramic material for the purposes of investigating hypotheses #4 and 5. The artifacts recovered at HBS 41 are interpreted as representing items discarded by officers occupying Thomas Hall (HBS 39) during the late nineteenth century (ca. 1866-1903) while 14LV358-881 is associated with enlisted men from the 1830s to 1870s.

The interpretation of site 14LV358-881 as an enlisted men's dump is based on archival and archaeological information recovered by 1988 investigations at the site (Wagner et al. 1988). Similar to the present investigations, the 1988 excavations revealed that nineteenth century cultural deposits in area 881 extend from 30-90 cm beneath the surface. A series of fill layers, sometimes separated by culturally sterile lenses of slopewash, were definable within the midden. The site was tentatively identified as an enlisted men's dump based on the types of artifacts recovered (i.e., enlisted men's brass shoulder scales and stamped brass General Service cap insignia). In addition, artifacts diagnostic of this status (i.e., gilt ceramics including porcelain) were small in number, suggesting a place of origin other than officers' quarters. The small number of food preparation artifacts (i.e., ceramic mixing bowls) also were interpreted as being indicative of an enlisted men's mess as more food preparation activities would have occurred at officers' quarters which had kitchens. Based on these and other data, the refuse deposited at 14LV358 was interpreted as having originated from the enlisted men's barracks located on the west side of the Main Parade (Figures 10-13). A ca. 1865 map of the post shows that at that time there was a road running west from the Main Parade past site 14LV358-881 to a quarry located on the west side of the installation (Hunt and Lorence 1937). Refuse originating at the enlisted men's barracks on the west side of the Main Parade could easily have been transported to site 14LV358-881 via this old quarry road (Wagner et al. 1988:290).

In sum, as both sites 14LV358-881 and HBS 41 are functionally similar, the materials from these sites should theoretically represent unbiased samples of the types of materials associated with officers and enlisted men, respectively, in the nineteenth century military.

Officers were separated from enlisted men by a vast social gulf created by "the bar of military caste as well as Victorian class sensitivity" (Coffman 1986:288). Although there were exceptions, officers in garrison posts such as Ft. Leavenworth rarely mixed--or sometimes even spoke--with enlisted men except in the line of duty. Only on special occasions such as Christmas was it expected that officers of a company would interact socially with their men by spending some time in their mess hall (Rickey 1963:62-63).

The subordinate role of enlisted men was an essential element of discipline within the "Old Army", i.e., the nineteenth century military. Discipline was required to insure that soldiers were responsive in carrying out orders both while in garrison and on campaign. Relations between officers and enlisted men were governed by the Articles of War, Army Regulations, and periodic general and special orders. These regulations codified the behavior of enlisted personnel and listed punishments for infractions (Rickey 1963:137). As noted by Rickey (1963:137) "fear of punishment was the basis of discipline" within the Old Army. Officers backed by the Articles of War, especially on isolated posts, controlled virtually all elements of the daily lives of the enlisted men. Tyrannical officers could and did punish enlisted men with physical force far beyond what circumstances required (Coffman 1986:198-200). Other officers, however, sought to establish working relationships with enlisted men on the basis of mutual respect (Rickey 1963:140).

The solidarity of the officer class was reinforced by a wide range of social activities from which enlisted men were excluded. Officers and their families hosted dinners for each other as well as for newly arrived officers and other visitors (Coffman 1986:128). At large posts such as Ft. Leavenworth officer's wives planned parties, dances, hops, balls, excursions, holiday celebrations, and other social events (Coffman 1986:63-65, 128). Hunting parties of officers and their wives also were organized (Coffman 1986:248, 287).

In a study of socio-economic status at the late nineteenth century military post of Ft. Larned, Kansas, Scott (1989) identified four factors that appear to be reliable indicators of high socio-economic status within the archaeological record. These are: (1) expensive ceramic types and styles; (2) a high proportion of glass tumblers as opposed to goblets; (3) the presence of animal remains indicative of the preparation and serving of separate portions, i.e., steaks and roasts as opposed to soups and stews. Ceramic vessels associated with the preparation and serving of individual meals include plates and platters; (4) a diverse artifact assemblage indicative of greater wealth and purchasing power (Scott 1989:26-30).

The officer's (unit B, HBS 40-41) and enlisted men's (14LV358-881) dump/discard areas exhibit strikingly similar proportions of food consumption/service, food preparation, and personal service items (Table 18). The officer's dump/discard area does contain a slightly higher proportion (80.1%) of food consumption/service items than the enlisted men's dump (76.6%) but this may simply reflect the variance in the sample sizes. Both sites, however, contain proportionally fewer food consumption/service items and more food preparation items than did the officer's privy at Ft. Larned (Table 18). The higher proportion of food preparation items at the Ft. Leavenworth sites may in some way be associated with their functions as open refuse dump/discard sites as opposed to privy sites but exactly why is unclear.

Undecorated and decorated ironstone, refined earthenwares, porcelain, stoneware, and yellowware were recovered from sites 14LV358-881 and unit B at HBS 40-41 (Table 19). The frequencies of these ware types at the two sites are relatively similar with the exception of porcelain. Although present at both sites, porcelain formed 23.81% of the ceramic assemblage from HBS 40-41 as opposed to 10.76% at 14LV358-881. The higher proportion of porcelain at HBS 40-41 may be status-related. It also could reflect the temporal difference between the sites. Because porcelain was difficult to manufacture or produce, it enjoyed a relatively small market during the early and mid-nineteenth century when site 14LV358-881 was in use. It did not become popular in the United States until Germany and Austria began manufacturing relatively inexpensive porcelain after 1875 (Haskell 1981:23) or approximately the time period that material was being discarded at HBS 40-41. Similar to 14LV358-881, porcelain also formed a small (3%) proportion of the ware types from the officer's latrine (1859-1878) at Ft. Larned (Table 19). This suggests that rather than being status related, the relatively high proportion (23.8%) of porcelain at site HBS 40-41 may reflect the greater availability and lower price of this ware type after 1875.

Table 18.
Comparison of Ceramic Vessel Functions, Selected Sites, Ft. Larned and Ft. Leavenworth.

Vessel Function	Unit B, HBS 40-41 Ft. Leavenworth #	%	14LV358-881 Ft. Leavenworth #	%	*Officer's Privy Ft. Larned #	%
Food Consumption/ Service	17	(80.1)	121	(76.6)	28	(88.0)
Food Preparation	3	(14.3)	36	(22.8)	3	(9.0)
Personal Service	1	(4.8)	1	(0.7)	1	(3.0)

Table 19.
Frequency of Ceramic Vessels by Ware Type, Selected Sites, Ft. Larned and Ft. Leavenworth.

Ceramic Ware Type	Unit B, HBS 40-41 Ft. Leavenworth #	%	14LV358-881 Ft. Leavenworth #	%	*Officer's Privy Ft. Larned #	%
Undecorated Ironstone	8	(38.1)	69	(43.7)	24	(81.0)
China (Refined Earthenware)	-	(--.-)	3	(1.9)	1	(3.0)
Porcelain	5	(23.81)	17	(10.8)	1	(3.0)
Decorated Ironstone	5	(23.81)	33	(20.1)	3	(9.0)
Stoneware	2	(9.5)	23	(14.6)	3	(9.0)
Yelloware	1	(4.8)	13	(8.2)	-	(--.-)

Scott's (1989) correlation of a high frequency of goblets and low frequency of tumblers with high status was supported by the data from the enlisted men's dump (14LV358-881) at Ft. Leavenworth where tumblers and goblets formed 1.6% and 9.2% of the assemblage, respectively (Table 20). This contrasts markedly with Scott's (1989) data from the officer's latrine at Ft. Larned where goblets formed 22% of the assemblage while

Table 20.
Comparison of Minimum Number of Glass Vessels, Various Sites, Ft. Leavenworth and Ft. Larned.

Glass Vessel Type	Unit B, HBS 40-41 Ft. Leavenworth #	%	14LV358-881 Ft. Leavenworth #	%	*Officer's Privy Ft. Larned #	%
Bottles	17	(94.4)	112	(84.2)	44	(73)
Tumblers	--	(--.-)	18	(13.5)	3	(5)
Goblets	1	(5.6)	3	(2.3)	13	(22)

tumblers formed only 5%. These data indicate that goblets are 14 more times frequent in assemblages associated with officers than with enlisted men. Tumblers, although associated both with enlisted men and officers, are almost twice as frequent at enlisted men-related sites. The data from unit B at HBS 40-41 appear to be too limited to address this question. Although tumblers were not recovered from this site while a goblet was (as would be expected from an officer-related site), this may be a reflection of the small sample size.

Comparison of bottle types between HBS 40-41 and 14LV358-881 revealed that the two sites contained virtually the same proportions of functional bottle types (Table 21). The medicine, liquor, patent remedy, and condiment bottles at these two sites were not military issue but would have had to have been purchased with personal funds (Rickey 1963; Coffman 1986). The virtually equal proportions of these bottle types at the two sites suggests that they are not status-related but that rather their contents were equally affordable by officers and enlisted men alike. If only identifiable bottles are considered, the medicine/liquor/patent remedy bottle type forms 78% of the bottles at HBS 40-41 and 85%of the bottles at 14LV358-881. Nineteenth century medicinal and patent remedy products frequently had a high alcohol content. Rather than attesting to illness or poor health on the part of the soldiers, the high proportion of medicine and patent remedy bottles reflects the high rate of alcoholism that plagued officers and enlisted men alike in the nineteenth century army (Coffman 1986:63-64, 350-352, 360; Rickey 1963:156-163).

The correlation of expensive meat cuts such as thin steaks with high status and low cuts indicative of the preparation of soups, meats, and stews with low status individuals was addressed as part of hypothesis #1. As noted in regard to that hypothesis, the data from the enlisted men's dump at Ft. Leavenworth (14LV358-881) differ markedly from that recovered from officer-related sites at Ft. Larned and other nineteenth century military posts.

Table 21. Comparison of Glass Bottle Types, HBS 40-41 and Site 14LV358-881.				
Bottle Type	Unit B, HBS 40-41		14LV358-881	
	#	%	#	%
Medicine/Liquor/Patent Remedy	7	(41.2)	42	(42)
Condiment	2	(11.8)	7	(7)
Unknown	8	(47.0)	41	(41)

In this same vein, Otto (1977), Scott (1989) and Wagner et al. (1991) have used vessel shape, which is associated with the preparation of different types of status-related foods, as an indicator of status. Lower status individuals commonly consumed stews and soups that were served in bowls while high status individuals consumed thins steak cuts and other meat dishes that were served on platters (Scott 1989:27). At HBS 40-41 flatware vessels formed 70% of the assemblage while bowls formed 30%. This proportion is higher than that recorded at Ft. Larned (54%) and may reflect Ft. Leavenworth's function as a garrison post during the late nineteenth century. If anything, officers posted to the Department Headquarters or Infantry and Cavalry School at Ft. Leavenworth may have been higher status than officers at Ft. Larned. In contrast, bowls (based on rim count) formed 58.4% of the identifiable vessels at 14LV358-881.

Finally, Scott (1989) suggested that the presence of a diverse range of artifacts in the Ft. Larned officer's latrine including toys, gaming pieces, clothing, toothbrushes, and other items was indicative of high status. As noted by Scott (1989:30) "the diversity of goods, particularly luxury goods, is indicative of more wealth and a greater purchasing power". A comparison of the proportions of functional categories for site HBS 40-41 and 14LV358-881 weakly supports this position with personal and clothing artifacts forming a lightly higher proportion of the artifact assemblage at HBS 40-41 than at 14LV358-881 (Table 17). Examination of the individual artifacts within the various functional categories, however, lends more support to Scott's (1989) thesis. HBS 40-41 produced a very finely made flow black transfer printed soup tureen, a vessel type not duplicated at site 14LV358-881 deposited the more extensive investigations at this location. Similarly, HBS 40-41 produced an equal number (n=3) of children's toys as did site 14LV358-881 despite the fact that the latter site produced 14 times as many artifacts. HBS 40-41 also produced a handle to a large glass pitcher, an artifact type not represented at 14LV358-881. HBS 40-41 also produced two shotgun shells in comparison to the one recovered at site 14LV358-881, a significant difference in light of the disparity between the artifact assemblages between the two sites.

As noted by Scott (1989), shotguns were not military issue but were personally owned weapons. Officers, because of their relatively higher economic standing, were able to purchase shotguns for recreational and activities such as hunting parties with other officers that were closed to enlisted men.

In sum, the artifact assemblage from HBS 40-41, although limited, does provide some information on the relationship between officers and enlisted men in the nineteenth century military when compared to site 14LV358-881 and other western military posts. The high quality of the tableware from this site which included a finely-made flow black transfer printed tureen is indicative of the formal dinners and other social events that promoted solidarity among the officer class. Toys, although present at both sites, formed a higher proportion of the artifact assemblage at HBS 40-41 than at 14LV358-881. The low frequency of toys at 14LV358-881 reflects the army's policy of discouraging the marriage of enlisted men during the nineteenth century. Army recruiters were forbidden to enlist married men during this time. Although the army did not officially acknowledge the existence of officer's wives and families, it provided for them through the assignment of quarters and supplies to their husbands commensurate with their rank. No such provision was made for enlisted men's families. Enlisted men housed their families in abandoned buildings or small shacks that were described as "wretched" and a "disgrace" by a late nineteenth century surgeon general's report (Coffman 1986:308-309). The high proportion of low cost meat cuts and bowls at site 14LV358-881 reflects the preparation of stews and soups. The ceramic assemblage at HBS 40-41, although limited, was dominated by flatware vessels indicative of the consumption of individual servings of presumably high status meat cuts.

Scott (1989:23) interpreted the accumulation of status-related objects by officers at Ft. Larned as functioning on two levels. First, these objects were the visible expression of the owner's self-perceived status in society. Second, they symbolized the larger society from which the officer's were physically separated, serving as "reminders of one's place in the hierarchy in that society (Scott 1989:31). In addition to serving as reminders of the larger society from which they were separated, however, it is also likely that the possession of high-status objects by officers served to emphasize the social distance that separated officers from enlisted men and emphasize the subordinate position of the latter class.

CHAPTER X. SITE EVALUATIONS AND PROJECT AREA RECOMMENDATIONS

Mark J. Wagner

Introduction

The Scope of Work for the 1992 American Resources Group Ltd., investigations at Fort Leavenworth required background research and Phase II and III investigations (Kansas definition) at seven project locations and site 14LV358, respectively. The purpose of this work was to: (1) precisely define the boundaries of areas 881 and 882 of site 14LV358; (2) to determine if archaeological properties that met the eligibility criteria for inclusion in the National Register of Historic Places (NRHP) were present in project areas 1 through 7.

In the following sections, the cultural resources within project areas 1-7 are evaluated using the procedures presented in the Historic Preservation Plan (HPP) for Ft. Leavenworth (Cox et al. 1989) as well as well as federal (Federal Register 1986) and state (Lees 1990) laws and policies regulating the treatment of historic archaeological sites. A detailed NRHP evaluation is not presented for site 14LV358 which has already been recommended as potentially eligible for the NRHP (Wagner et al. 1989). Management recommendations for the seven project areas and site 14LV358 are presented at the end of this chapter.

NRHP Evaluation Procedure

All 19th and 20th century historical sites within the boundaries of the Ft. Leavenworth military reservation represent cultural properties that potentially meet the eligibility criteria for the National register of Historic Places. These criteria are stated in 36CFR Section 60.6 as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and

a) that are associated with events that have made a significant contribution to the broad pattern of our history; or

b) that are associated with the lives of persons significant in our past; or

c) that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) that have yielded, or may be likely to yield, information important in prehistory or history.

Criteria Considerations: ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register (Federal Register 1976:595).

Although all historical sites at Ft. Leavenworth are potentially eligible for the National Register of Historic Places (NRHP), it is obvious that it would be impossible for financial reasons alone to conduct extensive data recovery operations at all of these sites. In response to this and similar situations faced by land managing agencies, the Secretary of the Interior has placed increasing emphasis on the development of local or regional historic contexts that provide a rational framework through which the significance of cultural properties such as individual military-related sites can be evaluated (Federal Register 1983). A historic context is "a body of information about historic properties organized by theme, place, and time ... a context may be based on one or a series of events or activities, patterns of community development, or associations with the life of a person or a group of persons that influenced the destiny and character of a region ... contexts may be organized according to broad patterns of development and general periods of time, such as early settlement or community development in the 19th century" (U.S. Department of the Interior, National Park Service, Interagency Resources Division 1986:7).

The Secretary of the Interior has published standards and guidelines that establish historic context as the foundation of the preservation planning process and a framework through which decisions about the National Register eligibility of individual cultural properties could be made. Historic context can be used to determine the significance of cultural properties and to guide decisions regarding survey methods, protection strategies, and preservation activities. Historic contexts are dynamic constructs that can and should be revised as new information is gathered and new site types identified (USDI/NPS/IRD 1986:8).

Historic contexts are linked with historic archaeological sites through the concept of "property type". A property type is a "grouping of properties based on a set of shared

physical or associative characteristics. Physical characteristics may relate to structural forms, architectural styles, building materials or site types ... a property type may include a variety of buildings or may be based on distinguishable structural types or functions" (USDI/NPS/IRD 1983:8).

The determination of whether individual property types within a particular area meet the National Register criteria should be based on a consideration of the relationship of the property type to the historic context of the region. The historic context can maximize existing information and data about a region, point out gaps in information regarding the region, and organize data and evaluation criteria in a useful manner. By viewing property types in relation to historic context, it is possible to focus on those properties with the potential to provide data on areas where information is lacking, and avoid repetitive research on similar property types (USDI/NPS/IRD 1986:10).

Wagner et al. (1989:25) separated the historic occupation of Ft. Leavenworth into nine temporal periods associated with changes in the functions and responsibilities of the fort through time. Although characteristics associated with the periods overlap (the Santa Fe Trail, for example was a major overland route until approximately 1865), each period represents a time in which the responsibilities of the post were expanded or changes beyond those of the preceding period. These periods, with one addition (French Exploration and Ft. de Cavignal 1710-1764), were presented by Cox et al. (1989:89) as representing the historic contexts for Ft. Leavenworth (Table 22).

Cox et al. (1989:89) also defined 13 property types for Ft. Leavenworth (Table 22). These categories should be expanded as additional information regarding property types at Ft. Leavenworth becomes available. Based on the current and former (Wagner et al. 1989) investigations, at least six additional property types--dump/discard, outbuilding, privy/sink/water closet, cistern, gun house, and magazine--are warranted (Table 22). The dump/discard property type consists of material scatters and deposits that originated through the discardment of refuse that originated elsewhere on the installation. Privies (also variously referred to as sinks and water closets) were located to the rear of enlisted men's barracks, officer's quarters, residences, and other post buildings from the early 1830s until 1883 (Hunt and Lorence 1937:249). The outbuilding property type consists of structures and facilities once located in the rear yards of the enlisted men's barracks and officer's quarters at Ft. Leavenworth. Based on the 1856 and 1875 Surgeon General's report, these minimally consisted of stables, carriage houses, and fuel houses (Barr and Rowlison 1977:42; Hunt and Lorence 1937:288). Cisterns are large, brick or stone lined water retention facilities that were located to the rear of the enlisted men's barracks and officer's quarters during the nineteenth century (Hunt and Lorence 1937:286). A "gun house" and magazine also were located to the rear (east) of HBS 10 in the 1830s (Figures 20, 21).

The NRHP evaluation of individual historical archaeological sites within the Ft. Leavenworth military reservation should be conducted in accordance with the Secretary of the Interior's guidelines and standards regarding historic contexts and property types

Table 22. Historic Context, Property Types, Research Themes, and Evaluation Factors for Historical Sites at Ft. Leavenworth, Kansas.	
Historic Context/Study Units	
1.	Ft. De Cavignal (1714-1764)
2.	Santa Fe Trail and Indian Relocation (1817-1844)
3.	Oregon Trail and Mexican War (1845-1860)
4.	Civil War (1861-1865)
5.	Post-Civil War (1865-1881)
6.	Infantry and Cavalry School (1882-1897)
7.	Spanish American War and Philippine Insurrection (1898-1902)
8.	General Services School (1903-1917)
9.	World War I (1918)
10.	School of the Line/General Staff School (1919-1946)
Property Types	
1.	Officer's Quarters
2.	Enlisted Men's Barracks
3.	Cavalry Buildings
4.	Educational Buildings
5.	Medical Facilities
6.	Administrative Buildings
7.	Prison Buildings
8.	Religious Structures
9.	Cultural Facilities
10.	Commercial Buildings
11.	Technological Features and Utilities
12.	Warehouse and Storage Features
13.	Landscapes

Table 22. Historic Context, Property Types, Research Themes, and Evaluation Factors for Historical Sites at Ft. Leavenworth, Kansas.	
14.	Outbuildings
15.	Privies/Sinks/Water Closets
16.	Cisterns
17.	Gun House
18.	Magazine
19.	Dump/Discard Site
Research Themes	
1.	Architecture
2.	Subsistence
3.	Socioeconomic Status
4.	Material Culture
5.	Trade and Transportation
Evaluation Factors	
1.	Potential to Provide Information
2.	State of Preservation

(Federal Register 1983). The National Register eligibility of these sites should be assessed in terms of their ability to provide information regarding specific research themes associated with the historic contexts of the installation. The creation of study units and research themes provide a vehicle through which the relationship of property types to the historic context of a region can be examined. Once study units and general research themes for an installation such as Ft. Leavenworth have been established, it is possible to develop research questions that examine specific aspects of the installation's development.

The ten temporal phases for Ft. Leavenworth also represent the study units for the installation (Table 22). The characteristics of these study units have been previously presented as part of the historic background research in Chapter III. Each study unit represents a period in which the responsibilities and activities of Ft. Leavenworth changed from those of the preceding period as the result of cultural, economic, and historical factors.

The relationship of property types to a historic context can be examined through the development and investigation of research themes. Once research themes have been defined, more specific research questions can be formulated. Based on the historical background of Ft. Leavenworth, previous archaeological investigations at other military installations (O'Brien 1985; Scott 1989), and the 1988 archaeological investigations (Wagner et al. 1989), research themes for Ft. Leavenworth that can be successfully investigated using archaeological and archival data include architecture, subsistence, material culture, trade and transportation, and socioeconomic status (Table 22).

The historic context, property types, research themes, and information needs should be used in combination to provide a rational framework for an evaluation of the National Register eligibility of individual historical sites. Two criteria must be considered integral parts of the evaluation process: (1) Potential to provide information regarding the historic contexts and property types of Ft. Leavenworth; (2) state of preservation.

NRHP Evaluations

The project Scope of Work required that archaeological investigations be conducted in eight locations, six of which had "definite" historical building remains and had been assigned HBS numbers (5, 10, 38, 39, 41-42, 46-49, 131-133, and 141). The results of the archaeological testing were to indicate whether these HBS sites were eligible or not eligible for the NRHP (Appendix A).

As noted in Chapter V, however, archival map sources checked as part of the current investigations indicated that numerous other historical building sites once existed in project areas 1 through 6 in addition to those assigned HBS numbers by Barr and Rowlison (1977). As the possible presence of such additional sites was not expected, procedures or instructions were not presented in the project Scope of Work for the testing and evaluation of these resources (Appendix A).

Table 23 presents NRHP evaluations by project area for each of the recorded HBS sites using the the concepts of historic context, property type, research themes, and state of preservation. Table 24 lists the additional historic building sites within each of these areas; organizes this data using the concepts of historic context, property type, and research themes; and presents preliminary recommendations regarding the NRHP potential of these sites and the possible need for further archaeological investigations to locate and evaluate these features.

All of the HBS sites were further assigned to one of five categories (I-V) of potential NRHP significance as defined in the Fort Leavenworth Historic Preservation Plan (HPP) (Tables 23 and 24). These categories provide guidance on the treatment, preservation, and management of archaeological properties. Category I and II properties are listed in or

Table 23. NRHP Evaluations.

Project Area	Site Number	Site Type	Historic Contexts	Property Type	Historic Property Category	NRHP Evaluation
Project Area	Site Number	Site Type	Historic Contexts	Property Type	Historic Property Category	NRHP Evaluation
1	HBS131-133	1882-1943 NCO Quarters	6-10	2	IV	Not Eligible
2	*HBS47-49	1881 Privy Vaults	5-8	14	II	Insufficient Data
3	*HBS46	1881 Band Quarters	5-6	2	N/A	Insufficient Data
4/5	HBS39	1830s-1903 Dragoon Barracks/Officer's Quarters	2-8	2-6	I	Eligible
5	HBS38	1866 Privy/Sink/ Water Closet	5	14	I	Eligible
5	HBS39	1830s-1903 Dragoon Barracks/Headquarters	2-8	1-2	I	Eligible
6	HBS5	1866 Privy/Sink/ Water Closet	5	14	I	Eligible
6	HBS40	19th Century Outbuilding	2-7	14	IV	Not Eligible
6	HBS41	19th Century Outbuilding	2-7	14	IV	Not Eligible
7	HBS141	19th/20th Century Indeterminate Structure	6-8	14	IV	Not Eligible
8	14LV358	Early to Mid-Nineteenth Century Enlisted Men's Dump	2-5	19	I	Eligible

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*=Testing was insufficient to determine presence or absence of HBS47-49 within project area 2; overlay of 1881 post map with modern-day map indicates that HBS46 is located south of project area 3; HBS10 was not tested (Appendix C).

Table 24. Management Recommendations by Project Area.

Project Area	Site	Site Type	Property Type	Historic Property Category	NRHP Potential	Avoidance Feasible	Avoidance Unfeasible
1	HBS131-133	1882-1903 NCO Quarters	2	IV	Ineligible	No Further Work	No Further Work
1	*Archival Site A	?-1881 Officer's Quarters	1	II	Potentially Eligible	Preservation In Place	Test Investigations
2	HBS47-49	1881-1905 Privy Vaults	15	II	Potentially Eligible	Preservation In Place	Monitor During Construction
3	HBS46	1881 Band Quarters	2	IV	Ineligible	No Further Work	No Further Work
3	Archival Site B	1828-1856 Infantry Barracks	2	IV	Ineligible	No Further Work	No Further Work
3	Archival Site C	1856-1882 Company Barracks	2	IV	Ineligible	No Further Work	No Further Work
4	HBS39	1830s-1903 Dragoon Barracks/Headquarters	2-6	I	Potentially Eligible	Preservation In Place	Test Investigations
5	HBS10	1830s-1903 Dragoon Barracks/Officer's Quarters	2-6	I	Potentially Eligible	Preservation In Place	Test Investigations
5	HBS38	1866 Sink/Privy	14	I	Potentially Eligible	Preservation In Place	Mitigation/ Excavation
5	HBS39	1830s-1903 Dragoon Barracks/Headquarters	1-2	I	Potentially Eligible	Preservation In Place	Test Investigations
5	Archival Site D	1830s Gun House	17	II	Potentially Eligible	Preservation In Place	Test Investigations
5	Archival Site E	1830s Magazine	18	II	Potentially Eligible	Preservation In Place	Test Investigations
5	Archival Site F	1830s Sink/Privy	15	II	Potentially Eligible	Preservation In Place	Test Investigations
5	Archival Site G	1840s Sink/Privy	15	II	Potentially Eligible	Preservation In Place	Test Investigations
5	Archival Site H	1881 Sink/Privy	15	II	Potentially Eligible	Preservation In Place	Test Investigations
5	Archival Site I	19th Century Outbuildings	14	II	Potentially Eligible	Preservation In Place	Test Investigations
6	HBS5	1866 Sink/Privy	15	I	Potentially Eligible	Preservation In Place	Mitigation/ Excavation
6	HBS40	19th Century Outbuilding	14	II	Potentially Eligible	Preservation In Place	Test Investigations
6	HBS41	19th Century Outbuilding	14	II	Potentially Eligible	Preservation In Place	Test Investigations
6	Archival Site J	19th Century Outbuildings	14	II	Potentially Eligible	Preservation In Place	Test Investigations
6	Archival Site K	1830s Sink/Privy	15	II	Potentially Eligible	Preservation In Place	Test Investigations
6	Archival Site L	1840s Sink/Privy	15	II	Potentially Eligible	Preservation In Place	Test Investigations
6	Archival Site M	1881 Sink/Privy	15	II	Potentially Eligible	Preservation In Place	Test Investigations
6	*Field Site A	19th Century Dump/Discard Area	19	I	Potentially Eligible	Preservation In Place	Excavation/ Mitigation
7	HBS141	Late 19th/Early 20th Century Indeterminate Structure	14	IV	Ineligible	No Further Work	No Further Work

Archival Sites = These are sites that are potentially present within the project area based on 19th century maps and photographs. Sources included: Anonymous 1835, 1839, ca. 1855; Campbell 1874, 1881; Johnston 1839; Potter 1865; Mitchell 1866; Swords 1837; Shoemaker 1848; Sheridan 1876.
Field Site A = This site consists of a late nineteenth century dump/discard scatter located in a ravine in the approximate location where Barr and Rowlison (1977) showed HBS41 to be located.

eligible for inclusion in the NRHP. All efforts should be made to avoid adversely effecting these properties during project and mission planning. Category III properties are of minor importance but may contribute to the character of a historic district. They may be eligible for the NRHP. Category IV properties are of no historic significance and are note eligible for the NRHP (Cox et al. 1989:90-91).

HBS Site NRHP Evaluations.

Project area 1 contained HBS sites 131-133, three non-commissioned officer's quarters dating from 1882-1943 (Table 23). Systematic shovel testing across the lawn containing these three structures revealed that all three are heavily disturbed. Shovel tests within the structure foundations revealed that all three are filled with brick and limestone rubble. Apparently when the structures were demolished in the 1940s, the demolished remains were used to fill the subsurface cellars located beneath the structures. Soil horizons around these structures are also highly disturbed as the result of the 1940s demolition. Intact midden deposits were not present adjacent to any of the three structures. Based on our evaluation it is the opinion that the extensive disturbance to these three structures has effectively destroyed their NRHP potential. All three are recommended as being ineligible for the NRHP.

Barr and Rowlinson (1977) identified three late nineteenth century privy vaults (HBS 47-49) within project area 2 on the basis of archival data. Information provided by post Museum personnel during the course of these present field investigations, however, indicated that Barr and Rowlinson's (1977) placement of these privy vaults was incorrect and that no structures were ever located within project area 2. As a result, at a meeting with the Corps of Engineer representative on October 30, 1992, it was agreed that archaeological investigations within project area 2 would be restricted to shovel testing (Appendix C). As noted in Chapter V, however, an overlay of existing post buildings with the 1881 post map--if correct--indicates that as many as five privy vaults may be located beneath project area 2 (Figure 9). The data provided by the shovel tests, excavated to a maximum depth of 45 cm below surface, were insufficient to determine whether these vaults actually are located beneath project area 2. As such, the NRHP eligibility of these features cannot be assessed.

Barr and Rowlinson (1977) identified the front yard of existing building 46 as the former location of the late nineteenth century band headquarters (HBS 46). As noted in Chapter V, however, an overlay of the 1881 map with the 1977 post map revealed that the L-shaped structure identified as the "Band Quarters" is located south of project area 3 (Figure 9). The excavation of two 1 m^2 units within project area 3 also failed to identify any in situ structural remains (Chapter V). As HBS 46 lies outside of the area of archaeological investigations within project area 2, an NRHP evaluation of this site is not possible.

HBS 39 is located within project areas 4 and 5. Barr and Rowlinson (1977) show this structure as being located immediately south of the existing structure at 2 Sumner Place.

Based on the dimensions for this structure provided on various nineteenth century maps, however, as well as field observations and measurements made during the current investigations, the existing structure at 2 Sumner Place was constructed through the center of HBS 39 following its demolition. The archaeological investigations within project area 5 conducted as part of the current project were confined to the former rear (east) yard of this structure. These revealed that the upper 30 to 80 cm of this area has been heavily disturbed, consisting primarily of brick and rubble layers. The former brick cistern to HBS 39, however, was discovered in unit B at 82 cm below the present ground surface. This cistern dates to at least 1870. A description of the HBS 39 and other cisterns at Ft. Leavenworth were described as follows in the Surgeon General's report for 1870:

> Each of the officer's quarters, as well as each barrack for the enlisted men is supplied with a good cistern which furnishes, in ordinary seasons, most excellent drinking water throughout the year (in Hunt and Lorence 1937:286).

The identification by the investigations of the cistern associated with HBS 39 indicates that despite the disturbance to the upper soil horizons within project area 5 architectural features associated with Thomas Hall (HBS 39) still exist within these areas. Although the interior of the HBS 39 cistern was not investigated, it should be expected that this feature was intentionally filled following the extension of a water line from the city of Leavenworth into the base (Hunt and Lorence 1937:249). As such, this feature may contain artifactual and other debris that can provide information on late nineteenth century military life. HBS 39 and its associated features such as the cistern have the potential to provide information on the architectural, material culture, subsistence, trade and transportation, subsistence, and socioeconomic status associated with all nineteenth century historic contexts at Ft. Leavenworth. As such, it is recommended as being eligible for the NRHP.

HBS 10 and HBS 38 also are located within project area 5. In accordance with instructions received from the COE representative, archaeological investigations were not conducted within the southern section of project area 5 containing HBS 10. Although the base of a nineteenth century wine bottle was collected from an eroded area above HBS 10, the NRHP eligibility of this property cannot be evaluated. HBS 38 is a ca. 1866 six-chambered privy/sink/water closet located to the rear of HBS 10. The current archaeological investigations located and sampled one of the chambers to this privy. This revealed that the chamber vault extends to at least 5.60 ft below the present ground surface. Cultural, botanical, and faunal material that can provide information regarding material culture, subsistence, and trade and transportation research themes within the historic context of the post-Civil War (1865-1881) utilization of Ft. Leavenworth was recovered from the vault. HBS 38 is recommended as having high NRHP potential.

HBS 5, 40, and 41, are located within project area 6. HBS 5 is a ca. 1866 privy/sink/water closet associated with McPherson Hall (HBS 10). The archaeological investigations successfully located and sampled at least two vaults to this six-chambered structures. Botanical, faunal, and cultural materials were recovered from one of the vaults

which extended to ca. 5.40 m beneath the present ground surface. An interior stone wall to one of the vault chambers also was located at 70 cm beneath the ground surface. HBS 10 has the demonstrated potential to produce information that can be used to address subsistence, material culture, architectural, and trade and transportation research themes within the historic context of the post-Civil War (1865-1881) occupation of Ft. Leavenworth. It is recommended as having high eligibility for the NRHP.

HBS 40 and 41 are identified by Barr and Rowlison (1977) as two of a group of three "officer's quarters outstructures" (HBS 40-42) dating from 1881 to 1905 that were located in the rear (east) yards of the barracks and officer's quarters that lined the east side of the Main Parade. The 1875 Surgeon General's report (Hunt and Lorence 1937:288), however, indicates that outbuildings including stables, carriage houses, and fuel houses were located east of McPherson Hall at least six years earlier than the initial date suggested by Barr and Rowlinson (1977). As noted in Chapter V, it is unclear why Barr and Rowlinson (1977) assigned only two HBS site numbers in this area when the 1881 map from which they drew their information shows at least 11 structures in this area. Further, it is unclear which of the structures shown on the 1881 map that HBS 40 and 41 are intended to represent. Finally, although the 1992 investigations were located in the approximate locations of HBS 40 and 41 as shown on the 1977 site map, the area sampled by the investigations in actuality appears to originally have been a ravine located east of the line of outbuildings shown on the 1881 map. Based on measurements made during the field investigations, the line of structures shown on the 1881 map in reality should lie between two to five meters east of the alley that forms the western border of project area 2 (or immediately east of HBS 5). Because of the above problems, it is recommended that HBS 40 and 41 as currently defined are ineligible for the NRHP. These HBS sites will be further discussed in the management recommendations section of this chapter.

