Historical and Archeological Investigations at the Chalmette Battlefield, Jean Lafitte National Historical Park and Preserve

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A Report Prepared for
The U.S. Army Corps of Engineers
New Orleans District

To
The Military Engineers
of the
United States
Both Past and Present

In this wet, sucking place it is easy enough to imagine that everything that ever was here still is—that it is all down there somewhere in the dark, pressed layers, that New Orleans is a giant slowly settling palimpsest.

—Frederick Turner, *Remembering Song: Encounters with the New Orleans Jazz Tradition*

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CHAPTER 14

INTRODUCTION TO THE ARCHEOLOGICAL RESEARCH

Ted Birkedal

Previous Archeological Research

The Chalmette Unit of Jean Lafitte National Historical Park and Preserve received no archeological attention until 1957. In that year, Francis H. Elmore of the National Park Service conducted a series of test excavations along the Rodriguez Canal (Elmore 1957). The intent of the work was to gain information for the interpretive development of the park area and to discover artifacts for museum exhibition. The specific objective was to determine the original shape of the Rodriguez Canal and the width of the defensive rampart (Elmore 1957:1).

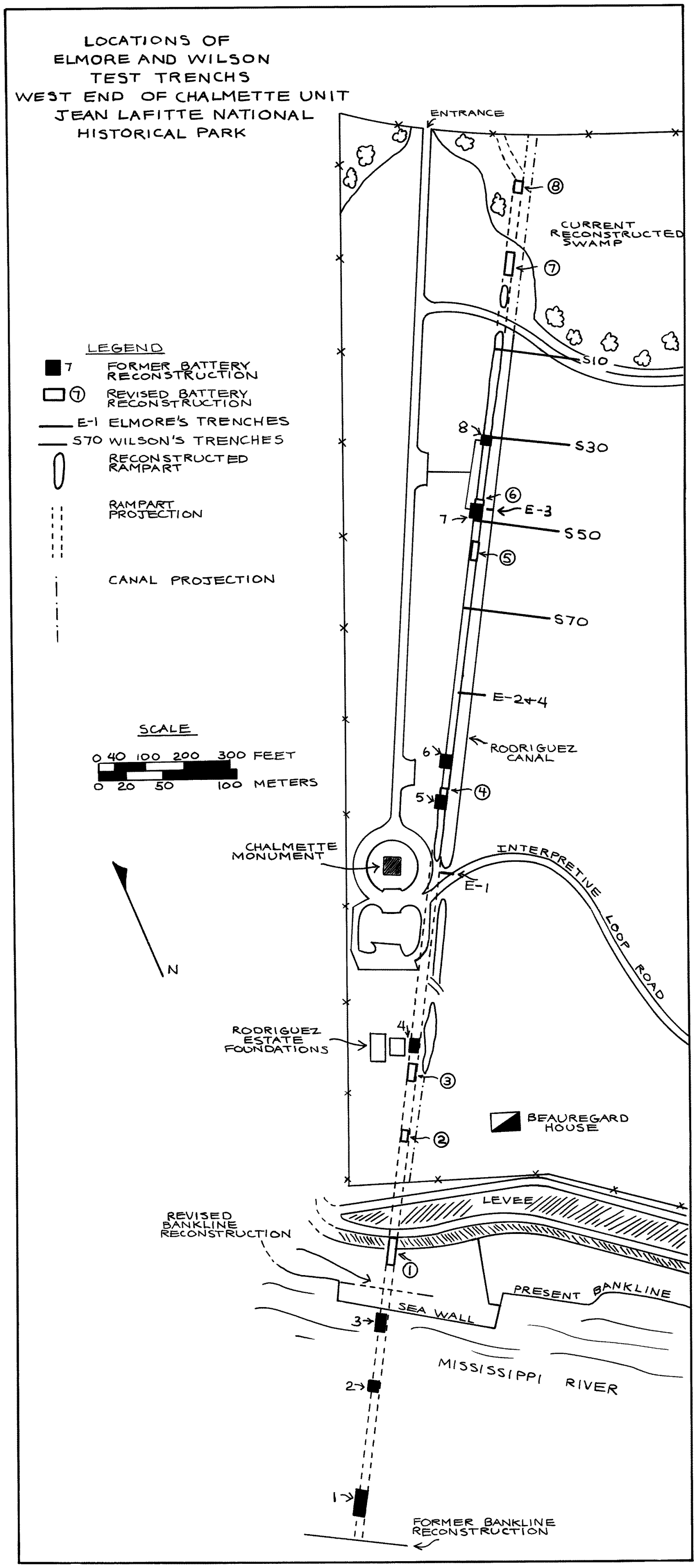
Four test trenches were dug, all perpendicular to the canal alignment. The first trench was placed across the canal at a point nearly opposite the Chalmette Monument (Map III-1). This trench measured 5 ft (1.52 m) in width and 12 ft (3.7 m) in length. It was dug to a depth of 3 ft 2½ in (.98 m). The trench was abandoned soon after water was struck. Elmore (1957:2) reported that "brick, wire, cow bones, etc." were encountered in the first 2 ft (.61 m), but he observed no evidence of the old canal. The exposed profile showed only a light topsoil followed by an undifferentiated subsoil.

The second trench, a combination of Trenches 2 and 4, was dug 416 ft (126.8 m) to the north of the first trench. Once finished, this trench extended 89 ft (27.1 m) in an east-west direction. Its width varied between 3 and 5 ft (.92 and 1.52 m), and its depth between 3 and 7 ft (.92 and 2.1 m). Again, no signs of the old canal sides or rampart were observed (p. 3). The only visible distinctions in the soil profile were a topsoil, an undifferentiated subsoil, and a basal bluish gray muck.

A thin lens of light-colored sandy soil was exposed just below ground surface on the west bank of the present canal remnant, but Elmore's workmen

Map III-1. West end of Chalmette Unit, Jean Lafitte National Historical Park and Preserve, showing locations of previous archeological work in the park unit along with past and present projections of battlefield features located along the Rodriguez Canal.

Drawn by Lyndi Hubbell for the National Park Service.


LOCATIONS OF
ELMORE AND WILSON
TEST TRENCHS
WEST END OF CHALMETTE UNIT
JEAN LAFITTE NATIONAL
HISTORICAL PARK
ENTRANCE
CURRENT RECONSTRUCTED SWAMP
LEGEND
7 FORMER BATTERY RECONSTRUCTION
⑦ REVISED BATTERY RECONSTRUCTION
E-1 ELMORE'S TRENCHES
S70 WILSON'S TRENCHES
RECONSTRUCTED RAMPART
RAMPART PROJECTION
CANAL PROJECTION
S10
S30
E-3
S50
S70
E-2+4
RODRIGUEZ CANAL
SCALE
0 40 100 200 300 FEET
0 20 50 100 METERS
CHALMETTE MONUMENT
INTERPRETIVE LOOP ROAD
E-1
N
RODRIGUEZ ESTATE FOUNDATIONS
BEAUREGARD HOUSE
LEVEE
REVISED BANKLINE RECONSTRUCTION
SEA WALL
PRESENT BANKLINE
MISSISSIPPI RIVER
FORMER BANKLINE RECONSTRUCTION

reported that this soil most likely represented the sand fill which had been used to build up the roadbed between the Chalmette Monument and the main gate (p. 5). One brick was discovered in the blue clay at a depth of 2 ft 9 in (.83 m). The only other object was a cow bone found at 2 ft 9 in (.83 m) below ground surface.

Trench 3 was placed across the canal 434 ft (133.3 m) north of Trench 2. This trench measured 2 ft 4 in (.72 m) in width and 6 ft 6 in (1.98 m) in length. It reached a depth of 7 ft 6 in (2.3 m) and no artifacts were found. As with the other trenches, no apparent evidence of the canal or rampart was exposed. Elmore tried to supplement his test excavations with a mine detector, but he reported that it "did not work satisfactorily" (p. 9).

After Elmore's frustrating and unproductive introduction to Chalmette archeology, no investigations were performed in the park unit until January of 1963. This second set of investigations was also centered on the Rodriguez Canal and the area of the American rampart. Plans for the reconstruction of the American line of defense were now under way as part of the National Park Service's Mission 66 Program, and archeological information was sought to supplement the available historical record. Little time was allotted to the investigations because the proposed restoration and reconstruction work on the battlefield was to be completed in time for the Sesquicentennial Celebration scheduled for 1965.

National Park Service archeologist Rex Wilson was sent to Chalmette in January of 1963 to direct and perform the required archeological investigations. The target of his work was a 900 ft (274.4 m) section of the American line of defense located to the north of the Chalmette Monument. This section had been chosen earlier by the planning team as the site for the restoration of Jackson's rampart (Wilson 1963:3). Wilson began his search for evidence of the rampart with a mine detector and an operator from the Louisiana National Guard. The entire rampart restoration site and several proposed trench locations were covered in the course of this systematic metal detector survey. The survey yielded a number of metal items along the former rampart zone on the west side of the Rodriguez Canal, but only one object could be attributed to the battle. This was a 6-pound cannon ball found 9½ in (24.1 cm) below ground surface (Wilson 1963:6).

After the metal detector survey, Wilson dug a series of four backhoe trenches, designated South 10, South 30, South 50, and South 70, across the Rodriguez Canal and the rampart area at intervals of 200 ft (61 m) (Map III-1). The northernmost of these trenches, South 10 (S-10), was located 100 ft (30.5 m) south of a permanent datum established 445.8 ft (135.9 m) and $2^{o}5'$ east of north from the easternmost gatepost of the park entrance. The western ends of the trenches were set against a gridline oriented 29^{o} east of magnetic north. Each trench was 200 ft (61 m) in length, 2 ft (.61 m) in width, and between 2½ to 3 ft (.76 to .91 m) in depth. Examinations of the trench profiles revealed no evidence of the original canal sides or the earthen portion of the rampart (1963:6). However, a large cypress log, lying parallel to the canal, was discovered at a depth of 26 in (66 cm) below ground surface in the western end of the second trench, South 30 (S-30), 300 ft (91.4 m) distant from the datum. This bark-covered log was 10 ft 10 in (3.30 m) in length and 14 in (35.6 cm) in diameter. Further, it appeared to exhibit axe cuts at either end.

Just prior to backfilling, two vertically placed fragments of wood were exposed in the trench wall to the south of the log (p. 6). Both measured roughly 1 by 5 in (2.54 by 12.7 cm) and appeared to be the remains of boards. One was found 8 in (20.3 cm) south of the log; the other was located 6 ft 4 in (1.9 m) beyond the first. Both were set in approximately the same alignment 8 in (20.3 cm) to the west of the log. Wilson (p. 7) interpreted both the log and the board fragments as remnants of rampart construction. He believed the boards were remnants of the vertical palings that once lined the rear of the rampart. On the other hand, he suggested two other possibilities for the log. One supposition was that it was used horizontally with other logs, braced by palings, to line the rear of the rampart (pp. 7, 9). His second idea was that it may have formed part of one of the battery platforms (p. 7).

In 1964, Rex Wilson was again sent to Chalmette, this time to search for the mass grave of British war dead from the Battle of New Orleans (Wilson, personal communication 1984). This search was centered in the northeast sector of the battlefield, primarily in the area just west of the National Cemetery wall and south of the present-day reconstructed "cypress" swamp. Wilson first used a metal detector in the hopes that it would provide a clue to the presence of the mass grave by registering buttons, buckles, and other military accoutrements that might be associated with the buried soldiers. Not one item connected with the battle turned up in the course of the metal detector work.

The next phase of operations involved a series of extensive backhoe trenches that were placed at arbitrary intervals throughout the area chosen for the search. These trenches proved to be totally unproductive, and the work was discontinued. Not a single battle-era artifact was found. Because the results were negative, no formal report on this search for the mass British grave was ever written (Wilson, personal communication 1984).

For a period of nearly fifteen years following Wilson's search for the mass grave, no archeological work was conducted in the park unit. In 1979, however, Chalmette was chosen by Joan Mathien of the Division of Remote Sensing, National Park Service, as the subject of a case study in the application of remote sensing techniques (Mathien and Shenkel 1981). The purpose of the research was to compare the utility of three types of photographic aerial imagery—black and white photography, color infrared photography, and multispectral imagery—in the discrimination of cultural features.

At the conclusion of the remote sensing work in 1980, a field check was performed by Dr. Richard Shenkel in order to ground truth some of the features revealed by the photographic examination. This field check simply consisted of a visual inspection of six selected sections of the park unit; no excavations or soil tests were performed (Mathien and Shenkel 1981:84-86).

From an archeological standpoint, the primary value of the work was the documentation and mapping of the numerous linear features that occur within the Chalmette park boundaries. Most of these linear features were interpreted as remnants of historic drainage ditches that had been associated with the early nineteenth-century sugar- cane plantations of the area (1981:80-82). No previously unknown battle or habitational features were identified in the course of the study.