HBS 141 is a late nineteenth/early twentieth structure of indeterminate function reportedly located within project area 7. Archaeological investigations within the sloping terrain of this very small project area encountered only a light scatter of architectural debris that may be associated with existing structures in the vicinity of the project area. Based on the lack of archival and archaeological data regarding this structure, HBS 141 has limited potential to address any of the research themes associated with the late nineteenth/early twentieth century historic contexts at Ft. Leavenworth. HBS 141 is recommended as being ineligible for the NRHP.

Site 14LV358 was recommended as being eligible for the NRHP based on the information recovered from the site by the 1988 archaeological investigations (Wagner et al. 1989). The information recovered by the current investigations in area 881 of the site supports that initial recommendation. Specifically, site 14LV358 has the potential to address four research themes--subsistence, material culture, socieoeconomic status, and trade and transportation--associated with early to mid to late nineteenth historic contexts at Ft. Leavenworth (Table 22).

Management Recommendations

Management recommendations are presented by project area in the following section. These are followed by a recommendation regarding the need for detailed archival work prior to any further archaeological investigations in the older sections of the post.

Project Area Recommendations

The recommendations in the following section provide guidance on the management of archaeological resources within the various project areas in relation to the planned construction activities. Three types of recommendations were developed based on assessments of the eligibility or non-eligibility of the property types for the NRHP: (1) no further work; (2) further archaeological investigations; (3) monitoring during project construction.

Sections 4.a.1, 4.c.19, and 7.A.c.1-4 of the Scope of Work further required that guidance be provided regarding potential impacts of the findings of this project to the Master Plan, Mobilization Master Plan, and Annual Construction Plan for Fort Leavenworth (Appendix A). Copies of the Master Plan, Mobilization Master Plan, and Annual Construction Plan, however, were not provided by the government to the subcontractor (American Resources Group, Ltd.). As such, it is beyond the scope of this project to comment on the effects that the findings of this project will have on these planning documents. Similarly, Sections 7.A.3-4 of the project Scope of Work required that alternative project locations be identified in the case of those project areas that contain NRHP eligible properties (Appendix A). Detailed background information (i.e., type of project, plans, cost, etc.) on the planned construction activities in the various project areas, however, were not provided to the subcontractor. As such, it is not possible to identify alternative locations for these activities.

Project Area 1. No further work is recommended in this project area in regard to the late nineteenth/early twentieth century non-commissioned officer's quarters (HBS 131-133). Archival work conducted as part of the current project, however, indicated that an earlier set of mid to late-nineteenth century officer's quarters also once was located in this area (Figure 7). Shovel tests along the western and southern boundaries of the project area encountered soil horizons extending to over 1 m below the present ground surface that produced artifacts that date to the mid to late nineteenth century. This indicates that despite the disturbance caused by the razing of both these earlier quarters and the construction and razing of the later non-commissioned officer's quarters, cultural deposits associated with the Oregon Trail and Mexican War (1845-1860), Civil War (1861-1865), and post-Civil War (1865-1881) may still exist in this area. At a minimum, additional test investigations will be necessary to determine the NRHP eligibility of these deposits before any planned construction in this area.

Project Area 2. This project area potentially contains five late nineteenth century privy vaults dating to the mid to late nineteenth century. It also is possible, however, that the upper portions of these features were disturbed or destroyed during the construction of the existing building in 1882. The use of soil probing or hand excavation through the upper disturbed levels of the rear yard of existing building 46 in an attempt to determine the possible existence or precise locations of these features would be a costly and possibly inaccurate procedure. Attempts by the current investigations to use soil probing to locate subsurface structural features within the various project areas simply did not work due to the large amount of brick and stone rubble that lies beneath the surface of the older sections of Ft. Leavenworth. Rather than hand excavations or soil probing, we recommend that the construction scheduled for this project area be allowed to proceed but that it be monitored by a professional archaeologist. If the remains of a privy vault or other structural features are located the construction work should be halted, the extent of the remains assessed, and all or a sample of the archaeological materials within the construction area should be excavated and analyzed.

Project Area 3. Archival research conducted as part of the current project indicated that the identification of this project area as the location of HBS 46 is incorrect (Chapter V). Archival research indicated, however, that at least two earlier barracks dating to ca. 1830s-1856 and 1856-1882 once were located within this area. Excavation of two archaeological test units within this area, however, recovered only a small amount of military-related and other items. Structural features or in situ midden deposits associated with the earlier structures in this location were not encountered. The archaeological remains within this area appear to have low NRHP potential. As such, clearance for any future construction project in this area is recommended.

Project Area 4. Field investigations were not conducted within this project area (Appendix C). The archival research, however, revealed that this project area is located over the former location of the northern end of McPherson Hall or HBS 39 (ca. 1830s-1903). As such, project area 4 potentially contains archaeological remains associated with the Santa Fe Trail and Indian Relocation (1817-1844), Oregon Trail and Mexican War (1845-1860), Civil War (1861-1865), Post-Civil War (1865-1881), Infantry and Cavalry School (1882-1897) and Spanish-American War and Philippine Insurrection (1898-1902) historic contexts. Archaeological test investigations to assess the NRHP potential of that portion of HBS 39 contained within project area 4 must be conducted prior to any construction or other ground altering activity.

Project Area 5. Barr and Rowlison recorded four HBS sites--5, 10, 38 and 39--within this project area. HBS 5 actually is located within project area 6 and is discussed under that heading. In addition to the three HBS sites, the archival research indicated that numerous other structures including privies/sinks/water closets, a gun house, magazine, and outbuildings are located within this project area (Table 23).

Only HBS 39 will be disturbed by the proposed construction of the new parking garage to 2 Sumner Place. The archaeological investigations revealed that a brick cistern formerly associated with HBS 39 is located approximately 80 cm below the present ground surface at the western edge of the proposed construction area. The upper soil layers (0-50 cm bs) in this area represent fill comprised of structural debris rather than a midden associated with the dragoon barracks (HBS 39). Any original soil layers or midden in this area appear to have been removed at some point in the late nineteenth or early twentieth century. We recommend no further work in this area as long as construction of the proposed parking garage does not involve ground disturbance below 50 cm beneath the present ground surface. If it is necessary to go beneath this depth, further archaeological investigations will be necessary.

The archaeological investigations at HBS 38 revealed that structural features associated with the early history of Ft. Leavenworth are located beneath the grass lawn north of Grant's Statue and south of 2 Sumner Place, outside of the area that will be disturbed by the construction of the parking garage. In addition to the 1866 privy vault (HBS 38) which contained undisturbed in situ deposits, the archival research indicated that three additional privies, a gun house, magazine, and military-related outbuildings once existed in this area. All of these features have the potential to provide significant information regarding the various nineteenth century historical contexts at Ft. Leavenworth. Archaeological investigations consisting at a minimum of the hand excavation of archaeological test units are strongly recommended before any type of ground-disturbing activity occurs anywhere within project area 5 in the future.

Project Area 6. Based on the archival and archaeological data recovered by the 1992 investigations, project area 6 contains the remains of privies/sinks/water closets; outbuildings including carriage houses, stables, and fuel houses; and dump/discard sites contained within a filled-in ravine that ran through the project area in the early nineteenth century (Table 23). The locations provided by Barr and Rowlinson (1977) for HBS 40 and 41 were found to be ambiguous and imprecise. Rather than just three structures (HBS 40-42), a row of at least 11 structures appears on an 1881 map of the installation in this area. The 1866 privy (HBS 5) has been recommended as potentially eligible for the National Register of Historic Places. Before any future construction takes place in this area it is recommended that: (1) archaeological test investigations be conducted in the area of proposed construction to determine the location and extent of possible NRHP archaeological resources; (2) that mechanical equipment be used to remove the disturbed overburden above 1866 privy (HBS 5) to uncover and map the foundation of this feature. Once this has been accomplished, hand excavation of all vault contents to 1 m below the base of the proposed disturbance is recommended (Figure 68).

Project Area 7. Archival and archaeological investigations failed to identify NRHP eligible cultural resources within this project area. Clearance for any proposed construction projects within this area is recommended.

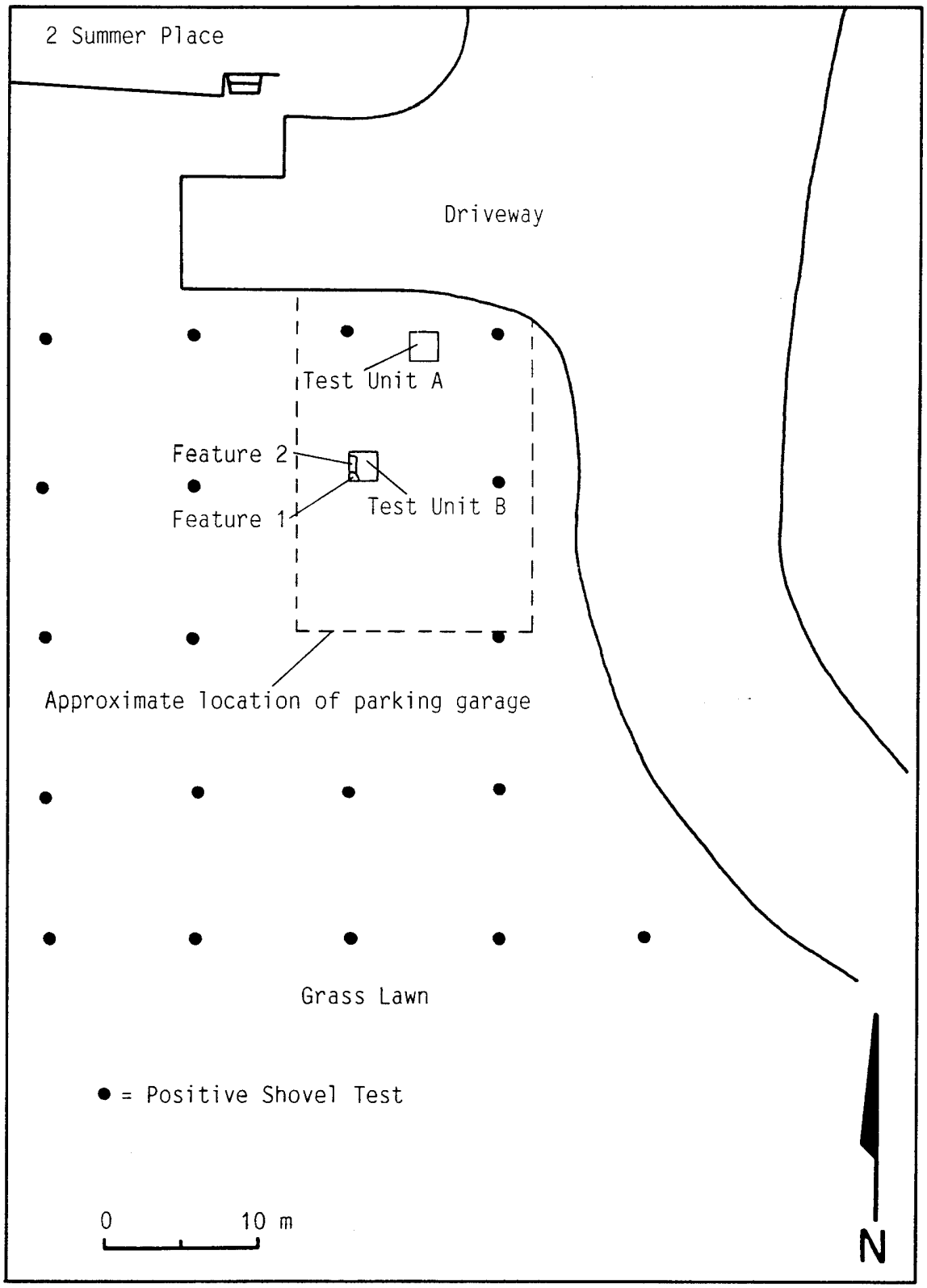


Figure 68. Proposed location of parking garage at HBS 5 in relation to subsurface archaeological features.

Site 14LV358-881. As demonstrated by the 1988 (Wagner et al. 1989) and current (Chapter VI) investigations, site 14LV358-881 contains significant undisturbed cultural deposits containing tens of thousands of artifacts and other remains associated with the early history of the United States Army. Also as noted by Lees (1990:64), site 14LV358-881 contains some of the earliest dated cultural deposits for all of Kansas. Analysis of the artifacts recovered from this site has provided information on the material culture, foodways, and socoieoeconomic status of enlisted men in the United States Army during the early to mid nineteenth century (McCorvie and Wagner 1988, 1993; Wagner et al. 1989). Site 14LV358-881 was recommended as having high NRHP eligibility (Wagner et al. 1989:329-331). The management recommendations for site 14LV358-881 remain the same as in 1989:

> Site 14LV358 (881) contains detailed information regarding the early development of the U. S. Army and the opening of the American West and should be preserved if possible. If preservation is not a viable option, total excavation of (site 14LV358-881)...is recommended. Plowing of the site area to obtain a controlled surface collection is specifically not recommended as this would result in damage to undisturbed midden deposits. The archaeological investigations should consist of hand and mechanical excavations in the undisturbed parts of the site midden. Mechanical excavations should be limited to removing the very compact gravel road and slopewash layer (approximately 20-25 cm) that covers the center of area 881....Following removal of the site overburden, the site midden should be excavated by hand using 2 m^2 or larger units. Following the completion of the excavations, either all or a sample of the recovered artifactual, botanical, and faunal materials should be analyzed (Wagner et al. 1989:332).

Both the 1989 and 1992 hand excavations indicate that variation exists within various parts of the site regarding the types of artifacts and other materials present. The site appears to have formed through the dumping of individual wagon loads of debris that contained varying types of materials. As a result, it is not clear if we yet have an adequate sample of all types of materials contained at the site. We would recommend that at a minimum that Phase III investigations consist of the excavation of at least one north-south and one east-west trench across the site to provide continuous profiles of the site in both directions. Ideally, several east-west trenches should be excavated to provide information further information regarding soil strata and artifact variation within the midden.

We further strongly recommend that if preservation in place of site 14LV358-881 is not feasible, that all--not a sample--of the site be excavated. Site 14LV358-881 has been demonstrated to contain information regarding the opening of the American West, early nineteenth century military lifeways, and the early history of Kansas that cannot, based on current knowledge, be duplicated elsewhere. As such, the artifacts and other materials at the site represent a unique assemblage that should be recovered, analyzed, and curated in their entirety if they cannot be preserved in place.

The current investigations also revealed that the area enclosed by the archaeological site fence needs to be expanded to the north (Figure 69). The site extends approximately 6 m north of this fence. We recommend that a 10 m section of the fence be extended 10 m north to include the northern most of the two cement walls or barriers. This would encompass all of the site located outside of the present fence line and provide a buffer of several meters (Figure 69).

14LV358-882. The work to be conducted at this area of site 14LV358 consisted of relocating the site through shovel testing so that the excessive non-site area enclosed by the archaeological site fence could be reduced. The 1992 investigations at site 14LV358-882 provided the following information: (1) the site covers an approximate 10 m x 10 m area; (2) It is located approximately 55 m west of the current eastern boundary of the archaeological site fence; (3) the fenced area can be reduced as follows: 45 m of the eastern end of the fenced area can be deleted. At the 10th pole to the west on the existing fence line, a new fence line that extends south from the current archaeological site fence to the old fence line will have to be constructed; (4) horses have knocked down a section of the archaeological site fence enclosing both sites 14LV358-881 and -882 (Figure 70). This fence needs to be repaired to stop the horses from damaging the two sites.

Archival Research Recommendations. As noted in this chapter and elswhere in this report, errors exist in the number and placement of Historic Building Sites (HBS) shown on the 1977 archaeological site map (Barr and Rowlinson 1977). The inaccuracy of the locational data and number of historic resources shown on this map seriously hampered the completion of the present project. It is our opinion that the 1977 survey fails to provide adequate information regarding the locations, types, and extent of historic structures associated with the development of Ft. Leavenworth. As such, we recommend that all of the HBS sites recorded by the 1977 archaeological survey be reviewed for locational and historical accuracy. Those which cannot be associated with specific structures (HBS 40-42, for example) should be delisted.

As part of this review, we recommend also that a new literature search to precisely determine the locations of demolished nineteenth century structures and other facilities at Ft. Leavenworth in relation to the present day landscape and structures be conducted. This review should at a minimum include: (1) compilation of an annotated bibliography that lists all photographs, maps, and other documents housed at the Frontier Army Museum, Ft. Leavenworth, Kansas; National Archives, Washington, D.C.; and at other repositories as well as in published sources that provide information on the locations of demolished structures at Ft. Leavenworth; (2) transferance by a professional cartographer of the locational data provided by these maps, photographs, and other research materials to a series of overlays that show the locations of now-demolished structures in relation to existing structures; (3) creation of a new archaeological site map (or maps) that will replace the 1977 archaeological site map.

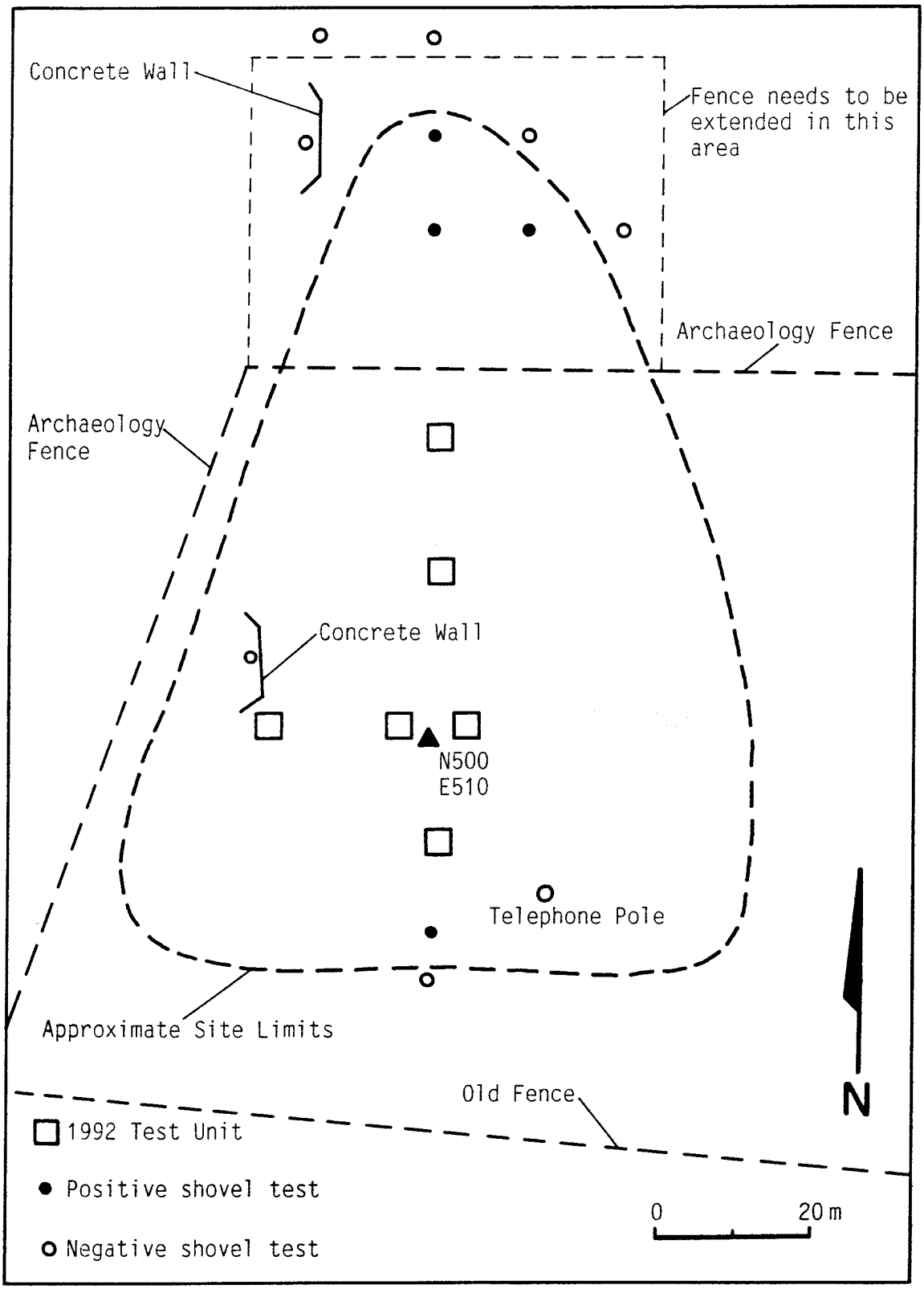


Figure 69. Illustration of management recommendations, site 14LV358-881.

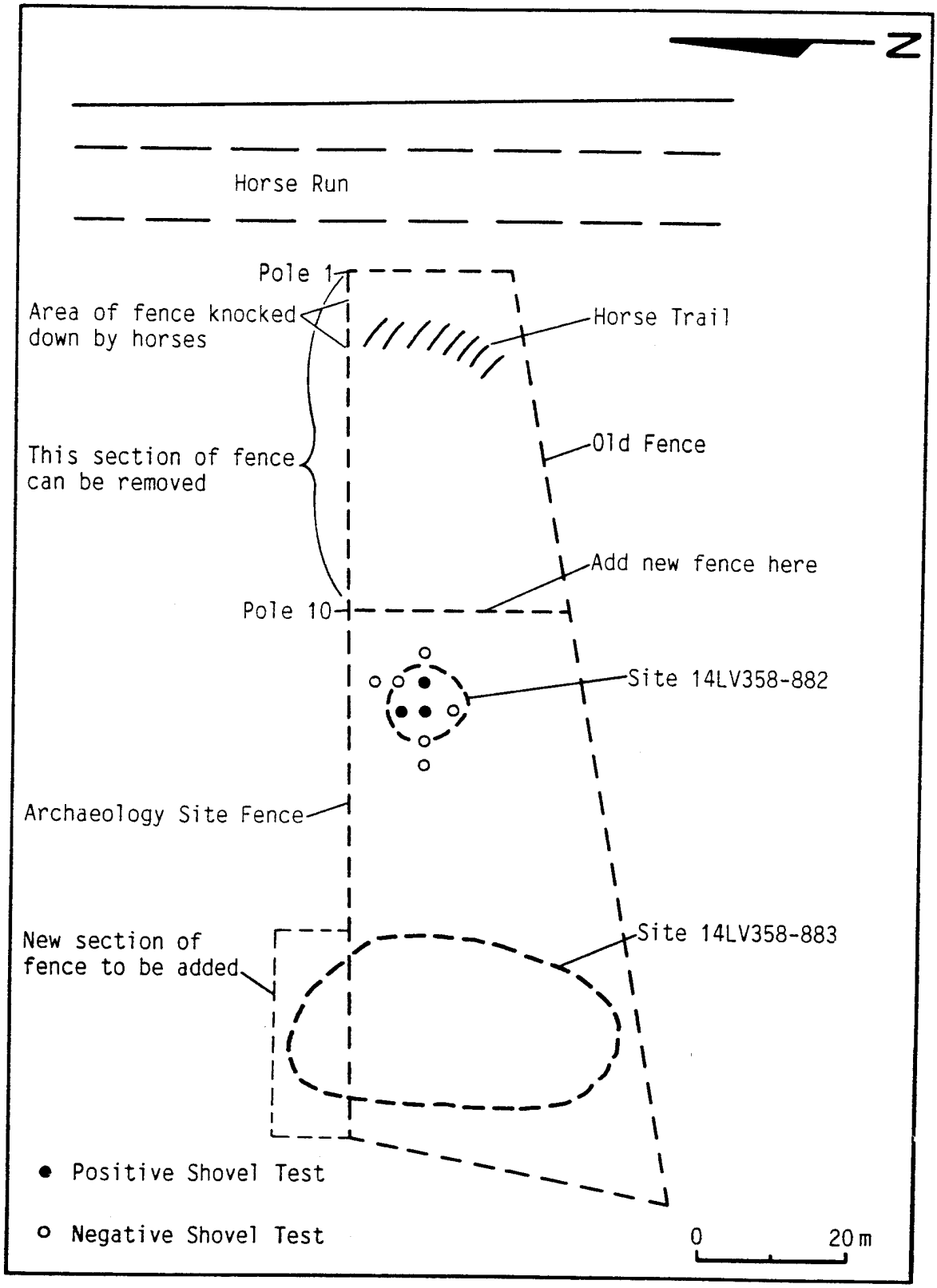


Figure 70. Illustration of management recommendations, site 14LV358-882.

Evaluation of Hydraulic Soil Probe Testing

A hydraulic soil probe was used to test the suspected locations of two ca. 1866 water closets or privies (HBS 5 and 38). The approximate location of HBS 38 initially was determined through a combination of archival research, surface survey, and excavation of archaeological test units. The approximate location of HBS 5 also had been determined through archival research and archaeological investigations. Unlike HBS 38, however, which was visible as a depression surrounded by an embankment in a grass lawn, HBS 5 was not visible on the surface (Chapter V). At both HBS 5 and HBS 38, archaeological hand excavations were necessary to locate the privy walls and chambers before the soil probe was brought in. If the soil probe had been used before the hand excavations had been conducted, the area sampled could have been located outside of the privy vaults or on top of one of the stone chamber walls.

The hydraulic soil core provided data regarding depth of deposits, contents, fill episodes, and material contents and frequency at both HBS sites. Within a space of a few hours in the field the use of this technique revealed that both of the suspected chambers were approximately 20 ft deep, confirming their identification as privy vaults; that very little in the way of cultural material was present in either vault; and that both were largely filled with yellowish brown clay, suggesting either natural (i.e., washed in) or intentional filling of the empty privy vault after it had been abandoned. Recovery of this information through hand excavation would have been extremely expensive, time-consuming, and possibly dangerous to the excavators. In addition, an enormous amount of fill from the vaults would have had to have been removed and placed on the lawn during the course of excavations. Given the historical significance and scenic beauty of the Main Parade area of the Ft. Leavenworth, this would have been an undesirable effect.

In sum, the use of a hydraulic soil core to sample privy vaults to obtain information on the depth and types of deposits was demonstrated to be a cost-efficient and reliable technique. It cannot entirely replace hand excavations, however, which--as in the case of the investigations at HBS 5 and 38--can provide information on the location of the vault chambers and walls prior to the use of the hydraulic soil core.

It should be emphasized in closing that this chapter contains only recommendations that are subject to review by the Kansas State Historic Preservation Office (SHPO) and the Advisory Council of Historic Preservation and does not mandate any action on the part of the Army with respect to historic resources at Fort Leavenworth. Official clearances for particular project actions and determinations of eligibility or noneligibility for particular resources are issued by the state SHPO.

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APPENDIX A

Project Scope of Work

September 1992

SCOPE OF WORK
FOR ARCHEOLOGICAL INVESTIGATION
AT FORT LEAVENWORTH, KANSAS
DACA-41-91-D00017

Outline

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Exhibits

No.	Title
1	Map of the Installation
2	Map of HBS sites and 14LV358 to be Investigated
3	Map (1866) of HBS 5, 10, 38, 39
4	14LV358 and HBS Site Forms (1977)
5	DD Form 1473 - Report Documentation Page
6	Contract Data Requirements List
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SCOPE OF WORK
FOR ARCHEOLOGICAL INVESTIGATION
AT FORT LEAVENWORTH, KANSAS
DACA-41-91-D-0017

1. INTRODUCTION AND PROJECT CONCEPT.

a. This delivery order for Master Planning Services-Military Branch is to be conducted at Fort Leavenworth, Kansas (the Installation) for National Register of Historic Places (NRHP) eligibility testing, and incorporation of those results into the Fort Leavenworth Master Plan, Mobilization Master Plan, and Annual Construction Work Plan;

b. The term "historic properties" used throughout this Scope of Work refers to any prehistoric or historic district, site, building, structure, object and property;

c. The term "Vault" used throughout this Scope of Work refers to a subsurface privy that contains remains associated with human bodily waste and its deposition in a centralized location;

d. Work the Contractor shall accomplish under this Delivery Order includes, but is not limited to, the following:

(1) Discussion with the Direcorate of Public Works (DPW) Planning and/or Design personnel to confirm details of planned construction impacting the areas contained in this delivery order. Once accomplished, the Contractor shall conduct;

(2) Background research and Phase III testing at the Fincher Site, a historic military dump (14LV358 [881]) dating from the 1830's to late 19th Century (See Exhibit 2).

(a) Data analysis, interpretation and identification of cultural materials encountered;

(b) Documentation - maps, forms photographs, reports, and, data as applicable; and,

(c) Preparation of items for curation, and delivery of recovered materials and documentary data to the Installation museum.

(3) Background research and Phase II testing at seven (7) locations on the Installation where the five year management plan identifies likely disturbance due to construction and/or other activities. All such areas are identified with the subsurface remains of historic military structures and/or subsurface historic Vault deposits (See Exhibit 2).

(a) Data analysis, interpretation and identification of cultural materials encountered;

(b) Documentation - maps, forms, photographs, reports, and, data as applicable; and,

(c) Preparation of items for curation, and delivery of recovered materials and documentary data to the Installation museum.

(4) Determination of eligibility to the National Register of Historic Places and, where applicable, their full documentation and preparation for submittal to the SHPO.

2. PROJECT STANDARDS AND REFERENCES

a. The Contractor shall conduct this study in a professional manner, using accepted methodology in accordance with:

(1) Army Regulation (AR) 420-40, ("Historic Preservation");

(2) "Archeological and Historic Preservation: Secretary of the Interior's Standards and Guidelines: (the Standards and Guidelines). These are presented in the Federal Register, Vol. 48, No. 190, September 29, 1983.

3. BACKGROUND RESEARCH AND RESEARCH DESIGN

a. Literature Search. The Principal Investigator shall conduct a review of documentary sources which include past documents and current literature to obtain comprehensive coverage of Master Planning, Mobilization Planning, and the archeological and historical resources on the Installation. The purpose of the literature search is to accumulate, develop, and interpret the acquired scientific and technological data to serve as a basis for the resultant recommendations. This review shall include, at a minimum, consultation with the Kansas SHPO's representative; the Kansas State Historical Society (KSHS); DPW Planning and/or Design Personnel, DPW Building 85, Ft. Leavenworth; The Historic Preservation Officer, DPW Building 85, Ft. Leavenworth; and the Kansas City District (KCD), Corps of Engineers Project Manager.

(1) A review of the National Register of Historic Places and supplements, pertinent available archeological and historical site forms, and the Kansas Master Plans for History and Historic Archeology.

(2) A review of pertinent previous and on-going reports, records and other research data concerning historic properties at the Installation; and,

(3) Consultation with pertinent local individuals and local, county, state and

federal government officials, archeological and historical societies, and qualified professional and amateur authorities, who may have information about historical properties at the Installation.

b. Research Design. The Contractor shall submit a research design based on the Secretary of the Interior's Standards and Guidelines and Kansas Preservation Master Plan. This research design, for extensive historic archeological site testing and subsurface investigation, will optimize the probability of revealing the presence of any intact cultural remains. The cultural manifestations shall be addressed in the research model. The research design shall provide the rationale, goals and methods for investigations of historic archeological properties including, but not limited to:

(1) The reasons for pursuing the proposed investigation;

(2) Hypotheses to be tested and the questions to be asked of the data that is what the investigator hopes to determine about past historic occupations and military/civilian activities;

(3) The explicit manner in which data will be collected and analyzed, and how these relate to the research goals. Include a cost effective means to determine what and how many specialized studies are anticipated;

(4) The testing strategies for each loci, including sampling fractions, test unit size (horizontal and vertical), configuration, and placement;

(5) Descriptive analytic techniques, including description of classification or topology to be used, the relationship of the techniques to research goals, and methods to interpret the data;

(6) Procedures used in processing, cataloging, curation; and,

(7) Schedule and work effort estimates.

4. METHODOLOGY.

a. General Information. The Contractor shall diligently pursue the study in a professional manner. Field work shall begin after the Contracting Officer approves the research design. All data collected during site testing shall be used to fulfill the discussion required in the Report of Findings.

(1) NRHP testing shall be performed at seven locations, of which all have definite historical building remains and have been assigned HBS numbers (5,10,38,39,41,41,46-49,131-133,141; See Exhibits 2 & 4). Results of this testing shall indicate they are eligible or not eligible for the NRHP and shall provide recommendations for future disposition of the sites, and their effect, if applicable, to the overall Master Plan and Mobilization Plan;

(2) NRHP testing shall be performed at a historic military dump (14LV358). Results of this testing shall indicate if it is eligible or not eligible for the NRHP and to what degree the site is damaged, its areal extent, and shall provide recommendations for future disposition of the site;

(3) It will not be appropriate under this delivery order to recommend further or additional testing or site evaluation for eligibility of these sites; this delivery order shall conclude these issues. Work up to completion of the field investigation shall constitute approximately 50% of the effort for this delivery order.

b. Evaluation. The Contractor shall conduct sufficient investigations to provide site evaluations in terms of the Secretary's Standards and Guidelines and published criteria of eligibility for the NRHP (36 CFR Part 60, 36 CFR Part 63 and National Park Service Bulletins 12 and 16 [19 as applicable] and any updates as they become available).

(1) The Contractor shall provide facts, substantiate and give the rationale justifying the decision of the sites suggested eligibility or non-eligibility determination for the NRHP. Site information which must be furnished shall include a detailed description of the nature and extent of the resources, as well as a detailed and convincing statement of significance if the sites are considered to meet NRHP eligibility criteria;

(2) **If the sites appear to meet the NRHP eligibility criteria, the Contractor shall prepare a NRHP nomination form.** One (1) draft copy of the form shall be submitted with the draft report of findings as part of the background data. After the draft copy has been reviewed, one (1) original and one (1) copy of a final version assimilating any Government comments shall be provided to the Government for review and processing; and,

(3) If the sites appear eligible, the Contractor shall suggest research questions and outline a plan for mitigation with specific emphasis on the Master Plan and Mobilization Master Plan. Based on the relative significance of the sites, rank the priorities for accomplishing suggested future mitigation work.

c. Procedures. The Contractor shall conduct the site testing in the following manner:

(1) At a minimum, this archeological investigation must provide the following information;

(a) Detailed horizontal extent of site(s);

(b) Detailed vertical extent (depth of deposits);

(c) Provide detailed information to establish nature and density of deposits; and,

(d) Provide detailed data to develop predictive statement as to potential or lack

of potential sites(s) has for answering questions hypothesized in report and regional oriented research questions, **and whether said site(s) is/are NRHP eligible.**

(2) In reference to the historic military dump (14LV358), intensive sampling/excavation shall be directed in determining subsurface cultural artifact density, and if any areas can be reasonably considered nonsignificant due to lack of materials and\or prior destruction by intrusive activities or erosion (Exhibit 4). Total area to be tested is shown in Exhibit 2. The final report should clearly indicate mitigation strategies, particularly in reference to adverse effects should this area return to horse pasture.

(3) In reference to the loci containing the remains of HBS 5 and HBS 38 (Dragoon Vault), testing is to be directed towards the intensive sampling/excavation of these feature to determine its proportions, depth and potential for well-preserved stratified remains (See Exhibit 2, 3 & 4). Considering the use of this feature in the early history of Fort Leavenworth (1830's), an attempt shall be made to utilized recovered material culture specimens for comparison with those specimens found at the military dump (14LV358) discussed in c.(1) of this page. Such a methodology should provide the research with a temporal/spatial datum at HBS 5 and HBS 38, whereby items located at 14LV358 (881) without said control could be compared and possibly assigned historical and temporal classifications.

(4) In reference to the loci's containing the remains of HBS 5 (Dragoon Vault), HBS 10 (Barrack), HBS 39 (Department Headquarters; Dragoon Barrack), HBS 38 (Vault), HBS 39 (Department Headquarters), HBS 41 (Officer's Quarters Outstructure), HBS 42 (Officers Quarters Outstructure), HBS 46 (Band Quarters), HBS 47 (Barrack Vault), HBS 48 (Barrack Vault), HBS 49 (Barrack Vault), HBS 131 (Lieutenant's Quarters), HBS 132 (Lieutenant's Quarters), HBS 133 (Lieutenant's Quarters), HBS 141 (Indeterminate), and a small area directly west of HBS 41/42 (See Exhibit 2), extensive stratified sampling to determine NRHP eligibility and extent of historical remains. Total areal acreage equals 3.07 acres.