It was not until 1983 that archeological excavations again took place in the park. In March of that year, the author, together with Barbara Holmes of Jean Lafitte National Historical Park and Preserve, dug two test pits 76 m (249 ft) south of the Chalmette Monument. The location of these test pits, an L-shaped area immediately to the north and east of the present park restroom facility, had been chosen as the proposed site for a new visitors' contact station. Each of the pits measured 2 by 2 m (6.6 by 6.6 ft), and both exposed a layer of unexpected historic trash. This trash level was encountered between 25 cm (9.8 in) and 65 cm (25.6 in) below ground surface, and it yielded a relatively large quantity of red brick, ceramics, glass, and metal artifacts. Subsequent analysis of the recovered materials indicated that the layer contained a mixed assortment of historic artifacts that covered the entire span of the nineteenth century (Goodwin and Yakubik 1983). Despite the mixture of early and late materials, a large proportion of the remains clearly derived from the first half of the nineteenth century. A careful statistical analysis of the recovered historic ceramics demonstrated this fact. This analysis yielded a mean ceramic date of 1826 for Test Pit 1 and a date of 1842 for Test Pit 2 (Goodwin and Yakubik 1983:30).

While still in the field and soon after encountering the trash, I began to try to discover a reasonable source for the material. Larry Trahan of the Soil Conservation Service, who examined one of the test pit profiles at the National Park Service's request, pointed out that the trash rested on a natural topsoil level, and he also indicated that this topsoil could easily be quite old, for no signs of a buried topsoil horizon occurred beneath it. In fact, Trahan joked that if Jackson had fought much below this topsoil layer, the Battle of New Orleans would, by necessity, have been fought in a Pleistocene swamp. These observations contradicted the then popular notion that early historic materials at Chalmette were deeply buried or had been long since "sucked" into the Mississippi, an idea that had gained some credence with the lack of finds associated with previous archeological work. Thus, it was entirely possible that the trash was not simply recent fill that had perhaps been brought in from another location and spread out as a base for the first parking lot at Chalmette (a concrete parking lot dating from the 1930s had once occupied the test location). Four large live oaks situated south of the test area particularly aroused suspicion. These were arranged in an L-shaped pattern, a pattern which is often associated with early historic country estates and plantation houses in the vicinity of New Orleans.

After eliminating the Beauregard estate, the old Chalmette caretaker's residence, and the construction of the Chalmette Monument as satisfactory sources of the trash, I went back to the historical record for a fresh look. My attention was particularly caught by Samuel Wilson, Jr.'s (1965:33-38) account of the Rodriguez House, a house that had stood on the battlefield during the Battle of New Orleans and, after a long abandonment, had been eventually razed in the late nineteenth century. The historical interpretation, then current in the park, had the former site of the house situated in the Mississippi River just beyond the southwest corner of the seawall (Figure III-1). After consulting some of the key historic maps relevant to Chalmette, I found this placement of the Rodriguez House difficult to accept. None of these maps, nor any maps from the late nineteenth century or early twentieth century, indicated a cumulative bank loss of sufficient magnitude to place the site of the house in the river. It was especially difficult to understand how the Rodriguez House could have been lost to the Mississippi when the nearby Beauregard House had survived well inside the levee, for the historic maps clearly showed the latter to have been located closer to the river than the Rodriguez House.

In early April of 1983, I outlined my reasoning in a manuscript report (Birkedal 1983) to the National Park Service and proposed that the Rodriguez House was actually located in the L-shaped grove of live oaks (Birkedal 1983:1-2). This hypothesis was soon given additional support by an independent study of the historical record prepared by Historian Barry Mackintosh (1983) of the Washington Office of the National Park Service. The expertise of Mackintosh had been quickly called upon both to augment and check the archeological findings, for these contradicted a view of the park that had guided park management, public interpretation, and research for nearly fifty years.

In late May of 1983, I was sent back to Chalmette to uncover archeological evidence that would verify the former existence of the Rodriguez House at the historically projected location because, if the house were present, as I had proposed, its discovery would have a major effect on the content and direction of a major National Park Service planning effort that was rapidly reaching conclusion. Verification of the presence or absence of the house was crucial to deciding whether to scrap the plan or stay the course on its completion.

As in the first tests, I was assisted by Barbara Holmes of Jean Lafitte National Historical Park and Preserve. A systematic series of auger lanes were used in the search, and a broad foundation wall of soft red brick was soon encountered in one of the auger tests, 108 m (354 ft) south of the Chalmette Monument (Map III-1). Once this wall was fully exposed, a metal probe was employed to find other sections of the foundation. Samuel Wilson, Jr.'s (1965:33-38) description of the house was used to guide the probing operation.

Eventually, the probing yielded an approximate picture of the size and layout of the house. It also showed the presence of an adjacent outbuilding located to the east of the main house. A stratigraphic test trench was then dug across the midsection of the house foundations. This first trench was followed by a series of shallow test pits that were specifically placed so as to exactly define the plan of the house. These additional exploratory tests were dug no deeper than was necessary to expose key sections of the foundations. This was done to minimize impacts to the structural fabric. Unfortunately, large portions of the foundation were found to have been disturbed by later construction. A sewer trench had been dug diagonally across the house and had resulted in the destruction of the northwest and southeast corners. Further, construction of a turn-of-the-century shell path to the Chalmette Monument had severely disturbed the entire length of the house's east wall.

Despite the above post-occupational disturbances to the house remains and the time limitations imposed on the tests, sufficient data was collected to conclusively demonstrate that the remnant foundations were those of the Rodriguez House (Figures III-2, III-3). Like the house of historical record, the archeological house was long, narrow, and relatively small. The primary foundations, which once formed the base of a raised brick basement or lower story, measured 17.8 m (58.5 ft) in length and 6.7 m (22 ft) in width. As indicated by the historical record, these original foundations had been lengthened by a later northern addition, bringing their total length to 20.7 m (68 ft). The foundation ruins were also oriented correctly, with one narrow end pointing toward the river and the opposite end to the landward. Moreover, the remains of a brick-paved outbuilding were encountered 5.4 m (17.7 ft) to the east of the main house in a position similar to that shown in early artistic renderings of the Rodriguez Estate (Figure III-4). A sizable quantity of structural debris and other artifacts was recovered in the course of the excavations. Perhaps the two most interesting were a .69 caliber musket ball and a British gun flint.

Two separate stratigraphic horizons were associated with the house remains. The lowermost produced a mean ceramic date of 1798; the other yielded a mean date of 1834 (Yakubik 1983:44-55). These dates were also in conformance with the available historical data on the house (see Chapter 11, Part II, this report).

Figure III-1. Oblique aerial view of the southwest corner of the Chalmette Unit taken in January of 1968. The large clump of trees to the south of the Chalmette Monument surrounds the remains of the Rodriguez House. The Rodriguez Canal is clearly visible running through the center of the photograph. On the lower right side of the photograph stands the Beauregard House, a large plantation house dating from the Ante-bellum Era.

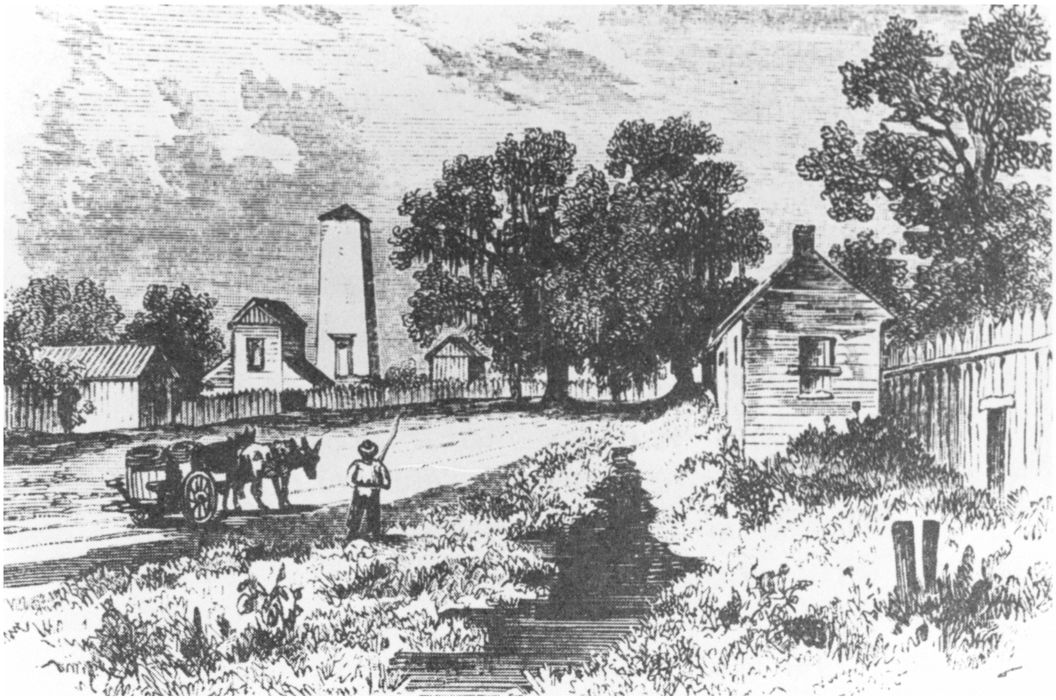
Courtesy of the photographer, Betsy Swanson.

Figure III-2. Benson Lossing's 1861 sketch of the Rodriguez Canal in the southwest corner of the Chalmette Unit. The view is to the north-northeast with the partially finished Chalmette Monument in the distance. Sheds and outbuildings associated with the former Rodriguez Estate are in the left foreground. The small house and fence beside the canal border the Villavaso Estate.

From Benson Lossing, *The Pictorial Field-Book of the War of 1812*. New York. Harper and Brothers, 1869.

Figure III-3. Photograph of the southwest corner of the Chalmette Unit in 1984, view to the north-northwest. The oaks enclose the buried foundations of the Rodriguez House. The shallow ditch on the right marks the Rodriguez Canal. Test Area 1 is located just north of the brushy area beside the walkway, Test Area 2 is on the near side of the brushy area, Test Area 3 is marked by the distant piles of dirt under the pecan tree, and Test Area 4 is in the left foreground outside the fence.

Photograph by Ted Birkedal, National Park Service.



Coincident with the Rodriguez House tests, a systematic metal detector and auger survey was conducted in the northwest sector of the park unit. This work was designed to assess the potential impact of a visitor wayside at this location. The focus of the survey was a 200 by 300 ft (61 by 91.4 m) assessment zone situated between the main entrance to the Chalmette Unit and the northwest exit of the interpretive loop road. The investigation produced only a light scatter of historic metal objects. Most of these were nondiagnostic, and none could be identified as military items associated with the Battle of New Orleans.

The last work, prior to the present study, was performed in July of 1983. Barbara Holmes and I conducted a small testing operation along a proposed utility corridor. This corridor, approximately 3 m (9.8 ft) in width, ran just outside the southern boundary fence of the park between the Beauregard House and the St. Bernard Parish Sewage Treatment Plant. The investigation included a linear series of auger holes and two test pits. The only historic features located were a section of brick and shell pavement immediately west of the St. Bernard Parish Sewage Treatment Plant and the terminus of an old carriage road that once linked the property immediately adjacent to the Beauregard House to the Levee Road. The pavement area was constructed of closely laid, irregular chunks of soft and hard brick. This pavement may have formed part of an access road or a paved area near an early twentieth century house at this location. The carriage road, on the other hand, was framed on either side by a soft red brick edging, two bricks in width. The interior was paved with shell. In places, the shell paving exhibited signs of hasty repair by means of coal slag and other hard waste materials (i.e., glass, brick fragments, small chunks of coal).

To conclude, archeological work at Chalmette, for a park unit of its type and significance, had been surprisingly limited in the years preceding this study. Only in the early 1980s did a true picture of its archeological potential finally begin to emerge. Contrary to earlier opinion, much remained to be discovered under the park's misleadingly empty expanse.

Introduction to the Archeological Investigations

Research Orientation

No illusions were held about the role of archeology in the context of the wider study of the Chalmette riverfront; from the start, its primary purpose was simply to serve as a handmaiden to history—to enhance and supplement the historical record. The pursuit of anthropological archeology was not a concern, and rightly so, in view of the exploratory nature of the research. With few concrete expectations as to what might be found, it would have been premature, and perhaps pretentious, to have posed and sought answers to questions about culture process or the dynamics of human behavior in the past. Such research was seen as best left for the future.