(5) Perform all measurements using both the Standard and Metric systems;

(6) Test units shall be .50 x .50 m (for the purpose of sampling), 1 x 1; 2 x 1; 2 x 2 meter in size. Tests should be of sufficient size and depth to ascertain the presence or absence of cultural materials and their general condition, however, shovel tests and the use of a "Giddings Soil Corer" are authorized (All Cores MUST be refilled and capped with clay);

(7) Collect all diagnostic artifacts and a sample of other surface and subsurface materials (ie., brick, mortar, etc.) at each site; various techniques such as flotation and dry screening should be used, where feasible and/or applicable;

(8) Collect materials for specialized studies (ie., stratified latrine soils) when appropriate. Analysis, beyond what is anticipated in the Research Design, will not occur without written justification by the Contractor and written approval by the Contracting Officer.

(9) Detailed soil stratification profiles shall be made and basic geomorphic data shall be collected;

(10) Photograph all phases of field work, using black and white film and color slides;

(11) Prepare detailed site plans and detailed maps showing site boundaries and visible features of all historic and, if applicable, prehistoric properties located by this study;

(12) In the investigation of 14LV358, a permanent datum shall be placed in close proximity to the site, and shall consist of materials that guarantee long-term survival for future use by other researchers. All points mapped for both topographic and excavation purposes must ultimately be tied into this primary datum. A steel or brass cap, secured by concrete and rebar, shall have the site number, the date the datum was placed, and a X or Plus (+) for accurate establishment of a transit station, punched clearly into the cap. All datum locations are to be identified in the finished plat maps.

(13) Testing to determine eligibility for the National Register of Historic Places shall be conducted in accordance with methodology defined in the basic contract. Should the use of shovel tests be employed, locational data of all shovel tests shall be provided, as will the rationale behind the placement of shovel tests. Documentation of the depth and pedological units encountered during all shovel testing will be provided in the field records. At the completion of testing, all excavated material will returned to its original location. Once backfilling is complete, rake the soil as smooth as possible so that erosional problems can be arrested.

(14) Maintain a complete and thorough record of all field activities, including: field notebooks, site survey and other relevant forms; maps showing site locations etc.; and a photographic record documenting the investigations. The Contractor shall maintain complete records (man hours devoted to each field task, etc.) and include with the draft report a time-and-task summary for all work performed;

(15) After the investigations are completed, document in writing the condition of the sites in accordance with 36CFR63;

(16) Stabilize, process, catalog and prepare all recovered materials. All artifacts shall be labeled with site numbers;

(17) Identify and analyze the cultural materials recovered to provide a base for future use by the archeological profession as data for research;

(18) Consult with Contracting Officer and Mr. Steve Allie, Director, Ft. Leavenworth Frontier Museum to discuss and approve what cultural materials will be curated with the Ft. Leavenworth Frontier Museum; and,

(19) Provide an assessment of the impacts of the study results on the Ft. Leavenworth

Master Plan, Mobilization Master Plan, Annual Construction Plan, and provide recommendations for the revision of those plans; and,

(20) Update HBS and KSHS Site Forms with any new information.

5. INTERIM REPORT.

The Contractor shall provide the Government with eight (8) copies of a brief Interim Report (of not more than 20 pages) of the field investigations with a discussion of the sites investigated and an outline of the content and format of the report of findings. The Government will review and comment on this information. Comments shall be assimilated into the writing of the draft report.

6. CONTENTS OF THE REPORT OF FINDINGS.

(a) General

(1) A brief synopsis, suitable for publication in an abstract journal, bound in front of the report thus serving as an Executive Summary of the findings, conclusions and recommendations;

(2) A brief synopsis of any information to be added to the Master Site List (computer data base) compiled for the Historic Preservation Plan;

(3) A completed Report Documentation Page, DD Form 1473, (See Exhibit 5) to be placed in the front of the final report;

(4) The following statement: "The study performed herein by the Contractor for the Corps of Engineers is called for in the National Historic Preservation Act of 1966 (PL 89-665) as amended. Accomplishment of this work provides documentation evidencing compliance with Executive Order 11593 "Protection and Enhancement of the Cultural Environment" dated 13 May 1971, and Section 110 of the National Historic Preservation Act";

(5) Brief descriptions of the Installation, including historic land-use, physiographic alteration due to military activities, topography, hydrology, geology, soils, flora and fauna as they relate to the investigation. Pertinent data contained in previous reports shall be incorporated by reference; and,

(6) An indepth descriptive cultural history of the study areas, incorporating, by reference, the data contained in previous reports and the results of the literature and archival search and a more detailed discussion of the role of the investigated sites to the history of Fort Leavenworth, Kansas. Historic literary, photographic and cartographic documentation, available from the Fort Leavenworth Frontier Museum, will be incorporated into the final report in an effort to provide clear documentation of the original structures, and their position in the

Installation history.

(b) Study Results

(1) A copy of the approved research design (or a synopsis thereof), with a detailed description of the methods used in research and field and lab work. This description should be of sufficient detail to allow for review and critique of the research design as it was actually implemented by or through literature search, field investigations and analyses; a brief analysis of the results of the research design - were all hypotheses able to be tested, were the results as expected, etc; and,

(2) A brief discussion containing the following information: a. Historic land use and ownership; b. Size; c. General description of the area, general topography; d. Description of testing procedures employed; and, e. Pertinent observations/recommendation.

(c) Include site descriptions with information needed in the Master Site List (in the Historic Preservation Plan) and a discussion of:

(1) Previous investigations (professional and amateur);

(2) Geomorphic setting;

(3) Investigations conducted by this delivery order as they relate to past studies and to the study area; a description of the site and the features and artifacts encountered, presented both in support of the discussion in the text, the research design and also as valuable data for professional use of the report;

(4) Incorporation of research topics following the direction of the Kansas Preservation Plan's four volumes entitles:

A Time of Contrasts: Progress, Prosperity, and the Great Depression, 1900-1940

Section of Historical Archeology

Study Unit on the Period of Exploration and Settlement (1820s-1880s)

The Period of Rural/Agricultural Dominance (1865-1900)

(5) Chapters on all artifact classes and their relationship to the history of the Installation in particular, and the military in general;

(6) Chapter on biological analysis: midden material such as faunal remains,

organic detritus associated with the vaults (latrines), as pertinent;

(7) Interpretation; and,

(8) Summary describing significance of the sites, suggested valid research questions for future work which shall be developed in accordance with the Advisory Council on Historic Preservation's "Treatment of Archeological Properties, A Handbook", November 1980, and the Kansas Archeological Master Plan.

(c) Management Information

(1) Contribution to the regional and US Army potential for addressing topics contained in the Research Design, and other items contributing to future professional use of the report;

(2) Recommendations related to the potential impacts on the Fort Leavenworth Master Plan, Fort Leavenworth Mobilization Master Plan, the Fort Leavenworth Annual Work Plan for small construction or site improvement projects due to compliance with Federal Cultural Resource Protection for investigated sites; and,

(3) A discussion of recommendations for National Register of Historic Places eligibility with justification relating to the historic contexts. Statements of potential eligibility or non-eligibility for the National Register, if any, require sufficient documentation to support recommendations and non-recommendations in accordance with 36CFR60 and 36CFR63.

(d) Miscellaneous

(1) Photographs (black and white), illustrations, maps, tables, graphic representations of data with captions; photographs and slides are to be adequately cataloged and incorporated into the permanent records of the site;

(2) One map showing the investigated sites spatial relationships to the overall Fort Leavenworth Installation;

(3) Site maps - individual maps showing the horizontal provenience and individual maps showing the vertical provenience of the sites, artifact distributions and features investigated during this study. The maps shall indicate features, locations of all tests, and other data critical to understanding each component; profile maps or descriptive chart of the soil stratification found at each site;

(4) A glossary of unusual terms, especially any not contained in previous reports on the Installation; and,

(5) Reference section, at the conclusion of the report, with all sources referred

to in the text or used in the report, personal communciations, interviews, bibliography, etc. Reference to unpublished sources shall include sufficient information to allow location of the document by future researchers.

7. REPORT OF FINDINGS - ADMINISTRATIVE INFORMATION

(A) A report of findings shall be prepared by the Principal Investigator for the Contractor. The main text of the report shall be authored by either the Principal Investigator, key personnel and/or consultants. The Principal Investigator, whose credentials are used to justify the assumption of professional work being performed, shall be a major author of the report. Work up to the submission of the draft report would constitute about 75% of the effort of this project;

(b) The main text of the report of findings shall be written in a professional manner with a minimum of jargon. It must be presented and organized in a manner and form readily usable and understandable by non-cultural-resource-trained personnel. Use of tables, charts and illustrations is encouraged. Detailed presentation and discussion of data on interest to the profession shall be included in a second part of the report or as appendices;

(c) In addition to the aforementioned, the Contractor shall provide conclusions and/or recommendations related to the potential impacts on the Master Plan and/or proposed construction program. Such information shall address:

(1) If the site is found to be historically significant does the extent of the site prohibit any use of the area?;

(2) What are, if any, compatible uses for the area?;

(3) Identify alternative sites for projects that cannot be accommodated in the investigated site locations; and,

(4) Should alternative sites be identified, discuss the compatibility with surrounding areas and uses; proximity to related functions, site constraints that may change the project scope and/or the monetary costs (ie., grades, availability of utilities easements, etc.);

(d) Fourteen (14) copies of a complete draft of the report shall be submitted to the Government for the purpose of review:

(1) For purposes of draft report review only, the Scope of Work and a list of principal staff personnel and consultants, with their qualifications, will be attached as an appendix;

(2) The Government will submit the draft report to Army reviewers, the Kansas SHPO, the Kansas State Historical Society and the National Park Service for review and

comment. The Contractor shall address these comments in the final report unless, in the opinion of the Contracting Officer, none is required;

(3) If the draft report is not acceptable to the Government, the Contracting Officer may, at his discretion, require the Contractor to submit revised draft documents prior to submittal of the final report; and,

(4) In addition to standard review procedures, the Contracting Officer may (at his discretion) send the draft report and background data to three (3) qualified professionals not associated with a State or Federal Government agency for peer review of the merits and acceptability of the report. If this becomes necessary, the Contractor shall provide the three (3) extra copies of the draft documents.

(e) The Contractor shall then complete necessary revisions and submit the final, professionally edited report. The Corps of Engineers, TRADOC and DPW comments shall be incorporated into the final report. The Contractor shall submit one (1) original and one (1) copy of the final report of findings to the Government. The copy shall include all plates, maps, and graphics in place and shall be assembled as a mock-up for reproducing the report;

(f) The Government will review and edit the final report and the assembled copy. If these are not acceptable, the Contractor shall make corrections and re-submit the final report and copy for review and approval. However, the Contracting Officer retains the authority to make the final decision as to whether the report is acceptable; and,

(g) The Contractor shall provide 60 printed copies of the report to the Government after Government approval of the final mock-up copy. Among the recipients (SHPO, KSHS, Corps and other Army offices) of the final report, two copies of the report only will then be submitted by the Government to the Defense Technical Information Center for submittal to the National Technical Information Service for distribution.

8. PROJECT DELIVERABLES

a. All deliverables shall be checked and coordinated prior to all submittals. Deficiencies, ambiguities, conflicts, and inconsistencies shall be rectified prior to submittal of documents. A complete submission must be received by the Government before any review process will begin. Partial submission will only be accepted when requested and approved in writing. The item to be submitted and their quantity and distribution can be found in Exhibit 6; Contract Data Requirements List.

b. Products the Contractor shall deliver include, but are not limited to, the following:

(1) Research Design;

(2) Interim, Draft and Final Reports of Findings;

(3) Narrative slide programs and professional article;

(4) Updated site forms, maps, and NRHP forms, if applicable;

(5) Items for curation and supporting data;

(6) Documentation stipulating the necessary changes to the Installation Master Plan and Mobilization Plan, if applicable; and,

(7) Monthly Progress Reports and Time and Task summaries.

c. Deliverables shall be submitted to the following addresses, as specified. Documentation shall be provided to the KCD for all materials which are provided directly to the DPW, the SHPO, and the KSHS.

(1) Kansas City District, Corps of Engineers
ATTN: CEMRK-PD-R (Ms. Lechliter, Room 612)
601 E. 12th Street
Kansas City, Missouri 64106-2896

(2) Fort Leavenworth
Directorate of Public Works
ATZL-GCE (ATTN: Historical Coordinator)
Building 85
Fort Leavenworth, Kansas 66027-5020

(3) Kansas State Historical Society
Center for Historical Research
Attn: Mr. Martin Stein
120 West Tenth
Topeka, Kansas 66612-1291

9. PROJECT SCHEDULE

a. The Contractor shall submit all deliverables by the date negotiated for this delivery order. In the event the Contractor is delayed on the work due to causes beyond the control and without the fault or negligence of the Contractor, the contract period for completing the work on the delayed portions of the schedule may be extended to one mutually agreed upon in writing by the Contracting Officer and the Contractor.

b. The Contractor shall complete all work and services on this project by 15 October 1993. The project schedule can be found in Exhibit 7. The Principal Investigator must make timely submittals to the Contractor so that the submittal dates to the Government are not missed.

The Contractor's proposed schedule will be discussed at the Pre-Study Conference.

c. The Contractor shall coordinate the field schedule prior to initiation and after completion of any field work with the KCD Project Manager (Ms. Lechliter - #816-426-3402) and with the Fort Leavenworth Directorate of Engineering and Housing Office (DPW) (Mr. Mike Bogner - #913-684-5649). The Contractor's representatives shall have in their possession at all times while on post, authorization provided them by the Army granting them authority to view documents and facilities within the study area.

10. PROGRESS REPORTS

The Contractor shall submit a monthly progress report. The detailed monthly report shall contain an accurate, up-to-date account of all work procedures and results and a time and task summary. Format for the report is found at Exhibit 8 - 1 & 2. It shall provide details on research, analysis and progress. These reports shall be completed as of the 1st day of the month and submitted to KCD by the 4th day of the month with a copy to the DPW.

11. MEETINGS

a. The Contractor shall attend coordination meetings with the Government to include:

(1) One pre-study conference at the DPW office at Fort Leavenworth, Kansas, by 30 October 1992, to coordinate study activities; and, to discuss, at a minimum, contract stipulations, scheduling, letters of authorization, data availability and curation. The meeting will be scheduled by the KCD Project Manager in coordination with the Contractor and DPW. Prior to this conference, the Contractor shall have prepared the study schedule and shall be able to show that references and forms in Exhibit 9 are currently available to the Principal Investigator;

(2) At the discretion of the Government, at least one meeting in the field during the course of the study and one during the laboratory and write-up phase at the Contractor's office;

(3) Meetings with the SHPO's representative and KSHS personnel to review records at their offices in Topeka, Kansas; and,

(4) One meeting at the Installation to discuss the review of the draft report by 15 June 1993.

b. By written request, the Contracting Officer may require the Contractor to furnish the services of technically qualified representatives to attend coordination meetings in addition to those specified above. Payment for such services will be made at the hourly rate negotiated for the disciplines involved plus travel expenses computed in accordance with Government Joint Travel Regulations in effect at the time travel is performed.

12. PROJECT PERSONNEL STANDARDS

a. The Principal Investigator for this delivery order must qualify in the Archeology field, with familiarity in Kansas-Missouri area archeology. Qualifications are listed in AR 420-40, Appendix C-1 and C-7.

b. The Principal Investigator is the person responsible for the day-to-day technical activities during the delivery order. The Principal Investigator shall be in the field a minimum of 2 days for each 3 days of the field investigation and shall be the major author of the reports.

c. The Contractor agrees that the Principal Investigator identified with the Contractor's offer shall be the person utilized in this delivery order for the pertinent studies. A Principal Investigator position may not be vacant for more than thirty (30) days during the course of this contract. Failure to replace the Principal Investigator in that time frame may result in termination of this contract for default. Any changes in the Principal Investigator during the course of this Delivery Order must be submitted in writing and be approved by the Contracting Officer in writing. The new Principal Investigator must meet the minimum and specialized qualifications set forth above. Vitae of the Principal Investigator must be included with the Contractor's offer and must clearly specify the experience and qualifications the person has to fulfill this contract.

d. All consultants must be qualified in their area of expertise.

13. MISCELLANEOUS SENSITIVE ITEMS. These items are materials dealing with exact site locations. They are considered confidential and are not to be published or released. None of these items will be bound into the report of findings nor submitted to the Defense Technical Information Center or the National Technical Information Service. Documentation shall be provided to the Government for all materials which are to be provided directly to the SHPO and to KSHS by the Contractor. Please note the submittal dates on the various items. Some of the following material will be submitted with the draft report to allow for proper review; other materials will be submitted with the final or reproduced final report for distribution or curation.

a. A Cultural Resources Survey Project Summary Sheet with the draft report.

b. Background Data. Nine (9) copies of information required as background data shall be bound and submitted with the draft report. These data are intended for use in planning by the Government and not for publication or release. This volume will have a cover bearing the title of the report of findings, an appropriate reference (appendix, volume, or part number), and the inscription, "Not for submission to the Defense Technical Information Center or the National Technical Information Service." This document will be included in the main Table of Contents of the report of findings. Background data shall include at a minimum:

(1) Reduced (to 8 1/2" x 17") annotated USGS and Basic Information maps indicating exact location of the investigated sites.

(2) Copies of the updated KSHS site form prepared per the most recent KSHS guidelines with all information required.

(3) If any, copies of the NRHP nomination form with any attachments.

(4) An ARPA damage assessment report, if applicable;

(5) Based of the relative significance of the site, and on the ARPA damage assessment, recommend mitigation strategies, such as ARPA enforcement, specific protection measures and data recovery. Rationale for the selection of action with concise recommendations and justifications for both mitigative work and for accepting loss without data recovery shall be presented in accordance with State of the Art references. If no action is suggested for the site, rationale for this recommendation should be stated in detail;

(6) Develop priorities for work to be done at a later date, if applicable, to include level of effort and time and cost of the recommended work, and,

(7) Suggestions which could be added to the HPP and which could be used for interpretive programs.

c. The Contractor shall provide individual responses to all review comments on this report with the final report. The comments and responses are not intended for publication. The comments, whether in comment or question form, must be responded to and/or incorporated into the final report. The Contractor shall demonstrate to the Government in one or more of the following ways how, what and where the comments were answered in the final report. The Contractor can either:

(1) Provide an annotated copy of the draft report containing the actual changes that were made to the final document;

(2) If there is a need to explain the changes made or the reason why the changes were not made, provide separate written statements for each comment describing how the comments were responded to and on what pages and paragraphs of the final report the changes can be found; or

(3) If the responses are obvious, the Contractor can provide the page numbers and paragraphs of the final report on which the changes were made.

d. Specialized Information.

(1) Materials not suitable for publication in the report shall be submitted with the final reproduced report to the DPW. These materials include repetitious photographs of the site, all negatives of photos, feature maps, large amounts of specialized statistical data, a complete listing of the records, field notebooks, and other documentation not of interest to most readers

of the report. All original computer disks/diskettes, programs, notes, records, maps, photographs, and other pertinent data gathered during this Delivery Order are the property of the U.S. Government and will be retained and curated with the artifact collection.

(2) Attached to the letter of transmittal for the final reproduced report shall be a cumulative inventory of all cultural materials found during these investigations and a listing of other items to be curated. Collections shall be properly stored in containers clearly marked "Property of the U. S. Government, Fort Leavenworth, Kansas." These materials shall be stored at the installation Museum or at a repository designated by the Commander, U.S. Army Center of Military History (see AR420-40). If the Installation Museum will not be the repository, appropriate arrangements must be made and approved well in advance of this submittal date. Under no circumstances will the collection be curated outside the state of Kansas.

14. NARRATIVE SLIDE PROGRAM AND PROFESSIONAL ARTICLE.

a. A narrative slide program shall be prepared on the work accomplished under this contract. The Contractor shall furnish a total of five (5) sets of the slide program. Each set shall contain sixty (60) plastic mounted Kodachrome color slides, in plastic sleeves for storage in a 3-ring binder and a six (6) to ten (10) page, single-spaced type-written text on the methodology and results of this investigation suitable for incorporation into the Army's public presentation program. Suggestions for organization and content of the slide program follow.

(1) A simplified summary of the information gathered;

(2) Discussion of methods used to acquired information;

(3) Photographs or illustrations of the sites and artifacts;

(4) Simplified map showing features and extent of site;

(5) Discussion of the location and its importance in the culture history;

(6) Brief discussion on the material and method by which the site was created.

b. The Contractor shall prepare a professional article which details the work and findings produced under this delivery order and shall be suitable for publishing in a professional journal. The article shall be 10 to 15 pages, single-spaced type-written. References shall be added as an addendum to the article.

15. FURTHER RESPONSIBILITIES OF THE CONTRACTOR AND GOVERNMENT

a. Data Availability. The Government will provide the Contractor with the necessary maps, aerial photographs, available background information, remotely sensed data (if any) and

correspondence as needed. In addition, the Government will provide support to the Contractor regarding suggestions on data sources, format of study outline and report, and review of study progress. See Exhibit 9 for material to be supplied or loaned to the Contractor at the Pre-study Conference.

b. Publication. It is expected that the Contractor and those in his employ, may during the term of the delivery order, present reports of the work to various professional societies and publications. Outlines or abstracts of those reports dealing with work sponsored by the Army and the Corps of Engineers shall be sent to the KCD office for review and written approval prior to presentation or publication. Proper credit shall be given the Army and the Corps of Engineers and the Government shall be furnished six (6) copies of each paper presented and/or report published. The report of findings and all associated documents shall become the property of the US Government and shall not be published or reproduced except in accordance with this contract without the express written permission of the Government.

c. Court Testimony. In the event of controversy or court challenge, the Contractor shall make available, as appropriate, expert witnesses who performed work under this delivery order and shall testify on behalf of the Government in support of the findings. If a controversy or court challenge occurs and testimony of expert witnesses is required, an equitable adjustment will be negotiated.

d. Safety Requirements. The Contractor shall provide a safe working environment for all persons in his employ as prescribed by EM 385-1-1, "General Safety Requirements Manual," a copy of which will be provided by the Government. Areas that have active excavation shall be taped to prevent safety hazards both during and between active field work. Field activities associated with areas itemized in 4.c.(3)(4) shall have the sod carefully removed prior to excavation. Said sod shall be protected in such a manner as to guarantee its successful replacement at conclusion of the field work, ensuring a presentable environment subsequent to all investigation. In addition, contact shall be made with the Fort Leavenworth Safety Officer (Regina Ericson; Lowe Hall @ 913-684-3274) to provide necessary consultation in the manner of which precautions can be made for safety during night pedestrian traffic.

e. Professional Conduct and Appearance. The Contractor shall notify the field crew that they will be in a high visibility profile, and must adhere to both professional conduct and appearance during all aspects of this delivery order. The Contractor is reminded that military personnel at Fort Leavenworth are very sensitive to the Installation's outward appearance to both military and civilian personnel. Specifically, those areas discussed in 4.c.(3)(4) are in close vicinity to Main Parade and other significant military locations, and must be maintained in a clean, safe and presentable fashion. **It is not appropriate for the field crew to discuss any aspect of this delivery order with the public and/or media. All such inquiries shall be directed to the Historic Preservation Officer, DPW, Building 85. In no case is it acceptable for the field crew to discuss, reveal and/or allude to other archeological resources located at the Installation.**

f. Field Personnel, Visitors, etc. The Contractor shall notify the Historic Preservation Officer, Ft. Leavenworth, of any scheduled visits by crew family, friends or consultants, for Installation Security provisions.

g. Movement of Archeological Field Personnel About Fort Leavenworth. The Contractor shall require the field crew to remain in those areas described within this delivery order. Free movement by field personnel in remote areas of the Installation is absolutely prohibited without prior approval. In the event such movement is believed to be necessary, one week advance request by the Contractor must be made through the Historic Preservation Officer, coupled with sufficient written justification for making aforementioned request. It is the Installations complete discretion, through the Historic Preservation Officer, to deny any and all such requests outside those stipulated in this delivery order.

16. EQUIPMENT AND FACILITIES. The Contractor must provide or demonstrate access to:

a. Adequate permanent office, field, and laboratory equipment necessary to conduct operations defined in the Scope of Work. The Government will not fund the purchase or lease of such items including alidades, cameras, GPS equipment, transits, typewriters, microscopes, etc. Vehicles cannot be purchased under this contract; however, they can be leased. See Exhibit 9 for necessary references and forms.

b. Adequate laboratory and office space and facilities for proper treatment, analysis, and storage of specimens and records likely to be obtained from the project. This does not necessarily include such specialized facilities as pollen, geochemical, or radiological laboratories, but does include facilities sufficient to properly preserve or stabilize specimens for any subsequent specialized analysis.

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APPENDIX B

Research Design

RESEARCH DESIGN AND METHODOLOGY FOR ARCHAEOLOGICAL TEST INVESTIGATIONS AT VARIOUS HISTORICAL SITES FORT LEAVENWORTH, KANSAS

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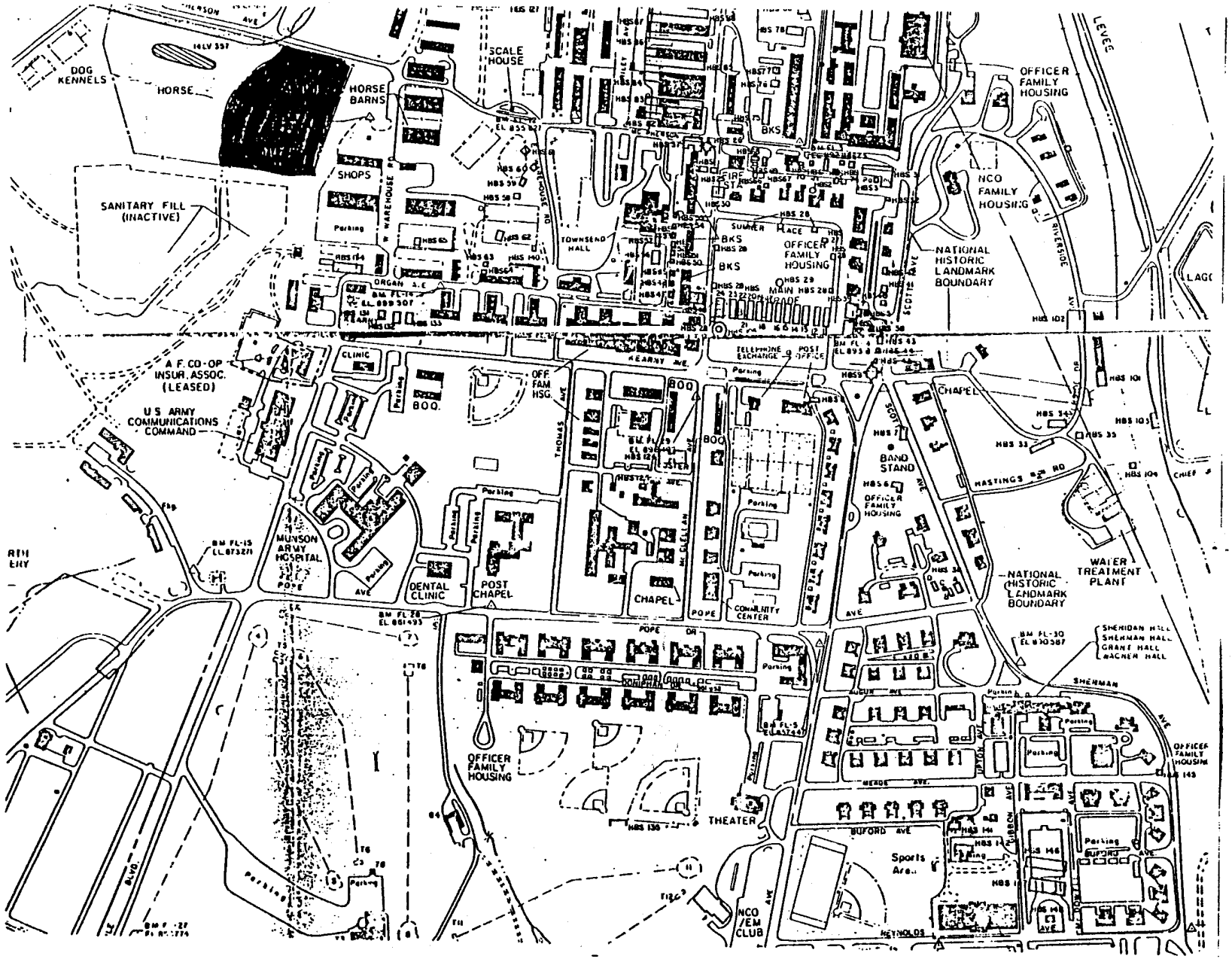
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RESEARCH DESIGN AND METHODOLOGY FOR ARCHAEOLOGICAL TEST INVESTIGATIONS AT VARIOUS HISTORICAL SITES FT. LEAVENWORTH, KANSAS

INTRODUCTION

The primary objective of the Phase II investigations at Ft. Leavenworth, Kansas, is to recover sufficient information to evaluate the archaeological eligibility of 13 historic building sites (HBS 5, 38-41, 46-49, 131-133, 141) and one military dump/discard site (14Lv358-881) (Map 1) for inclusion in the National Register of Historic Places (Appendix A: Scope of Work). All work conducted by American Resources Group, Ltd., at this site will conform to professional standards and guidelines set forth in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register, Volume 48, No. 190, September 29, 1983).

Specific tasks that will be accomplished by American Resources Group, Ltd., as part of the Phase II investigations will include (1) preparation of a research design; (2) a records and literature review; (3) excavation of archaeological materials at 13 locations within the Ft. Leavenworth military reservation; (4) site documentation, i.e., maps, excavation forms, photographs, etc.; (5) analysis of recovered materials; (6) preparation of cultural materials for curation; and (7) prepare a report of findings in accordance with the Scope of Work.


DOG KENNELS
HORSE
HORSE BARNS
SCALE HOUSE
SHOPS
SANITARY FILL (INACTIVE)
OFFICER FAMILY HOUSING
NCO FAMILY HOUSING
NATIONAL HISTORIC LANDMARK BOUNDARY
TOWNSEND HALL
SUMMER PLACE
MAIN
A.F. CO-OP INSUR. ASSOC. (LEASED)
U.S. ARMY COMMUNICATIONS COMMAND
CLINIC
BOQ
OFF FAM HSG
TELEPHONE EXCHANGE
POST OFFICE
CHAPEL
BAND STAND
HASTINGS RD
MUNSON ARMY HOSPITAL
DENTAL CLINIC
POST CHAPEL
COMMUNITY CENTER
WATER TREATMENT PLANT
SHERIDAN HALL
SHERMAN HALL
GRANT HALL
MACNER HALL
SHERMAN
OFFICER FAMILY HOUSING
THEATER
BUFORD AVE
Sports Area
NCO /EM CLUB
REYNOLDS
LEVEE
EXHIBIT 2
14LV358 (DUMP)
= HBS Locations

MAP 1

ENVIRONMENTAL SETTING

The Fort Leavenworth Military Reservation occupies a 5,927 acre tract on the right bank of the Missouri River 27 mi north of Kansas City in Leavenworth County, Kansas. The reservation is situated geographically in the Glaciated Region of Kansas, a dissected drift plain bordered on the south by the Kansas River valley and on the west by the Flint Hills (Mandel 1987:III-3).

At least two ice sheets have previously invaded northeast Kansas and Leavenworth County which left a covering of glacial drift of unconsolidated till and loess of Pleistocene Age over much of the terrain and in lower areas alluvium of more recent age. Most of the topography in the Fort Leavenworth area may be classified as rock-controlled. Typically along the Missouri river in this portion of the state, the country is quite dissected into a rough and hilly terrain. In many cases the topography in this region is deeply incised and contains prominent rugged hills, steep-walled ravines, and long, narrow, winding ridges. Throughout the area exposures of limestone, shale, sandstone, and some coal of the Pennsylvania series of the Carboniferous system of rock can be seen in the eroded ledges. The Oread Limestone is relatively weather resistant, compared to the other rock members, and caps the escarpments in the vicinity. A major topographic feature found in this region is the Oread Escarpment which forms the steep slopes of Government Hill, Pilot Knob, and other conspicuous ridges west of the Missouri River.

The upper courses of the streams found on Fort Leavenworth gradually merge into the uplands and rolling terrain at the heads of the drainages. The drainage is entirely to the Missouri River although some portions of the post are indirectly drained by Salt and Plum creeks to the west and north of the military reservation.

The Missouri River serves as an eastern boundary for Fort Leavenworth. The river varies from 250 m to 350 m in width and flows through a steep-walled valley. The bluffs range from 30 m to 90 m in height with the valley itself being approximately 4.5 km wide near Leavenworth. The Missouri is classified geologically as a mature stream which is characterized by the river flowing in large meanders or long sweeping curves across the floor of the valley. The channel of the Missouri has shifted frequently during the historic period in the Fort Leavenworth vicinity; this shifting of the mainstream often left numerous sloughs, marshes, and oxbow lakes that eventually filled with silt and associated vegetation combinations.

The Missouri River valley forms a corridor which provides a route for an extension of the Central Hardwood Forest through what was once the tall grass prairie. The flora and fauna of the deciduous forest complex have utilized this corridor and the adjacent feeder streams' valleys to spread inland throughout much of northeastern Kansas.

The timbered fringes of the Missouri and of the adjacent smaller tributaries contain an admixture of numerous types of trees usually found associated with an almost impenetrable mass of understory. The forested areas have varieties of oak and elm along with hickory, sycamore, cottonwood, ash, willow, walnut, hackberry, etc. The understory often consists of intermixed species of weedy annuals and

perennials along with greenbrier, gooseberry, wild grape, virginia creeper, sumac, and poison ivy.

Today, Fort Leavenworth supports deer, raccoon, coyote, fox, many forms of rodents plus numerous types of birds. Other fauna consists of amphibians, fishes, turtles, beaver, wading birds, plus migratory and some resident waterfowl species (Barr and Rowlison 1977:3-5).

CULTURAL HISTORICAL CONTEXT

Introduction

Contemporary approaches to cultural resource management emphasize the importance of placing archaeological and historic properties in contexts that include a broad range of related properties classified into defined property types. A historic context is a theoretical construct that is defined as ". . .an organizational format that groups information about related historic properties based on a theme, geographic limits, and chronological period (Federal Register 1983:44718).

The Kansas Preservation Plan (Brown and Simmons 1987) first became available in 1987. Modeled after the National Park Service's Resource Protection Planning Process (RP3), the plan offers study units, cultural units, themes, and research questions for the investigation of the state's past. The historical archaeology section of the Kansas Preservation Plan was not completed until two years later (Lees 1989). Five chronologically based study units were defined to provide cultural contexts for the evaluation of historical archaeological sites. These were: (1) Exploration and Contact with Native Americans (1541-1820); (2)

Exploration and Settlement (1820-1865); (3) Period of Rural and Agricultural Dominance (1865-1900); (4) Time of Contrasts (1900-1939); (5) The Recent Past (1939-Present). Each of these study units represents a period in which major changes in the history of Kansas occurred. Five research contexts--historical particularism, reconstruction of past lifeways, processual studies, archaeological science, and direct historical approach--for the investigation of historical archaeological resources associated with each of the study units also were defined. These research contexts were defined as:

> a statement of problem domains or specific research topics which are of current interest in the state or to which research could be productively applied....these research questions can...be used to structure research, to define the sites of interest and to validate significance evaluations (Lees 1989:75).