For the purposes of the assessment, the archeological research had a more modest and particularistic goal to achieve. This goal was to verify and refine the pattern of resource occurrence and distribution suggested by the historical sources. Recognition was given to the possibility that the natural levee of the current channel of the Mississippi River may have proved attractive to the late prehistoric occupants of St. Bernard Parish (Gagliano et al. 1979:2-7, 3-9). Similarly, consideration was given to the more remote possibility that deeply buried sites associated with the older La Loutre-Mississippi course might also be present (Wicker et al. 1982:78). However, a concerted search for prehistoric sites was not included as a priority in the scope of work issued by the Corps of Engineers; moreover, practical constraints of the project would have precluded the intensive, broad-coverage testing that would have been required to verify the presence or absence of prehistoric sites with any reasonable degree of confidence. Consequently, the design of the archeological reconnaissance effort was largely directed toward the resources of the historic era, and only secondarily toward those of the prehistoric era. In view of the unique cultural resource values that had originally led to the establishment of the Chalmette Unit, this orientation was entirely justifiable.

The Corps' scope of work stated explicitly that archeological attention "will be focused on the American defense line and the positions of Batteries 2 and 3." Of all the threatened resources, these were potentially the most significant archeological features that could be impacted by the levee construction work. Construction Area 1 appeared to lie directly in the path of the projected rampart, and initial estimates based on the known location of the Rodriguez House foundations suggested that the position of Battery 2 might easily fall as far south as the crown of the artificial levee. There was only an outside chance that Battery 3 would be found within or immediately adjacent to the area of effect, but the discovery of the archeological remnant of this gun battery was considered pivotal to the success of the overall assessment. The expectation was that Battery 3 would provide the best opportunity to establish a reliable physical link between the battlefield of the past and that of the present.

The Rodriguez House, although it was portrayed on the contemporary battle maps, did not provide a fixed geographical reference point of sufficient accuracy. Among the available historical sources, its position relative to closely adjacent military features varied as much as 50 m (164 ft). Yet, these same sources all exhibited close agreement when it came to the positioning of the military features alone. This concurrence was particularly evident for the American artillery emplacements along the line of defense. General William Fields of the New Mexico National Guard, a combat engineer of long experience, was asked about this disparity in locational accuracy soon after the discovery of the Rodriguez House (personal communication 1983). In answer, he pointed out that military engineers of the day would have taken great care in the layout of the stationary artillery positions, for heavy smoothbore cannon required exact and calculated placement if they were to provide an effective and coordinated field of fire against the enemy's artillery and avenues of attack. Exact measurements for the location of civilian structures and similar features, on the other hand, would have been superfluous, for such precision would not have met any practical military purpose. Consequently, Fields concluded that the variable placement of the Rodriguez House on the battle maps reflected reliance on simple "eyeball" estimates for the determination of location. There was no need for anything more: "Close" was close enough (General William Fields, personal communication 1983).

Battery 3 was selected over Battery 2 as the best hope for the discovery of a fixed reference point because this battery had been a two-gun emplacement, and as the larger of the two artillery positions, it was assumed to possess the more prominent archeological signature. Further, the historical source information on Battery 3 was more complete. By a fortuitous circumstance, it had been the subject of a highly detailed sketch (Figure III-4). Drawn on the battlefield in 1819 by the famous Washington architect Benjamin Latrobe, the sketch illustrated a wide "pond and a Gap" in the American rampart which had by then formed at the location of the dismantled battery (Latrobe 1951:46). Latrobe's drawing provided an invaluable clue to the probable archeological appearance of the feature. It suggested that the position of Battery 3 would be marked by a broad, shallow depression in the old bank line of the Rodriguez Canal. Although most signs of the depression had in all likelihood been buried, it was anticipated that the unique stratigraphy of the feature would nonetheless betray its present-day location.

Once its position had been established, Battery 3 was to serve as the locational guidepost to the other battlefield landmarks, such as Battery 2 and the American powder magazine. Similarly, the known locations of the Rodriguez House and the Beauregard House would fulfill the same need for the reconstruction of the historical geography of the civilian occupation of the riverfront. Measurements for the projections were to be taken from the more reliable of the archival sources; namely, those maps and accounts that provided the most detail had been prepared from on-site knowledge of the period geography and exhibited the greatest across-the-board agreement in the presentation of locational data. Archeological verifications, predicted by the geographical reconstructions, would then be used to demonstrate the credibility of the indicated patterns of resource occurrence.

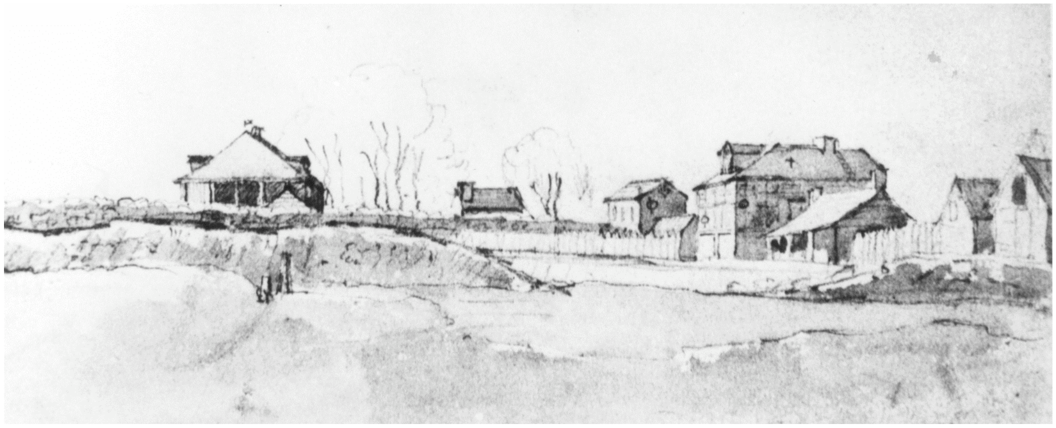
Preparatory work, prior to the commencement of field investigations, involved several activities. The major primary and secondary sources then available on the Battle of New Orleans were reviewed along with any historical reports that touched upon the nonmilitary use of the Chalmette Unit lands. Also, a number of early National Park Service administrative documents were consulted for bits and pieces of information that might prove relevant to understanding the extent and nature of recent alterations in the cultural landscape of the area. In addition, a series of the better-known archival maps of the unit were selected for study (Lafon 1808; Latour 1816a, 1816b; Zimpel 1834; d'Hémécourt 1867; Mississippi River Commission charts). These maps, which dated between 1808 and the early twentieth century, were reduced to a common scale to permit overlay with a 1981 aerial photographic overview of the same general land area (Figure *i-3)*. This exercise gave some orientation to the historical geography of the riverfront, but the lack of shared reference points among the maps and their varying degrees of cartographic excellence made the prediction of former

Figure III-4. Benjamin Henry Latrobe's 1819 "View of the New Orleans Battleground" (Sketchbook XIV, February 1819 [Image XIV-14]). The sketch shows the Rodriguez Estate (to the right) with the "pond and a Gap" that mark the location of Battery 3 clearly visible in the foreground. The imposing profile of the Macarty House can be seen on the left behind the surviving remnants of the American earthwork. The view is to the northwest.

Courtesy of The Maryland Historical Society.

Figure III-5. The projected location of Battery 3 from about the same position that Benjamin Henry Latrobe made his historic sketch of the "pond and a Gap" in the American line in 1819. Test Area 3 is just forward of the oaks and marks the present-day location of the battery. The remains of the Rodriguez House are bounded by the large oak trees. The view is to the northwest.

Photograph by Ted Birkedal, National Park Service.



structure and feature locations nearly impossible. It was found that only general zones of possible resource occurrence could be established with any degree of confidence.

In hopes of further limiting the search areas, more detailed aerial imagery at the National Park Service's Branch of Remote Sensing was consulted. This included a black-and-white stereoscopic mosaic (1978 at 1:1920) as well as color infrared transparencies (1977 at 1:1800). With guidance provided by the results of Mathien's (1981) earlier experiments at Chalmette, vegetative and topographic anomalies were traced and attempts were made to correlate these anomalies with historical features portrayed on the archival maps. For the most part, this effort proved fruitless; numerous anomalies were evident, but only a few of the more prominent historic ditch lines emerged as identifiable entities at this stage in the investigation.

Much of the preparatory work was centered around the definition of clues that would help to identify Battery 3. The project's military historian, Jerome Greene (1983), was asked to prepare a hypothetical reconstruction of the battery and its use. He suggested that Battery 3 had probably been built in accordance with at least the minimal rules of military battery architecture. Thus, in his view, its interior had been revetted on its inside by planks, fence palings, and possibly fascines. Greene further posited the use of wooden gun platforms held together by pegs, as opposed to nails, and the presence of earthen traverses and a wide observation banquette that would have lined the interior of the epaulement (the section of parapet that fronts a battery). Much to the disappointment of the archeological team, Greene cautioned that early artillerymen tended to be both careful and frugal in the use of the tools of their trade. Moreover, he noted that artillerymen usually kept their batteries clean and free of debris, as they wanted nothing extra in the battery that could cause inadvertent sparks or obstruct the operation of the gun carriage. If there were any artifact deposits resulting directly from battery use, Greene suggested that these would be found in the Rodriguez Canal within an easy throw's range from the battery.

William Meuse, the Chief Curator at the Springfield Arsenal and the National Park Service's foremost expert on early artillery, was also questioned on battery construction and use. He was intimately familiar with the Battle of New Orleans, for he had once served as a historian at the Chalmette Unit. Meuse (personal communication 1983) concurred with Greene's reconstruction.

He further dampened hopes for the easy identification of the battery. Although Meuse agreed that Battery 3 had most likely been a major target for British artillery fire and that most of the rounds had probably come close to the target, he warned against the expectation that a particularly large accumulation of cannonballs would be found in and around the archeological remnant of the battery. Many rounds, he stated, would have been overflights and many others would have ricocheted off the sloping forward crest of the epaulement. He agreed with the notion that the battery position was probably marked by a distinct "apron" of spent rounds, but he did not believe this accumulation could be easily defined without a great deal of comparative excavation. The total number of discoverable rounds would be relatively small, and the rise and fall in the occurrence of balls would be subtle and gradual. In spite of this expert advice, I and the other archeologists in the investigatory team initially clung to the false hope that a mass of metal would help identify the battery.

If time constraints had allowed, it would have been best to have had the luxury of several months of preparatory time for background research, but ideal conditions are rarely met in the world of compliance archeology, and so the archeological team had to proceed with only a murky sense of the historical geography of the Chalmette Unit and the kinds of data that would identify the historic features. In hindsight, it is obvious that a firm and precise grasp of the archeology only began to emerge after the completion of the formal historical studies. The results of these studies first became available in draft form some seven months into the life of the project, too late to orient the archeological field work, but not too late to give welcome guidance to the archeological interpretation.

Research Methodology and Techniques

The research plan for the field investigations called for the use of a variety of exploratory techniques, but magnetic survey was selected to serve as the centerpiece and workhorse of the effort. Faced with a large expanse of land and the prospect of few surface indications, an emphasis on magnetic survey seemed particularly appropriate. It offered the potential of rapid and broad aerial coverage in exchange for a relatively small commitment of personnel and time. Moreover, this remote sensing technique posed no harm to the archeological remains that might be found. The latter consideration was important, because not all portions of the assessment zone were under immediate threat from the levee setback project. The aim of the magnetic survey was twofold: first, to locate areas of archeological potential in order to establish correlations with features indicated on the historical map sources; second, to serve as a guide to the efficient and effective placement of subsurface archeological tests within the areas of high potential. A master grid system of quadrants (Map III-2), each measuring 25 m (82 ft) on a side, was developed to provide horizontal control for the magnetic survey as well as the project as a whole (see Chapter 15 for a full discussion of the magnetometer methodology and detailed description of the grid system).

Originally, a systematic sweep with a metal detector was to follow each segment of the magnetometer survey. However, the rigorous application of this technique was soon abandoned as unproductive and time consuming. The riverfront proved to contain widespread accumulations of metal trash. Metal "hits" were so common as to be meaningless, and many tantalizing readings resulted in the discovery of such recent objects as pop cans and fencing wire. For the most part, the metal detector was limited to occasional, judgmental use.

Another supplemental tool, known by the popular term "plumber's probe," proved infinitely more productive. No more than a thin steel rod with a point at one end and a handle at the other end, this simple tool helped on numerous occasions to confirm the presence or absence of structural debris at suspicious anomaly locations. It was especially useful in the identification of historic red brick, for the battered tip of the rod would pick up a coating of moist brick dust when it hit this older type of building material.

The research plan targeted subsurface tests for only a few select locales. The locales included Construction Areas 1 and 2 (Map III-2), for these were the most likely to be disturbed by the planned levee work. The west bank of the Rodriguez Canal in the southwest corner of the Chalmette Unit was also chosen as a major test zone because of its potential to reveal the positions of Batteries 2 and 3. The tests were to supply critical stratigraphic clues and confirm the presence of archeological features suggested by the other exploratory techniques. Test pits, auger tests, and shovel tests were all to be used in the subsurface testing effort. This subsurface work was to remain limited, so as to keep disturbance to possible buried resources and the Chalmette Unit's park-like grounds to a minimum. Although trenching with a backhoe would have proved extremely useful from a purely archeological standpoint, it was never seriously considered as an option.

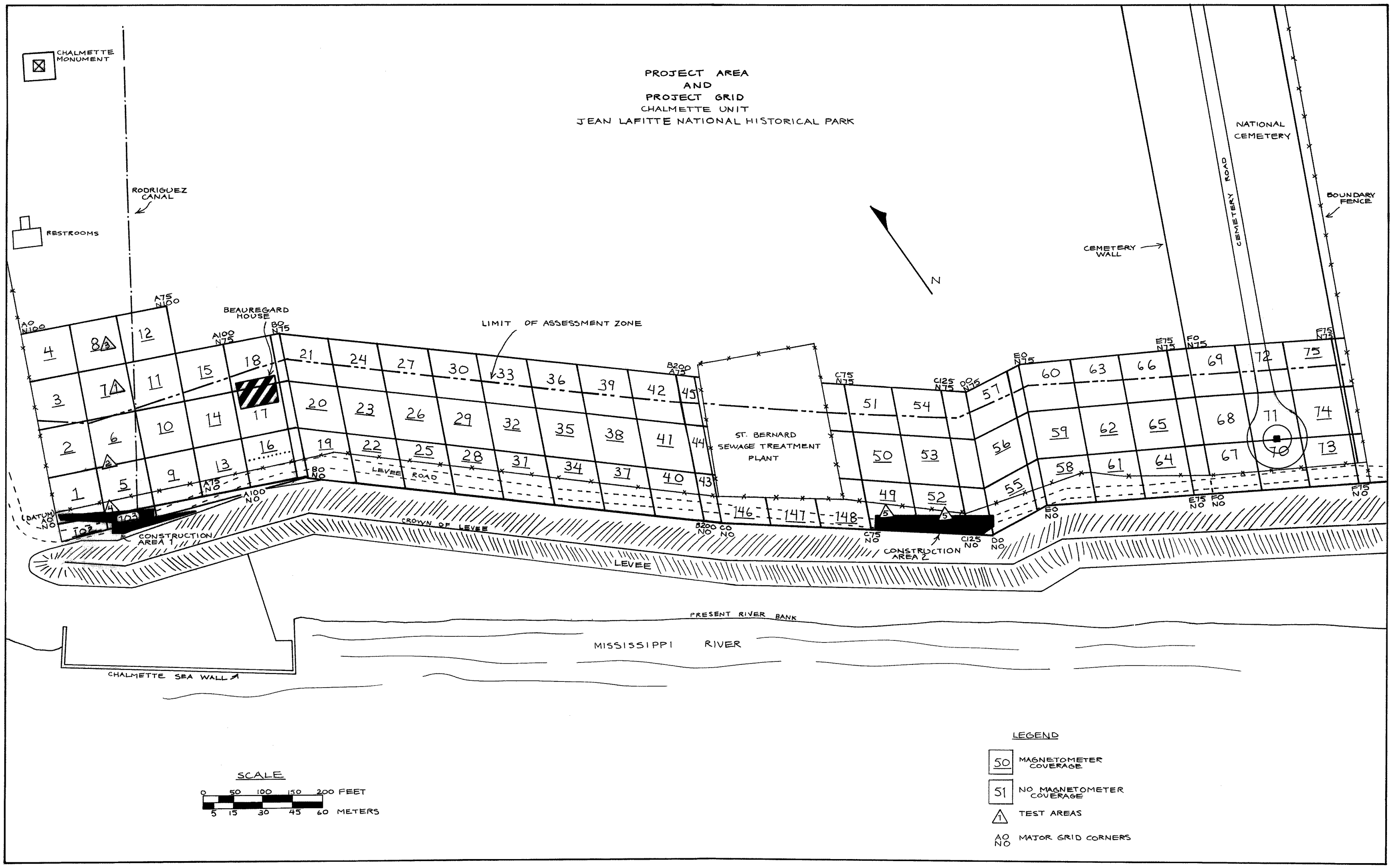
There was a fear that machine-dug trenches would disrupt visitor use; require an excessive amount of reconstructive landscaping on the part of the maintenance staff; and, as "blind tests," pose an unacceptably high threat of premature damage to archeological resources that were not under immediate risk from the proposed levee construction work.

As a supplement to the archeological tests, the cooperation of the Soil Conservation Service was enlisted to conduct a series of specialized soil tests in the southwest corner of the Chalmette Unit. These tests were to supply a comparative baseline for the identification and discrimination of the stratigraphy exposed in the archeological excavations. Initially, this work was to be concurrent with the other field investigations, but scheduling difficulties delayed the conduct of the tests well into spring. Nonetheless, the information gained from these soil auger tests proved invaluable to the final interpretation of the discovered cultural deposits.

In general, the archeological interpretation of the results took a great deal more effort than anticipated at the outset of the project. New and unexpected relationships among the various data sets emerged with each day of study, and a number of critical archival sources were discovered long after the completion of the formal historical reports (Parts I and II, this report). Further, as the analysis proceeded, it became apparent that an accurate placement and understanding of the cultural resources of the assessment zone depended on a reconstruction of the wider historical geography of the battlefield. Thus, the solution to the smaller puzzle rested upon a solution to the larger puzzle—a revision of the historical content and layout of an entire park unit, a task that did not come easy.

Map III-2. Map of the project area and magnetometer grid layout, Chalmette Unit, Jean Lafitte National Historical Park and Preserve.

Drawn by Lyndi Hubbell for the National Park Service.


PROJECT AREA
AND
PROJECT GRID
CHALMETTE UNIT
JEAN LAFITTE NATIONAL HISTORICAL PARK
CHALMETTE MONUMENT
RESTROOMS
RODRIGUEZ CANAL
BEAUREGARD HOUSE
LIMIT OF ASSESSMENT ZONE
ST. BERNARD SEWAGE TREATMENT PLANT
NATIONAL CEMETERY
CEMETERY ROAD
CEMETERY WALL
BOUNDARY FENCE
N
LEVEE ROAD
CROWN OF LEVEE
LEVEE
CONSTRUCTION AREA 1
CONSTRUCTION AREA 2
PRESENT RIVER BANK
MISSISSIPPI RIVER
CHALMETTE SEA WALL
SCALE
0 50 100 150 200 FEET
5 15 30 45 60 METERS
LEGEND
50 MAGNETOMETER COVERAGE
51 NO MAGNETOMETER COVERAGE
TEST AREAS
A0 N0 MAJOR GRID CORNERS

CHAPTER 15

MAGNETIC SURVEY METHODOLOGY

John Coverdale
Kenneth Holmquist
Larry Murphy

Introduction

Magnetometer survey is a remote-sensing approach that has developed as a major archeological tool in the last four decades. The magnetometer is an electronic instrument that measures and records the earth's magnetic field. The basic unit of measure is the "gamma" (0.00001 oersted); the earth's magnetic field in the United States normally varies between 50,000 and 60,000 gammas.

In archeological applications, the magnetometer is deployed so that small local variations in the earth's ambient magnetic field can be delineated, recorded, and analyzed. These highly localized variations are commonly termed "anomalies." Magnetic anomalies within a search area may have many archeological origins, but the most pronounced usually result from the presence of ferrous metal. Anomalies of archeological interest are not limited to iron artifacts, however, because discernible magnetic anomalies of varying intensities can be produced by any archeological feature possessing a magnetic field different from the surrounding geological matrix. Common cultural processes that can produce magnetic features include construction, refuse deposition, excavation and filling, and compaction. Under certain conditions, excavated and refilled areas can stand out magnetically against a background of intact and more densely packed natural soils. Even compacted roadways and paths can appear as recognizable anomalies if the bordering soils are of a lesser density.

It is important to stress that anomalies may result from either a positive or negative deflection from the surrounding or ambient field. For example, a basalt rock deposited in loose quartz sand would produce a positive anomaly; limestone rock in a magnetite-rich soil would register as a negative anomaly. Ferrous materials normally produce both a negative and positive deflection;

configurations of this type are referred to as dipolar anomalies; that is, both magnetic poles are present.

From the standpoint of magnetic survey, the most significant property of an archeological feature—other than ferrous content—is thermoremanant magnetism. This property occurs in certain objects when they are heated to a temperature high enough to allow some of the constituent particles to become fluid and to align themselves parallel with the earth's magnetic field (Breiner 1973). The net magnetic effect of this realignment process is a thermoremanant magnetism that can be displayed by virtually any material subjected to extreme heat (for example, pottery, hearths, kilns, bricks, and ceramic tiles). The possibility of detecting thermoremanant features by magnetometer was first suggested by J. C. Belshe in 1957 and field tested in 1958 (Aitken, Webster, and Rees 1958). Magnetometer surveys in archeological field work focus on the detection of anomalies produced by thermoremanant and ferrous sources, as well as those from soil disturbances.

The magnetic survey of the river frontage at Chalmette was directed toward the location and delineation of buried historical features exhibiting virtually no observable surface manifestations. Background research suggested that the magnetometer survey would be an efficient and productive investigative tool at Chalmette. According to the historical record, the riverfront assessment zone had once been the scene of intensive occupation and use, yet surface clues of past human activities, both civilian and military, were largely absent. Field investigators faced with nearly one-half mile of archeological *terra incognita* selected magnetometer survey as a logical and necessary aspect of the search. Concentrations of brick and metal structural refuse associated with the civilian historical occupation were expected to produce recognizable magnetic anomalies. Similar expectations were held for features connected with the Battle of New Orleans because military constructions and excavations, as well as lost military ordnance and other debris, usually produce detectable magnetic anomalies.

Factors Relevant to Survey Design

The earth's magnetic field does not remain constant. Temporal fluctuations in the field originate from atmospheric changes and solar activity. These diurnal variations are unpredictable and may result in shifts of 100 gammas or more. When field data are collected over a period of even a few days, such shifts can yield significantly different magnetometer readings at the survey location. If these diurnal fluctuations are not taken into account prior to data reduction, serious errors in interpretation can result. Consequently, diurnal correction is essential to survey accuracy, particularly in high-resolution magnetometer surveys. The typical method used to correct for diurnal changes is the deployment of a second magnetometer to serve as a base station. This base-station magnetometer remains stationary and takes periodic readings during the daily collection of field data. The field readings are adjusted up or down, as necessary, to reflect the diurnal fluctuations recorded by the base-station magnetometer. For the highest possible resolution, base-station readings should be taken concurrently with field readings. Concurrent readings are especially important in situations where the discrimination of subtle nonferrous magnetic features is important.

Field data can also be compromised by the presence of modern ferrous masses or electrical power lines. Iron or steel fences, water or sewer pipes, metal culverts, and overhead or underground electric lines often create areas that preclude collection of valid magnetometer readings. Areas proposed for investigation should be checked for the presence of such interferences prior to the start of actual magnetometer work. Test surveys with the magnetometer can then be easily carried out in a potentially impacted area to determine the degree and extent of interference. Heavily impacted zones may be eliminated from survey coverage. Experience, however, shows that some anomalies can be detected within interference areas. The most practical procedure to estimate the area of impact is to run short transects perpendicular to the interference.

Data Recording and Reduction

Magnetic data must be reduced to a usable format before they can be analyzed or interpreted. A contour map provides the most useful and practical display of magnetic data for archeological interpretation. A magnetometer contour map uses iso-intensity lines to depict the total magnetic field variations in the survey area. Contour lines connect areas of equal magnetic intensities much the same as the lines of a topographic map connect areas of equal elevation.

Magnetic anomalies are highly variable in shape and intensity and can be quite complex when numerous ferrous masses are present. It is assumed that anomaly-contour configurations reflect the characteristics of the feature or grouping of objects that produce the deflections. However, the form of an anomaly can vary if different paths of approach (survey transects with different alignments of the instrument) are employed in a survey.

Some anomaly-contour configurations on the magnetic map represent patterns that can be linked to certain archeological or geological features. These patterns can then become recognizable signatures for similar features located in the area of survey. Ideally, ground-truthing should be carried out during, or as soon as possible after, the magnetometer survey. Early test excavations at selected anomaly locations can greatly enhance the quality and accuracy of overall magnetic data interpretation and lead to the development of signatures for specific archeological features. Unfortunately, few quantitative methods exist to interpret magnetic contours, and the process of evaluation remains primarily subjective.