The chronological periods presented in the Kansas Preservation Plan Section on Historical Archaeology (Lees 1989) represent the state-wide historic context for Ft. Leavenworth, the occupation of which (1827-present) spans all of these periods. Ft. Leavenworth, however, was created as the result of national policy rather than being associated with internal developments within Kansas. As such, historical archaeological sites associated with Ft. Leavenworth do not reflect the agricultural and industrial changes characteristic of the Period of Rural/Agricultural Dominance (1885-1900) and Time of Changes (1900-1939) respectively.

For the above reasons, it is suggested here that the significance of sites within Ft. Leavenworth should be evaluated on the basis of their ability to provide information regarding the daily lives, activities, and material culture of the tens of thousands of military personnel that

have occupied Ft. Leavenworth from 1827 until the present day. Wagner et al. (1988) defined nine temporal periods for Ft. Leavenworth based on changes in the functions and responsibilities of the fort through time. These periods are: (1) Santa Fe Trail/Indian Relocation (1827-1844); (2) Oregon Trail/Mexican War (1845-1860); (3) Civil War (1861-1865); (4) Post Civil War (1866-1881); (5) Infantry and Cavalry School (1882-1897); (6) Spanish American War/Philippine Insurrection (1898-1902); (7) General Service Schools (1902-1917); (8) World War 1 (1918); (9) School of the Line/General Staff School (1919-1945). Although characteristics associated with the periods overlap (the Santa Fe Trail, for example, was a major overland route until approximately 1865), each period represents a time in which the responsibilities of the post were expanded or changed beyond those of the preceding period.

The above temporal periods were presented (with one revision) by the authors of the historic preservation plan for Ft. Leavenworth as forming the cultural context of the installation (Cox et al. 1989:89). The single revision consisted of the addition of a temporal period (French Exploration and Ft. de Cavaignal [1714-1765]) that pre-dated the founding of the installation.

In the following section, information is presented regarding the characteristics of each of the chronological periods for Ft. Leavenworth (Wagner et al. 1988; Cox et al. 1989). This information forms the cultural context for Ft. Leavenworth and provides a brief history of Ft. Leavenworth to provide a setting for the research questions that can be examined through the Phase II investigations.

Santa Fe Trail/Indian Relocation (1827-1844)

Ft. Leavenworth was established in 1827 on the orders of the War Department. These orders directed that the post be established on the left side of the Missouri River near the mouth of the Platte River. Approximately six weeks following the issuance of the orders, four companies of the 3rd Regiment of the U.S. Infantry under the command of Captain W.G. Belknap left in keelboats from Jefferson Barracks, Missouri, to establish the new post; the wives and children of some of the soldiers accompanied them. The whereabouts of Colonel Leavenworth during this time are unknown, but he appears to have preceded the troops in order to select a suitable site for the cantonment (Blackburn 1971:58).

Colonel Leavenworth's report to the War Department on May 8, 1827, stated that his examination of the country revealed that no suitable site for the cantonment existed on the left side of the river. Using his own judgment, he had selected a site on the right side of the river that offered the advantages of being on the same side of the river as the Santa Fe Trail and being surrounded by dry, rolling country. Leavenworth's choice for the post was approved by the War Department on September 19, 1827, and officially designated as "Cantonment Leavenworth" the same year (Hunt 1926:60).

The initial structures at Cantonment Leavenworth consisted of a tent camp. These were quickly replaced by small bark and log huts erected in the general location of the square known as the Main Parade. By 1828, the bark huts were being replaced by log structures, and new cottonwood stables were under construction (Hunt 1926:22). An 1829 inspection report by Col. George Croghan, inspector general, found that:

> The same mistake has been committed here that I have elsewhere more than once complained of too much has been undertaken everything is upon too vast a scale to warrant a belief in its completion ... within any reasonable time ... A great deal has been done, much more in truth than could have been expected of a garrison so reduced by sickness; still the work is not half accomplished ... A good hospital has been erected, and four houses originally intended to quarter one company each (though now occupied by officers) have been put up and very nearly completed, but there yet remains to be provided for: Officers quarters, store houses, guard house, magazine, etc., etc. (DeZurko 1947:355).

As the above report indicates, the garrison suffered heavily from sickness due to the unhealthiness of the region. Malarial fevers struck the post so severely in 1827 that at one point 77 of the 174 enlisted men were sick. An additional 65 soldiers were detailed to take care of the sick, leaving only 32 men for active duty (Hunt 1926:24). In 1828, a surgeon at the post reported that 163 cases of malaria had occurred during June of that year, 11 of which were fatal (Walton 1973:26). Malarial fevers again struck the post in the spring of 1829 with several deaths resulting. The War Department considered the situation so serious that the 3rd Infantry was ordered to leave the post and proceed back to Jefferson Barracks in St. Louis, Missouri. They were replaced by the 6th Infantry which had orders to spend the summer on the Plains and only occupy the Cantonment in the winter (Hunt 1926:27-30).

The respite for the 3rd Infantry was short lived. Reports of Indian trouble in Randolph County, Missouri, resulted in Colonel Leavenworth ordering one company of the 3rd Infantry and five companies of the 6th Infantry to leave Jefferson Barracks to return to Cantonment Leavenworth. Colonel Leavenworth was able to settle the matter without further bloodshed through meetings with the Iowa Indians and the Missouri settlers (Walton 1973:16-17).

Cantonment Leavenworth had been established to protect trade caravans traveling along the Santa Fe Trail between the United States and Mexico. However, the first expedition to actually perform such a duty did not occur until two years after the post was founded, when a battalion of the 6th Infantry under Major Bennet Riley set out along the trail in June, 1829 (Hunt 1926:32). Major Riley escorted a group of traders as far as Choteau's Island in the Arkansas River; this was the beginning of Mexican Territory, and the regiment went into camp to await the return of the traders in the fall. Indians attacked the caravan shortly after the regiment left it. Notified by messenger of the attack, Riley entered Mexican territory and provided the caravan with an escort for five more days, afterwards returning to Chouteau Island (Young 1955:42). Over the next three months, the command was attacked several times by Kiowa and Comanche Indians who were after their livestock, and several soldiers were killed or wounded (Young 1955:43-48). Riley rendezvoused with the traders in the fall and escorted them back to United States territory, arriving safely at Cantonment Leavenworth on November 8, 1829. Following Riley's expedition, the Santa Fe Trail remained peaceful for several years, but protection was required again in 1832 and 1834 (Richmond 1974:45). In both years companies of Mounted Rangers operating out of the post escorted trade caravans down the Santa Fe Trail. As Hunt (1926:49) notes, this duty was probably more frequent than existing records indicate.

In 1832 the War Department issued an order that all cantonments be reclassified as forts, and the name of the post was officially changed to Fort Leavenworth. Also in 1834 Fort Leavenworth was designated as the

headquarters of the 1st Regiment of Dragoons by the War Department (Barr and Rowlison 1977:19, 21). Dragoons were troops trained to fight both on foot and on horseback and formed a separate branch of service in the pre-Civil War army (Russel 1965:xiii). The 1st Regiment of Dragoons had been organized at Jefferson Barracks, Missouri, in 1833 to replace the Mounted Rangers who had proved ineffective in dealing with the Indians (Hunt 1926:59).

In addition to providing military escort to traders using the Santa Fe Trail, Fort Leavenworth became a center of Indian relocation during the early 1830s as the eastern tribes were forced to give up their lands east of the Mississippi River and move west of the Missouri River. The idea had been suggested as early as 1803, when President Thomas Jefferson proposed that the eastern tribes be given land in an Indian territory west of the Mississippi in exchange for those on which they lived (Richmond 1974:25). Jefferson believed this would result in an orderly American settlement in the east and provide the Indians with time to become civilized (i.e., acculturated); nothing substantial came of this plan. Some missionaries also wished to remove the Indians from white influence which they felt was destroying the Indians spiritually and physically. As early as 1818 Isaac McCoy, a Baptist teacher and minister, believed the only solution to be the creation of an Indian state beyond the Mississippi River where the Indians could become Christian farmers (Barnes 1936:230; Richmond 1974:26). He approached the Secretary of War, John C. Calhoun, with his plan. Calhoun in turn passed it on to President James Monroe who, in 1825, proposed a voluntary migration plan (Manzo 1981:247). In June 1825, William Clark arranged a treaty with the Kansa and Osage Indians whereby they gave up large areas

of land in Kansas for the resettlement of the eastern tribes (Richmond 1974:26). In 1828 Isaac McCoy escorted delegations of Potawatomies, Ottowas, Creeks, Chickasaws, and Choctaws to the west to inspect the new lands (Barnes 1936:228). These and other eastern Woodland Indian groups were distressed by the lack of trees and the severity of the climate in Kansas (Manzo 1981:247-252). Few were anxious to move, and in 1830 Congress passed the Indian Removal bill providing for the mandatory removal of the eastern Indians to a western Indian territory.

Fort Leavenworth was contained within part of the Kansas lands given to the Delaware Indians; no provision had been made in the treaty regarding the boundaries of the military post (Blackburn 1971:65). Isaac McCoy had been designated by the Government in 1830 to survey the lands allotted to the Delaware and other Indian tribes. McCoy reached an agreement with John Quick, a Delaware representative and Indian Commissioner, regarding the location and size of the military reservation. Using soldiers supplied by the post, McCoy surveyed and established the boundaries of the military reservation on December 30, 1830 (Hunt 1926:41-42).

Numerous Indian councils were held at Fort Leavenworth throughout the 1830s. The upper Missouri Indian agent, John Doughtery, had moved his office to Ft. Leavenworth in 1827 shortly after the founding of the post. Both Doughtery and the post commander at the time, Colonel Leavenworth, apparently believed Doughtery would be more useful at the post than at Council Bluffs (Holt and Holt 1985:28). In 1830 Doughtery called the first large council, which was attended by representatives of the Oto, Iowa, Omaha, Shawnee, Delaware, Sac, and Kickapoo tribes (Hunt

1926:39). A second council was held with the Pawnee Indians on September 24, 1830, at the request of Isaac McCoy who was responsible for surveying part of their lands. The Pawnee agreed to the survey, which was completed without incident. A large council was held at the post in 1834 to settle trouble between the Pawnee and Delaware that had started when the Pawnee and their Oto allies continued to hunt on land reserved for the Delaware. The conflict broke into open warfare with the Pawnee ambushing Delaware hunting parties and the Delaware in turn burning a Pawnee village (Walton 1973:24). The Indians began arriving at the post several days before the council, "having pitched their camps in the adjacent groves" (Irving 1955:241). After several days of meetings, the Pawnee and Delaware agreed to a treaty that essentially agreed with the Delaware position, and the matter was settled. Other councils at the fort included one with the Sac and Fox in September, 1836, for the purpose of extinguishing their land titles in Missouri (Hunt 1926:66-67). Doughtery remained as Indian Agent at Ft. Leavenworth until 1839, when he resigned in disappointment over not receiving a promotion to Commissioner of Indian Affairs (Holt and Holt 1985:34-35).

In addition to the Indian councils held at the fort during the 1830s, Indians visited the post frequently to trade with the sutler and apparently just to visit. Treat Irving (1955:28-34) reported seeing a group of approximately 40 Kansa at the post in 1833. Their village was over 100 miles away, suggesting that they were probably camping at the post. The Kansa felt comfortable enough at the post that they would enter the post buildings frequently and without notice. Although the Kansa may have been at the post to attend a council, Irving gives the impression that their presence at the post had no particular purpose.

Irving also reported seeing a Sac Indian in the woods adjoining the post and numerous Kickapoo who had come to trade with the post sutler (Irving 1955:36-38). In all, a considerable Indian presence within the boundaries of the military reservation during the 1830s appears to be indicated.

Military expeditions to police the Santa Fe Trail and impress the Indians with shows of force continued to leave the post during the late 1830s and early 1840s. The major expeditions included the Dragoon Expedition of 1833-1834 during which the first post commander, Colonel Leavenworth, died of injuries; the expedition of Colonel Henry Dodge to the Rocky Mountains and Colorado in 1835; and the Pawnee Village Expeditions of 1844-1845 under the command of Major Clifton Wharton. Military escorts continued to be provided to caravans traveling on the Santa Fe Trail during this period. In 1843 Captain Phillip St. George Cooke escorted a caravan of traders down the Trail to the Mexican border, in the process capturing a group of "Texan Invincibles" under Captain Jacob Snively. These men had been engaged in confiscating property within United States territory under the dubious authority of a Texas commission (Hunt 1926:70). Innumerable patrols and smaller commands also left the post on an almost monthly basis during the 1830s and 1840s to provide escorts, protect civilians from Indian attack, settle disputes among various Indian groups, assist in Indian relocation, and evict squatters from Indian lands (Young 1955:91, 92, 98).

Oregon Trail/Mexican War (1845-1860)

During this period the responsibilities of the post began to expand. Although military escorts continued to be provided to trading caravans

along the Santa Fe Trail, the onset of western migration along the Oregon Trail and the Mexican War expanded the responsibilities of the post beyond that of its original purpose of protecting southwestern bound travelers.

Although the Oregon Trail had been used by fur traders as early as 1813, it was not until 1830 that a wagon train under the direction of William Sublette traveled along the trail to the Rocky Mountains (Richmond 1974:47). By the winter of 1844-45, western bound emigrants planning to use the trail were gathered along the Missouri frontier in unprecedented numbers. A branch of the trail ran through Fort Leavenworth and in May, 1845, the 1st Dragoons received orders to protect western bound emigrants along the trail. In addition, they were to explore as far as the South Pass, discover the disposition of the Indians, and return by way of the Santa Fe Trail to escort the trade caravans east (Young 1955:153). The South Pass Expedition was under the command of Colonel Kearny with the troops supplied from Fort Leavenworth. During this three month 2,200 mile journey, the 1st Dragoons escorted a western bound emigrant train, rescued a group of stranded French-Canadian voyagers, negotiated with the Sioux near Fort Laramie, crossed the Continental Divide at South Pass, met with the Cheyenne, and escorted the trade caravans back up the Santa Fe Trail to Fort Leavenworth (Young 1955:152-171). While on the return trip, the expedition for the first time encountered western bound emigrants along the Santa Fe Trail in addition to the usual trade caravans (Young 1955:171).

Western emigration along the Oregon trail steadily increased throughout the late 1840s. In 1844, there were over 1,400 emigrants; by 1845 3,000; and by 1848 13,000 emigrants, 50,000 head of stock, and 3,000 wagons used the trail. The California Gold Rush of 1848 increased traffic on the trail; 5,350 wagons crossed the Missouri River in a single month in 1849 (Walton 1973:64). In 1848 and 1849 military expeditions were dispatched from Fort Leavenworth to investigate the land around Columbia, Oregon, and the Great Salt Lake area of Utah toward which the immigrants were heading (Hunt 1926:82).

With the beginning of the Mexican War in 1846, Fort Leavenworth became a base for military operations against Mexican possessions in the Southwest. The United States Congress authorized the raising of 50,000 troops to be divided into three divisions: the Army of the West, the Army of the Center, and the Army of Occupation. The Army of the West was to be based at Fort Leavenworth under the command of Colonel Stephen Kearney. With the exception of a small force of Regular Dragoons, Kearney's force was made up of volunteers from Missouri including cavalry, artillery, and infantry units. The entire force numbered 1,658 men. The volunteer recruits were housed, equipped, and trained at Fort Leavenworth until Kearney's expedition departed the fort on June 26, 1846 (Hunt 1926:76). Kearney's expedition and a subsequent one under the command of Colonel Sterling Price resulted in the conquest of New Mexico and California by the fall of 1847. While Kearney's expedition was in the West, numerous additional volunteer regiments were sent to Fort Leavenworth to be equipped and dispatched as needed. During the Mexican War Fort Leavenworth assumed a role that it would continue to fulfill

during the Civil War and the Indian Wars of the 1870s, that of supply depot and quartermaster to military forces in the western United states.

Fort Leavenworth remained an important supply depot following the close of the Mexican War in 1848. By 1850, 67 Army posts were located west of the Mississippi River. Fort Leavenworth was the supply depot for many of these posts, especially those close to the Santa Fe and Oregon Trails (Blackburn 1973:4). Supplies including pork and military equipment were shipped to Fort Leavenworth from St. Louis and other downstream ports. New storehouses were built on the post in 1850 to handle the increase in material, including a three story warehouse along the river at which steamboats unloaded their supplies.

During the Mexican War, the Army initially attempted to operate its own freight system to move supplies from Fort Leavenworth to outlying posts and the regiments in the field. The quartermaster at Fort Leavenworth alone purchased 459 horses, 3,658 mules, 14,904 oxen, and 516 pack saddles for the cavalry, artillery, and transportation (Walker 1966:228). This venture ended in dismal failure due to the inability of the Army to care for the thousands of animals involved and the maintenance and repair of the wagons. One observer estimated that five million dollars of government supplies were strewn along the Santa Fe Trail as a consequence of the Army's freight operation (Blackburn 1973:5). In 1847 the quartermaster at Fort Leavenworth was instructed to contract with civilian freighters. In 1848 the government entered into a contract with James Brown of Independence, Missouri, to transport supplies from Fort Leavenworth to Santa Fe (Walker 1966:230). The government engaged various contractors over the next several years, but in 1855 the firm of Russell, Majors, and Waddell obtained a two year

monopoly on military freighting west of the Missouri River, becoming the leading freight company on the Santa Fe and Oregon Trails (Blackburn 1973:6). In 1857 the Army notified this firm that they would have to transport three million pounds of supplies to Utah to supply an expedition against the Mormons; this was above and beyond the company's existing contract to transport supplies to the other forts. The firm dispatched the supplies in 41 oxen pulled wagons as well as sending 2,000 head of cattle (Blackburn 1973:7). Although the headquarters of Russell, Wadell, and Majors was located in the town of Leavenworth, the many thousands of oxen and mules used to haul the wagons as well as animals belonging to the Government were corralled in One Mile Creek (otherwise known as Corral Creek) in the southern part of the military reservation (Young 1955:97). In describing this establishment in 1849, Horace Greeley enthused:

> Such acres of wagons! Such pyramids of extra axletrees! Such herds of oxen! Such regiments of drivers and other employees! No one who does not see can realize how vast a business this is, nor how immense its outlay as well as income. I presume the great firm has at this hour two millions of dollars invested in stock, mainly oxen, mules, and wagons. [Last year they employed six thousand teamsters and worked 45,000 oxen] (Hunt 1926:98).

Although Greeley's account might seem exaggerated, the Russell, Majors, and Waddell bookkeeper recorded that in March of 1859 the company owned 4,796 wagons, 46,720 oxen, 4,380 mules, and had 4,680 employees (Walker 1966:240). By the close of 1859, however, the company actually was bankrupt due to unwise investments in the Pony Express, stagecoaching, and a chain of retail stores. By 1860 Russell, Majors, and Waddell had been replaced as freight contractors to the Army by the firm of Irwin, Jackson, and Company (Walker 1966:241).

Fort Leavenworth also became an ordnance depot and arsenal during the 1850s. A depot had been established at the post during the Mexican War but was discontinued in 1849 (Blackburn 1973:8). The Chief of Ordnance believed that the western movement of military operations required a movement of the government arsenal from Liberty, Missouri, to a more western location. Fort Leavenworth was selected as the site (Hunt 1926:121). A small depot was established in 1858. This was enlarged in 1859; in 1860, 138 acres in the southeast corner of the post became the site of the arsenal (Blackburn 1973:8; Hunt 1926:121).

Military and exploratory expeditions continued to depart from Fort Leavenworth during the 1850s. In 1854 Major Edward Steptoe led an expedition with the mission of finding a new route to California while Colonel Faunterloy and two troops of dragoons escorted a supply train and officers' families to Fort Union, New Mexico (Hunt 1926:99). In 1855 General William S. Harney organized a military expedition from Fort Leavenworth to punish the Sioux for the massacre of 30 soldiers under the command of Lieutenant Gratton the year before. Harney met the Indians in Nebraska, refused to negotiate, and defeated them in a battle in which many of the Indians were killed (Young 1955:110-111). In May, 1857, Colonel E.V. Sumner led a successful expedition against the Cheyenne who had been attacking emigrants in Kansas and Nebraska (Hunt 1926:115). Also in 1857, General Sidney Johnson led an expedition against the Mormons in Utah who refused to acknowledge the authority of the federal government. The Mormons and the weather combined to defeat the purpose of the expedition, and the matter was settled by negotiation in 1859 (Hunt 1926:115-118). Finally, in 1858 a force of 2,000 men

departed Fort Leavenworth for Benicia Barracks in California (Hunt 1926:119-120).

Indian councils and conferences continued to be held at Fort Leavenworth throughout the 1840s; in October, 1848, the representatives of the Delaware, Wyandotte, Shawnee, Potawatomie, Ottowa, Chippewa, Peoria, and Miami met at Fort Leavenworth to protest proposed legislation to organize the territory of Nebraska, which they feared spelled the loss of their lands. Although they did succeed in making their views heard at the council, nothing was decided and the Indians became uneasy about their future.

Their fears were realized in 1853, when a bill was submitted to organize the territory of Nebraska. A revision of this bill in 1854 called for the creation of two territories, Kansas and Nebraska (Richmond 1974:61). An important objection to this bill was that the new territory could not be organized until the Indian occupancy titles were extinguished (Abel 1904:86). Treaties were reached with the Delaware, Kickapoo, Miami, Shawnee, and Piankashaw providing for the sale or cession of their land to the federal government in 1854; with the Wyandot in 1855; with the Kaw, Chippewa, Sac, and Fox in 1860; with the Potawatomie and Ottowa in 1862; the Cherokee in 1866; and with the Osage in 1867 (Abel 1904:88-109). Although many of these Indians groups did not leave Kansas for several years after the treaties, the treaties opened the way for white settlement of their lands.

The Kansas-Nebraska Act also provided that the question of whether slavery should be allowed in the new territories would be decided on the basis of popular sovereignty. The net effect of this provision was that both the pro- and anti-slavery factions encouraged their supporters to

emigrate to Kansas, and the conflict eventually turned to bloodshed. Fort Leavenworth was the acting capital of the new territory from October to November of 1854. In the same year, threats of violence from slavery supporters caused many of the residents of the newly founded town of Leavenworth to abandon their homes on several occasions and move onto the military reservation for protection (Hunt 1926:113-114); Free-Soil families are also reported as having asked and been granted refuge on the military reservation in 1856 (Walton 1973:116). Unable to calm the disturbances in Kansas between the Free-Soil and pro-slavery factions, the Governor requested in December 1855 that the federal government authorize the Commander of Fort Leavenworth to assist him. The War Department issued orders authorizing the Governor to use federal troops in early 1856; over the next several years soldiers from Fort Leavenworth used the threat of force on numerous occasions to quell disturbances and enable the territorial government to operate (Walton 1973:112-118).

The Civil War (1861-1865)

During the Civil War, Fort Leavenworth functioned as an arsenal, a supply base, and a training and organizational camp for volunteer troops. Rumors that the Confederates intended to seize the arsenal led to the withdrawal of troops from Forts Kearney, Randall, and Ridgely to reinforce Fort Leavenworth in April 1861. In addition, troops withdrawn from Fort Smith reached Fort Leavenworth in May 1861 (Hunt 1926:127-131).

During the Civil War the supply depots at Fort Leavenworth furnished equipment and food to troops and forts farther west as well as troops

stationed in Kansas to protect the state against Confederates. In 1861 Irwin, Jackson, and Company, government freighters, moved their headquarters from Kansas City to Leavenworth when the army moved its western supply depots to Fort Leavenworth. For three years (1861-1863), this firm had a monopoly on government freight contracts. By 1864 it was estimated that more than four million dollars of supplies had passed through the post since the start of the Civil War. During that time Fort Leavenworth was the supply base for all troops in the department of Kansas and New Mexico as well as those on the Great Plains (Blackburn 1973:9).

A training camp for volunteers named Camp Lincoln was established within the military reservation on May 29, 1861 (Hunt 1926:134). Over the next four years, thousands of volunteers were drilled, equipped, and shipped out from this camp. Camp Lincoln appears to have been located in the southern part of the military reservation south of the permanent post buildings. For example, Walton (1973:123) notes that one of the volunteer regiments, the 1st Kansas Regiment, "went into camp at a spot halfway between the post and the city," suggesting a southern location for Camp Lincoln.

In addition to training volunteers, Camp Lincoln may also have served to process the "Galvanized Yankees," former Confederate prisoners of war who had enlisted in the United States Army for service against the Indians on the western frontier (Walton 1973:133). Two of these regiments, approximating 1,200 men, were organized at Fort Leavenworth in February 1865. After training, these men were shipped out to other frontier posts for patrol duty and expeditions against the Indians. Following the end of the war, the majority of the "Galvanized Yankees"

were discharged from the army at Fort Leavenworth in late 1866 (Walton 1973:135).

General Stirling Price's northward march through Missouri with 16,000 Confederate soldiers in September 1864 led to the construction of a series of defensive earthworks known as Fort Sully in the southwestern part of the Fort Leavenworth military reservation. Although fortified with siege guns, the earthworks were never tested in battle due to the defeat of General Price's army in a series of engagements in Missouri before he was able to reach Fort Leavenworth (Hunt 1926:141-142; Walton 1973:135-137).

In addition to its duties as an arsenal and a training camp, Fort Leavenworth continued to protect the western frontier during the Civil War with military expeditions leaving the post to engage the Indians and protect western bound emigrants. At the time of General Price's 1864 invasion, most of the Fort Leavenworth troops were in the West pursuing Indians (Hunt 1926:141).

Post Civil War (1866-1881)

Following the end of the Civil War, increasing pressure from white settlement resulted in a series of Indian attacks against outlying settlements and the Kansas Pacific Railway during the winter of 1866-1867 (Hunt 1926:144-145). In order to deal with the situation more effectively, a series of new posts--Forts Dodge, Harker, Hays, and Wallace--were created to reinforce the existing posts of Leavenworth, Riley, Larned, and Zarah (Richmond 1974:89). During the beginning of this period, Fort Leavenworth continued to function as a logistical base, with troops and supplies for the expeditions against the Indians

passing through the post on the way to their ultimate destinations. The completion of railroads across the Plains and mountains, however, doomed the long distance freighting business. The fiscal year ending June 30, 1866, saw the first use of railroads west of the Missouri River for the transportation of military supplies. Although Fort Leavenworth continued to function as a supply depot for New Mexico and the plains, military posts in Colorado and Utah were supplied by train by 1866. The importance of Fort Leavenworth steadily diminished throughout the 1870s. In 1874 the arsenal was discontinued and transferred to Rock Island, Illinois. The quartermaster supply depots continued to function at a diminished level throughout the 1870s but were discontinued by the 1880s (Blackburn 1973:11-12). A government observer who visited the town of Leavenworth in the early 1870s reported that freight wagons were abandoned on vacant lots around town until they were carried away piece by piece. The oxen that had been used to pull the wagons were sold for whatever they would bring or abandoned on the prairies (Walker 1966:59).

One notable event that occurred at Fort Leavenworth in the post-Civil War period was the organization of the all black 10th Regiment of United States Cavalry under the command of Colonel Benjamin Grierson. These "Buffalo Soldiers" (as they were later to be called by the Indians) were trained and equipped at Fort Leavenworth during late 1866 and early 1867. Prejudice against the use of black troops by the Post Commander resulted in their being quartered in January and February 1867 "in a swampy area, the only low ground on the post" (Walton 1973:141), presumably somewhere on the floodplain at the northeast edge of the military reservation. By June 1867, at least part of the 10th Cavalry had moved and were "encamped along the road between Leavenworth and the

city" in the southern part of the military reservation (Leckie 1967:14). Colonel Grierson organized the regiment quickly, and by August 1867 eight companies had left Fort Leavenworth for other posts (Leckie 1967:16).

Fort Leavenworth settled into a relatively comfortable existence as a garrison post from 1870-1880; facilities on the post were renovated and new buildings constructed (Hunt 1926:147-149). By 1875 a race track with a grandstand had been constructed in the bottoms at the northeast end of the military reservation, and race days were scheduled.

The race track saw a different use in 1876, when Chief Joseph and 430 Nez Perce Indians were confined in the center of the track from November 27, 1877, to July 21, 1878. They had been captured by Colonel Nelson Miles in Montana and sent to Fort Leavenworth to await relocation to a reservation. The floodplain location was so unhealthy that the Indian inspector who supervised their removal to the Indian Territory the next year reported that at one point 260 of the Indians were sick from malarial fevers and that one quarter of them had died (McWhorter 1952:529). Out of a total of 431 Indian prisoners known to be at the post on December 4, 1877, 410 were alive the next spring. The actual death rate was probably higher as it is not known how many babies were born during this time or how many additional Nez Perce prisoners were added to the original group of 431 (McWhorter 1952:530).

The 1870s also witnessed the construction of the first military prison at Ft. Leavenworth. The decision to place the prison at Fort Leavenworth apparently was made concurrently with the decision to move the Arsenal to Rock Island, Illinois, on February 2, 1874 (Hunt

1926:151). The prison was located within the existing Quartermaster's Depot on the north side of the post, and the supply depot was transferred to the abandoned arsenal buildings.

Infantry and Cavalry School (1882-1897)

With the lessening of Indian troubles on the frontier, it was recognized by the Army that many of the smaller military posts no longer served a useful purpose. In 1877 General John Pope, commander of the Department of the Missouri, recommended the abandonment of the smaller posts and the concentration of their troops at Fort Leavenworth. Pope believed that not only would this save the Army money but that it would raise the morale and increase the training opportunities of the formerly isolated troops (Hunt 1926:155-156, 158-159).

During this same period three of the great northern Civil War officers--Generals Grant, Sherman, and Sheridan--were concerned about the need for a school to teach basic command skills to infantry and cavalry officers. All three separately reached the conclusion that an effort must be made to improve the educational qualifications of officers (Walton 1973:162). As Commander of the Army of the United States, General Sherman issued General Orders No. 42 of 1881 creating a school of application for infantry and cavalry officers at Fort Leavenworth (Hunt 1926:159-160). The student body was to consist of one lieutenant from each cavalry and infantry regiment with the students nominated by the commanding officers of the regiment. At the school they were to be attached to troops of cavalry, infantry, and artillery where they would perform the duties of company officers as well as attending courses in military science. The school was officially

designated as established by the War Department on January 26, 1882 (Walton 1973:164).

In 1886 the name of the school was officially changed to the United States Infantry and Cavalry School (Hunt 1926:166). In 1888 the course of instruction was revised into a two year program in which students took courses in the Department of Military Art which provided them with a systematic course of instruction in tactics. In addition, students were instructed in military, constitutional, and international law; engineering; military hygiene; and early aid to the injured (Hunt 1926:170-171). By 1890 a large part of the instruction in military art consisted of practical exercises which were probably conducted on the military reservation. The curriculum was revised again in 1897 with an even greater emphasis on practical instruction (Hunt 1926:177).

Spanish American War/Philippine Insurrection (1898-1902)

The school was closed during this period because of a lack of Regular Army officers to serve as instructors. The influence of the training that graduates of the school had received was not demonstrated to any great degree during the war as most of these officers were still lieutenants. Ft. Leavenworth was used as a staging area during this time with the 14th Cavalry organized at the post in March 1901. Following the end of the war, Fort Leavenworth was used as a separation center for the discharge of soldiers from the service.

General Service Schools (1903-1917)

Following the Spanish-American War, the Army recognized that many officers who had not had the opportunity to attend the Cavalry and Infantry School at Fort Leavenworth were inadequately trained. In

response, the War Department instructed that much of the training that had formerly occurred at the Fort Leavenworth school would now take place at other post schools so as to involve more officers. Fort Leavenworth became a sort of post graduate college to which officers who had shown superior merit in the post schools were sent for further instruction. The length of the course was reduced to one year, and the students were still lieutenants (Hunt 1926:181; Walton 1973:170).

In 1904 the two year course was reinstituted with the first year designated the Infantry and Cavalry School and the second the Staff College. In 1905 the name of the school was changed to the United States infantry and Cavalry School; in 1907 it was changed to the Army School of the Line. In 1907 the school commandant, Brigadier General Franklin J. Bell, announced that only senior captains and young ranking majors would thereafter be accepted as students (Walton 1973:170). The purpose behind the change of rank was to insure that the students would have sufficient rank to implement what they learned upon their graduation (Hunt 1926:183).

Graduates of the school began to make their influence felt during Pershing's Vera Cruse Expedition of 1914, but it was not until World War I that Fort Leavenworth graduates commanded brigades and divisions and served in high staff positions. General Pershing and Marshal Foch of France both singled out the Fort Leavenworth school graduates for praise following the end of the war (Hunt 1926:184; Walton 1973:171).

A vivid description of training activity at the post during this time appeared in the July 7, 1917, issue of the Army and Navy Journal:

> On the hillsides of the parade ground are squads of men noting the topographical features of the country by small sketches which will be later elaborated into maps. The men scattered

> over the landscape in khaki colored groups each party intent on his own lessons give an impression of activity long missed on the reservation. On the north end of the west parade grounds, troops of Cavalry are rapidly changing the soft turf into a field of dust as the horses walk, trot, gallop, wheel, and charge. Nearby is the plot where the horsemen learn the use of their sabers. In another direction a detachment of the Signal Corps soldiers can be seen stringing a concealed telegraph wire from one spot to another - laying it on the ground or beneath the surface. One of the most interesting tasks of the officers is trench building. Over the hill south of Merrit Lake are a series of barbed-wire barricades reinforced by rows of sharpened stakes. Behind these are the trenches exactly as those used in France. The main fighting trenches are connected by passageways...permitting (safe) retreat or (the bringing up of supplies (in Walton 1973:172).

The description is particularly significant in that it indicates a great deal of training activity took place just prior to World War I in the peripheral areas of the reservation away from the main post buildings.

World War 1 (1918)

As during the Spanish American War, classes were suspended at Fort Leavenworth during World War 1. The post once again became a training and induction center through which thousands of men were processed. Accelerated training courses were introduced from which students graduated as lieutenants in 90 days; the post also became a center for signal corps instruction.

School of the Line/General Staff School (1919-1946)

When the school reopened as the School of the Line and General Staff School in 1919, the tour had once again been reduced to one year. Assignment to and graduation from the school was a prerequisite for the advancement of the careers of Regular Army officers (Walton 1973:173). Many of the officers who were to play important roles as senior army commanders during World War II, including Eisenhower, Marshall, and

Bradley, were graduates of Fort Leavenworth. Almost to a man their staffs were comprised of officers who had attended the college (Walton 1983:173).

In contrast to the Spanish-American War and World War I, the Fort Leavenworth school did not close during World War II. The courses were shortened to accommodate a greater number of officers; during the course of World War II, over 19,000 officers graduated from the Fort Leavenworth school. Similar to the earlier wars, however, Fort Leavenworth once again functioned as an induction and separation center. Over 318,000 men were processed through the induction center; 452,000 men went through the reception center; and 147,000 men were discharged from the service at the post.

RESEARCH DESIGN

Introduction

The primary objective of the Phase II investigations at the twelve HBS sites and site 14Lv358-881 will be to recover sufficient information to evaluate the eligibility of these sites for inclusion in the National Register of Historic Places (Appendix A). This will be accomplished through:

(1) a literature and archival review that will examine primary documents that provide specific information regarding the physical location, original appearance, history, and function of the various sites;

(2) The excavation of a series of screened shovel tests and archaeological test units at HBS sites (39-41, 46, 131-133, 141) that represent the remains of structures;

(3) The use of soil coring techniques to obtain information regarding the fill and internal depth of the HBS sites (5, 38, 45-47) that represent the remains of privy vaults;

(4) The excavation of screened shovel tests and a series of units at site 14Lv358-881 to obtain information on the vertical and horizontal extent of cultural deposits and obtain a representative artifact sample;

(5) The use of both soil coring and hand excavation techniques at either HBS 5 or HBS 38 to obtain information on the nature and depth of the fill within such privy vaults and obtain a representative artifact sample;

(6) An analysis of the recovered materials to obtain information regarding the function, length of utilization, and types of artifacts associated with each site;

(7) Evaluation of the archaeological significance of each site using the cultural context framework developed by Wagner et al. (1988) and Cox et al. (1989) for the evaluation of such resources.

(8) The submittal of a detailed written report to the U.S. Army Corps of Engineers describing the results of the investigations and providing specific recommendations regarding the cultural resources at each site.

Research Domains

The sites to be investigated represent a cross-section of functionally and temporally diverse military-related structures and facilities at Ft. Leavenworth. Functional site types include barracks, officers' quarters, outbuildings, band quarters, privy vaults, and dump/discard sites. Based on information contained in Barr and Rowlinson

(1977) and Wagner et al. (1988), these sites span the early nineteenth to early twentieth centuries. As such, the archaeological investigations at these sites have the potential to recover information regarding nineteenth-century dietary patterns, military social relations, material culture, temporal change, and functional activity areas at Ft. Leavenworth.

Site 14Lv358-881 represents an enlisted men's dump/discard area dating to the mid to late nineteenth century (Wagner et al. 1988:290-296). The faunal assemblage from this site consisted almost entirely of meat cuts from domesticated animals indicative of the preparation of stews, soups, and roast. This pattern contrasts markedly with that recovered from officer's quarters (Martin 1987) at other nineteenth century military posts which have been found to contain a high proportion of wild species. The inclusion of officer's quarters (HBS 131-133) and privy vaults (HBS 5 and 38) believed to have been used by both officers will provide an opportunity to examine the diets of officers at Ft. Leavenworth. This information can then be compared to that recovered from site 14Lv358-881 by both the 1988 and current investigations as well as that recovered from other nineteenth century military installations (Martin 1987) to assess variations in diet between officers and enlisted men in the nineteenth century Army.

Although preliminary information regarding the meat-consumption patterns of nineteenth century military personnel in Kansas has been recovered (Kirby 1985; Martin 1987; Reynolds 1983), similar information regarding the importance of floral resources in the diet is lacking. The botanical remains recovered from site 14Lv385-881 in 1988 represent the

first flotation-derived floral remains recovered from any type of historical site in Kansas (Lees 1989). These, however, unfortunately, provided very little in the way of information regarding floral consumption patterns at Ft. Leavenworth (Wagner et al. 1988). The inclusion of privy vaults within the sample of sites to be investigated, however, should generate a sizable botanical assemblage that can be used to examine the floral consumption patterns of both officers and enlisted men.

The current investigations also provide an opportunity to examine the material culture associated with officers at Ft. Leavenworth during the nineteenth century. Although data regarding the material culture of enlisted men was recovered by the investigations at site 14Lv358-881 (Wagner et al. 1988) similar information is lacking for officers. The inclusion of officer's quarters and privy vaults associated with officers in the sample of sites to be investigated will provide comparative data that can be used to assess the relative socio-economic positions of officers and enlisted men in the nineteenth century military. It has been previously noted that there is a high, although not perfect, correlation between social classes and the material culture acquired by historic site residents (McBride and McBride 1987:152). The "types of goods selectively acquired and discarded by households are strongly influenced by socioeconomic status", reflecting the unequal distribution of goods and services as a result of social and economic differences within society (Spencer-Wood 1987:3). The ability of site occupants to purchase consumer goods should have clear archaeological correlates in that the difference in material culture will reflect the amount of capital available to spend on such goods (Orser 1987:129-130).

The investigations also will provide information on temporal changes in material culture associated with the transition of Ft. Leavenworth from a frontier post in the early to mid nineteenth century to a garrison post by the late nineteenth century. It should be expected that this transition will be reflected in changes in the proportion of the various functional artifact categories throughout the nineteenth century. Specifically, the proportion of arms and transportation items within the artifact assemblage should decrease through time while household items should increase. The inclusion of functionally distinct site types within the sample of sites to be investigated, i.e. privies, dump/discard sites, officers quarters, and so on also will provide information on the types of artifact patterns associated with these various types of activities. Such information will provide comparative data that can be used both at Ft. Leavenworth and elsewhere for the interpretation as to the function of historical sites that lack documentation.

The botanical, faunal, material culture, and functional analyses will provide information that can be used to examine the nature of the social relationships that existed between officers and enlisted men within the nineteenth century Army. Based on documentary information, enlisted men in the United States clearly occupied a subordinate role within nineteenth century American society. Scorned by civilians for voluntarily having given up their freedom, enlisted men occupied a subordinate position within a rigid military hierarchy in which virtually all aspects of their daily lives were controlled by an officer caste that often despised and tyrannized them (Coffman 1986:137, 200-

203; Rickey 1963:62-74). A characteristic of subordinate groups such as enlisted men is that they are blocked from achieving political, economic, and social power within the larger society (Ringer and Lawless 1989:28-29). Orser (1988:321) has noted that recognizing the material relationships of this type of power relationship in the archaeological record is a difficult but achievable task. Similarly, as noted by Stine (1990:49) archaeologists "cannot excavate social inequality. Archaeologists can, however, discover direct and indirect effects of social inequality within a community". Archaeological correlates of a power relationship characterized by social and economic inequality between officers and enlisted men at Ft. Leavenworth should be reflected in variances in dietary patterns and the types, amount, and value of material culture items between the two groups.

Research Hypotheses

The following specific research hypotheses were developed to examine the research avenues presented in the preceding section. The extent to which the various hypotheses can be examined, of course, is contingent on the types and quantities of archaeological data recovered:

(1) A variance in dietary pattern existed between officers and enlisted men in the nineteenth century Army. This pattern is characterized by access to a wider range of floral and faunal species and more expensive meat cuts by officers in comparison to enlisted men.

(2) The artifact assemblage will reflect the transition of Ft. Leavenworth from a frontier to garrison post during the nineteenth century. This transition will be marked through a change in the proportion of functional artifact categories through time.

(3) Differences in artifact patterning will occur among the various functional site types.

(4) Ceramic and other material culture indicators of status will indicate that enlisted men were of lower socio-economic status than officers or contemporary civilian groups.

(5) Enlisted men occupied a subordinate social position within the nineteenth century Army, one which was characterized by unequal access to social and economic power in comparison to officers. This subordinate role will be reflected in variations in the types and quantities of material goods associated with the two classes in the archaeological record.

Methodology

The methods described in this section are proposed to meet requirements for four types of anticipated tasks: field investigations, laboratory analysis, report writing, and curation. Each task is addressed separately for purposes of this research design.

Task 1 - Field Investigations

Because the ages, functions, assumed data contents, and present conditions of the 13 historic building sites (HBS 5, 38, 39-41, 46-49, 131-133, 141) and military dump/discard site (14Lv358-881) to be investigated under this contract are variable, excavation strategies will be tailored to the conditions at each individual site. The general philosophy will be to maximize data recovery and minimize cost.

A combination of screened shovel tests, soil probing, and visual surface reconnaissance will be used at all 13 HBS sites and site 14Lv358-881 to define site limits; obtain information regarding subsurface cultural deposits; and locate subsurface building foundations, privy vaults, and other structural features.

All 13 HBS sites are currently located in grass lawns associated with former standing structures. Discolored grass areas within these lawns that possibly mark the location of subsurface architectural

features will be mapped when present for each site. The lawn containing each HBS site will then be shovel tested on a grid pattern with individual shovel tests and transects separated by 5 m intervals. Each shovel test will be precisely placed using a transit stationed over a site datum keyed in to the existing structures and roads. The area to be shovel tested will be based on project construction limits for one site (HBS 5) while the remainder of the grass lawns will be completely shovel tested. Each shovel test will be excavated to either the B soil horizon or to a maximum depth of 30 cm bs. Each shovel test will measure approximately 30 cm by 30 cm in size. The soil from each shovel test will be passed through 1/2" mesh to recover artifacts.

Following the completion of the surface reconnaissance and shovel testing, soil probing and/or additional shovel tests will be used to further delineate possible structure foundations at HBS sites 40-41, 46, 131-133, and 141. The subsurface location and extent of the structure walls and floors will be confirmed by systematically placing soil probes or shovel tests above the suspected locations of these features. The grass cover will be removed from an approximate 1 m long by 50 cm wide section of one wall to each foundation to recover information regarding architectural construction. Exposed foundation wall sections will then be mapped and photographed for each HBS site. The sod covering will be removed and replaced in grass covered areas.

Two 1 x 2 m units will be excavated at HBS sites 40-41, 46, 131-133, and 141 following completion of the shovel testing and recording of the structure foundations at these sites. The purpose of these units will be to provide information regarding the depth and types of cultural deposits within and around each of the structure foundations. The

placement of these units will be based on the information provided by the shovel testing regarding the location of high artifact frequency areas or subsurface features. Ideally, one unit would be placed within each structure foundation to provide information regarding activities associated with the structure itself while one would be placed outside of the foundation to provide information regarding activities that occurred in the vicinity of the structure.

All of the 1 m x 2 m units will be excavated with hand tools (i.e., shovels and trowels). Each unit will be excavated in 10 cm arbitrary levels. The southwest corner of all units at each site will be recorded in relation to the site datum, with all measurements within each unit taken from these corners using a line level and a hand held tape. This corner also will be used as a designator for the entire unit, with each unit assigned an individual number. The bottom and sides of these units will be inspected and all soil zones recorded. The floor of each unit will be troweled and mapped at a 1:20 scale at the base of each level if soil staining if present. If soil staining is absent, a notation to that effect will be recorded in the site notebook and a map will not be prepared. All fill from these units will be passed through 1/2" mesh screen with a 10 liter sample from each level passed through 1/4" mesh. Artifacts will be collected by 10 cm level. One five liter flotation sample will be recovered from each level of each unit. Standard level forms will be filled out for each level excavated and at least one wall of each hand excavation unit will be profiled and photographed. If features are found, they will be mapped on the level floor plans and drawn on the unit profiles. In order to facilitate record keeping, hand

units will be identified by a letter of the alphabet as well as by a site grid number. Similar procedures will be used in the excavation of subsurface features other than architectural features. Each feature will be mapped in plain view, cross sectioned, and mapped in profile. All feature fill will be passed through 1/2" mesh screen with one 10 liter sample from each feature passed through 1/4" mesh. At least one flotation sample will be removed from each feature. If the feature fill is stratified, multiple flotation samples were collected in order to sample the various strata. Flotation samples will be at least 5 liters in size. Standard feature forms will be filled out for each feature excavated.

Investigation procedures at HBS 45-47 will consist of systematic shovel testing and soil probing with an Oakfield soil probe to define the location of the privy vaults and site limits. Two 1 m x 2 m archaeological test units will be located in high frequency artifact areas or above the suspected locations of architectural remains. Once the privy vault has been located, a truck-mounted soil sampling probe that employs a two inch diameter Shelby tube will be used to obtain a core sample of the vault contents. All soil cores will be carried to the sterile soil beneath the vaults. The samples will be processed at the offices of Kansas City Testing and Environmental Company in Kansas City Missouri. Soil differences within the core samples will be recorded as they are removed to obtain a stratigraphic profile of the vault contents. The soil cores will not be screened. Instead, they will be processed as flotation samples to obtain information regarding botanical and faunal materials within the privy vaults.

The initial excavation strategy at HBS 5 and 38 will consist of a combination of surface reconnaissance, systematic shovel testing, and soil probing techniques similar to that described for HBS 45-47. A Giddings soil probe also will be used to obtain information on the nature and depth of the fill within the two privy vaults. Following the completion of the soil coring a section of contents of one of the privy vaults will be excavated. Assuming these vaults are similar in size to that excavated by O'Brien (1985:2) at Ft. Riley, each will at a minimum measure approximately 8 ft x 9 ft in size by approximately 15 ft deep. Based on O'Brien's (1985) findings, the upper portion of the vault also may be capped with sterile fill to a depth of five or more feet. The decision on which vault to excavate will be reached in consultation with the U.S. Army Corps of Engineers.

Given the projected size of these privy vaults, it obviously will be possible to excavate only a sample of the feature contents. The initial excavation step in regard to the privy vault will consist of the mechanical removal of the sterile fill cap. Once the soil coring has provided information regarding the depth of the post-abandonment sterile fill used to cap the feature, a backhoe will be used to remove this fill down to the level of the <u>in situ</u> deposits that formed while the privy was in use. Following this, a 2 m x 2 m square unit will be excavated through the privy fill. Excavation procedures in regard to this unit will be identical to those for the 1 m x 2 m units to be excavated at the HBS structure sites. The depth to which this unit will be excavated will be based on the stratigraphic information provided by the soil core, consultation with the U.S. Army Corps of Engineers, and/or safety conditions. Ideally, excavation of the privy vault would continue to the

base of the culture-bearing deposits. Given the possible internal depth of the feature (15-20 ft), however, excavation of the unit to the base of the culture-bearing deposits may represent a hazard to the excavators due to the possibility of the collapse of the matrix surrounding the unit. Excavation of the unit will be discontinued if in the opinion of the supervising archaeologist the possibility exists that the privy fill surrounding the excavation unit may collapse. Outside of this situation, the decision regarding the final depth to which the unit will be excavated shall be decided in consultation with U.S. Army Corps of Engineers personnel based on the determination that adequate information regarding the construction, stratigraphy, and contents of the privy vault has been recovered.

The initial excavation strategy at HBS site 14Lv385-881 will be similar to those at HBS sites 40-41, 46, 131-133, and 141. Systematic shovel testing and soil probing at 5 m intervals will be used to define the horizontal extent of the midden. Following this a series of ten 1 m x 2 m units will be excavated in a cross pattern through the site area. These units will be separated by 10 m intervals. Excavation of these units will provide north-south and east-west profiles of cultural deposits at the site, recover a representative sample of materials from across the site, and define the vertical depth of the midden. Excavation methodologies, including the collection of flotation samples, will be identical to those of the previously described units.

Detailed maps showing the location of discolored grass areas, shovel tests, excavation units, and architectural remains in relation to existing structures and roads will be prepared for each of the 12 HBS

sites and site 14Lv358-881 using either a transit or an alidade and plane table stationed over a datum. The datums for all 12 HBS sites will consist of temporary wooden stakes that will be removed at the end of the test investigations. The locations of these datums, however, will be keyed into permanent structures in the vicinity of each site so that the datums can be re-established at a future date. The datum at site 14Lv358-881 will consist of a permanent brass/steel capped datum set in concrete and rebar that will be furnished by the government.

Task 2 - Laboratory Analysis

All artifacts will be processed (washed, sorted, cataloged, and labeled) at the laboratory facilities of American Resources Group, Ltd., in Carbondale, Illinois. Processed artifacts will be separated first into three major classes--ceramic, glass, and metal. Subclasses will be then defined within each major class. Material noted in the field but not collected will also be identified. This fourth class of artifacts will consist of construction materials other than ceramic, glass, and metal and included such materials as cement, brick, and sandstone. These classes will be used to describe and quantify material and to aid in determining site type as well as the date of occupation of each site.

In addition, each artifact will be attributed to a particular functionally related category. The categories to be used in the present study include: (1) kitchen (tablewares, preserved food containers and associated elements and cooking utensils); (2) household (furniture parts, figurines, lamp parts, mirror fragments, and non-food related bottle and jars); (3) clothing (buttons, snaps, shoe parts, hook-and-eye parts, straight pins and clothing-related military accouterments); (4) personal (pipes, toys, combs, and jewelry); (5) arms (gun parts,

ammunition and accouterments); (6) transportation (wagon and carriage parts, harness and saddle parts, horseshoes and farriers nails); (7) architectural (window glass, nails, and hardware); (8) other (items which are potentially identifiable but cannot be identified at the present time); and (9) unidentifiable (all items which are too poorly preserved or too fragmentary to be identified as to function).

Ceramics. The ceramic artifacts will be initially identified according to ware type such as whiteware, ironstone, porcelain, and stoneware. These wares are differentiated on the basis of paste color, paste texture, glaze, and decoration, attributes generally recognized as temporal indicators for historic ceramics.

Whiteware and Ironstone. Because of their similar paste composition and glaze color, whiteware and ironstone are often difficult to separate. Therefore, for this analysis ironstone is defined as a highly fired refined white-pasted ware. Whiteware, although refined, is fired at a much lower temperature and therefore more porous. Ironstone wares can be easily separated from whiteware by the lack of porosity, indicated in touching the sherd in question to the tongue. Whiteware will stick slightly to the wet surface of the tongue whereas ironstone wares will not.

Porcelain. Porcelain is an extremely hard, fine-grained, nonporous, and usually translucent white ceramic ware which has been fired at high temperatures. Because it is both difficult and expensive to produce, the market for porcelain was relatively small during the early and mid-nineteenth century. It did not become popular in the United States until Germany and Austria began to produce relatively

inexpensive porcelain after 1875 (Haskell 1981:23). It finally came into common use after the American porcelain industry began producing even less expensive, and hence, more marketable wares after 1890 (Ketchum 1983:13).

Stoneware. Stoneware is "an ordinary earthenware fired at a temperature high enough to partially vitrify the ingredients and make the ware impervious to liquids" (Hughes 1963:89). The pastes of these wares are generally cream to gray or brown in color although much variation can occur even within a single vessel. This color variation is largely due to uneven firing within the kiln. Salt was often added during the firing to produce a glaze which gave the surface of a salt-glazed vessel the appearance of a granular texture similar to that of an orange peel. The gloss of the glaze depended on the amount of salt used: the more salt that was added, the higher the shine and vice versa. Various slips were also used to decorate stoneware vessels. These slips were thin mixtures of water and colored clays which when fired imparted a uniform color to the vessel. Two or more slips were often applied to the same vessel to produce a more ornate decoration. Stonewares are generally nondiagnostic as temporal indicators; however, the mass-produced brown Albany and white Bristol slipped stoneware was very popular during the late nineteenth and early twentieth centuries, whereas the locally made salt-glazed wares were increasingly in less demand during the last half of the nineteenth century (Ketchum 1983).

Temporal Indicators. Decorative treatments and motifs also will be noted for all the ceramic wares and, where possible, temporal periods were assigned. Mean Ceramic Dates will be calculated utilizing South's (1977:217) formula and the temporal ranges (Table 1).

Table 1. Ceramic Temporal Ranges and Mean Dates.

Attribute	Range	Mean	Reference
Pearlware			
Plain	1780-1830	1805	South 1977
Annular	1790-1820	1805	South 1977
Blue handpainted	1780-1820	1800	South 1977
Black transfer printed	1795-1840	1818	South 1977
Whiteware			
Plain	1830-1930*	1880	Price 1982
Embossed	1850-1900	1875	Price 1982;Wetherbee 1980
Provincial blue	1850-1880	1865	Miller 1987
Bright annular	1855-1880	1867.5	Price 1982
Blue shell edge	1830-1860	1845	Lofstrum et al. 1982
Spongeware	1840-1860	1850	Lofstrum et al. 1982
Blue other decorated	1830-1880	1855	Lofstrum et al. 1982
Floral handpainted	1840-1860	1850	Lofstrum et al. 1982
Transfer printed			
Black	1830-1850	1840	Majewski & O'Brien 1984
Blue	1830-1860	1845	Majewski & O'Brien 1984
Red	1828-1850	1839	Majewski & O'Brien 1984
Decalcomania	1890-1930*	1915	Haskell 1981
Ironstone			
Plain	1840-1930*	1885	Wetherbee 1985
Embossed	1840-1907	1873.5	Gates & Ormerod 1982
Provincial blue	1850-1880	1865	Miller 1987
Bright annular	1855-1880	1867.5	Price 1982
Blue shell edge	1840-1860	1850	Lofstrum et al. 1982; Wetherbee 1985
Handpainted			
Flow blue	1840-1860	1850	Lofstrum et al. 1982
Tea Leaf	1880-1910	1895	Kamm 1951
Transfer printed			
Brown (thick walled)	1860-1890	1875	Price 1982
Flow black	1840-1860	1850	Majewski & O'Brien 1984
Gilt	1880-1930*	1905	Miller 1987
Porcelain			
Gilt	1880-1930*	1905	Miller 1987
Decalcomania	1900-1930*	1915	Haskell 1981
Yellow Ware			
Plain	1827-1930*	1878.5	Ketchum 1983; 1987
Slip-glazed (mottled)	1850-1900	1875	Ketchum 1987
Stoneware			
Albany slip (interior)	1820-1900	1860	Ketchum 1983
Albany slip (exterior)	1850-1920	1880	Ketchum 1983
Bristol slip	1880-1920	1900	Ketchum 1983
Albany/Bristol slip	1880-1920	1900	Ketchum 1983
Salt	1827-1900**	1864.5	Ketchum 1983

* 1930 represents the terminal date for the deposition of refuse outside of the post incinerator/landfill

**1827 represents the initial occupation of Fort Leavenworth

This procedure is based on the known period of manufacture of each ceramic type within the sample, with the midpoint between the beginning and the end of manufacture considered as the median manufacture date (South 1977:202). The median date for whiteware and ironstone is adopted from various ceramic studies (Brown 1982; Haskell 1981; Ketchum 1983; Miller 1987; Price 1982; Wegars and Carley 1982) with an adjustment made in the terminal date of these wares. An incinerator was present at Fort Leavenworth by 1930 (Anonymous 1930), and both an incinerator and landfill were in operation by 1937 (Hunt and Lorence 1937). Refuse discarded after these dates would have been transported to the post incinerator; therefore, a terminal date of 1930 was adopted for artifacts with manufacture date ranges which extended beyond the possibility of deposition outside of the post incinerator. In addition, manufacturer information was used in this study in lieu of the mean date for the ceramic type if the date range of the maker's mark was more temporally discrete than the ceramic type date range.

The Mean Ceramic Date for an assemblage is calculated by multiplying the median date of a ceramic decoration by the number of sherds of that type. The sum of all the types present within the assemblage are added together with the summation being divided by the total number of sherds to produce the Mean Ceramic Date (South 1977:217-218).

Glass. Glass artifacts will be classified into one of several categories: (1) whole and fragmented bottles and jars; (2) pressed glass which included, in this case, tableware and canning jar lid liners; and (3) miscellaneous categories of glass which included lantern glass and furniture glass.

Bottles and Jars. Bottle glass will be analyzed largely according to Deiss's (1981) study of a chronology of American glass and included both intact and fragmented bottles and jars. Bottle glass was further identified as to method of manufacture. Bottle manufacturing methods changed rapidly through the nineteenth and early twentieth centuries, and in many cases the new methods and designs were patented. This enables accurate dates to be assigned to many bottles and jars from an analysis of style and method of manufacture. Table 2 shows temporal ranges presented in a number of sources including Diess (1981), Lorrain (1968), and Wilson (1981) and mean dates utilized to calculate mean glass dates. Rogers et al. (1988) have adapted South's (1977) ceramic formula to diagnostic elements of whole and fragmentary bottles and jars. Again, this procedure is based on the known period of manufacture of each diagnostic bottle type within the sample, with the midpoint between the beginning and the end of manufacture again being considered as the median date. The mean bottle date for an assemblage is calculated by multiplying the median date of a diagnostic element by the number of fragments of that type. The sum of all types present within the assemblage are then added together with the summation being divided by the total number of items used in the calculation to produce the mean bottle date for that site. Again, an adjustment was made in the date range of those bottle and jar types with terminal dates which extended beyond the possible deposition outside of the post incinerator. In addition, an initial date of 1827 is igned to a small number of bottle attributes with beginning dates which obviously predated the settlement of Fort Leavenworth, which occurred in that year. Initial dates of only

Table 2. Bottle Glass Temporal Ranges and Mean Dates.*

Attribute	Range	Mean
Closures		
Flanged	1827-1875**	1851
Folded	1827-1875**	1851
Applied tooled		
Cork	1825-1875	1850
Ground rim		
Continuous thread	1858-1915	1886.5
Improved tooled		
Cork	1870-1915	1892.5
Machine made		
Continuous thread	1903-1930***	1916.5
Crown	1903-1930***	1916.5
Lug	1906-1930***	1918
Mold Blown Bases		
Pattern	1829-1850	1840.5
Turn mold	1875-1905	1890
Two piece		
Blowpipe pontil	1818-1860	1846.5
Snap case	1860-1875	1867.5
Three piece		
Plate bottom		
Blowpipe pontil	1858-1860	1859
Improved pontil	1858-1875	1866.5
Snap case	1860-1915	1887.5
Unidentified		
Snap case	1860-1915	1887.5
Machine made	1903-1930**	1916.5
Body		
Paneled		
Plain	1858-1925	1891.5
Embossed	1867-1925	1896
Gothic (cathedral)		
Pickle	1940-1890	1865
Pictorial	1840-1875	1857.5
Bitters (french square)	1850-1925	1887.5
Other		
Lantern glass	1860-1898****	1879

*After Diess 1981; Lorrain 1968; Wilson 1981
**1930 represents the terminal date for the deposition of refuse outside of the post incinerator/landfill
***1827 represents the date of initial occupation of Fort Leavenworth
****1898 represents the year Fort Leavenworth was electrified

two bottle attributes, folded and flanged closures, were modified. It was felt that omitting these attributes from the study would affect the accuracy of the Mean Bottle Date as well as detract from the significance of their presence within the bottle assemblage.

Glass bottles will be further identified as to functional type such as food preservation and medicine, soft drink, or alcohol containers. Bottle part, color, embossing, and manufacturer's marks were also noted.

Pressed Glass. Pressed glass will be analyzed according to Deiss's (1981) study of American glassware especially in regard to nineteenth and early twentieth century manufacturing techniques. Unfortunately, pressed glass has long, nondiscrete known periods of manufacture. Its use is therefore limited as an aid in identifying occupation dates. Pressed glass will be further identified as to functional type (i.e., tableware and lid liners), vessel part (if applicable), and color. This subclass of artifacts, although somewhat temporally diagnostic, was largely used in the identification of site types.

Miscellaneous Glass. In this study, miscellaneous glass includes both lantern glass and furniture glass. As with pressed glass, the long known periods of manufacture and/or use of these artifacts preclude the usefulness of this subclass of artifacts in dating the occupation of a site. The chief value of the identification of functionally related glass such as lantern glass within an assemblage is again as an aid in determining site types.

Metal. Metal artifacts will be classified according to material of manufacture (i.e., zinc, aluminum, brass, and iron) and

specific function. If pertinent (e.g., military buttons), the method of manufacture also will be noted when possible. Metal artifacts with long known periods of manufacture, such as zinc canning jar lids and square nails, are of little use as temporal indicators. They are, however, useful in determining site type.

Other. As noted earlier, this artifact class will consist of construction materials such as brick, limestone, mortar, slate, and daub. In addition, heating coal and the resultant cinders and clinkers are also considered in this artifact class. Other functionally related artifacts include bone utensil handles (kitchen), bone buttons (clothing), gun flint (arms), and transportation (harness leather). Prehistoric material (if recovered from a historic context) also will be included in this artifact class.

Task 3 - Report Preparation

Report preparation, format, and scheduling will follow precisely the guidelines and schedules presented in Sections 5-7 of the project Scope of Work (Appendix A). Monthly progress reports will be submitted to the government during the course of the project. An interim report of not more than 20 pages describing the results of investigations and an outline of the content and format of the report of findings will be provided to the government following completion of all fieldwork in accordance with Section 5 of the Scope of Work (Appendix A). The writing and preparation of the draft report will be carried out in accordance with the specifications presented in Section 6 of the project Scope Of Work. As noted previously, the chronological periods developed for Ft. Leavenworth (Wagner et al. 1988) and which form part of the historic preservation plan for the installation (Cox et al. 1989) will be used

rather than those in the Kansas Sate Historic Preservation Plan if this is acceptable to the government. This report will contain all findings of the field investigations, interpretations and conclusions, field and laboratory methodology, and other supporting data. The results of the field and laboratory investigations will be interpreted in light of the archaeological research problems. This report will include, among other pertinent information, evaluations of the potential eligibility of all tested sites for the NRHP and management recommendations regarding these resources in accordance with Section 7 of the project Scope of Work (Appendix A).

Task 4 - Curation

The recovered artifacts will be curated temporarily at the facilities of American Resources Group, Ltd., in Carbondale, Illinois. This will allow for accessibility to materials during the analysis and report writing phases. In accordance with the project Scope Of Work, all materials, maps, field notes, and other documents will be submitted to the Frontier Army Museum, Ft. Leavenworth, Kansas, for permanent curation.

PROJECT DELIVERABLES

Project deliverables will include a research design; interim, draft, and final reports; narrative slide program and professional article; updated site forms, maps, and NRHP forms; items for curation and supporting data; documentation stipulating necessary changes to the Installation Master Plan and Mobilization Plan, if applicable; monthly progress reports and time and task summaries; as presented in Section 8 of the project Scope of Work (Appendix A). American Resources Group,

Ltd., acknowledges that it is aware of these requirements and will deliver them according to the project schedule.

PROJECT SCHEDULE

Scheduling will proceed as outlined in the Scope Of Work. Due to the need to complete all aspects of the project by October 15, 1993, American Resources Group, Ltd., anticipates starting field investigations immediately following approval of the project research design and completion of the pre-study conference specified by Section 10 of the project Scope Of Work (Appendix A). The project schedule and time-in-task are presented in Tables 3 and 4. It should be noted that the project schedule is an ideal schedule that acknowledges American Resources Group, Ltd.'s, awareness of and committment to complete all project requirements by October 31, 1993. The actual duration and duration and completion dates of various phases of the project such as the field schedule may vary due to conditions beyond the control of the contractor such as rain or snow. All phases of the project, however, will be completed by October 31, 1993.

Table 3. Project Schedule

Task	Calendar Days
Pre-Study Conference	Begin day 1
Test Investigations at HBS sites 5, 38-41	Begin day 2/end day 44
Test Investigations at HBS sites 46-49, 141	Begin day 44/end day 67
Test Investigations at 14Lv385-881	Begin day 67/end day 91
Laboratory analysis	Begin day 90/end day 210

Table 3. (Cont'd.)

Task	Calendar Days
Draft report preparation	Begin day 210/end day 270
Submit draft report	Day 270
Submit slide presentation	Day 300
Submit journal article	Day 330
Submit final report	Day 360

Table 4. Time in Task, Unpriced Man Hours, Historic Properties Survey

Personnel	Pre-Field	Field Work	Lab Analysis	Draft Report	Final Report	Journal Article	Slide Presentation
Co-P.I. (McNerney)	20	40	40	40	10	-	-
Co-P.I. (Wagner)	20	480	80	320	40	40	40
Arch. Field Techs.	-	1440	-	-	-	-	-
Lab. Super.	-	-	200	-	-	-	-
Arch. Lab. Techs.	-	-	40	320	-	-	-
Graphics Tech.	-	-	-	120	-	-	-
Clerical	-	-	-	80	-	-	-

PROJECT BUDGET

The project budget is presented in Appendix C.

PROGRESS REPORTS

Progress reports will be delivered on a monthly basis in accordance with Section 10 of the project Scope of Work (Appendix A).

MEETINGS

At least four meetings with government and other personnel are required prior to, during, and following the completion of the project. Other meetings may also be required at the government's discretion (Appendix A: Scope of Work, Section 10). American Resources Group, Ltd., acknowledges its awareness of these requirements.

PROJECT PERSONNEL STANDARDS

American Resources Group, Ltd., acknowledges the project requirements regarding the project Principal Investigator and consultants as presented in Section 12 of the project Scope Of Work (Appendix A). Key personnel for this project include Michael J. McNerney (Co-Principal Investigator), Mark J. Wagner (Co-Principal Investigator), Fran Knight (Laboratory Supervisor/Historic Analyst), and Jim Snyder and Tracey Sandefur (Field technicians). Resumes for these key personnel are supplied in Appendix B. Resumes of additional laboratory and field technicians are available upon request.

Consultants for the project include Dr. Terrance Martin of the Illinois State Museum, Springfield, Illinois (faunal analysis); Ms. Kathryn Parker of Great Lakes EcoSystems, Indian River, Michigan

(botanical analysis); and Kansas City Testing and Environmental Services (soil coring). Resumes for Dr. Martin and Ms. Parker are included in Appendix B. Dr. Martin is Curator of Collections at the Illinois State Museum. He has had extensive experience in the analysis of historic and prehistoric faunal remains including those recovered from Ft. Leavenworth in 1988 (Wagner et al. 1988). Ms. Parker has a similar breadth of experience in the analysis of botanical remains recovered from prehistoric and historic sites (including Ft. Leavenworth) from throughout the Midwest (Appendix B).

MISCELLANEOUS SENSITIVE ITEMS

American Resources Group, Ltd., acknowledges its awareness of and obligation to fulfill the requirements of this section of the project Scope Of Work (Appendix A: Scope of Work, Section 13).

NARRATIVE SLIDE PROGRAM AND PROFESSIONAL ARTICLE

These items will be completed and delivered in compliance with the requirements set forth in Section 14 of the Scope of Work (Appendix A). Work on these items will commence once the draft report of investigations has been completed.

FURTHER RESPONSIBILITIES OF THE CONTRACTOR AND GOVERNMENT

American Resources Group, Ltd., acknowledges that it will comply with the instructions in Section 15 of the project Scope Of Work regarding data availability, publication, court testimony, safety requirements, professional conduct and appearance, field personnel, visitors, and movement of archaeological personnel around Ft. Leavenworth (Appendix A).

EQUIPMENT AND FACILITIES

American Resources Group Ltd., provides information in Appendix D to demonstrate that it has adequate facilities for the completion of this project.

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APPENDIX C

Project Correspondence

MONTHLY PROGRESS REPORT

Phase II Archaeological Investigations
Various Site Locations
Ft. Leavenworth, Kansas
Contract DACA-41-91-D0017

Mark J. Wagner
Co-Principal Investigator

American Resources Group, Ltd.
127 N. Washington
Carbondale, Illinois
618-529-2741

October 1992

MEMO ON FT. LEAVENWORTH

To: Michael McNerney
From: Mark J. Wagner
Date: November 3, 1992
Re: Meeting at Ft. Leavenworth with Berkely Bailey (USACOE) regarding Contract DACA-41-91-DOO17.

The purpose of this memorandum is to document in writing our meeting with Berkely Bailey at Ft. Leavenworth on October 30, 1992. Agreements were reached with Bailey (the USACOE representative) regarding the level of effort required as part of the Phase II archaeological investigations at the various Historic Building sites (HBS). These are summarized by HBS site below:

(1) HBS 5 - Excavation of two test units, location of the vault wall, and hydraulic coring of the feature to its base represents an adequate level of Phase II investigations. Further investigation is not required.

(2) HBS 10 - Determination of the location of this structure using archival maps contained at the post museum represents an adequate level of Phase II investigation. Excavation of shovel tests or units is not required.

(3) HBS 38 - Excavation of three units, location of the vault, and hydraulic coring of the feature to its base represents an adequate level of Phase II investigations. Further investigation is not required.

(4) HBS 39 - It was agreed at the meeting that shovel testing of that portion of the site located south of General Nash's quarters (2 Sumner Place) represented an adequate level of Phase II investigations for HBS 39. Shovel testing of the north yard was not necessarry. Test units also would not be excavated in the south yard. On November 3, 1992, however, Bob Zeigler of the USACOE stated that testing would be required in the location wherre the new parking garage will be built immediately south of 2 Sumner Place. Two 1 m^2 units will be excavated in this location.

(5) HBS 40-42 - A series of shovel tests and two test units were excavated in the area where Barr and Rowlinson (1977) show these structures as being located. These revealed that this area represents an old ravine that has been filled. Further archaeological investigation of this area is not required.

(6) HBS 46 - Shovel testing and the excavation of two units represents an adequate level of Phase II testing. Further investigation is not required.

(7) HBS 47-49 - These privy vaults are mislocated on the Barr and Rowlinson (1977) map and will not be affected by the proposed construction. Shovel testing of the proposed construction area represents an adequate level of Phase II investigations. Further investigation is not required.