On-site assessment of magnetometer field data gives researchers an opportunity to check interpretations and to adjust field procedures so as to maximize information recovery. Proper coordination of investigative tasks significantly increases the effectiveness and efficiency of a magnetometer survey. The in-field generation of magnetic contour maps is basic to proper feedback. Maps can be laboriously done by hand or produced at the end of each field day by a computer and plotter. Another alternative is to transmit information by modem to an off-site computer graphics facility that can generate maps and send them back to the field.

Survey Objectives

The purpose of the magnetic survey at Chalmette was twofold. First, the survey provided guidance for accurate placement of test excavations relative to targeted historic features. Second, the magnetometer survey served as a primary data-retrieval technique in its own right. The size of the assessment zone, the potential number of buried historical features, and the limited time available for field investigations precluded using test excavations alone for subsurface exploration. Instead, the survey was designed to utilize both magnetometer and historical data. If anomalies of the appropriate size and intensity occurred at the projected locations of historic features, the spatial correlation of the two data sets would supply a relatively reliable basis for identification of what might otherwise be unobservable archeological resources. Furthermore, the absence of characteristic anomalies at other locations (if in conformance with the historical record) would eliminate the possibility of certain types of resources being present beneath the surface (i.e., brick foundations, concentrations of structural debris, etc.). Compared to actual test excavations, the magnetometer survey was viewed as the next best alternative information source for generating subsurface information.

Survey Methodology

The entire survey zone was divided into standard subdivisions. The basic unit of this areal reference system was a block measuring 25 m (82 ft) on a side. Because the irregular alignment of the levee toe and the length of the Chalmette Unit prevented even subdivision, some of the boundary blocks were smaller or larger than the standard. To permit a hierarchy of reference, blocks were combined in five separate groupings, designated A, B, C, D, and E, from west to east. A transit-and-chain survey was used to fix the location of each block corner, and these corners were staked, labeled, and flagged for easy field reference (Map III-2).

The 25 (82 ft)m block was chosen as a convenient subdivision because it was small enough to permit the accurate use of fiberglass measuring tapes by the magnetometer crew, and it was also large enough to minimize the time-consuming job of locating and staking corners. The tape-positioning system proved to be extremely efficient during magnetometer operations. One tape was extended from north to south along the west edge of the block to be surveyed; a second tape was similarly placed along the east side of the block. Next, a polypropylene rope marked at the desired sampling interval was positioned from east to west across the block. The magnetometer operator then walked the rope, taking readings at the set intervals. When he reached the opposite side of the block, he and his assistant moved the rope to the next interval position on the north-south tapes, and he began collecting the next line of readings while traveling in the opposite direction of the previous pass. This process continued until the block had received full coverage.

Most magnetometer readings were taken at 3 m (9.8 ft) intervals, a spacing considered to be sufficient for locating historic structural remains. However, readings in Blocks 2 through 8, all located in the extreme southwestern corner of the park unit, were made at 2 m (6.6 ft) intervals because the survey here was oriented toward the discovery of more subtle military features associated with the American line of defense. An experimental test of the utility of a 1 m (3.28 ft) coverage was made in the eastern halves of Blocks 6 and 7, but this test produced little additional information from that gained at the 2 m (6.6 ft) sample interval.

Basing survey control on relatively small, contiguous blocks offered a number of clear advantages. First, the system provided flexibility in prioritizing survey coverage. Blocks likely to contain historical remains, or those targeted for immediate subsurface testing, could be surveyed first without significant interruption of the overall survey. Second, the use of discrete blocks reduced the likelihood of data-collection errors being transferred beyond the confines of a single block. Moreover, if errors were noted, the resurvey could easily be limited to the problem block.

Another value of this approach was the early return of information. Since readings from individual blocks could be contoured and studied as independent units, there was no need to defer data analysis until wide-area coverage was achieved. This rapid data turnaround allowed the magnetometer crew to catch and correct instrument and procedural errors early. Such quick feedback also provided the test excavation team with contoured magnetometer data from priority blocks in the first stages of the investigation. In turn, because subsurface tests began very soon after the start of the magnetometer survey, it was similarly possible for the magnetometer crew to benefit from the initial findings produced by excavation. Feedback was, in fact, an essential aspect of the total investigative process. As each contour map was completed, it was added to others to form an incremental mosaic of the magnetometer data. This growing body of data was reviewed at the end of each field day by the excavators and the magnetometer crew in order to develop strategy corrections and to identify signature patterns that could be linked to historic features. These daily interchanges were of great help in collecting and interpreting the magnetometer data. Finally, because the magnetometer survey was tied to a tight locational control system, it was a simple process for the excavators to position themselves precisely in relation to recorded magnetic anomalies. By using the staked corners of the blocks, rapid placement with very high accuracy was effected solely by the use of measuring tapes.

Survey Coverage

In all, 2.94 ha (7.26 acres) of the originally scheduled 4.94 ha (12.20 acres) of land were subjected to magnetometer coverage. Some areas were deleted from the original schedule because interference from recent intrusive features was found to be too great to permit accurate readings. For example, the greater portions of Blocks 17 and 18 were dropped because the existing Beauregard House dominated these units. Similarly, the linear group of blocks located along the levee road between the Beauregard House and the St. Bernard Parish Sewage Treatment Plant was deleted from the survey because the combined effects of an overhead power line, a new underground utility corridor, and the southern boundary fence skewed readings in this area. A second series of blocks was deleted because it was of secondary priority and not essential to the assessment. The greater part of this group included the northern line of blocks extending from the Beauregard House to the National Cemetery; the remainder was in the western two-thirds of the National Cemetery. These reserve units could have been completed in the allotted time frame if problems caused by instrument failure and inclement weather had not interfered with the momentum of the survey.

In spite of the above deletions, the magnetic survey achieved a 76 percent coverage of the 200 ft wide (61 m) (3.86 ha [9.5 acres]) riverfront assessment zone specified by the Corps of Engineers and a 59 percent coverage of the slightly larger project area laid out by the research team (4.94 ha [12.20 acres]). With the exception of eight hours of volunteer help, all work associated with the magnetometer field operation was accomplished by the two-person magnetometer crew with a total field time of twelve days.

Instrumentation

Initially, two different magnetometers were employed on the survey, one serving as a base station and a second portable one collecting field data. Both magnetometers were manufactured by Geometrics Incorporated. Model 806 was used for the base station and Model 856 was deployed as the field unit, the latter being designed to record and store magnetic readings together with time, line, and date information in an internal memory when a simple combination of pressure switches is activated. The magnetometer console was mounted with straps on the surveyor and the sensor was attached to a hand-held, nonferrous staff.

The base-station sensor was secured on a stationary mount about the same distance off the ground as the field sensor. A lightweight cable was used to "slave" the two units together. The base station was linked by cable to a portable Hewlett-Packard Model 85B computer. Whenever a field reading was taken, the base station was also activated, and the base-station reading was recorded and stored on tape by the computer. At the completion of each block unit, the field readings were transferred from the Model 856 memory to the computer and stored on the same tape as the base-station readings.

This magnetometer system, along with the computer software developed by Geometrics, allowed rapid contour generation in the field. The software executed diurnal-variation corrections and also provided an instant statistical analysis of the collected data. It was a relatively simple matter to transform the final readings on the computer tape into hand-drawn magnetic contours for analysis. However, the above instrument procedures required a modification midway through the project. Electronic problems began to plague the Model 806 base-station unit, primarily as a result of the nearly constant rains and cold weather encountered, and a Model 856 magnetometer was substituted for the failing Model 806 with its moisture-sensitive cables. Because of limitations of the Model 856, diurnal readings from this point on had to be taken at programmable intervals rather than in exact concert with the field unit. However, this change had little effect on the overall operation, and other instrument procedures remained the same.

The large number of modern magnetic masses located along the Chalmette riverfront had a definite effect on the instrument readings. As mentioned earlier in this chapter, the interference produced by larger entities was handled by simple block deletion in some cases. However, the abundance of fences, culverts, drains, and buried sewer lines was so great that, if all areas of modern interference had been dropped from the survey, less than half the assessment zone would have been left for magnetometer coverage. The only solution was to record the influence of these factors on the contour maps and to assess their potential effect on neighboring anomalies of interest. In most cases, it was possible to isolate areas under the masking or skewing influence of modern features. Whenever possible, old photographs were consulted or the park maintenance staff was interviewed in order to pinpoint the locations of drains and other buried features that could mislead anomaly interpretation. After some familiarity was gained with the signatures of these smaller, buried features of recent origin, it became clear that most produced distinctive signatures that could be eliminated from consideration.

A serious problem encountered during survey was inclement weather—New Orleans experienced some of the worst winter weather in twenty years while the magnetometer operations were under way. Freezing or near freezing temperatures combined with extremely high rainfall wreaked havoc with much of the electronic equipment. The Beauregard House was used as shelter for the base-station equipment while magnetometer operations were conducted in the vicinity. This worked well because the building was heated and contained internal power sources. Beyond the proximity of the Beauregard House, instrument difficulties increased. Although a tent was used to house the base-station equipment and the Hewlett-Packard field computer, the latter soon began to fail as a consequence of the low temperatures, and it had to be removed from direct field use. Data “dumps” and the generation of data tapes (from that point on) could only be performed in a heated environment at the end of each field day. This adjustment in equipment use slowed data returns and limited the magnetometer crew’s ability to catch and correct procedural or equipment errors during field operations, which in turn increased the risk of bulk data losses. All in all, moisture proved to be a larger difficulty than the cold, for it precipitated shorts and other problems with cables and connectors linking various pieces of equipment. The use of several rolls of duct tape reduced—but never fully eliminated—the adverse effects of moisture on these hardware linkages.

Even wind played a role in hampering the magnetometer survey. Toward the end of the survey, a high wind associated with one of the thunderstorms that frequently rolled in between the heavy drizzles completely flattened the base-station tent. No equipment was damaged, but the tent was rendered useless. Fortunately, a small break in the weather, along with further equipment adjustments, allowed completion of the remaining priority blocks.

Computer Mapping Procedures

As mentioned earlier in this chapter, background and field magnetometer readings were recorded on magnetic tape on a Hewlett-Packard (HP) 85B computer. The HP 85B was then returned to the offices of the Tennessee Valley Authority, Mapping Services Branch. The data was there transferred to an HP-1000 computer, and programs were written to perform diurnal data correction. This correction was done by subtracting background readings from field readings on a point-for-point basis. The difference in time between background and field readings, for almost all points, was less than one minute.

The data were then transferred to a Digital Equipment Corporation (DEC) VAX 11/780-based Intergraph Corporation computer-aided mapping system. The Intergraph Digital Terrain Model (DTM) software package was used to automatically generate contour maps of the magnetic data. Output plots of the contours were produced on a Gerber Scientific Instrument Company 4177P plotting system. Three registered overlays were generated and used in producing tri-color magnetic maps (see Chapter 18, Magnetic Contour Maps III-1 through III-6).

Some experimentation was carried out with computer-generated, color-coded shading, but the tri-color contour maps proved to yield the best overall data delineation. Green was used to record positive readings, blue for negative, and red for neutral readings. In order to respond to varying interpretive requirements, plots were produced at 5, 10, and 20 gamma contour intervals.

CHAPTER 16

TEST EXCAVATIONS

Ted Birkedal

General Introduction

This chapter covers the results of auger tests, shovel probes, and excavations in five separate test areas. Three test areas, Test Areas 1, 2, and 3, were created during the search for Battery 2 and Battery 3 (Map III-3; Figures III-3, III-5, III-6, III-7). The remaining areas were established in the course of archeological exploration within the two specific levee construction zones designated by the Corps of Engineers (Map III-2). Test Area 4 incorporates all subsurface tests made in the vicinity of Construction Area 1; Test Area 5 includes all tests centered on Construction Area 2. The auger tests, shovel probes, and the test excavations were tied to the overall grid system described earlier in this report (Chapter 15). Test pits and trenches were named with reference to their northwest corners. For example, if the northwest corner of a test pit was located 15 m east of the westernmost north-south baseline of the grid and 20 m north of the southern baseline, it would be designated A15, N20.

Depths in auger tests and shovel probes were measured from ground surface. On the other hand, with the exception of Test Area 5, depths in the test excavations were measured from arbitrary vertical datums established beside each test unit. These individual datums were tied to Mean Sea Level. Excavation proceeded by means of both arbitrary and natural levels. Arbitrary levels were employed in the initial excavations and in cases where the natural levels were difficult to define or follow. Excavation by natural levels was the preferred technique.