(8) HBS 131-133 - These structures were shovel tested at 5 m intervals. At the meeting at the site on October 29, 1992, it was agreed that further investigations would be conducted at this site. Specifically, two 1 m^2 units were to be excavated at the west end of the lawn where mid-nineteenth century materials had been recovered in shovel tests. On November 3, 1992, however, Bob Zeigler of the USACOE notified ARG that no further archaeological investigations would be conducted at HBS 131-133.

(8) HBS 141 - This structure is mislocated on the Barr and Rowlinson (1977) map and will not be affected by the proposed construction. Shovel testing of the proposed construction area represents an adequate level of Phase II investigations. Excavation of test units is not required.

Introduction

Thirteen historic building (HBS) sites at seven different locations within the Ft. Leavenworth military reservation are to be evaluated NRHP eligibility as part of this contract. Archival research regarding these sites was initiated on October 13, 1992. The archaeological field investigations at these sites began on the same day.

Archival Research

Archival research was conducted at the Frontier Army Museum on an intermittent basis from October 13-20, 1992. Mr. Steve Allie, Museum Director, provided access to 19th and 20th century maps and other documents containing information regarding the 13 HBS sites. This research revealed that the 1977 Barr and Rowlinson map contains numerous errors regarding the number, locations, and types of structures at Ft. Leavenworth. Several of the HBS locations to be tested as part of this contract may actually contain no structures. Others contain additional structures than those shown on Barr and Rowlinson's maps.

Specifically:

(1) HBS 141 - This site is plotted as being located northwest of the museum. Steve Allie (Director of the Frontier Army Museum) inspected this site with Mark Wagner. He said that this site is mislocated and should be much farther north than where Barr and Rowlinson have it located.

(2) HBS 5, 10, 38, 39, 40, 41 - These sites are shown by Barr and Rowlinson as being located north and northeast of Grant's Statue. HBS 39 is a 19th century dragoon barracks; HBS 5 and 38 are privy vaults associated with the dragoon barracks; and HBS 40 and 41 are outbuildings that appear on the 1881 post map. Problems exist with the locations and number of these sites.

First, Barr and Rowlinson (1977) have the dragoon barracks (HBS 10 and 39) located too far south on their map. HBS 39 is largely located beneath the southernmost building on the east side of Sumner Place. A portion of the barracks should be located where the parking garage is to be built adjacent to the general's quarters. Where the problem lies is with the privy vaults (HBS 5 and 38) that were located behind these barracks. Because they have the barracks mislocated, they also have these privy vaults mislocated over a hundred feet south of their actual locations. Using the 1866 map of the post we have located a large depression that we believe is HBS 38. We have not yet located HBS 5 but believe it is located where Barr and Rowlinson (1977) show HBS 40 to be.

Barr and Rowlinson show HBS 40 and 41 as part of a group of three structures (HBS 40-42) located in the grassy area in the loop between Scott Avenue and the driveway behind the residences on Sumner Place. Their source is the 1881 map. The 1881 map clearly shows that there are at least 10 structures in this area, one of which appears to be HBS 5. Barr and Rowlinson's (1977) locations for HBS 40 and 41 are so general that it is unclear which of the 1881 structures they are referring to.

In addition to the location problems with the sites to be tested, the various maps of the post show that there are additional privy vaults and other structures in the area northeast of Grant's Statue. These include (1) a 38 x 20 ft gun house that appears in two separate locations behind the southern dragoon barracks (HBS 10) on the 1837 and 1839 maps of the post; (2) two sinks (i.e., privies) located behind the barracks in 1839; (3) a central privy for the two barracks that appears on an 1850s map; (4) the 10 or more previously mentioned structures shown on the 1881 map that were part of a group of over 30 structures that were located along Scott Avenue in 1881.

(3) HBS 47-49 - Barr and Rowlinson (1977) show three privy vaults as being located behind the existing M.P. building at the corner of McClellan and Organ avenues. Their source is the 1881 map of the post. We have checked this map. It clearly shows that these 3 vaults are located behind the building immediately north of the present-day M.P. building.

Field Investigations

Field investigations were initiated at all 13 HBS sites during the period from October 13 to October 20, 1992. Excavation of test units is currently underway at several of these locations. The results of these investigations are summarized below:

(1) HBS 5 - The approximate location of this privy vault has been relocated using the 1866 map of the installation. This feature will be precisely relocated once the exact location of the other 1866 privy vault (HBS 38) has been determined. The 1866 map indicates that these features were located parallel to each other, exactly 190 feet apart.

(2) HBS 10 - The general boundaries of this structure have been determined using the 1837 through 1881 maps of the installation. The site has not yet been shovel tested or test excavated.

(3) HBS 38 - The approximate location of this feature has been established using the 1866 map of the installation. Soil probing has confirmed that a large stone foundation is present beneath the ground in this area.

(4) HBS 39 - Twenty one shovel tests were excavated at 5 m intervals. Sixteen were positive, producing cultural material from 0-40 cm bs. Recovered artifacts included brick, limestone, bone, porcelain, whiteware, window glass, nails, and bottle glass. Test units have not yet been excavated at this site.

(5) HBS 40-41 - Thirty six shovel tests and two 1 m x 1 m units were excavated in the location where Barr and Rowlinson show HBS 40 and 41. Both of the units are 1 m deep at the moment and still going. Both contain multiple fill zones consisting largely of demolished structure debris. One (Unit B) produced a cluster of mid-nineteenth century artifacts at ca 30-50 cm bs. This unit has now hit a solid layer of limestone rubble at 1 m deep. Unit A contains a large trench-like feature that may be an excavation for a water line.

While we were excavating last week one of the workers at the post informed us that the area containing HBS 41 and 42 has been heavily disturbed by construction activity. He personally has used a backhoe in the area to replace a water line and install underground utility lines.

(6) HBS 46 - Fifteen shovel tests and two 1 m^2 units were excavated \at this location. The two units produced a relatively small amount of artifacts including nails, glass, bullets, limestone, brick, and other items. Cultural material was recovered to a depth of approximately 40 cm below the surface. Structural remains or other features were not encountered.

(7) HBS 47-49 - Excavation of thirty shovel tests in this location failed to find any evidence of the privy vaults. The majority of the shovel tests produced limestone and brick fragments to a maximum depth of 44 cm bs. Other cultural material included a small amount of window glass, nails, bullets, and bone.

(8) HBS 131-133 - The field containing the remains of these late nineteenth/early twentieth structures was shovel tested at 5 m intervals. The foundation walls of the three structures are still discernible as discolored areas within the lawn. Shovel tests within the structures revealed that they contain brick and limestone rubble. This apparently represents fill that was bulldozed or otherwise placed within the structure cellars when they were demolished.

Shoveltests at the west end of the field beyond the recorded locations of HBS 131-133 encountered up to 1 m of cultural deposits. Artifacts within the shovel tests include a pre-1884 uniform button as well as mid-nineteenth-century ceramic and other artifacts. A foundation wall not associated with HBS 131-133 also was encountered in one of the shovel tests. Mr. Steve Allie of the Frontier Army Museum believes that mid-nineteenth century infantry barracks were present in this area prior to the construction of HBS 131-133 in the late nineteenth century. If so, the artifacts and structural remains could be associated with those barracks.

(9) HBS 141 - Thirty three shovel tests were excavated in this area at 5 m intervals. Whiteware, window glass, and nail fragments were recovered from five tests while 17 contained small brick and limestone fragments. Two soil horizons were found: (1) dark brown silty clay, 0-30 cm bs; (2) culturally sterile yellow brown clay, 30 cm+. Structural remains were not present.

Summary

Examination of nineteenth and twentieth century maps of Ft. Leavenworth indicate that substantial errors exist regarding several of the HBS site locations shown on the Barr and Rowlinson (1977) map. Field investigations at these locations also have failed to indicate the presence of structures. The archival research also revealed that additional structures besides those recorded by Barr and Rowlinson (1977) were once present within the area north of Grant's Statue.

Because of the above problems, we recommend that changes be made in the level of effort presented in the project scope of work and our technical proposal for several of the project areas. These changes are designed to decrease the level of effort at those areas that do not appear to contain NRHP eligible resources while increasing the effort at those that may contain significant resources. These recommendations are presented below by project area.

Project Area 1

Shovel testing around structures 131-133 failed to locate significant cultural deposits. In addition, the interiors of the three structures are filled with brick and limestone rubble that appears to have been used to fill in the structure cellars after they were demolished. These structures appear to have low NRHP potential. Rather than investigating these structures further, we propose to excavate a series of test units at the west end of the lawn containing these structures. The purpose of these units will be to recover further information about the distribution of mid-nineteenth century artifacts and the possible foundation wall found in this area. These materials may be associated with a set of mid-nineteenth century barracks formerly located in this area.

Project Area 2

Archival research and shovel testing failed to find any evidence of the three privy vaults (HBS 47-48) reportedly located in this area. The materials recovered from this area appear to have low NRHP potential. Excavation of test units is not recommended.

Project Area 3

Excavation of a series of shovel tests and two 1 m^2 units recovered a small amount of material possibly associated with the late nineteenth/early twentieth century band

headquarters (HBS 46). Structural or other features, however, were not found. Further investigations are not recommended.

Project Area 4

Project area 4 has not yet been investigated. This area will be shovel tested. A decision regarding the need for the excavation of units in this area will be made following the completion of the shovel testing. It should be noted, however, that the early nineteenth century dragoon barracks (HBS 39) located in this area also extends into project area 5 and will be sampled by test units in that area.

Project Area 5

Project Area 5 contains the remains of two nineteenth century dragoon barracks (HBS 10 and 39) and two mid-nineteenth century privy vaults (HBS 5 and 38).

The portion of HBS 39 that will be disturbed by the construction of the parking garage has been shovel tested. Two 1 m^2 units also will be excavated in this area.

The late nineteenth and early twentieth century maps of Ft. Leavenworth that show the location of the dragoon barracks indicate that HBS 10 will not be disturbed by the construction of the parking garage. As such, investigations at this site will be limited to using historic maps of Ft. Leavenworth to accurately record the location of HBS 10 in relation to existing buildings and other features.

One of the mid-nineteenth century privies (HBS 38) has been relocated using the historical maps of the post. It should be possible to locate the other privy (HBS 5) by measuring off of HBS 38. The foundations of these two privies will be located by soil probing. A single unit will be excavated within each privy to an adequate depth to recover a sufficient artifact sample. Following this, a hydraulic soil core will be used to obtain information on the contents and depth of the two privies.

The archival research also indicated that three additional privies, a gun house, and other structures once existed in the area east of the two dragoon barracks. The historical maps will be used to determine the general locations of as many of these features as possible in relation to existing structures and roads. As these features are not threatened by the proposed construction of the parking garage, shovel tests and test excavations will not be conducted.

Project Area 6

The locations given by Barr and Rowlinson for HBS 40 and 41 are imprecise. Rather than just two structures, a number of structures were located in this area in 1881. Based on conversations with post personnel, this area has been heavily disturbed by the construction

of water and utility lines. We propose to excavate two additional units near the south end of this project area to obtain additional information on the stratigraphy of the area and obtain an artifact sample. A hydraulic soil core also will be used to penetrate the limestone layer encountered at 1 m bs in unit B to determine if a privy vault or other feature is located beneath this layer.

Project Area 7

The archival investigations indicated that HBS site 141 is mislocated on the 1977 Barr and Rowlinson map. Shovel testing also failed to find any evidence of substructural remains at this location. We recommend that no further archaeological investigations be conducted in this location.

MONTHLY PROGRESS REPORT

Phase II Archaeological Investigations
Various Site Locations
Ft. Leavenworth, Kansas
Contract DACA41-91-D0017

Mark J. Wagner
Co'Principal Investigator

American Resources Group, Ltd.
127 North Washington
Carbondale, Illinois
618-529-2741

November 1992

Introduction

All archaeological field investigations at Ft Leavenworth required as part of the above contract have been completed. The level of effort expended at these sites by American Resources Group, Ltd., was based on instructions received from Berkely Bailey (USACOE) in a meeting at Ft. Leavenworth on October 30, 1992.

The investigations at HBS sites 5, 10, 38, 40, 41, 46-49, and 131 were described in the October progress report and in a memorandum from Mark Wagner to Michael J. McNerney on November 3, 1992. This report summarizes the field investigations at the three remaining locations-- HBS 39, 14Lv385-881, and 14Lv385-882.

(1) HBS 39 - On November 3, 1992, Bob Zeigler of the USACOE stated that testing would be required in the location where the new parking garage will be built immediately south of 2 Sumner Place (i.e., General Nash's quarters. Accordingly, two 1 m^2 units were excavated in this location from November 10-12, 1992.

Unit A - This unit was located 1-2 m due south of the existing driveway to General Nash's quarters. Three soil horizons were defined: (1) a dark gray silt loam top soil, 0-4 cm bs; (2) a grayish brown silty clay, 4- 24 cm bs. Structural debris including brick, limestone, nails, window glass, etc. was contained in this zone. This zone does not appear to represent a midden. Rather, it appears to represent a fill zone containing structural debris from the demolished dragoon barracks (HBS 39); (3) the sterile clay subsoil.

Unit B - This unit had several fill zones that contained structural debris similar to unit A. These fill zones extended from immediately beneath the top soil (0-18 cm bs) to 50-80 cm bs. Numerous bricks were contained within these soil zones. A very large thick (30 cm) cement slab (feature 1) that may represent a displaced section of a porch or steps to the dragoon barracks was contained in the lower section (50-80 cm bs) of the fill zone. The cement slab partially overlay a brick cistern (feature 2) that originated at 80 cm bs in the southwest corner of the unit. Three courses of the cistern wall were exposed in the unit. It was not possible to obtain an artifact sample from the cistern as its opening lay outside the unit to the west. Based on its location, feature 2 apparently represents a cistern that was located off the southeast corner of the dragoon barracks.

It is our conclusion that the upper soil layers in the area where the parking garage is to be built represent fill comprised of structural debris rather than a midden associated with the dragoon barracks. Any original soil layers or midden in this area appear to have been removed at some point in the late nineteenth or early twentieth century. We recommend no further work in this area as long as construction of the proposed parking

garage does not involve ground disturbance below 50 cm beneath the present ground surface. If it is necessary to go beneath this depth, further archaeological investigations will be necessary.

(1) Site 14LV385-881 - Six 1 x 1 m^2 units were excavated in a cross pattern at this site from November 9-14, 1992. In addition, a series of soil probes and shovel tests spaced at 5 m intervals also were excavated at the site to define the limits of the site more precisely.

The information provided by the excavation units regarding the depth and types of cultural deposits is generally similar to that provided by the 1988 investigations at the same site (Wagner et al. 1989). A midden varying in thickness from 40 to 60 cm exists at the site. This midden is buried 20 to 30 cm beneath the present ground surface by a combination of slope wash and gravel. Artifacts contained within the midden include buttons, uniform parts, and accouterments associated with early to mid-nineteenth century military personnel. Domestic items within the midden include dishes, bottles, spoons, and other items. An extensive faunal assemblage is also present.

The shovel tests and soil probes revealed that the fence surrounding the site needs to be extended to the north. The site extends approximately 6 m north of this fence. We recommend that a 10 m section of the fence be extended 10 m north to include the northern most of the two cement walls or barrier. This would encompass all of the site located outside of the present fence line and provide a buffer of several meters (see map).

As stated in the 1989 report report of investigations (Wagner et al. 1989:329-331) site 14LV385-881 is undoubtedly of National Register significance. The artifacts and other materials at the site represent an irreplacable collection of items associated with the westward expansion of the United States. The information contained at the site--based on present knowledge--cannot be duplicated anywhere else in Kansas. If preservation of the site in place represents a management problem, Phase III investigation of the site will be necessary. As the primary significance of the site is based on its ability to provide information on the pre-Civil War U.S. Army through the artifacts and subsistence remains contained within the site midden, these investigations will have to consist of hand excavation of the midden. Both the 1988 and 1992 hand excavations indicate that variation exists within various parts of the site regarding the types of artifacts and other materials present. The site appears to have formed through the dumping of individual wagon loads of debris that contained varying types of materials. As a result, it is not clear if we yet have an adequate sample of all types of materials contained at the site. We would recommend that at a minimum that Phase III investigations consist of the excavation of at least one north-south and one east-west trench across the site to provide continuous profiles of the site in both directions. Ideally, several east-west trenches should be excavated to provide information further information regarding soil strata and artifact variation within the midden. Detailed information regarding the location and extent of these excavations will be provided in the draft report of investigations for the project.

(2) 14LV385-882 - Work to be conducted at this site consisted of relocating the site through shovel testing. The purpose of this work was to more accurately define the site limits so that the area enclosed behind the archaeological site fence could be reduced.

The site was relocated by shovel testing on November 10, 1992. Three positive shovel tests that produced glass and ceramics were flagged. The site covers an approximate 10 m x 10 m area. It originates approximately 55 m west of the current western boundary of the archaeological site fence (see sketch map).

The fenced area can be reduced as follows: 45 m of the western end of the fenced area can be deleted. At 10th pole to the west on the fence line, a new fence line that extends south from the current archaeological site fence to the old fence line will have to be constructed.

It should be noted that the horses have knocked down a section of the fence enclosing sites 14Lv385-881 and 14Lv882 (see map). The fence needs to be repaired immediately to stop the horses from damaging the two sites.

APPENDIX D

Archival Data for HBS Sites 131-133

RECORD OF EXPE

F. Y.	Amount	F. Y.	Amount	F. Y.	Amount
	5507.44				
1938	18.96				
	5526.40				
1939	94.03				
	5620.43				
1940	11.16				
	5631.59				
	233.07				
	5864.66				

PERMANENT INST

Date	S. T. No.	Item	Cost	Date

Place.....March 1st. 1905 Q.M.G.O.Plan No..... Building No.....

Designation of Building,....., Capacity,

.....; Construction: Cost $....., Date.....

Material: Walls.....Foundations.....

Roof....., Floors.....How heat

.....(....sq ft. rad.), How lighted.....

Provided with: Water connections....., Sewer connections.....Water Closets No.., Urinals No.., Wash Sinks No.., Wash Basins No..,Laundry Tubs No...., Baths;Showers No...., Tubs No...., Screens....., Storm Sash...., Storm Doors.....,Wall Lockers No....., Total floor area all basement sq. ft.....; Dimensions, Main Building.....Wings....., Each & every room arranged by floors;

5 x 4 Photograph of Building Here.

Below enter chronologically all modifications, additions, introduction of water, sewer, electric light, etc., since Mch. 1st, 1905.

Repairs.

Expended to date $.....

Yr. ending 3-1-06 $.....

3-1-07 $.....

3-1-08 $.....

3-1-09 $.....

3-1-10 $.....

3-1-11 $.....

3-1-12 $.....

3-1-13 $.....

3-1-14 $.....

3-1-15 $.....

3-1-16 $.....

3-1-17 $.....

3-1-18 $.....

3-1-19 $.....

3-1-20 $.....

3-1-21 $.....

Q.M.G.O. Plan No. [illegible] Building No. 32

Repairs

Ex. Yr. ending	DATE	COST	
	3-1-06		702.52
	3-1-07		
	3-1-08		
	3-1-09		
	3-1-10		
	3-1-11		
	3-1-12		
	3-1-13		
	3-1-14		
	3-1-15		
	3-1-16		
	3-1-17		
	3-1-18		
	3-1-19		
	3-1-20		
	3-1-21		

Place Fort Leavenworth, Kansas. March 1st, 1905.

Designation of Building M.C. Officers Qrs. Capacity

1 Officer Construction: Cost $ Unknown Date 1884

Material Walls Brick & Wood Foundations Stone

Roof Shingle-Tin Floors Wood How heated

Stoves [illegible] sq ft rad. How lighted Electricity

Provided with Water connections Yes. Sewer connections Yes. Water Closets No. 1 Urinals No. 0 Wash Sinks No. 1 Wash Basins No. 1 Laundry Tubs No. 0 Baths Shower No. 0 Tubs No. 1 Screens Yes Storm Sash 0 Storm Doors 0 Wall Lockers No. 0 Total floor area above basement sq. ft. 1430 Dimensions Main Building 24' x 34' Wings 22' x 43' Each & every room arranged by floors

1st Floor-2R-10'x14' 1R-12'x12' 1R-15'x20' 1R-9'x16' 1R-12'x16' 1R-15'x18' 1Clo-4'x4' 1R-7'x12'

Below enter chronologically all modifications, additions, introduction of water, sewer, electric light, etc., since March 1st 1906.



RECORD OF EXPENDITURES

Bldg. No. 32
Street No. 540 Ave C

F. Y.	Amount	F. Y.	Amount	F. Y.	Amount	F. Y.	Amount	F. Y.
Funds	4826.71							
1938	280.82							
	5057.53							
1939	525.50							
	5583.03							
1940	39.38							
	5622.41							
	472.57							
	6094.98							

PERMANENT INSTALLATIONS

Date	S. T. No.	Item	Cost	Date	S. T. No.	Item

540 Kearney Ave.

NT
d No. 173A)

Post Plan No. ---

O.Q.M.G.: Plan No. --- Building No. 2

FORT LEAVENWORTH, KANSAS

gnation of building N.C.O. Quarters. Capacity One (1)

l cost, $ Unknown Date completed 1881

erial: Walls Brick and Frame Foundation Stone

Shingle and Tin Floors Wood

l floor area above basement, square feet 1130

Main building 24' x 34' Wings (1) 22' x 13' Basement ---

Stoves (How heated) Height of first floor above ground 3'

Coal (Type of heat) How lighted Electricity

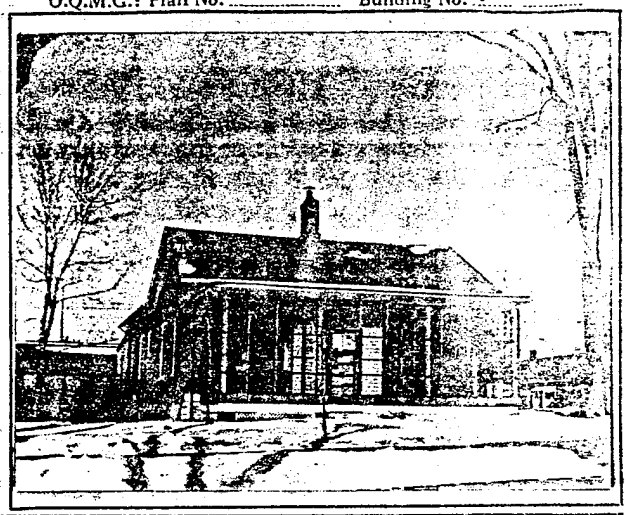
Gas Fired Boiler (Type of domestic hot water heater) Water connections Yes

Sewer connections Yes

Gas connections Yes

KING RANGES INSTALLED (Give quantity and size)	REFRIGERATORS INSTALLED (Give quantity and size)	METERS INSTALLED (Give quantity and capacity)
--	Gas	Gas 1
1	Electric	Electric 1
tric --	Ice	Oil --
--		Steam --
m --		Water --

oval of Secretary of War
quired by A. R. 30-1435
(Give date and File Number)



ADDITIONS AND INSTALLATIONS

(Below enter chronologically all modifications, additions, introductions of water, sewer, lights, heating, etc.)

DATE		COST	DATE		COST

INSTRUCTIONS.—"a" State whether heated from central heating or by individual heating plants, stoves, furnaces, or fireplaces.
"b" State whether steam, vapor, hot water, or hot air.
"c" State whether gas, coal, oil, or central heating plant.

reverse side of form.

Place..Fort Leavenworth, Kansas.....March 1st, 1906.

Designation of Building..Officers Quarters.., Capacity, Officer.; Construction; Cost $Unknown, Date.....1884....

Material: Walls Brick & Wood...Foundations.....Stone.....,

Roof Shingle & Tin..Floors.....Wood.....How heated .....Stoves.....(...sq ft rad), How lighted..Electricity.

Provided with: Water connections....Yes., Sewer connections..Yes..Water Closets No.1, Urinals No. 0, Wash Sinks No.1, Wash Basins No.1, Laundry Tubs No...0, Baths; Shower No...0, Tubs No...1, Screens...Yes, Storm Sash...0, Storm Doors....0..., Wall Lockers No...0..., Total floor area above basement sq. ft ...1430....., Dimensions, Main Building .24' x 34'.....Wings.....22' x 43'....., Each & every room arranged by floors:

1st Floor-2R-10'x14' 1R-12'x12' 1R-15'x20' 1R-9'x16' 1R-12'x16' 1R-15'x18' 1 Clo-4'x4' 1R-7'x12'

Below enter chronologically all modifications, additions, introduction of water, sewer, electric light, etc., since Mch. 1st, 1905.

10-29-1[illegible] Heater, water gas, permanently installed $1490

3-34-10 Window shades $1.875

36-4 Receiver, garbage, underground, w/semi-decontainer, 15¾x21½ 1 Outside shell 2-receivers, garbage, underground, 23½x27½ 2 Cast. set, gr. $8.2.2974

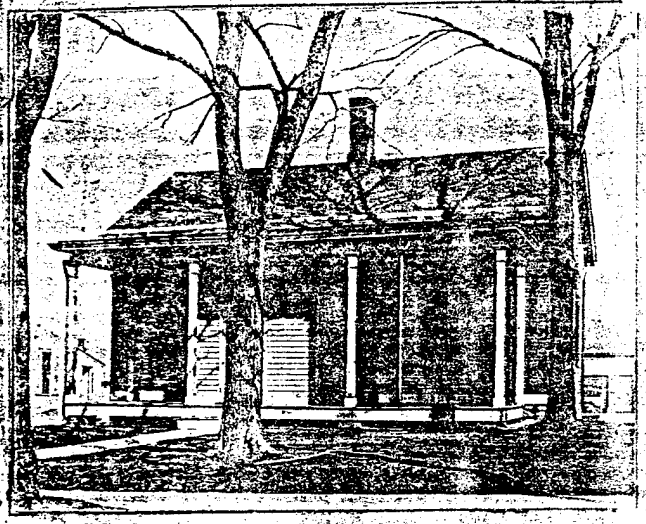
1-36-2 Heater-Radiator $3.1404

5-37-1 Bowl, Lavatory, 22x25 $3.928.

1944-2 Laundry tubs @ $9.50 = $19.00 $2.4958

G.M.C.O. Plan No.----, Building No...33...

542 Ken



Repairs. DATE	COST	
pended to 7-1-29	$..660.87	FY 1922 12.53
Yr. ending 3-1-00	$...98.15	FY 1923 133.95
		$2617.80
3-1-07	$.None reported	39.45
		$2656.91
3-1-08	$...34.85	63.44
		$2720.35
3-1-09	$...58.19	45
		$2321.80
3-1-10	$...254.20	68
		$2601.68
3-1-11	$...[illegible]	15
		$2732.33
3-1-12	$...[illegible]	80
		$2[illegible]
3-1-13	$...[illegible]	82
		33.15
3-1-14	$...[illegible]	41.72
		[illegible]
3-1-15	$...[illegible]	23
		[illegible]
3-1-16	$...[illegible]	41
		[illegible]
3-1-17	$...[illegible]	3
		[illegible]
3-1-18	$...[illegible]	24
		[illegible]
3-1-19	$...[illegible]	31
		[illegible]
3-1-20	$...[illegible]	08
		[illegible]
3-1-21	$...[illegible]	

RECORD OF EXPENDITURES

Bldg. No. 32

Street No. N.C.O. Qts.-540 Kearney

Amount	F. Y.	Amount	F. Y.	Amount	F. Y.	Amount	F. Y.	Amount
$ 472.57								
6094.98								
-31-41 27.85								
6,122.83								

PERMANENT INSTALLATIONS

S. T. No.	Item	Cost	Date	S. T. No.	Item	Cost
A90	1 ea. Heater, water, gas.		3/4/43	2995	4 ea. Bowl-stove @ 7.25	29.00
B75	15 Window Shades.				6 ea. Heater, gas @ 11.85	71.10
2974	1 Receiver, garbage, underground without inside				1 ea. Range, [illegible]	[illegible]
	container, 15 3/4 x 21.					
	1 Outside, small-fly, receiver, garbage, under-					
	ground 23¼ x 27½					
	2 Can, Ash & Ref.					
2347	Installed in Year of Bldg.					
	1 Fire hydrant, Indlow, list #90, 5' x valve opening					
	2-2½ nozzles, 1 Stream, nozzle, 2½ x 6 inch					
	1 Valve, secondary, gate, 6" for Indlow list #90					
	hydrant.					
	1 Tub, laundry, combination.					
	1 Bath, Recess, 4'-8 5/8 ft.					
	1 [illegible]					
	Indow Shades					

PARTMENT
No. 117 (Old No. 173A)
June 28, 1939

O.C

Place Fort Leavenworth, Kansas
Designation of building N.C.O. Quarters Capacity One (4)
Total cost, $ Unknown Date completed 1884
Material: Walls Brick and Frame Foundation Stone
Roof Shingle and Tin Floors Wood
Total floor area above basement, square feet 1430
Size: Main building 24' x 34' Wings (1) 22' x 43' Basement ---
a Stoves (How heated)
b Coal (Type of heat)
c Gas Fired Boiler (Type of domestic hot water heater)
Height of first floor above ground 3'
How lighted Electricity
Water connections Yes
Sewer connections Yes
Gas connections Yes

COOKING RANGES INSTALLED (Give quantity and size)
Coal --
Gas 1
Electric --
Oil --
Steam --

REFRIGERATORS INSTALLED (Give quantity and size)
Gas
Electric
Ice

METERS INSTALLED (Give quantity and capacity)
Gas 1
Electric 1
Oil --
Steam --
Water --

Approval of Secretary of War as required by A. R. 30-1435 (Give date and File Number)

ADDITIONS AND INSTALLATIONS

(Below enter chronologically all modifications, additions, introductions of water, sewer, lights, heating, etc.)

DATE		COST	DATE	

INSTRUCTIONS.—"a" State whether heated from central heating or by individual heating plant
"b" State whether steam, vapor, hot water, or hot air.
"c" State whether gas, coal, oil, or central heating plant.

See reverse side of form.

RECORD OF E

F. Y.	Amount	F. Y.	Amount	F. Y.	Amou
1941	$ 233.07				
	5864.66				
	12-31-41 70.02				
	5,934.68				

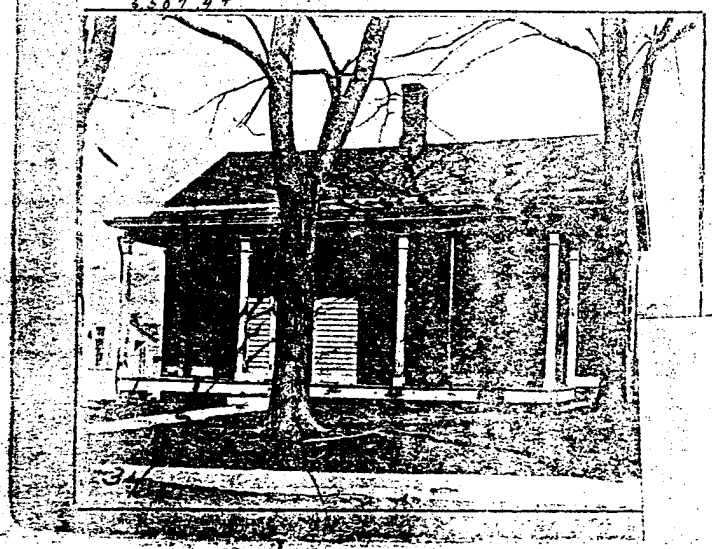
PERMANENT I

Date	S. T. No.	Item	Cost
11-20-29	490	1 ea. Heater, Water, Gas.	
11-23-34	875	16 Window Shades.	
6-11-36	2974	1 Receiver; garbage, underground, without inside container, 15 3/4 x 21½.	
		~~1 Outside shell for receiver, garbage, underground~~ 23½ x 24½.	
		2 Cans, Ash G.I.	
8-1941	707	1 Add - A Shower, Complete	$9.60
3/4/43	2295	4 ea Board, stove @ 1.25	5.00
		3 ea. Heater, gas @ 18.95	56.85
		1 ea. Range, gas, Household type @	60.00

Q.M.G.O. Plan No. ----, Building No. 34

Repairs.

Expe	DATE	COST
	Yr. ending 3-1-06	$ 40.35
F.Y. 1922 $128.06	3-1-07	$
F.Y. 1923 80.05	3-1-08	$ 14.60
$2350.39 15.11	3-1-09	$ 35.58
F.Y. 1924 $2365.50	3-1-10	$ 26.54
F.Y. 1925 165.66 $2531.16	3-1-11	$ 7.10
F.Y. 1926 $2418.67	3-1-12	$ 41.25
F.Y. 1927 $2779.83 322.25	3-1-13	$ 22.00
F.Y. 1928 $3,102.08 109.50	3-1-14	$ 12.60
F.Y. 1929 $3,211.58 115.54	3-1-15	$ 89.10
F.Y. 1930 $3,327.12 $2,774.33	3-1-16	$ 6.50
F.Y. 1931 50.36 3,774.71	3-1-17	$ 9.25
F.Y. 1932 1,001.88 4,776.59	3-1-18	$ 2.50
1933 27.94 4,854.53	3-1-19	$ 32.00 487.00
1934 4.01 4,858.54	3-1-20	$ 34.00
1935 2.48 4,861.02	3-1-21	$ 10.55
1936 41.99 4,903.01		
1937 604.43 5,507.44		



Place.... Fort Leavenworth, Kansas., March 1st, 1905.

Designation of Building, Officers Quarters., Capacity 1 Officer; Construction: Cost $ Unknown Date.... 1884...

Material: Walls..... Brick & Wood Foundations..... Stone.....

Roof Shingle & Tin, Floors..... Wood..... How heated .... Stoves.... .(...sq ft. rad.), How lighted. Electricity.

Provided with: Water connections....Yes., Sewer connections. Yes...Water Closets No. 1, Urinals No. 0 Wash Sink No. 1, Wash Basins No. 1, Laundry Tubs No. 0., Baths; Shower No. 0.., Tubs No...1, Screens..Yes, Storm Sash...0, Storm Doors..0...., Wall Lockers No..0..., Total floor area above basement sq. ft...1430..... ...; Dimensions, Main Building 24' x 34'.....Wings.....22' x 43'....., Each & every room arranged by floors;

1st Floor-2R-10'x14' 1R-12'x12' 1R-15'x20' 1R-9'x16' 1R-12'x1
1R-15'x18' 1 Clo-4'x4' 1R-7'x12'

Below enter chronologically all modifications, additions, introduction of water, sewer, electric light, etc., since Mch. 1st, 1905.

11-20-29-1 [illegible] Heater, water, gas, permanently installed $
11-23-34-[illegible] Window Shelter $2.875-
6-11-36-1 Receiver, garbage, underground, w/c inside container, 15¼x21
1 Outside shell for receiver, garbage, underground, 23½x
2 Can, ash, gi. $2.29
Aug., 1941 - 1 Add-Gl-Shower, complete #9.60 $2.70

T
No. 173A)

O.Q.M.C

FORT LEAVENWORTH, KANSAS

nation of building N.C.O. Quarters Capacity One (4)

cost, $ Unknown Date completed 1884

ial: Walls Brick and Frame Foundation Stone

Shingle and Tin Floors Wood

floor area above basement, square feet 1430

Main building 24' x 31' Wings (1) 22' x 13' Basement ---

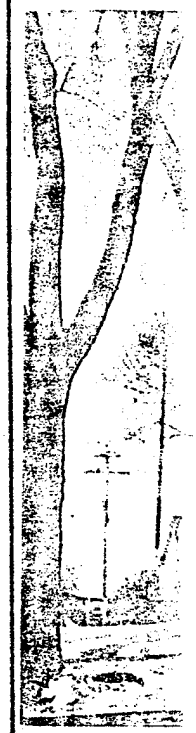
toves (How heated) Height of first floor above ground 3'

oal (Type of heat) How lighted Electricity

Water connections Yes

Gas fired boiler (Type of domestic hot water heater) Sewer connections Yes

Gas connections Yes



ING RANGES INSTALLED (Give quantity and size)

--

1

ric --

--

n --

REFRIGERATORS INSTALLED (Give quantity and size)

Gas

Electric

Ice

METERS INSTALLED (Give quantity and capacity)

Gas 1

Electric 1

Oil --

Steam --

Water --

oval of Secretary of War
quired by A. R. 30-1435
(Give date and File Number)

ADDITIONS AND INSTALLATIONS

(Below enter chronologically all modifications, additions, introductions of water, sewer, lights, heating, etc.)