In Test Area 1, all the dirt from the excavations was forced through a ½ in mesh screen in order to maximize artifact recovery. However, the nearly constant rains and the heavy consistency of the soils led to the abandonment of screening in the remaining test units. In these subsequent excavations, screening was used only occasionally to check if significant numbers of artifacts were being missed in the shoveling and troweling process. Actually, the screen checks indicated that an artifact recovery rate of at least 90 percent was achieved without the screens. This recovery rate was obtained because soils in artifact-bearing levels were first removed by trowel before being transferred to buckets or shovels. Artifact assemblages from particular levels or features were assigned field specimen numbers and bagged separately.

A gasoline-powered pump proved to be an essential tool of excavation in any tests that extended more than 30 cm below ground surface. The combination of a high water table with incessant heavy rains required almost continuous pumping and the use of sump pits and sump trenches.

Test Area 1

Introduction

Test Area 1 was chosen for subsurface testing because the area initially appeared promising as a location for Battery 3 (Map III-3). The misleading indicators were as follows:

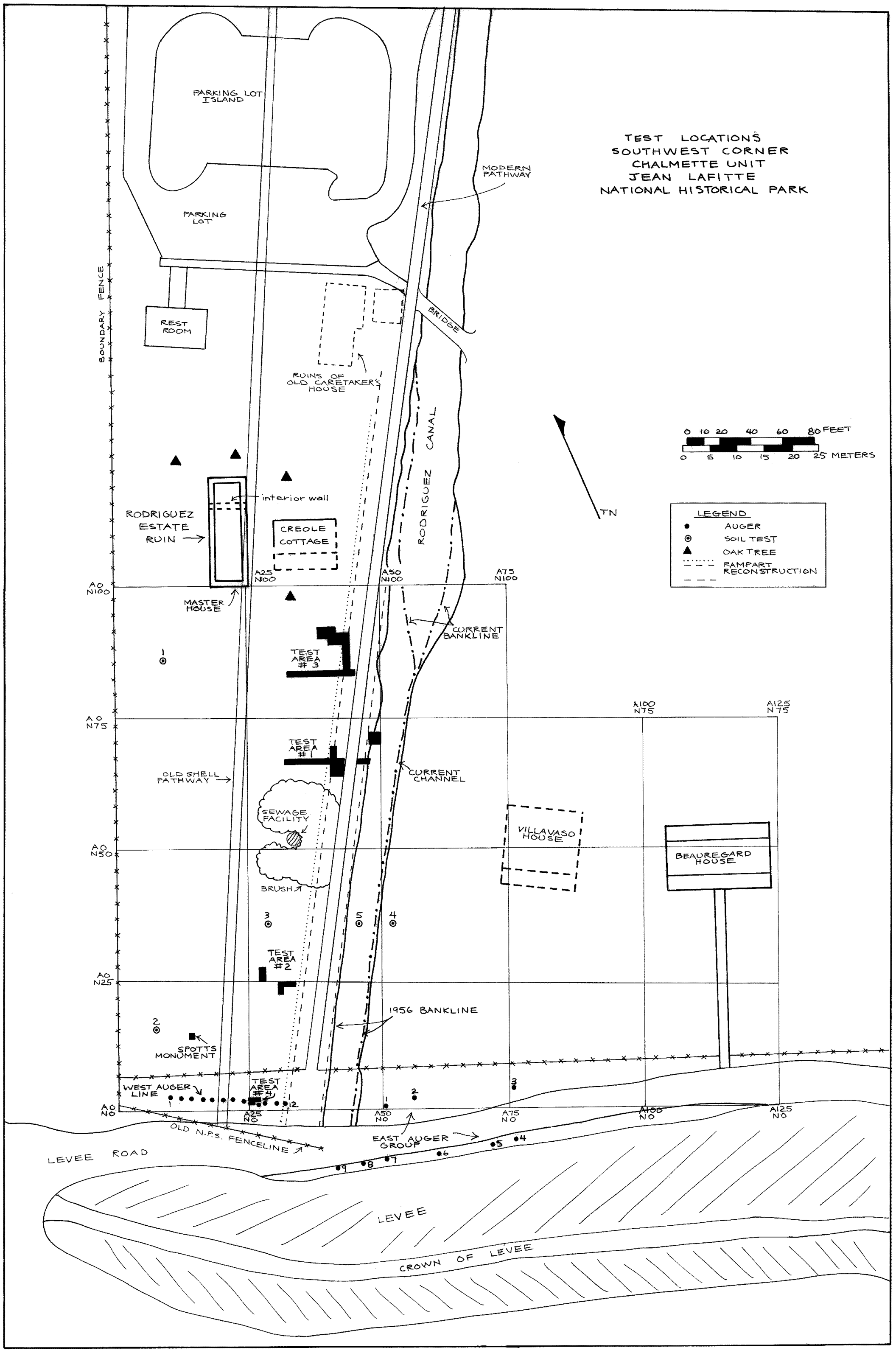
1. The center of the area was marked by a large C-shaped swale or depression. This surface depression opened up toward the Rodriguez Canal and measured 22.5 m in length and 5 m in width. The depression had been prominently visible on aerial imagery of the park and it was equally visible on the ground. Overall, the depression appeared to be exactly what might have been expected if a sizable battery gap had once been present at the position and then had been partially filled by subsequent deposition (Figure III-1).

2. Magnetometer readings at both 2 m and 1 m intervals appeared to reveal a C-shaped anomaly that nearly replicated the form of the surface depression. Smaller, more intense anomalies suggested the presence of a great deal of subsurface metal.

3. Metal detector readings also indicated the presence of a fair amount of subsurface metal.

Map III-3. Test area locations and the positions of selected historic features in the southwest corner of the Chalmette Unit, Jean Lafitte National Historical Park and Preserve.

Drawn by Lyndi Hubbell for the National Park Service.



TEST LOCATIONS
SOUTHWEST CORNER
CHALMETTE UNIT
JEAN LAFITTE
NATIONAL HISTORICAL PARK
PARKING LOT ISLAND
PARKING LOT
REST ROOM
BOUNDARY FENCE
MODERN PATHWAY
BRIDGE
RUINS OF OLD CARETAKER'S HOUSE
RODRIGUEZ CANAL
0 10 20 40 60 80 FEET
0 5 10 15 20 25 METERS
TN
LEGEND
AUGER
SOIL TEST
OAK TREE
RAMPART RECONSTRUCTION
interior wall
RODRIGUEZ ESTATE RUIN
CREOLE COTTAGE
MASTER HOUSE
A0 N100
A25 N00
A50 N100
A75 N100
CURRENT BANKLINE
TEST AREA #3
A0 N75
A100 N75
A125 N75
TEST AREA #1
OLD SHELL PATHWAY
CURRENT CHANNEL
SEWAGE FACILITY
VILLAVASO HOUSE
BEAUREGARD HOUSE
A0 N50
BRUSH
TEST AREA #2
A0 N25
1956 BANKLINE
SPOTTS MONUMENT
WEST AUGER LINE
TEST AREA #4
A0 N0
A25 N0
A50 N0
A75 N0
A100 N0
A125 N0
OLD N.P.S. FENCELINE
EAST AUGER GROUP
LEVEE ROAD
LEVEE
CROWN OF LEVEE

4. The position of the swale relative to the foundations of the Rodriguez master house appeared to approximately replicate the position of the gap illustrated in Latrobe's 1819 sketch of Battery 3 and the Rodriguez Estate (Figure III-4).

Test Excavations

Test Pit A46, N73

This was the first test pit dug in Test Area 1. It was placed on the north shoulder of the surface depression directly over an intense magnetometer anomaly of limited size that had been seconded by an equally pronounced metal detector "hit." The unit was situated on the upper slope of the present west bank of the Rodriguez Canal (Figures III-6, III-8).

This 2 by 2 m unit was excavated in arbitrary 10 cm levels measured from a vertical datum line set 34 cm above ground surface, an elevation equal to the southwest corner of the Rodriguez main house (Figure III-9). When water problems caused by constant rain became excessive, full excavation of the test unit was stopped at 60 cm below datum and restricted to a 50 by 50 cm sump test to a depth of 110 cm.

Beyond 110 cm, further exploration was conducted with two auger holes dug in the east and west halves of the pit to a depth of 155 cm below datum.

Stratigraphy

(Datum: 34 cm above ground surface, 2.4 m above MSL)

1. 34-50 cm below datum - This is a dark brown, silty clay loam topsoil. It dips down toward the east to reach a maximum depth of 68 cm. The stratum was found to contain a relatively large quantity of mixed historic and recent trash, including pieces of tar paper and asbestos. A large wire, nearly

1 m in length, and a sizable bolt were found to be the cause of the strong metal readings picked up by both the magnetometer and the metal detector.

2. 50-62 cm below datum - The next layer consists of sterile tan levee sand that was apparently deposited to provide a base for the adjacent pathway farther to the west. It dips slightly to the east and pinches out roughly 40 cm west of the east wall of the test unit.

3. 62-89 cm below datum - This gradually dipping level is a brown silty clay loam containing soft red brick fragments and a few historic artifacts of mixed origin. It corresponds closely to the A1 horizon in Auger Test 5 identified by the Soil Conservation Service (Appendix A). It probably represents a combined spoil and topsoil level that was at the surface prior to the National Park Service's pathway construction.

4. 89-145 cm below datum - At the top of this level, there is a change to a grayish brown clay. It contains a scatter of nineteenth-century artifacts and small brick fragments. The level closely resembles the B1 horizon identified by the Soil Conservation Service in Auger Test 5 (Appendix A).

5. 145 cm and below - Greenish gray clay or a similar water saturated clay appears at this depth. The identification is not absolute, and it may simply represent the lower gray clay found in Auger Test 5 (Appendix A).

Figure III-6. View to the north-northeast along the Rodriguez Canal toward Test Areas 1 and 3 prior to the start of excavation. Test Area 1 is in the mid-distance beyond the bush on the left. Test Area 3 is located forward of the large oak trees. The small wooden flagpoles in the foreground mark the locations of "hits" recorded by the metal detector.

Photograph by Ted Birkedal, National Park Service.

Figure III-7. View to northwest of the location of Test Area 3 with test excavations under way.

Photograph by Ted Birkedal, National Park Service.

Figure III-8. Test Area 1, plan view of the test excavations.

Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA #1
CHALMETTE UNIT

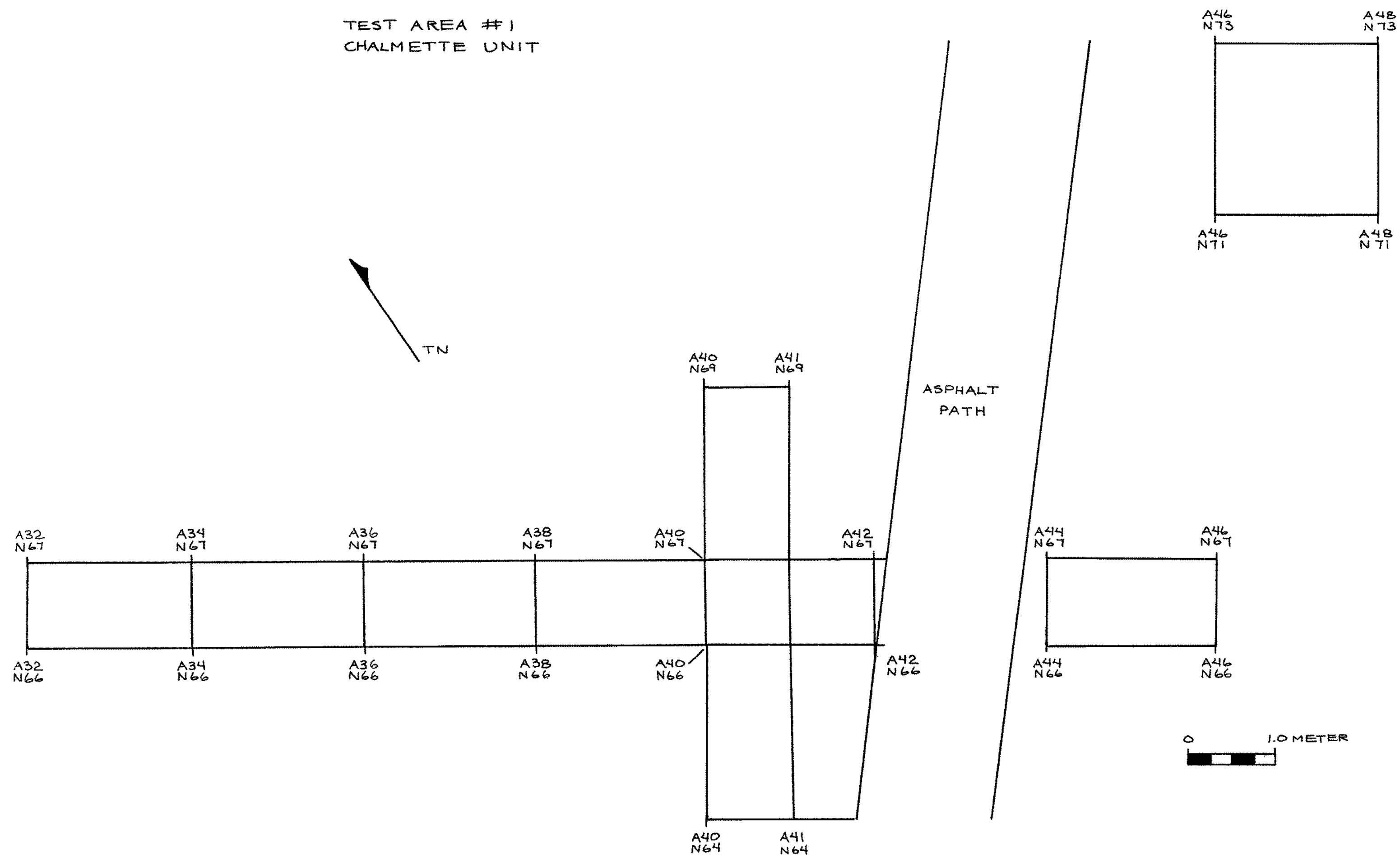
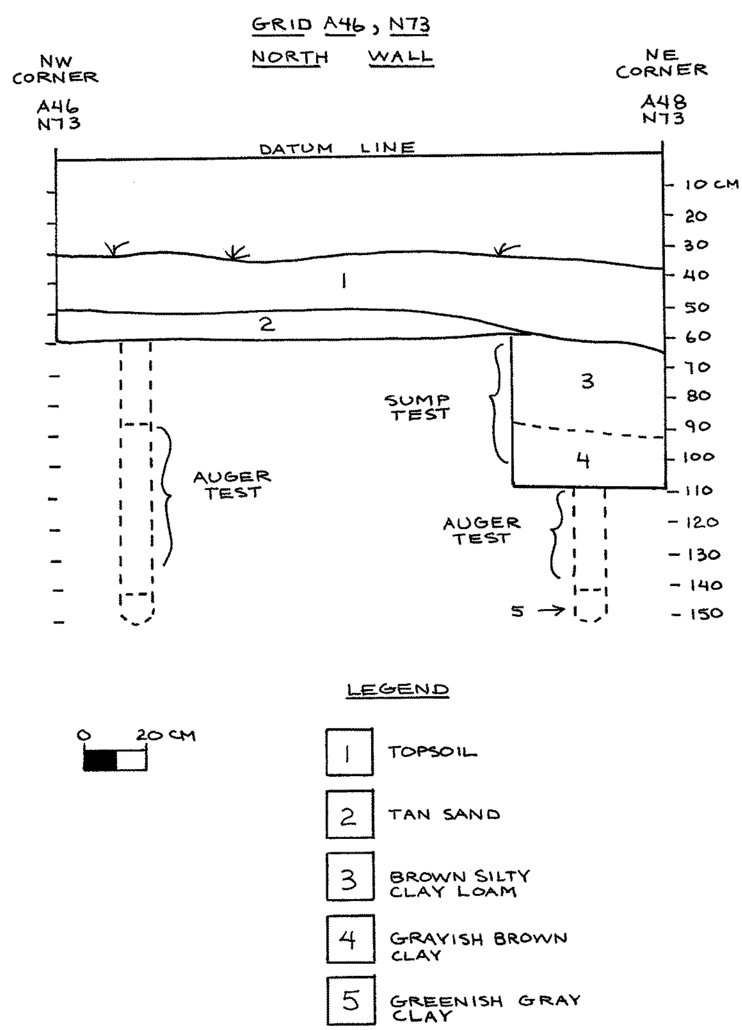


Figure III-9. Test Area 1, profile of Grid A46, N73.

Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA #1, CHALMETTE UNIT



Stratigraphic Observations

This unit exposed the stratigraphy of the west upper bank of the Rodriguez Canal. In many ways, though not exactly, it resembles the sequence identified by the Soil Conservation Service in Auger Test 5 (Appendix A). The top of the grayish brown clay most likely represents the ground surface as it appeared in the middle to late nineteenth century.

Test Trench A32, N67

This shallow 12 m test trench was laid out to bisect the surface depression mentioned earlier (Figure III-8). By approaching from well behind the swale in a west-to-east direction, it was hoped that this trench would lead us into the soil changes that were expected to mark Battery 3. As it turned out, this was a false expectation.

The westernmost units were simply excavated below the present humic zone to an underlying, compact brown-mottled gray clay. The top of this clay continued on a relatively level plane until it reached the eastern half of Unit A38, N67, where it began to noticeably dip toward the Rodriguez Canal. At the base of the slope, and after a drop of 20 cm, was a shallow ditch. This ditch was concave in profile and cut into the clay to a depth of 10 cm. It exhibited a north-northeast alignment and measured 25 cm in width. This ditch was followed 2 m to the south and another 2 m to the north in perpendicular extensions of the main east-west trench.

Because the easternmost units exhibited a more complex stratigraphy and were dug to a slightly deeper depth than the other units, both Unit A40, N67, a 2 by 1 m test segment, and Unit A44, N67, a second 2 by 1 m test segment, will be accorded separate stratigraphic treatment (Figure III-10). A National Park Service pathway separated these last two sections of the test trench.

Stratigraphy of Unit A40, N67

(Datum: 25 cm above ground surface, 2.4 m above MSL)

1. 25-36 cm below datum - The upper soil is a dark grayish brown topsoil of silty clay loam. Its top surface inclines west to east. A 4 cm thick lens of crushed oyster shell occupies the base of the level. This small lens pinches out 36 cm west of the asphalt path margins.

2. 36-44 cm below datum - The humic zone is followed by a sterile tan sand. This sand lens is identical to the one noted in Test Pit A46, N73. The sand pinches out 46 cm to the west of the path edge, on the eastern margin of the concave ditch.

3. 44-48 cm below datum - The next level is a thin trashy level of grayish brown to dark gray clay or clay loam. It exhibits numerous small brick fragments and appears to pinch out before reaching the concave ditch to the west.

4. 48-70 cm below datum - The final level exposed in the unit is dark gray mottled clay soil with fine brick-fragment inclusions.

Stratigraphic Observations

(See section for Test Trench A44, N67)

Stratigraphy of Unit A44, N67

(Datum: 30 cm above ground surface, 2.4 m above MSL)

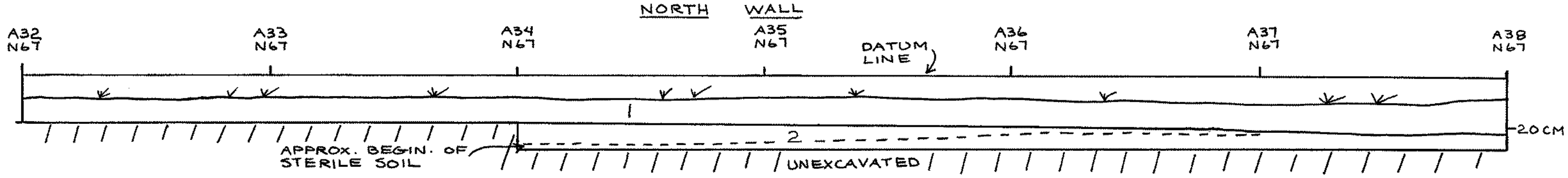
1. 30-44 cm below datum - The topmost soil is a silty clay loam topsoil that exhibits a dark grayish brown color. It contains a mixed assortment of artifacts and soft red brick fragments.

Figure III-10. Test Area 1, profiles of Grids A32, N67; A34, N67; A36, N67; A38, N67; A40, N67; N41, N67; and A44, N67.

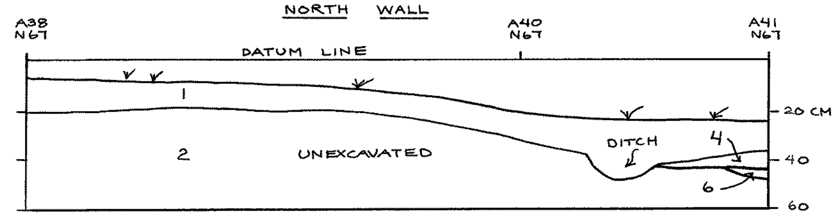
Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA #1, CHALMETTE UNIT

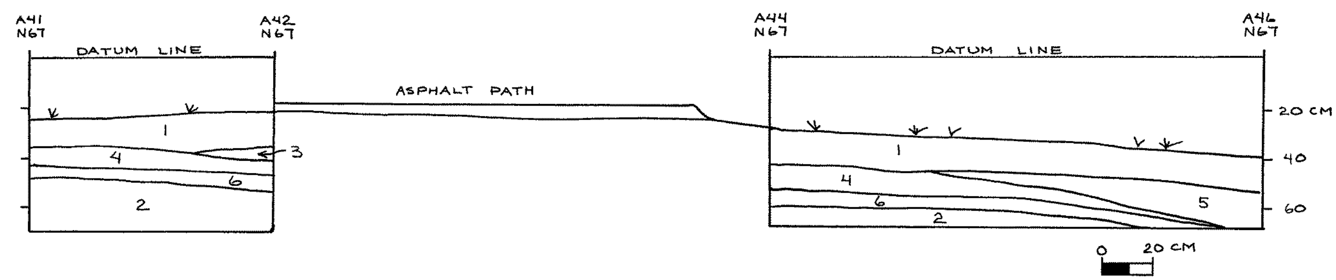
GRIDS A32, N67 / A34, N67 / A36, N67
NORTH WALL



GRIDS A38, N67 / A40, N67
NORTH WALL



GRIDS A41, N67 / A44, N67
NORTH WALL



LEGEND

1 TOPSOIL	4 TAN SAND
2 DARK GRAY CLAY	5 BROWN SILTY CLAY LOAM
3 OYSTER SHELL	6 TRASHY DARK GRAY CLAY

2. 44-54 cm below datum - A tan sterile sand follows the topsoil. It dips toward the Rodriguez Canal and pinches out at the eastern end of the trench to meet the base of the asphalt visitors' path. Brick fragments and artifacts are both common in this horizon.

3. 54-60 cm below datum - A thin, trashy, grayish brown to dark gray clay occurs beneath the sand. It contains numerous small brick fragments together with historic artifacts. This deposit also dips toward the canal.

   A brown silty clay loam overlays the eastern half of the sterile sand. It expands in thickness as the sand and the layer below play out. At the far eastern wall of the trench, this layer reaches a depth of 70 cm.

4. 60-70 cm below datum - The lowermost soil exposed in the trench is a dark gray,mottled clay. It contains scattered fine brick fragments.

Stratigraphic Observations

The upper humic zone exhibited in both excavation units—A40, N67 as well as A44, N67—is of recent origin and postdates the asphalt path construction (Figures III-9, III-10). The sterile sand level was obviously laid down to form a base for the path. Similarly, the small shell lens represents another visible section of the path base. In addition, the brown silty clay loam lens in the eastern half of A44, N67 is also viewed as a product of path construction or recent landscaping. It may have been deposited in order to reduce the gradient between the path and the bottom of the Rodriguez Canal. This intrusive soil resembles the A1 horizon in the Soil Conservation Service's Auger Test 5 (Appendix A). The latter is identified as a mixture of spoil and topsoil.

The dark gray level below the sand seems to represent a deposit of sheet trash and original surface soils that have accumulated on the west bank of the Rodriguez Canal.

General Observations

The mottled dark gray clay that follows the topsoil horizon in the trench between A32, N67 and A40, N67 (and represents the lowermost level exposed in Units A40, N67 and A44, N67) corresponds closely to the B1 or subsoil horizon identified by the Soil Conservation Service in Auger Test 1 (Appendix A). Although this soil has probably been subjected to considerable disturbance by the actions of man, erosion, and the natural shrink-swell factor, its development does not appear to postdate the Battle of New Orleans. As support for this view, it is important to note the upper surface of the brick foundations of the nearby Rodriguez master house occur at approximately the same depth below ground surface as the top of this soil. Moreover, Larry Trahan of the Soil Conservation Service, after studying the area west of the Rodriguez Canal, has concluded that soil loss or gain since the period of the Battle of New Orleans has been negligible (Appendix A).

The downward slope that becomes noticeable in the eastern half of Unit A38, N67 most likely marks the beginning of the upper west bank of the Rodriguez Canal (Figure III-10). Sometime in the late 1950s, this slope was interrupted by the construction of the asphalt path. Sand was brought in to provide a level, raised base for the path. Also, some surface spoil may have been added to the bed of the Rodriguez Canal on the east side of the path to reduce the gradient and thereby limit the potentially damaging effect of water erosion upon the path base. In addition, a shallow ditch was cut on the west side of the path to draw run-off away from the path surface.