DATE		COST	DATE	

INSTRUCTIONS.—"a" State whether heated from central heating or by individual heating plants, etc
"b" State whether steam, vapor, hot water, or hot air.
"c" State whether gas, coal, oil, or central heating plant.

everse side of form.

RECORD OF EXPENDITURE

F. Y.	Amount	F. Y.	Amount	F. Y.	Amount	F.
1941	$1451.11					
	6928.64					
12-31-41	38.23					
	6,966.87					

PERMANENT INSTALLATIONS

Date	S. T. No.	Item	Cost	Date	S. T. No.
-20-29	490	1 ea. Heater, Water, Gas.			
-23-34	875	10 Window Shades.			
-11-36	2974	1 Receiver, garbage, underground, without inside Container, 153/4 x 21¼.			
		1 Outside shell for redeivers, garbage, underground ~~23½x27½~~.			
		2 Cans, ash, G.I.			
-21-36	1404	2 Window Shades.			
-25-37	920	1 Bowl, Lavatory, 22x27.			
-41	4958	2 Laundry tubs.	$19.00		
3/6/43	2245	4 ea Heaters, gas @ 18.95	75.80		
		1 ea, Range, gas, household type	50.00		

RECORD OF E

F. Y.	Amount	F. Y.	Amount	F. Y.	A
2nd.	5047.39				
1938	119.15				
	5166.54				
1939	191.29				
	5357.83				
1940	119.70				
	5477.53				
	1451.11				
	6928.64				

PERMANENT I

Date	S. T. No.	Item	Cost

Bldg 36
Later

516 Kearney Ave.

Post Plan No. ---

O.Q.M.G.: Plan No. --- Building No. 36



Capacity One (1)

ement (1) 30' x 19' (1)
st floor above 17' x 12' 6".
3'

Electricity

ctions Yes

tions Yes

ons Yes

METERS INSTALLED
(Give quantity and capacity)

1

ric 1

—

n —

r —

TALLATIONS

modifications, addi-
r, lights, heating, etc.)

COST	DATE		COST

from central heating or by individual heating plants, stoves, furnaces, or fireplaces.
vapor, hot water, or hot air.
l, oil, or central heating plant.

16—2068

Place....Fort Leavenworth, Kansas..., March 1st, 1905. Q.M.G.O. Plan No..

Designation of Building,....., Capacity, ...; Construction: Cost $....., Date..... Material: Walls.....Foundations....., Roof....., Floors.....How heated .....(...sq ft. rad.), How lighted..... Provided with: Water connections....., Sewer connections.....Water Closets No.., Urinals No.., Wash Sinks No.., Wash Basins No..,Laundry Tubs No...., Baths;Shower No...., Tubs No...., Screens....., Storm Sash...., Storm Doors.....,Wall Lockers No....., Total floor area above basement sq. ft.....; Dimensions, Main Building .....Wings....., Each & every room arranged by floors;

5x4

Expended

Yr. endin

Below enter chronologically all modifications, additions, introduction of water, sewer, electric light, etc., since Mch. 1st, 1905.

10-39- 1 ea. Press, mechanical, screw type, w/rack and pinion (Manley Mfg. Co. - Machine No. 145-65780 a) S.J.9. W.C.W. 12-1-41 $140.00

9-40 - 1 Hydrant, yard, 3/4" - 4 ft. in ground #528 S.J.594

AUDITED NOV 7 1940 W.C.W.

ng No. 265...

Place....., March 1st, 1905.

Designation of Building,....., Capacity,

.....; Construction: Cost $....., Date.....

Material: Walls.....Foundations.....,

Roof....., Floors.....How heated

..... .(...sq ft. rad.), How lighted.....

Provided with: Water connections....., Sewer connections.....Water Closets No.., Urinals No.., Wash Sinks No.., Wash Basins No..,Laundry Tubs No...., Baths;Shower No...., Tubs No...., Screens....., Storm Sash...., Storm Doors.....,Wall Lockers No....., Total floor area above basement sq. ft..... ...; Dimensions, Main Building .....Wings....., Each & every room arranged by floors;

.....
715.....
.....
2815.....
2524.....
3937.....
3744.....
1100.....
2724.....
2300.....
2650.....
4400.....
2220.....
5920.....
1700
1500.....
7350.....
1138.....



Below enter chronologically all modifications, additions, introduction of water, sewer, electric light, etc., since Mch. 1st, 1905.

7-17-28- 1 ea. Boiler, steam, Red Flash #1-S-7-S.J.69. 265-B-
11-20-29 2 ea. Heaters, water, gas, permanently installed S.J. 490.
609 McClellan - 18 Window Shades } S.J. 875
11/23/34 611 " 23 " "
Oct. 1935 - 1 Receiver, garbage, 20 gal. complete S.J. 1171.
4/4/36 - 611 McCl. - 12 Window shades - S.J. 2537
2/28/36 - 1 Receiver, garbage, 23½x27½ S.J. 335
9-26-36 - 611 McCl. - 1 fixture, 4-light pendant - S.J. 949.
10-1-37 - 609 McCl - 1 Basin, earthenware, 14x17 #2460 - S.J. 668
7-22-38 - 2 ea. Feeders, water - S.J. 1678.
4-16-38 - 1 ea. Window shade - 609 McCl.
10-21-38 - 611 McCl. - 1 Bowl, closet, 12" rough; 1 Tank, closet. S.J. 916
7-39 - 609 McCl. - 1 Sink, enam. iron, 20x24. S.J. 1627.
9-40 - 609-611 McCl - 2 Lavatories, vit. china, 18½x20¼ type A } S.J.
@ #21.92 ea. = #43.84
611 McCl. - 1 Bowl, closet, 12" rough #4.16 } 59%
1 Tank, closet #8.31
Eng; 1940 - 609-611 McCl. - 2 automatic low water cut offs
@ #20.95 = #41.90 S.J. 783
21-40 - 611 McCl. 15 Window Shades @ 85¢ #12.75 S.J. 75

EDITED NOV 7 1940 W.C.W.

APPENDIX E

Artifact Table

Table 1. 14Lv351 HBS 131-33, Historic Artifact Inventory

Provenience	Shovel Tests																							
	N480 E440	N480 E445	N480 E450	N480 E455	N480 E460	N480 E465	N485 E440	N485 E445	N485 E450	N485 E465	N485 E470	N485 E475	N485 E480	N485 E485	N485 E490	N490 E440	N490 E445	N490 E450	N490 E465	N490 E470	N490 E480	N490 E485	N490 E490	N490 E495
Artifact Type																								
MILITARY CLOTHING & ACCESSORIES																								
Accoutrements																								
Buttons																								
Three-Piece(Sanders)																								
General Service				1																				
Accoutrements Total				1																				
Arms																								
Ammunition																								
Bullets																								
.22 Caliber Shell Casing						1																		
.22 Caliber Cartridge			1																					
45-70 Caliber(Rifle Bullet)					1																			
.38 Caliber Bullet					1																			
Arms Total			1		2	1																		
Transportation																								
Draft/Harness																								
Buckle-with leather strap attached																								1
Wagon Parts																								
Wagon Box Strap																								
Transportation Total																								1
Unidentifiable																								
Unid Military																								
Unidentifiable Total																								
MILITARY TOTAL			1	1	2	1																		1
KITCHEN																								
Ceramic																								
Cremeware																								
Transfer Printed																								
Cup																								
Black																								
Unid Vsl																								
Brown					1																			
Embossed																								
Lid				1																				
Cremeware				1	1																			
Whiteware																								
Dipped																								
Bowl																								
Annular/Brown		1																						
Undecorated																								
Bowl																	1							
Tea Pot? Octagonal																								
Unid FW																								
Unid Vsl																								

Table 1. (Cont'd).

Provenience	Shovel Tests																							
	N480 E440	N480 E445	N480 E450	N480 E455	N480 E460	N480 E485	N485 E440	N485 E445	N485 E450	N485 E465	N485 E470	N485 E475	N485 E480	N485 E485	N485 E490	N490 E440	N490 E445	N490 E450	N490 E465	N490 E470	N490 E480	N490 E485	N490 E490	N490 E495
Whiteware Total		1															1							
Ironstone																								
Unid Vessel																								
Undec																							1	
Ironstone Total																							1	
Porcelain																								
Lid?	1																							
Unid HW(Smoking Pipe Bowl?)										1														
Unid Vsl																								
Decalcomania																								
Undec																								
Porcelain Total	1									1														
Yellowware																								
Unid HW					3																			
Yellowware Total					3																			
Stoneware																								
Unid Vsl																								
Slt/Slp					1																			
Stoneware Total					1																			
Ceramic Total	1	1		1	5					1							1						1	
Glass																								
Base																								
Unid Bottle																								
Post Bottom Mold																								
Other Vessel																								
Wine Bottle Kickup																								
Turn Mold				1																				
Container Base Total				1																				
Lips/Necks																								
Unid Bottle/Jar																								
Tooled Finish																								
Container Lip/Neck Total																								
Body																								
Soda Bottle																								
Plain																		1						
Beer/Ale Brown		1																						
Case Bottle																	2							
Wine Bottle												1		1			1	1				1		
Wine Bottle																								
Unid Bottle																								
Embossed					1																			
Plain																								
Unid Bottle/Jar																								
Plain		1			1									1					1					
Glass Body Total		2			2							1		2			3	2	1			1		

Table 1. (Cont'd).

Provenience	Shovel Tests																							
	N480 E440	N480 E445	N480 E450	N480 E455	N480 E460	N480 E465	N485 E440	N485 E445	N485 E450	N485 E465	N485 E470	N485 E475	N485 E480	N485 E485	N485 E490	N490 E440	N490 E445	N490 E450	N490 E465	N490 E470	N490 E480	N490 E485	N490 E490	N490 E495
Glass Total		2		1	2							1		2			3	2	1			1		
Fauna																								
Bone		2		2	4		1			1		1	1			2				1	1			
Fauna Total		2		2	4		1			1		1	1			2				1	1			
KITCHEN TOTAL	1	5		4	11		1			2		2	1	2		2	4	2	1	1	1	1	1	
ARCHITECTURE																								
Metal																								
Nail, Machine Cut																								
Common																								
Whole																								
Clinched		1									1					1								
Pulled																								
Unused		3			3										1									
Fragment																								
Clinched								1																
Unk									1		1	2		1	2				1					
Spike																								
Whole																								
Unused										1														
Machine Cut Nail Total		4			3			1	1	1	2	2		1	3	1			1					
Nail, Wire																								
Common																								
Whole				1																				
Clinched																								
Pulled																								
Unused																								
Fragment																								
Pulled																								
Unused																								
Brad																								
Whole																								
Unid Fragment																								
Unk																								
Wire Nail Total				1																				
Nail, Unid Mnf																								
Fragment																								
Unknown																								
Unid Nail Total																								
Nail Total		4		1	3			1	1	1	2	2		1	3	1			1					
Metal Total		4		1	3			1	1	1	2	2		1	3	1			1					
Glass																								
Flat <3mm																								
Aqua				1	3			1					1						3					
Glass Total				1	3			1					1						3					
Ceramic																								

Table 1. (Cont'd).

Provenience	Shovel Tests																								
	N480 E440	N480 E445	N480 E450	N480 E455	N480 E460	N480 E465	N485 E440	N485 E445	N485 E450	N485 E465	N485 E470	N485 E475	N485 E480	N485 E485	N485 E490	N490 E440	N490 E445	N490 E450	N490 E465	N490 E470	N490 E480	N490 E485	N490 E490	N490 E495
Brick																								
Electric Insulator-Porcelain																								
Ceramic Total																								
Other																								
Wood Fragment w/ Paint																								
Other Metal and Wood Total																								
ARCHITECTURE TOTAL		4		2	6			2	1	1	2	2	1	1	3	1			4					
CLOTHING																								
Button																								
Bone-4 hole				1																				
CLOTHING TOTAL				1																				
PERSONAL																								
Smoking Pipe																								
Bowl-Porcelain																								
Grooming Items																								
Bobby Pin-Metal																								
Toy																								
Gun Part-Hammer																								
PERSONAL TOTAL																								
HARDWARE																								
Bolt																								
Machine Cut																								
Flexible Gas Appliance Pipe																								
Metal(Iron) Ring																	1							
Wire																1								
Unid																								
HARDWARE TOTAL																1	1							
UNIDENTIFIABLE																								
Curved Metal Rod Fragment																							1	
Unid Indet																								
UNIDENTIFIABLE TOTAL																							1	
OTHER																								
Metal Bracket																								
Metal Spring From Clothes Pin																								
Phonograph Record																			1					
Terra Cotta Flower Pot																					1			
OTHER TOTAL																			1		1			
PREHISTORIC																								
Chipped Stone																								
Debitage																								
PREHISTORIC TOTAL																								
OVERALL TOTAL	1	9	1	8	19	1	1	2	1	3	2	4	2	3	3	4	5	3	5	1	2	1	2	1

Table 1. (Cont'd).

Provenience	N490 E500	N495 E435	N495 E455	N495 E460	N495 E470	N495 E480	N495 E485	N495 E495	N495 E500	N500 E440	N500 E450	N500 E460	N500 E475	N500 E480	N505 E440	N510 E445	N510 E450	N510 E455	N510 E480	N515 E435	N515 E445	N515 E465	N515 E470
Artifact Type																							
MILITARY CLOTHING & ACCESSORIES																							
Accoutrements																							
Buttons																							
Three-Piece(Sanders)																							
General Service																							
Accoutrements Total																							
Arms																							
Ammunition																							
Bullets																							
.22 Caliber Shell Casing																							
.22 Caliber Cartridge																							
.45-70 Caliber(Rifle Bullet)																							
.38 Caliber Bullet																							
Arms Total																							
Transportation																							
Draft/Harness																							
Buckle-with leather strap attached																							
Wagon Parts																							
Wagon Box Strap												1											
Transportation Total												1											
Unidentifiable																							
Unid Military	1																						
Unidentifiable Total	1																						
MILITARY TOTAL	1											1											
KITCHEN																							
Ceramic																							
Cremeware																							
Transfer Printed																							
Cup																							
Black																							
Unid Vsl																							
Brown																							
Embossed																							
Lid																							
Cremeware																							
Whiteware																							
Dipped																							
Bowl																							
Annular/Brown																							
Undecorated																							
Bowl																							
Tea Pot? Octagonal																							
Unid FW																							
Unid Vsl																							

Table 1. (Cont'd).

Provenience	N490 E500	N495 E435	N495 E455	N495 E460	N495 E470	N495 E480	N495 E485	N495 E495	N495 E500	N500 E440	N500 E450	N500 E460	N500 E475	N500 E480	N505 E440	N510 E445	N510 E450	N510 E455	N510 E480	N515 E435	N515 E445	N515 E465	N515 E470
Whiteware Total																							
Ironstone																							
Unid Vessel																							
Undec																							
Ironstone Total																							
Porcelain																							
Lid?																							
Unid HW(Smoking Pipe Bowl?)																							
Unid Vsl																							
Decalcomania																							
Undec																							
Porcelain Total																							
Yellowware																							
Unid HW																							
Yellowware Total																							
Stoneware																							
Unid Vsl																							
Slt/Slp																							
Stoneware Total																							
Ceramic Total																							
Glass																							
Base																							
Unid Bottle																							
Post Bottom Mold										1													
Other Vessel																							
Wine Bottle Kickup																							
Turn Mold																							
Container Base Total										1													
Lips/Necks																							
Unid Bottle/Jar																							
Tooled Finish				1																			
Container Lip/Neck Total				1																			
Body																							
Soda Bottle																							
Plain																							
Beer/Ale Brown																							
Case Bottle																							
Wine Bottle																							
Wine Bottle																							
Unid Bottle																							
Embossed																							
Plain																1							
Unid Bottle/Jar																							
Plain			1																				
Glass Body Total			1													1							

Table 1. (Cont'd).

Provenience	N490 E500	N495 E435	N495 E455	N495 E460	N495 E470	N495 E480	N495 E485	N495 E495	N495 E500	N500 E440	N500 E450	N500 E460	N500 E475	N500 E480	N505 E440	N510 E445	N510 E450	N510 E455	N510 E480	N515 E435	N515 E445	N515 E465	N515 E470
Glass Total			1	1						1						1							
Fauna																							
Bone				1		1	2								1			2					
Fauna Total				1		1	2								1			2					
KITCHEN TOTAL			1	2		1	2			1					1	1		2					
ARCHITECTURE																							
Metal																							
Nail, Machine Cut																							
Common																							
Whole																							
Clinched				1	1					1													
Pulled																				1			
Unused								1														1	
Fragment																							
Clinched																				1			
Unk									2												1		
Spike																							
Whole																							
Unused																							
Machine Cut Nail Total				1	1			1	2	1										2	1	1	
Nail, Wire																							
Common																							
Whole																							
Clinched																							
Pulled																							
Unused																							1
Fragment																							
Pulled																							
Unused																							
Brad																							
Whole																							
Unid Fragment																							
Unk																							
Wire Nail Total																							1
Nail, Unid Mnf																							
Fragment																							
Unknown							1																
Unid Nail Total							1																
Nail Total				1	1		1	1	2	1										2	1	1	1
Metal Total				1	1		1	1	2	1										2	1	1	1
Glass																							
Flat < 3mm																							
Aqua		1					2			1	1												
Glass Total		1					2			1	1												
Ceramic																							

Table 1. (Cont'd).

Provenience	N490 E500	N495 E435	N495 E455	N495 E460	N495 E470	N495 E480	N495 E485	N495 E495	N495 E500	N500 E440	N500 E450	N500 E460	N500 E475	N500 E480	N505 E440	N510 E445	N510 E450	N510 E455	N510 E480	N515 E435	N515 E445	N515 E465	N515 E470
Brick														1									
Electric Insulator-Porcelain																			1				
Ceramic Total														1					1				
Other																							
Wood Fragment w/ Paint													2										
Other Metal and Wood Total													2										
ARCHITECTURE TOTAL		1		1	1		3	1	2	2	1		2	1					1	2	1	1	1
CLOTHING																							
Button																							
Bone-4 hole																							
CLOTHING TOTAL																							
PERSONAL																							
Smoking Pipe																							
Bowl-Porcelain																							
Grooming Items																							
Bobby Pin-Metal																							
Toy																							
Gun Part-Hammer		1																					
PERSONAL TOTAL		1																					
HARDWARE																							
Bolt																							
Machine Cut																							
Flexible Gas Appliance Pipe																	1						
Metal(Iron) Ring																						1	
Wire					1																		
Unid																							
HARDWARE TOTAL					1												1					1	
UNIDENTIFIABLE																							
Curved Metal Rod Fragment																							
Unid Indet											1												
UNIDENTIFIABLE TOTAL											1												
OTHER																							
Metal Bracket																							
Metal Spring From Clothes Pin																							
Phonograph Record																							
Terra Cotta Flower Pot																							
OTHER TOTAL																							
PREHISTORIC																							
Chipped Stone																							
Debitage																							
PREHISTORIC TOTAL																							
OVERALL TOTAL	1	2	1	3	2	1	5	1	2	3	2	1	2	1	1	1	1	2	1	2	1	2	1

Table 1. (Cont'd).

Provenience	Shovel Tests																			
	N515 E475	N515 E480	N515 E490	N515 E495	N520 E435	N520 E450	N520 E465	N520 E470	N520 E480	N520 E485	N525 E445	N530 E450	N530 E455	N530 E460	N530 E470	N530 E475	N530 E480	N530 E490	N530 E495	Total
Artifact Type																				
MILITARY CLOTHING & ACCESSORIES																				
Accoutrements																				
Buttons																				
Three-Piece(Sanders)																				
General Service																				1
Accoutrements Total																				1
Arms																				
Ammunition																				
Bullets																				
.22 Caliber Shell Casing																				1
.22 Caliber Cartridge																				1
.45-70 Caliber(Rifle Bullet)																				1
.38 Caliber Bullet																				1
Arms Total																				4
Transportation																				
Draft/Harness																				
Buckle-with leather strap attached																				1
Wagon Parts																				
Wagon Box Strap																				1
Transportation Total																				2
Unidentifiable																				
Unid Military																				1
Unidentifiable Total																				1
MILITARY TOTAL																				8
KITCHEN																				
Ceramic																				
Cremeware																				
Transfer Printed																				
Cup																				
Black							4													4
Unid Vsl																				
Brown																				1
Embossed																				
Lid																				1
Cremeware							4													6
Whiteware																				
Dipped																				
Bowl																				
Annular/Brown																				1
Undecorated																				
Bowl																				1
Tea Pot? Octagonal											1									1
Unid FW										1										1
Unid Vsl								2												2

Table 1. (Cont'd).

Provenience	Shovel Tests																			
	N515 E475	N515 E480	N515 E490	N515 E495	N520 E435	N520 E450	N520 E465	N520 E470	N520 E480	N520 E485	N525 E445	N530 E450	N530 E455	N530 E460	N530 E470	N530 E475	N530 E480	N530 E490	N530 E495	Total
Whiteware Total								2		1	1									6
Ironstone																				
Unid Vessel																				
Undec																				1
Ironstone Total																				1
Porcelain																				
Lid?																				1
Unid HW(Smoking Pipe Bowl?)																				1
Unid Vsl																				
Decalcomania						1														1
Undec																			1	1
Porcelain Total						1													1	4
Yellowware																				
Unid HW																				3
Yellowware Total																				3
Stoneware																				
Unid Vsl																				
Slt/Slp			1																	2
Stoneware Total			1																	2
Ceramic Total			1			1	4	2		1	1								1	22
Glass																				
Base																				
Unid Bottle																				
Post Bottom Mold																				1
Other Vessel																				
Wine Bottle Kickup																				
Turn Mold																				1
Container Base Total																				2
Lips/Necks																				
Unid Bottle/Jar																				
Tooled Finish																				1
Container Lip/Neck Total																				1
Body																				
Soda Bottle																				
Plain																				1
Beer/Ale Brown																				1
Case Bottle																				2
Wine Bottle																				5
Wine Bottle																				
Unid Bottle																				
Embossed																				1
Plain																				1
Unid Bottle/Jar																				
Plain																				5
Glass Body Total																				16

Table 1. (Cont'd).

Provenience	Shovel Tests																			
	N515 E475	N515 E480	N515 E490	N515 E495	N520 E435	N520 E450	N520 E465	N520 E470	N520 E480	N520 E485	N525 E445	N530 E450	N530 E455	N530 E460	N530 E470	N530 E475	N530 E480	N530 E490	N530 E495	Total
Glass Total																				19
Fauna																				
Bone	1																			24
Fauna Total	1																			24
KITCHEN TOTAL	1		1			1	4	2		1	1								1	65
ARCHITECTURE																				
Metal																				
Nail, Machine Cut																				
Common																				
Whole																				
Clinched						1														7
Pulled																				1
Unused																				9
Fragment																				
Clinched								1												3
Unk																		1		12
Spike																				
Whole																				
Unused																				1
Machine Cut Nail Total						1		1										1		33
Nail, Wire																				
Common																				
Whole																				1
Clinched																1				1
Pulled	1																1			2
Unused	3																			4
Fragment																				
Pulled																		1		1
Unused				1	1			1							1			1		5
Brad																				
Whole	1																			1
Unid Fragment																				
Unk													1							1
Wire Nail Total	5			1	1			1					1		1	1	1	2		16
Nail, Unid Mnf																				
Fragment																				
Unknown				1																2
Unid Nail Total				1																2
Nail Total	5			2	1	1		2					1		1	1	1	3		51
Metal Total	5			2	1	1		2					1		1	1	1	3		51
Glass																				
Flat < 3mm																				
Aqua	6							1				2								23
Glass Total	6							1				2								23
Ceramic																				

Table 1. (Cont'd).

Provenience	Shovel Tests																			
	N515 E475	N515 E480	N515 E490	N515 E495	N520 E435	N520 E450	N520 E465	N520 E470	N520 E480	N520 E485	N525 E445	N530 E450	N530 E455	N530 E460	N530 E470	N530 E475	N530 E480	N530 E490	N530 E495	Total
Brick																				1
Electric Insulator-Porcelain																				1
Ceramic Total																				2
Other																				
Wood Fragment w/ Paint																				2
Other Metal and Wood Total																				2
ARCHITECTURE TOTAL	11			2	1	1		3				2	1		1	1	1	3		78
CLOTHING																				
Button																				
Bone-4 hole																				1
CLOTHING TOTAL																				1
PERSONAL																				
Smoking Pipe																				
Bowl-Porcelain	1																			1
Grooming Items																				
Bobby Pin-Metal														1						1
Toy																				
Gun Part-Hammer																				1
PERSONAL TOTAL	1													1						3
HARDWARE																				
Bolt																				
Machine Cut									1											1
Flexible Gas Appliance Pipe																				1
Metal(Iron) Ring																				2
Wire																				2
Unid								1												1
HARDWARE TOTAL								1	1											7
UNIDENTIFIABLE																				
Curved Metal Rod Fragment																				1
Unid Indet	2																			3
UNIDENTIFIABLE TOTAL	2																			4
OTHER																				
Metal Bracket																		1		1
Metal Spring From Clothes Pin																		1		1
Phonograph Record																				1
Terra Cotta Flower Pot																				1
OTHER TOTAL																		2		4
PREHISTORIC																				
Chipped Stone																				
Debitage		1																		1
PREHISTORIC TOTAL		1																		1
OVERALL TOTAL	15	1	1	2	1	2	4	6	1	1	1	2	1	1	1	1	1	5	1	171

Table 2. 14Lv351 HBS, Historic Artifact Inventory

Artifact Type								
MILITARY								
Ammunition								
.50 Cal. Brass Shell					1			1
Ammunition Total					1			1
MILITARY TOTAL					1			1
ARCHITECTURE								
Metal								
Nails, Machine Cut								
Unid Fragment								
Unknown	1							1
Machine Cut Nail Total	1							1
Nail, Wire								
Common								
Pulled			1					1
Brad								
Whole				1				1
Unid Fragment								
Unknown						1		1
Wire Nail Total			1	1		1		3
Metal Total	1		1	1		1		4
Glass								
Flat <3mm								
Aqua							13	13
Glass Total							13	13
ARCHITECTURE TOTAL	1		1	1		1	13	17
KITCHEN								
Glass								
BODY								
Unid Bottle								
Undecorated	1							1
Unid Jar/Bottle								
Undecorated		1	2		1	4		8
Glass Total	1	1	2		1	4		9
Fauna								
Bone/Tooth			1			2		3
Fauna Total			1			2		3
KITCHEN TOTAL	1	1	3		1	6		12
OTHER								
Ceramic								
Drainage Tile						1		1
OTHER TOTAL						1		1
OVERALL TOTAL	2	1	4	1	2	8	13	31

Table 3. 14Lv351 HBS 46, Historic Artifact Inventory

	SHOVEL TEST				UNITS								
Provenience	N492 E500	N495 E500	N505 E495	N510 E495	UA L2	UA L3	UA L4	UA L5	UB L1	UB L2	UB L3	UB L4	Total
Artifact Type													
MILITARY													
Ammunition													
Bullets/Casings													
.45-70 Cal.(Rifle)										1			1
.56 cal.1/2 Lead Ball						1							1
.46 cal. Brass Shell				1									1
Flattened Lead Ball										1	3		4
Ammunition Total				1		1				2	3		7
Other Military													
Brass Key										1			1
Other Military Total										1			1
MILITARY TOTAL				1		1				3	3		8
ARCHITECTURE													
Metal (Fe)													
Nail, Machine Cut													
Common, Whole													
Pulled				1							1	2	4
Unused							1						1
Common, Fragment													
Pulled							1			1	1	1	4
Unid, Fragment													
Pulled												1	1
Machine Cut Nail Total				1			2			1	2	4	10
Nail, Wire													
Common, Whole													
Clinched					1								1
Wire Nail Total					1								1
Nail Total				1	1		2			1	2	4	11
Aluminum													
Window Track			1										1
Metal Total			1	1	1		2			1	2	4	12
Glass													
Flat <3mm													
Aqua											1		1
Glass Total											1		1
ARCHITECTURE TOTAL			1	1	1		2			1	3	4	13
KITCHEN													
Whiteware													
Transfer Print/Handpainted													
Serving Bowl												1	1
Undecorated													
Unid FW						1	2				1		4
Unid HW						1							1
Whiteware Total						2	2				1	1	6
Ironstone (White Granite)													
Undecorated													
Unid Vessel							1					1	2
Ironstone Total							1					1	2
Ceramic Total						2	3				1	2	8
Glass													
Container/Body													
Wine Bottle							1						1
Unid Jar/Bottle		1					1				2	2	6
Embossed										3			3
Unid Vessel	1										1		2
Container Total	1	1					2			3	3	2	12
Non-Container													
Unid Vessel Lid							1						1
Non-Container Total							1						1
Glass Total	1	1					3			3	3	2	13
Metal													
Can Parts													
Aluminum Beer/Soda Can Tab									1				1
Metal Total									1				1
Fauna													
Bone/Tooth		1				2					1	1	5
Fauna Total		1				2					1	1	5
KITCHEN TOTAL	1	2				4	6		1	3	5	5	27
PERSONAL													
Smoking Pipe													
Kaolin													
Plain											1		1
PERSONAL TOTAL											1		1
FURNISHINGS													
Kerosene Lamp													
Chimney			1										1
FURNISHINGS TOTAL			1										1
UNIDENTIFIABLE													
Sheet Metal Fragment							1	2					3
Iron Fragment						1							1
Unid/Indet Glass						2	1		1	1	3	1	9
UNIDENTIFIABLE TOTAL						3	2	2	1	1	3	1	13
OTHER													
Slate												2	2
OTHER TOTAL												2	2
OVERALL TOTAL	1	2	2	2	1	8	10	2	2	8	15	12	65

Table 4. 14Lv351 HBS 38, Historic Artifact Inventory

	UNITS																	CORES				Total
Provenience	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UA L7	UA L8	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UC L1	UC L2	UC L3	UC L4	C1 L4	C1 L5	C1 L8	C1 L9	
Artifact Type																							
MILITARY																							
Ammunition/Bullets																							
Full Metal Copper Jacketed																							
.45 cal. Copper (Revolver)		1																					1
Smashed (unk cal.)	1																						1
MILITARY TOTAL	1	1																					2
ARCHITECTURE																							
Metal																							
Nail, Machine Cut																							
Common																							
Whole																	2						2
Pulled											1					2	2						5
Unused											1		1		1		2	2					7
Fragment																							
Clinched								1					1										2
Pulled								1				1		1									3
Unknown				1		1		1		1			1				4	2					11
Machine Cut Nail Total				1		1		3		1	2	1	3	1	1	2	10	4					30
Nail, Wire																							
Common																							
Whole																							
Clinched		1																					1
Unused		1																					1
Wire Nail Total		2																					2
Nail Total		2		1		1		3		1	2	1	3	1	1	2	10	4					32
Glass																							
Flat <3mm																							
Aqua					4	1					1	1		1							5	6	19
Glass Total					4	1					1	1		1							5	6	19
ARCHITECTURE TOTAL		2		1	4	2		3		1	3	2	3	2	1	2	10	4			5	6	51
KITCHEN																							
Ceramic																							
Cremeware																							
Transfer Printed																							
Cup (Blue-Gray)																		1					1
Cremeware Total																		1					1
Whiteware																							
Undecorated																							
Saucer			1																				1
Unid Vessel																					1		1
Whiteware Total			1																		1		2
Yellow Ware																							
Unid Vessel																							
Ferromang							1																1
Yellow Ware Total							1																1
Porcelain																							
Undecorated																							
Unid Vessel						1		1			1												3
Porcelain Total						1		1			1												3
Stoneware																							
Unid HW																							
Slt/Slp																		1					1
Stoneware Total																		1					1
Ceramic Total			1			1	1	1			1							2			1		8
Glass/Container																							
Base																							
Beer/Ale-Unid Manuf												1											1
Beverage/3PPB - Embossed		1																					1
Unid Bottle																							
Unid Manuf							1																1
3PPB/Snap Case																						1	1
Base Total		1					1					1										1	4
Lip/Neck																							
Unid Bottle																							
Mach-made Cork-Ground Lip																		1					1
Tumbler																							
Fluted												1											1
Indeterminate												1											1
Druggist Bottle																							
Turn Mold/Fire Po! Lip											2												2
Lip/Neck Total											2	2						1					5
Body																							
Unclassified Medicine																							
Druggist Bottle											2												2
Soda Bottle										3													3
Embossed			1																				1
Unid Bottle		2																				28	30
Unid Jar/Bottle								1	1	1			2	1		1		1		1	3		12

Table 4. (Cont'd).

	UNITS																	CORES				Total
Provenience	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UA L7	UA L8	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UC L1	UC L2	UC L3	UC L4	C1 L4	C1 L5	C1 L8	C1 L9	
Beer/Ale								1					1	6									8
Wine Bottle													1										1
Body Total		2	1					2	1	4	2		4	7		1		1		1	3	26	57
Glass/Container Total		3	1				1	2	1	4	4	3	4	7		1		2		1	3	29	66
Fauna																							
Bone/Tooth							3	6		3	1	2	1	1					5				22
Fauna Total							3	6		3	1	2	1	1					5				22
KITCHEN TOTAL		3	2			1	5	9	1	7	6	5	5	8		1		4	5	1	4	29	96
CLOTHING																							
Shoe/Boot																							
Leather Insole (Stitched)										1													1
Leather Sole																					5		5
Button																							
Shell-4 Hole																					1		1
CLOTHING TOTAL										1											6		7
PERSONAL																							
Marble																							
Glass-Clear W/Color Swirls						1																	1
Coins																							
1963 D Lincoln-Head Penny		1																					1
1963 Jefferson Nickel		1																					1
Penknife																	1						1
PERSONAL TOTAL		2				1											1						4
FURNISHINGS																							
Light Bulb Base (Threaded)			1																				1
FURNISHINGS TOTAL			1																				1
HARDWARE																							
Wood Screw-Brass									1														1
Washer									1														1
HARDWARE TOTAL									2														2
UNIDENTIFIABLE																							
Sheet Metal Fragment											1												1
Indeterminate Glass					2			1										1	3				7
Melted Glass											1												1
UNIDENTIFIABLE TOTAL					2			1			2							1	3				9
OTHER																							
Oval Metal Ring			1																				1
Terra-Cotta Flower Pot				1																			1
Slate					2																		2
Grooved Lead Disk										1													1
OTHER TOTAL			1	1	2					1													5
OVERALL TOTAL	1	8	4	2	8	4	5	13	3	10	11	7	8	10	1	3	11	9	8	1	15	35	177

Table 5. 14Lv351 HBS 39, Historic Artifact Inventory

Provenience	Shovel Tests										Units												
	N490 E505	N490 E510	N495 E500	N495 E505	N500 E500	N500 E505	N505 E500	N505 E505	N510 E500	N510 E505	UA L1	UA L2	UA L3	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L6 Fe	UB L7	UB L9	Total
Artifact Type																							
MILITARY																							
Accoutrements																							
Hinged Brass Lid												1											1
Unid						1																	1
Accoutrements Total						1						1											2
Arms																							
.25 Caliber Rim Fire Case												1											1
.30 Caliber Full Metal Jacket				1																			1
.53 Caliber Lead Round Ball																	1						1
Lead Shot(Buckshot)												1											1
Arms Total				1								2					1						4
MILITARY TOTAL				1		1						3					1						6
KITCHEN																							
Ceramic																							
Lustreware																							
Unid Vessel																							
Light Brown														1									1
Lustreware Total														1									1
Whiteware																							
Unid Vessel												8	6			2	1	1					18
Annular/Blue																	1						1
Whiteware Total												8	6			2	2	1					19
Ironstone (White Granite)																							
Unid HW																							
Embossed																	1						1
Unid Vsl												2				1							3
Ironstone Total												2				1	1						4
Porcelain																							
Unid Vessel												1	1										2
Porcelain Total												1	1										2
Yellowware																							
Unid Vessel/Clear Glaze													1										1
Yellowware Total													1										1
Stoneware																							
Handle																							
Slt												1											1
Ginger Beer Bottle																							
Bst/Bst													1										1
Unid HW																							
Slp/Slp												1											1
Bst/Bst																		1					1

Table 5. (Cont'd).

Provenience	Shovel Tests										Units												
	N490 E505	N490 E510	N495 E500	N495 E505	N500 E500	N500 E505	N505 E500	N505 E505	N510 E500	N510 E505	UA L1	UA L2	UA L3	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L6 Fe	UB L7	UB L9	Total
Stoneware Total												2	1					1					4
Ceramic Total												13	9	1		3	3	2					31
Glass																							
BASE																							
Beer/Ale																							
Indet Fragment													1										1
Container Base Total													1										1
Lips/Necks																							
Chemist-Druggest Bottle																							
Ground Lip												1											1
Tooled finish												1											1
Unid HW																							
Fire polished lip															1								1
Wide-mouthed													1										1
Container Lip/Neck Total												2	1		1								4
BODY																							
Beer/Ale													1										1
Case Bottle																							
Panel, Embossed																			1				1
Plain																1							1
Wine Bottle																							
Embossed												1											1
Plain	1								1	1	1	1	5	1	1				1				13
Whiskey Flask,Embossed													1										1
Unid Bottle																							
Embossed					1																		1
Plain												2			1		1						4
Unid Bottle/Jar																							
Embossed																		1					1
Plain											1	3			1								5
Unid HW												1											1
Embossed																							
Pressed												1					1						2
Plain												3			2		2						7
Unid Vessel												2											2
Container Body Total	1				1				1	1	2	14	7	1	5	1	4	1	2				41
Glass Total	1				1				1	1	2	16	9	1	6	1	4	1	2				46
Fauna																							
Bone									1			1	9			1	2	1					15
Fauna Total									1			1	9			1	2	1					15
KITCHEN TOTAL	1				1				2	1	2	30	27	2	6	5	9	4	2				92

Table 5. (Cont'd).

Provenience	Shovel Tests										Units												Total
	N490 E505	N490 E510	N495 E500	N495 E505	N500 E500	N500 E505	N505 E500	N505 E505	N510 E500	N510 E505	UA L1	UA L2	UA L3	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L6 Fe	UB L7	UB L9	
ARCHITECTURE																							
Metal																							
Nail, Machine Cut																							
Common																							
Whole																							
Pulled													1			1							2
Unused												2	1		1	1							5
Fragment																							
Clinched															1								1
Pulled											1		1		2			1					5
Unk			3		1		1		1		2		1		2	1	3	5			1		21
Spike																							
Whole																							
Unused																	1						1
Machine Cut Nail Total			3		1		1		1		3	2	4		6	3	4	6			1		35
Nail, Wire																							
Common																							
Whole																							
Clinched														1									1
Pulled								1															1
Brad																							
Whole																	1						1
Wire Nail Total								1						1			1						3
Nail Total			3		1		1	1	1		3	2	4	1	6	3	5	6			1		38
Metal Total			3		1		1	1	1		3	2	4	1	6	3	5	6			1		38
Glass																							
Flat <3mm																							
Clear											1						1						2
Aqua		1									4	9	1	2	6	3	7	6	1		2		42
Glass Total		1									5	9	1	2	6	3	8	6	1		2		44
Ceramic																							
Brick																1							1
Ceramic Total																1							1
Mortar																				1			1
ARCHITECTURE TOTAL		1	3		1		1	1	1		8	11	5	3	12	7	13	12	1	1	3		84
CLOTHING																							
Sewing/ Straight Pin																		1					1
CLOTHING TOTAL																		1					1
PERSONAL																							
Bowl																							
Porcelain																							

Table 5. (Cont'd).

Provenience	Shovel Tests										Units												
	N490 E505	N490 E510	N495 E500	N495 E505	N500 E500	N500 E505	N505 E500	N505 E505	N510 E500	N510 E505	UA L1	UA L2	UA L3	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L8 Fe	UB L7	UB L9	Total
Brown Exterior/Unglazed Interior												1											1
Stoneware																							
Decorated Exterior															1								1
Lincoln-head Penny 1982															1								1
Tobacco Tin																				1			1
PERSONAL TOTAL												1			2					1			4
FURNISHINGS																							
Unid Porcelain Sanitary Tile Object										1													1
FURNISHINGS TOTAL										1													1
HARDWARE																							
Machine Cut Tack													1										1
Wire Tack															1								1
Unid Fastener (nail? screw?)																		1					1
HARDWARE TOTAL													1		1			1					3
UNIDENTIFIABLE																							
Melted Glass															1								1
Unid Indet Glass												11	8					1	1				21
Sheet Metal Fragments																							
Gilded															1		3						4
UNIDENTIFIABLE TOTAL												11	8		2		3	1	1				26
OTHER																							
Copper Wire																							
Solid Strand	1																						1
Drainage Tile																							
slp/slp					1																		1
slt/slt																1							1
slp/ung																				1			1
Indet/Slp																1							1
Slate										1	3	3		2								1	10
Lead Type for Printing Press													1										1
OTHER TOTAL	1				1					1	3	3	1	2		2				1		1	16
OVERALL TOTAL	2	1	3	1	3	1	1	1	3	3	13	59	42	7	23	14	26	19	4	3	3	1	233

Table 6. 14Lv351 HBS 5, Historic Artifact Inventory

Provenience	Units																										Cores						
	UA L1-3	UA L4	UA L5	UA L6	UA L7	UA L8	UA L9	UA L10	UA L11	UA L12	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8&9	UB L10	UB L11	UA L7	UA L8	UA L9	UA L10F1	UA L11F1	UA L12F1	C1 L3	C1 L4	C1 L5	C1 L6	C1 L8	C1 L10	Total
Artifact Type																																	
MILITARY CLOTHING & ACCESSORIE																																	
Accoutrements																																	
Buttons																																	
Sew-through(4hole)																																	
Pewter?coated,embossed																1																	1
Accoutrements Total																1																	1
Arms																																	
Ammunition																																	
Bullets																																	
.30 Caliber Copper Full Metal Jacket		1																															1
Arms Total		1																															1
Other																																	
Unid Brass Sheet Metal					1																												1
Other Total					1																												1
MILITARY TOTAL		1			1											1																	3
KITCHEN																																	
Ceramic																																	
Whiteware																																	
Transfer Print																																	
Unid FW																																	
Blue			1																														1
Unid Vsl																																	
Brown																				1													1
Undecorated																																	
Serving Piece																																	
Lidded Vessel (Sugar Bowl?)																		1															1
Unid Vsl			1						1				1		1																	1	5
Flow																																	
Unid Vsl		1																															1
Whiteware Total		1	2						1				1		1			1		1												1	9
Ironstone (White Granite)																																	
Unid Vsl																																	
Undec														1																			1
Ironstone Total														1																			1
Porcelain																																	
Unid FW																		1															1
Porcelain Total																		1															1
Stoneware																																	
Unid HW																																	
Slt/Slp				1										1																			2
Unid Vsl																																	
Slt/Slp			1		1															1													3

Table 6. (Cont'd).

Provenience	Units																										Cores						
	UA L1-3	UA L4	UA L5	UA L6	UA L7	UA L8	UA L9	UA L10	UA L11	UA L12	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8&9	UB L10	UB L11	UA L7	UA L8	UA L9	UA L10F1	UA L11F1	UA L12F1	C1 L3	C1 L4	C1 L5	C1 L6	C1 L8	C1 L10	Total
Slt/Ung	1																																1
Stoneware Total	1		1	1	1									1						1													6
Ceramic Total	1	1	3	1	1				1				1	2	1			2		2													17
Glass																																	
Base																																	
Wine Bottle																																	
Post Bottom Mold																		1															1
Unid Footed Vessel																																	
Pressed Base										1																1							2
Unid Bottle																																	
Plate Bottom Mold/Snap Case																																1	1
Container Base Total										1								1								1						1	4
Lips/Necks																																	
Liquor Flask																																	
Improved Tool Cork					1																												1
Wine Bottle, neck only										1																							1
Unid Bottle																																	
Improved Tool Cork- Plain				1																													1
Machine Made, indet closure																1																	1
Unid Vessel-Bottle/Jar									1																								1
Flanged Lip																		1															1
Unid Mfg		1																														1	2
Container Lip/Neck Total		1		1	1				1	1						1		1														1	8
Body																																	
Beer/Ale																		1															1
Soda Bottle																																	
Embossed, and painted stripes														1																			1
Plain		1																															1
Wine Bottle		1	1				1		1	1							1		2													1	9
Unid Bottle																																	
Panel			1					1																									2
Plain		2	3			1		2		1									2														11
Plain				1					4															3	2							20	30
Unid Jar/Bottle																																	
Embossed														1																			1
Plain			1	1			1		2				1		6		1	1		1													15
Unid Hlw																																	
Engraved Decoration															1																		1
Pressed										1																							1
Plain	2	2	1			1										1																	7
Container Body Total	2	6	7	2		2	2	3	7	3			1	2	7	1	2	2	4	1				3	2							21	80
Glass Total	2	7	7	3	1	2	2	3	8	5			1	2	7	2	2	4	4	1				3	2	1						23	92
Fauna																																	

Table 6. (Cont'd).

Provenience	Units																										Cores						
	UA L1-3	UA L4	UA L5	UA L6	UA L7	UA L8	UA L9	UA L10	UA L11	UA L12	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8&9	UB L10	UB L11	UA L7	UA L8	UA L9	UA L10F1	UA L11F1	UA L12F1	C1 L3	C1 L4	C1 L5	C1 L6	C1 L8	C1 L10	Total
Bone			1			8		1	10						1		1	1	2	6													31
Shell	1		1				1	12	4	2																							21
Fauna Total	1		2			8	1	13	14	2					1		1	1	2	6													52
KITCHEN TOTAL	4	8	12	4	2	10	3	16	23	7			2	4	9	2	3	7	6	9				3	2	1						23	161
ARCHITECTURE																																	
Metal																																	
Nail, Machine Cut																																	
Common																																	
Whole																																	
Pulled					1																												1
Unused									1																								1
Fragment																																	
Pulled								1		1																							2
Unk			2			1	1		1								1										1		2		1	1	11
Spike																																	
Fragment																																	
Used									1																								1
Machine Cut Nail Total			2		1	1	1	1	3	1							1										1		2		1	1	16
Nail, Wire																																	
Common																																	
Whole																																	
Clinched		1																															1
Pulled		1																															1
Unused														1			1																2
Fragment																																	
Pulled														1																			1
Unk	1	2																															3
Wire Nail Total	1	4												2			1																8
Nail Total	1	4	2		1	1	1	1	3	1				2			2										1		2		1	1	24
METAL TOTAL	1	4	2		1	1	1	1	3	1				2			2										1		2		1	1	24
GLASS																																	
Flat <3mm																																	
Aqua		1		6	2	2			2					1		2	4	4		2	1										10	37
Clear																																2	2
Flat >3mm																																	
Aqua	1																																1
GLASS TOTAL	1	1		6	2	2			2					1		2	4	4		2	1										12	40
CERAMIC																																	
Electric insulator-porcelain													1																				1
Plaster		1																															1
CERAMIC TOTAL		1											1																				2
ARCHITECTURE TOTAL	2	6	2	6	3	3	1	1	5	1			1	3		2	6	4		2	1						1		2		1	13	66
CLOTHING																																	

Table 6. (Cont'd).

Provenience	Units																									Cores						
	UA L1-3	UA L4	UA L5	UA L6	UA L7	UA L8	UA L9	UA L10	UA L11	UA L12	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8&9	UB L10	UB L11	UA L7	UA L8	UA L9	UA L10F1	UA L11F1	UA L12F1	C1 L3	C1 L4	C1 L5	C1 L6	C1 L8	C1 L10	Total
Button																																	
Plastic																																	
Press molded(2 hole)		1																															1
Glass Seed Bead									1																								1
Stretchy synthetic fabric-footies?	1																																1
Fabric-cotton/poly blend gingham		1																															1
Straight Pin																								1		1							2
CLOTHING TOTAL	1	2							1															1		1							6
PERSONAL																																	
Marble																																	
glass-layered-red brown clear									1																								1
Toy																																	
Jack		1																															1
Plastic bucking horse		1																															1
Metal army Jeep hood (4928)		1																															1
PERSONAL TOTAL		3							1																								4
FURNISHINGS																																	
Kerosene Lamp																																	
Chimney		1															1																2
FURNISHINGS TOTAL		1															1																2
HARDWARE																																	
Screw																																	
Wood Screw-flat head											1																						1
Eye Screw															1																		1
Washer		1																															1
HARDWARE TOTAL		1									1				1																		3
UNIDENTIFIABLE																																	
Indet glass		4		2				1	7			3	1					2			4	1	3	5	6		3	3	1	1		19	66
UNIDENTIFIABLE TOTAL		4		2				1	7			3	1					2			4	1	3	5	6		3	3	1	1		19	66
OTHER																																	
Drainage Tile	1																	1															2
Plastic																																	
Shotgun shell base	1																																1
Metal Rod								1																									1
Terra-cotta flower pot															20																		20
Glass Rod									1																								1
OTHER TOTAL	2							1	1						20			1															25
OVERALL TOTAL	9	26	14	12	6	13	4	19	38	8	1	3	4	7	30	5	10	14	6	11	5	1	3	9	8	2	4	3	3	1	1	55	336

Table 6. 14Lv351 HBS 40-41, Historic Artifact Inventory

	SHOVEL TESTS										UNITS																				
Provenience	N510 E530	N515 E520	N515 E530	N515 E535	N520 E520	N520 E535	N525 E530	N530 E525	N530 E535	N540 E535	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UA L10	UA L11	UA L12	UA L13	UA L14	UA F1	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8	UB L9	**Total**
Artifact Type																															
MILITARY																															
Ammunition																															
Bullets																															
.45-70 Caliber (Rifle)																									1						1
Shotgun Shell																															
12 Gauge Pinfire																										1					1
10 Gauge Centerfire																													1		1
MILITARY TOTAL																									1	1			1		3
ARCHITECTURE																															
Metal																															
Nail, Machine Cut																															
Common, Whole																															
Pulled																									1						1
Unused												1																			1
Common, Fragment																															
Unknown					1	1	1	1																							4
Machine Cut Nail Total					1	1	1	1				1													1						6
Nail, Wire																															
Common, Whole																										1					1
Pulled																										1					1
Wire Nail Total																										1					1
Nail, Unid Manuf - Frag													1																		1
Nail Total					1	1	1	1				1	1												1	1					8
Other Metal																															
Eye Fragment														1																	1
Other Metal Total														1																	1
Metal Total					1	1	1	1				1	1	1											1	1					9
Glass																															
Flat <3mm																															
Aqua	1									1	1			1			1	2				4		1	24	17	8		2		63
Glass Total	1									1	1			1			1	2				4		1	24	17	8		2		63
ARCHITECTURE TOTAL	1				1	1	1	1		1	1	1	1	2			1	2				4		1	25	18	8		2		72
KITCHEN																															
Ceramics																															
Whiteware																															
Painted Mono/Flo																															
Unid Vessel															1																1
Dipped																															
Bowl/Annular																		1													1
Transfer Printed																															
Serving Piece(Black Flow)																															
Tureen																										2	8				10
Cover																											2				2
Unid HW (Black Flow)																												5			5
Unid Vessel																															
Brown																								1							1
Blue																											1				1
Undecorated																															
Plate/Platter																		1													1
Cup																										1	1				2
Bowl																										3	1				4

Table 6. (Cont'd).

Provenience	SHOVEL TESTS										UNITS																					
	N510 E530	N515 E520	N515 E530	N515 E535	N520 E520	N520 E535	N525 E530	N530 E525	N530 E535	N540 E535	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UA L10	UA L11	UA L12	UA L13	UA L14	UA F1	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8	UB L9	Total
Handle																											1					1
Unid FW																														1		1
Unid Vessel																	1								1	6	2	2	2			14
Whiteware Total															1		1	2						1	1	12	16	7	2	1		44
Ironstone (White Granite)																																
Handle																										1						1
Unid HW																												1				1
Unid Vessel																										1						1
Ironstone Total																										2		1				3
Porcelain																																
Plate/Platter																										10	3					13
Undec																																
Cup																										1						1
Decalcomania																																
Bowl																										2						2
Undec																										1	1					2
Unid FW																										1						1
Unid HW																									1	1		1				3
Unid Vessel																									1	16	4	1				22
Porcelain Total																																
Yellow Ware																			1													1
Bowl - Annular																			1													1
Yellow Ware Total																																
Stoneware																										1						1
Unid Vessel																1																1
Salt/Slip																1										1						2
Salt/Unglazed																								3								3
Stoneware Total															1	1	1	2	1					4	2	31	20	9	2	1		75
Unid Ceramics																																
Ceramics Total																																
Glass																																
Whole Vessels																																
Shoo-Fly Liquor Flask																																
3PPB/Imp Tool/Snap Case									1																							1
Whole Vessel Total									1																							1
Base																																
Beer/Ale																																
Embossed																										1						1
Wine Bottle																																
Turn-Mold																										2						2
Extract Bottle																																
Unid Manuf																											1					1
Tumbler																																
Pressed-Fluted																						1										1
Container Base Total																						1				3	1					5
Lip/Neck																																
Unid Bottle																																
Improved Tool Cork				1										1																		2
Unid Manuf/Indet																						1										1
Liquor Flask																																
Improved Tool																											1					1
Unid HW				1															1							1						3
Container Lip/Neck Total				2										1					1			1				1	1					7
Body																																

Table 6. (Cont'd).

Provenience	SHOVEL TESTS										UNITS																					Total
	N510 E530	N515 E520	N515 E530	N515 E535	N520 E520	N520 E535	N525 E530	N530 E525	N530 E535	N540 E535	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UA L10	UA L11	UA L12	UA L13	UA L14	UA F1	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8	UB L9	
Beer/Ale															1							2				3	4				1	11
Wine Bottle																7		1							5	13	2		1	1		30
Soda Bottle																							1									1
Unid Bottle																6										3	3		1	1		14
Unid Bottle/Jar								1					1								1	1		2	3	1			1			11
Unid Vessel																											4					4
Container Body Total								1					1		1	13		1			1	3	1	2	8	20	13		3	2	1	71
Non-Container																																
Handle (Pitcher)																										1						1
Stemware-Goblet																										3	12					15
Non-Container Total																										4	12					16
Glass Total				2				1	1				2		1	13		1	1		1	5	1	2	8	28	27		3	2	1	100
Fauna																																
Bone		1	1												3								1		2	3	3	5	2	1		22
Fauna Total		1	1												3								1		2	3	3	5	2	1		22
KITCHEN TOTAL		1	1	2				1	1				2		5	14	1	3	2		1	5	2	6	12	62	50	14	7	4	1	197
CLOTHING																																
Button																																
Glass																																
White (4 holes) - Undec																										1						1
Metal (Fe)																																
(Missing Shank)																			1													1
Porcelain																																
White (2 holes) - Undec																									1							1
Shell (2 holes)																												1				1
Bead																																
Glass Seed Bead (Pink)																													1			1
Other																																
Grommet, Brass																																
(Non-Shoe/Boot)																												1				1
CLOTHING TOTAL																			1						1	1		2	1			6
PERSONAL																																
Marble																																
Clay-Undec																										1						1
Grooming Items																																
Toothbrush (Bone)																										1						1
W/Maker's Mark																																
Handle Frag Unmarked																1																1
Toy Teacup Base																																
Porcelain, Undec																									1							1
Slate Pencil																											1					1
PERSONAL TOTAL																1									1	2	1					5
FURNISHINGS																																
Kerosene Lamp																																
Chimney															1					1					4	9	3					18
FURNISHINGS TOTAL															1					1					4	9	3					18
UNIDENTIFIABLE																																
Melted Glass																1															1	2
Sheet Metal																													1			1
Unid/Indet Glass					1			1						1		4			1						3	1	4	5	15	2		38
UNIDENTIFIABLE TOTAL					1			1						1		5			1						3	1	4	5	16	2	1	41

Table 6. (Cont'd).

Provenience	SHOVEL TESTS										UNITS																				
	N510 E530	N515 E520	N515 E530	N515 E535	N520 E520	N520 E535	N525 E530	N530 E525	N530 E535	N540 E535	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UA L10	UA L11	UA L12	UA L13	UA L14	UA F1	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB L8	UB L9	Total
OTHER																																
Slate													3											1	2							6
Syringe Plunger, Glass																										1						1
Flowerpot, Terra-Cotta																						1										1
Wire																								1								1
Plastic Object																									1							1
OTHER TOTAL													3									1		2	3	1						10
OVERALL TOTAL	1	1	1	2	2	1	1	3	1	1	1	1	6	3	6	20	2	5	4	1	1	10	2	9	50	95	66	21	27	6	2	352

Table 7. 14Lv351 HBS 141, Historic Artifact Inventory

	SHOVEL TESTS								
Provenience	N495 E470	N495 E480	N500 E475	N500 E490	N500 E495	N510 E475	N510 E490	N510 E500	**Total**
Artifact Type									
Artifact Type									
ARCHITECTURE									
Metal									
Nail, Machine Cut									
Common									
Whole									
Unused		1							1
Fragment									
Unused		1							1
Unidentifiable									
Whole									
Pulled		1							1
Machine Cut Nail Total		3							3
Nail, Wire									
Common									
Whole									
Pulled	1						1		2
Wire Nail Total	1						1		2
Nail Total	1	3					1		5
Glass									
Flat <3mm									
Aqua					3				3
Glass Total					3				3
ARCHITECTURE TOTAL	1	3			3		1		8
KITCHEN									
Ceramics									
Whiteware									
Undecorated									
Plate/Platter		1							1
Whiteware Total		1							1
Ceramic Total		1							1
Glass									
Body									
Unid Bottle									
Plain						1			1
Container Glass Total						1			1
Fauna									
Bone/Tooth			4						4
Fauna Total			4						4
KITCHEN TOTAL		1	4			1			6
UNIDENTIFIABLE									
Unid Metal			1						1
Sheet Metal				2					2
UNIDENTIFIABLE TOTAL			1	2					3
FENCING									
Metal (Fe) Locking Plate								1	1
FENCING TOTAL								1	1
OVERALL TOTAL	1	4	5	2	3	1	1	1	18

Table 8.14Lv358-881 Historic Artifact Inventory

Provenience	Units																																														ST	
	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB B D	UC B D	UC L1	UC L2	UC L3	UC L4	UC L5	UC L6	UC L7	UD L1	UD L2	UD L3	UD L4	UD L5	UE L1	UE L2	UE L4	UE L5	UE L6	UE L7	UE L8	UE L9	UF L1	UF L2	UF L3&4	UF L5	UF L6	UF L7	N525 E510	Total
Artifact Type																																															
MILITARY																																															
Accoutrements																																															
Adjustment Hook										2																																					2
Belt Keeper-Brass										1																																					1
Slide- Brass																																															
Stamped																				1																										1
Undec																								1									1												1
Buckle																																															
Brass																																															
D-Buckle																								1	1																		1		3
Brass Ring				1																																									1
Brass Aglet																				1																										1
Buttons																																															
Three-Piece(Sanders)																																														
Artillery																																															
Gilt																																														1		1
Dragoon																																															
Brass				1						1																																					2
General Service										1	1																																			2
Brass																								1																		1				2
Infantry									1	1																																				2
Indeterminate										1																							1													2
Two-Piece																																															
General Service																																		1												1
Sew-Through(4hole)																																															
Pewter-Shirt Button			1							2		1			1					1	1																								7
Metal-Suspender Button			1																																											1
Unid Parts																																															
Brass																																		1												1
Canteen																																															
Stopper Pull			1																																												1
Medal Buckle-Brass																																															
Stamped Design																																													1		1
Undec																					2																									2
Hasp-Brass										1													1																							2
Epaulets-Brass																													1																	1
Saber Belt Hook																					1																									1
Pronged Buckles																																															
Trousers,Overalls,Drawers											1																																				1
Accoutrements Total			3	2					1	10	2	1			1					3	4		1	2	1			1				1	3						2		2		40
Arms																																															
Ammunition																																															
Bullets																																															
.52 Caliber(Sharp)										1																																					1
.58 Caliber(Sharp)				1																																										1
.52 Caliber (Solid Lead Conical)									1																																						1
.58 Caliber (Solid Lead Conical)										1																																					1

Table 8. (Cont'd).

| Provenience | Units | | |

Table 8. (Cont'd).

Provenience	Units																																												ST	
	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB B D	UC B D	UC L1	UC L2	UC L3	UC L4	UC L5	UC L6	UC L7	UD L1	UD L2	UD L3	UD L4	UD L5	UE L1	UE L2	UE L4	UE L5	UE L6	UE L7	UE L8	UE L9	UF L1	UF L2	UF L3&4	UF L5	UF L6	UF L7	N525 E510	Total
Saucer																																												
Red/Blue Band-Red Cut Sponge																								3																				3
Unid Vessel-Blue																							2																				2
Dipped																																											
Bowl																																											
Annular																																											
Blue&Brown													1										1																				2
Blue										1	2																																3
Brown										1											1		1																				3
Unid Vessel																																											
Blue																																									1	1		2
Annular																																											
Brown										1																																	1
Green																							1																				1
Transfer Printed																																											
Cup																																											
Hand Painted Flow																							3																				3
Cranberry Red										1																																	1
Saucer																																											
Hand Painted Flow																							1																				1
Unid FW																																											
Brown																					1																						1
Transfer & HP																								2																				2
Unid HW	1																																										1
Cranberry Red																					4																						4
Unid Vsl																																											
Blue										1		1											3																				5
Red																					1																						1
Reddish Purple																																									1		1
Transfer & Painted																					1																						1
Flow Blue																																								1		1
Embossed (Molded)																																										
Plate/Platter	3	2				1				1	1	1																														9
Cup										1																																1
Bowl																					1																						1
Unid HW																																					1			1	1	1	4
Unid Vsl																																							2					2
Undecorated																																											
Plate/Platter	6	6	1							6	4	3							1	7			3										1			2						40
Cup		2							1		2	1								1								1			1										9
Saucer																				1				1																		2
Bowl				1																	1											1										3
Serving Piece																																											
Covered Bowl(Sugar Bowl?)			1																							1																2
Handle		1																			1																						2
Earthenware Jar																					1																						1
Unid FW		1									1	1						1			2		3										1										10
Unid HW			3			2																														1			1				7

Table 8. (Cont'd).

| Provenience | Units | | |

Table 8. (Cont'd).

| Provenience | Units | | |

Table 8. (Cont'd).

| Provenience | Units | | |

Table 8. (Cont'd).

Provenience	Units																																										ST	
	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB B D	UC B D	UC L1	UC L2	UC L3	UC L4	UC L5	UC L6	UC L7	UD L1	UD L2	UD L3	UD L4	UD L5	UE L1	UE L2	UE L4	UE L5	UE L6	UE L7	UE L8	UE L9	UF L1	UF L2	UF L3&4	UF L5	UF L6	UF L7	N525 E510	Total
Bottle Foodstuff										2																																		2
Embossed			8	1					2																														4	9		24
Case Bottle																											1																1
Embossed			1							3	2																												1			7
Panel										2	1	2											2	1																		8
Wine Bottle	8	17	48	15	20				20	38	22	24							2	1	9	1	18	10	8	4		1	1			6	4			3	4	2	14	5	1	307
Unid Bottle																																											
Embossed Curved			3	1	1				1	5	4	6	2							2			3	2							1	2							1			34
Panel		1	1																		1											1					1	2				7
Plain																																											
Paneled	3	10	1	12	8				10	7	5	2	2							3	1		14	1								8	2				3	2	4	3		99
Curved		34	22	5	7	1			85	23	14	50	7							42	12	3	26	20	1	2					2	2	27	3			5	12	21	24	7		457
Unid Jar/Bottle																																											
Plain	1	1		1	3			2			4					1	2	2																								17
Embossed Flask(Scroll Flask)		1		7	8																	1											2								19
Stemmed Goblet																							1																			1
Stemmed Vessel				1																																						1
Tumbler																																										
Fluted	1																			1				1																		3
Unid Hlw																																											
Painted Surface			1																																							1
Pressed (Patterned)																							4	1								2			1	1	3					12
Plain		4	5	1						2									1	8	2		2	3	1				1			4	4	1			4	4	2	17		66
Unid Vessel		1	1	1						2		1								5			4					1	1						2	2	2				23
Container Body Total	16	69	94	45	45	1		2	125	87	56	87	11			1	2	2	3	69	27	5	79	40	10	6		4	3		3	10	53	12			11	30	37	50	42	1	1138
Closure																																											
Glass Stopper																																											
Embossed																																											
Lea & Perrins												1																															1
Closure Total												1																															1
GLASS TOTAL	17	75	97	54	51	1		4	139	94	62	97	11			1	2	2	4	84	33	12	101	46	10	6		5	4		4	20	60	18			14	39	45	53	48	1	1314
Metal																																											
Utensils																																											
Fork																																											
Iron 2-Tined																																								1			1
Knife																																											
Iron Handle										1																																	1
Spoon																																											
Iron																								1																			1
Silver																					1																						1
Handle																																											
Bone										2																															1			3
Iron																							1																				1
Can Parts			5	1						4	4			1						3			6	6																			30
Aluminum Pop-Top Tab							1																																				1
Spider (Dutch Oven)																																	1	1									2
Metal Total			5	1			1			7	4			1						3	1		7	7									1	1						2			41
Fauna																																											

Table 8. (Cont'd).

Provenience	Units																																										ST	
	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB B D	UB B D	UC L1	UC L2	UC L3	UC L4	UC L5	UC L6	UC L7	UD L1	UD L2	UD L3	UD L4	UD L5	UE L1	UE L2	UE L4	UE L5	UE L6	UE L7	UE L8	UE L9	UF L1	UF L2	UF L3&4	UF L5	UF L6	UF L7	N525 E510	Total
Bone	2	26	103	123	21	2			28	161	57	14								17	28		34	45	20	1			1			7	115	90				4	7	25	2		933
Shell																																1										1
Fauna Total	2	26	103	123	21	2			28	161	57	14								17	28		34	45	20	1			1			8	115	90				4	7	25	2		934
KITCHEN TOTAL	39	189	243	194	76	10	1	7	181	298	143	123	13	1		1	2	3	6	144	120	12	193	113	34	16		12	12	1	5	81	233	115			22	64	63	90	54	2	2896
ARCHITECTURE																																											
Metal																																											
Nail, Machine Cut																																											
Common																																											
Whole		18	7	22	4	2			10	24	12	10	1						3	16	2		27	16	1	2						5	5				1	6	3	5			202
Fragment	3	19	33	29	15	9		3	53	74	36		14							32	3		40	31	5	9						15	35	10	1		5	26	7	33	2		542
Spike				1						1																						1										3
Machine Cut Nail Total	3	37	40	52	19	11		3	63	99	48	10	15						3	48	5		67	47	6	11						21	40	10	1		6	32	10	38	2		747
Nail, Wire																																											
Common																																											
Whole			1			2												2		1				1												1		1				9
Fragment																				2						1																3
Finishing																																											
Fragment																				2																						2
Wire Nail Total			1			2												2		5				1		1										1		1				14
Nail, Unid Mnf																																											
Fragment						1				12																						1	4					4				22
Unid Nail Total						1				12																						1	4					4				22
Nail Total	3	37	41	52	19	14		3	63	111	48	10	15					2	3	53	5		67	48	6	12						22	44	10	1		7	36	11	38	2		783
Other																																											
Tack									2			1							1																								4
Butt Hinge																																		1									1
Other Metal Total									2			1							1															1									5
Metal Total	3	37	41	52	19	14		3	65	111	48	11	15					2	4	53	5		67	48	6	12						22	44	11	1		7	36	11	38	2		788
Glass																																											
Flat <3mm																																											
Clear										7						2							1											1									11
Aqua	3	10	39	22	39	1		3	33	70	13	13							1	36	1	2	30	6		6		4	1		1	12	21	4			2	18	34	86	2		523
Glass Total	3	10	39	22	39	1		3	33	77	13	13				2			1	36	1	2	31	6		6		4	1		1	12	21	5			2	18	34	86	2		534
Ceramic																																											
Doorknob																							1																				1
Ceramic Total																							1																				1
ARCHITECTURE TOTAL	6	47	80	74	58	15		6	98	188	61	24	15			2		2	5	89	6	2	99	54	6	18		4	1		1	34	65	16	1		9	54	45	134	4		1323
CLOTHING																																											
Button																																											
Glass																																											
White(4 holes)																																											
Undec				1					1	1											1	1											1					1		1			8
Dec-Embossed/Molded			1																																								1
Brass																																											
3 Piece Stamped/Wolf's Head																																											
with rivet																																									1		1
Iron																																											
3-Piece?																																		1						1		2

Table 8. (Cont'd).

Provenience	Units																																											ST	
	UA L1	UA L2	UA L3	UA L4	UA L5	UA L6	UB L1	UB L2	UB L3	UB L4	UB L5	UB L6	UB L7	UB B D	UC B D	UC L1	UC L2	UC L3	UC L4	UC L5	UC L6	UC L7	UD L1	UD L2	UD L3	UD L4	UD L5	UE L1	UE L2	UE L4	UE L5	UE L6	UE L7	UE L8	UE L9	UF L1	UF L2	UF L3&4	UF L5	UF L6	UF L7	N525 E510	Total
2-hole																																						1					1
Shell																																											
With Shank										1																																	1
4 hole											1																																1
Glass Sphere		1																																									1
Straight Pin			1							2										3																			1			7
Shoe/Boot																																										
Shoe Nails/Pegs (no leather)				12					1		2	2										4	1																			22
Suspender Buckle				1																																						1
CLOTHING TOTAL		1	2	14					2	4	3	2								3	1	5	1										1		1			2	2	2			46
PERSONAL																																										
Beads																																										
Glass												1																														1
Glass Seed		1			1							1																														3
Doll		1	1																																							2
Eyeglasses																																										
Lens				1																																						1
Grooming items																																										
Toothbrush Handle-Bone				1																																				1		2
Bone Handle																					1																						1
Bone Disk																										1																	1
Smoking Pipe										1														2																			3
Bowl																																										
Brown Clay											1																																1
White Clay				1																														2						1		4
Porcelain Gilded																			1																							1
Stoneware		1								1																																2
Unglazed Medium Brown Clay																								1																		1
Stem																																										
White Clay									1	2											1												1						1			6
Toy Wheel													1																													1
PERSONAL TOTAL		3	1	3	1				1	4	1	2	1						1		2			3		1							3						1	1	1		30
FURNISHINGS																																										
Escutcheon												1																														1
Kerosene Lamp																																										
Chimney										2																																2
Decorative Bracket											1																																1
Key-Metal (Iron)																																						1		1			2
Rolled Rim-Metal (Iron)											4												10	6																			20
Toiletry Jar-Porcelain																				1																							1
Toiletry Jar-White Glass										2	2																																4
Unid Hollowware-Porcelain			1																																							1
FURNISHINGS TOTAL			1							4	7	1								1			10	6															1		1			32
HARDWARE																																										
Bolt																																		1								1
Nut				1																																						1
Angle Iron																							1																				1
Cable (Multi-Strand)																													4													4

Table 8. (Cont'd).

| Provenience | Units | | |