The trashy, dark gray clay below the basal sand of the path is interpreted as a wash deposit that collected over a long period of time during the nineteenth century, and the ceramics recovered from this horizon support this view (Chapter 19, this report). A dark brown, almost black, cast exhibited in the upper 2 cm of this soil horizon suggests that it once supported a vegetative cover. In 1890, when the canal served as an approach to the Chalmette Monument, a disgusted visitor commented on the weeds and underbrush that grew in profusion in the canal (Huber 1983:26).

The stratigraphic sequence observed in Unit A46, N73 samples the fill that has accumulated against the upper west bank of the Rodriguez Canal. To judge from its artifact content, the brown silty clay loam of this sequence probably dates from the same time span as the trashy dark clay found in Units A40, N67 and A44, N67. Similarly, the grayish brown clay that underlies the loam appears to correspond to the lowermost gray clay exposed in Units A40, N67 and A44, N67, and it is, in all probability, a wash derivative from this latter soil. Both of these lower clays produced ceramic collections that are characteristic of the earliest decades of the nineteenth century.

The shallow swale that first attracted attention to Test Area 1 apparently marks the location of an old, but relatively slight, erosional irregularity in the original bank line of the Rodriguez Canal. However, localized variations in recent landscaping efforts associated with the path construction, the emplacement of a septic tank to the south, regrading, and an adjacent eastward rechannelization of the Rodriguez Canal have also played a part in the creation of this feature (Figure III-1; Map III-3). For instance, the south edge of the swale is coincident with a raised apron of leveled spoil that surrounds the septic tank. Thus, in truth, the swale is not a single feature, but several disparate features that, in combination, produce the illusion of a broad swale in Test Area 1.

Test Area 2

Introduction

Test Area 2 was established 40 m south of Test Area 1 (Map III-3; Figure III-11). Two factors attracted attention to this area. First, the area contains a shallow depression with a roughly subrectangular plan (Figures III-1, III-3). This depression had been initially noted during a scan of false-color aerial imagery of the park unit. It was easily found on the ground, for it measures 9 by 11.4 m and its center lies 5 to 6 cm below the surrounding ground surface. Early magnetometer readings also pointed to this location as a likely candidate for testing. These readings, once contoured, showed a large C-shaped magnetic anomaly at almost the exact same location as the surface depression.

Since the surface depression and the magnetic anomaly both fell at a location that closely coincided with the initial estimated position for Battery 2, further testing was considered mandatory. Testing at this location was concurrent with the work at Test Area 1.

Test Excavations

Test Trench A27, N26

This 1 by 2 m trench was placed at the surface depression's northwest corner, parallel to the west inside edge. The idea was to bisect downward-trending stratigraphy that might betray the presence of a filled hole or swale associated with the suspected battery position. Excavation proceeded by arbitrary 10 cm levels (Figure III-12).

Stratigraphy

(Datum: 20 cm above ground surface, 2.8 m above MSL)

1. 20-30 cm below datum - The first level is a dark grayish silty clay loam. This topsoil contains grass roots and soft red brick fragments.

2. 30-80 cm below datum - This is a relatively uniform soil horizon. It consists of gray to gray brown silty clay loam. Brown mottles in the soil increase with depth. Old root channels are common and, in the lower portion of the horizon, partially decayed roots are still present. Small brick fragments occur throughout the horizon, but other cultural debris is scattered and infrequent.

Figure III-11. Test Area 2, plan view of the test excavations.

Drawn by Lyndi Hubbell for the National Park Service.

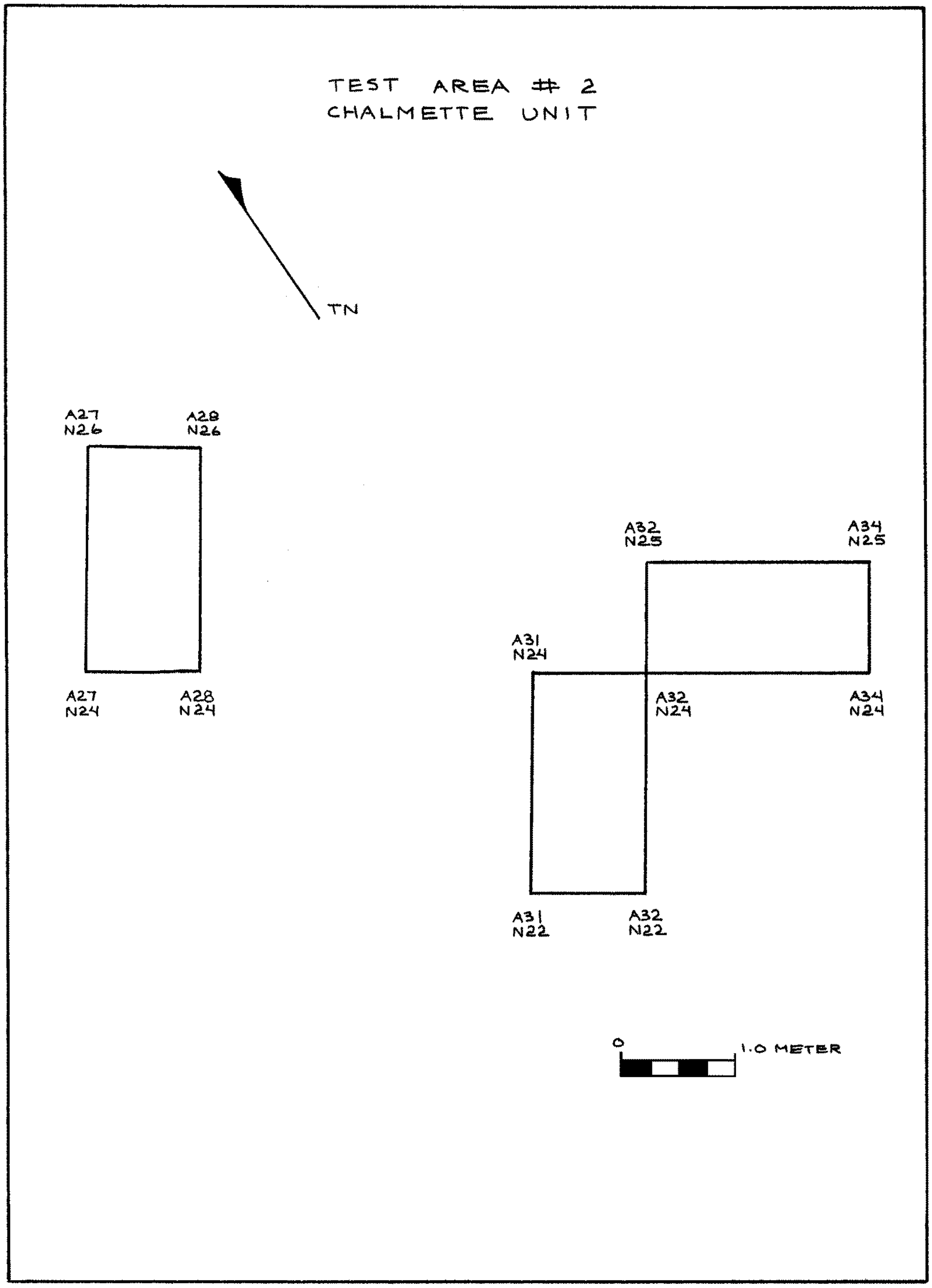
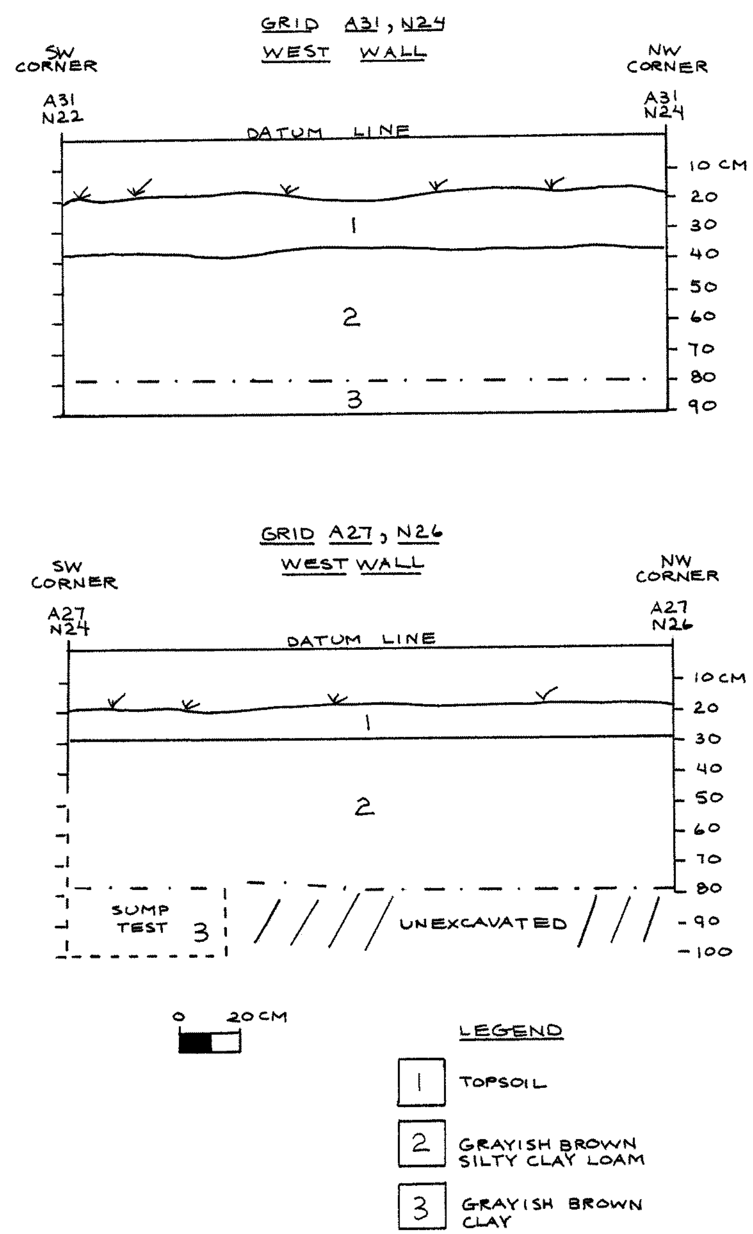

TEST AREA # 2
CHALMETTE UNIT
TN
A27 N26
A28 N26
A27 N24
A28 N24
A32 N25
A34 N25
A31 N24
A32 N24
A34 N24
A31 N22
A32 N22
0
1.0 METER

Figure III-12. Test Area 2, profiles of Grids A31, N24 and A27, N26.

Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA #2, CHALMETTE UNIT



3. 80-100 cm below datum - Here the silty clay loam is followed by a grayish brown clay. This horizon appears to be nearly sterile. Only very small brick bits are visible and only near the top of the soil level.

Stratigraphic Observations

The soil sequence within this trench closely resembles the one found in Auger Test 2 (Appendix A). The silty clay loam found between 30 and 80 cm corresponds to the B1 and B2 horizons described for this soil auger test. In turn, the lower clay horizon matches the B3 horizon in Auger Test 2. Other than scattered artifactual material of mixed origin, the trench revealed no archeological features or deposits. No dipping stratigraphy was observed: All layers were characterized by horizontal bedding.

Test Trench A31, N24

Test trench A31, N24 was dug toward the central east end of the surface depression. It also measured 1 by 2 m (Figures III-11, III-12).

Stratigraphy

(Datum: 20 cm above ground surface, 2.8 m above MSL)

1. 20-35 cm below datum - The upper level is a silty clay loam topsoil horizon. It is dark grayish brown and contains small brick fragments and grass roots.

2. 35-70 cm below datum - Below the topsoil is a gray to gray brown silty clay loam horizon. Former root channels and decayed tree roots are prevalent. Brown mottling is visible toward the bottom of the horizon. Small brick fragments are common throughout the level. Artifacts and other cultural materials, however, are infrequent.

3. 70-80 cm below datum - This next level is a grayish brown clay. Except for very small brick bits, the horizon appears sterile.

Stratigraphic Observations

The profile exposed by this trench essentially repeats the one found in Test Trench A27, N26. No signs of historical features were encountered.

Test Trench A32, N25

This trench was placed directly to the northeast and contiguous to Test Trench A31, N24. As with the other two, it measured 1 by 2 m (Figures III-11, III-13).

Stratigraphy

(Datum: 23 cm above ground surface, 2.8 m above MSL)

1. 23-40 cm below datum - The first horizon is a dark grayish brown topsoil. This is penetrated by grass roots and contains the ubiquitous small fragments of soft red brick.

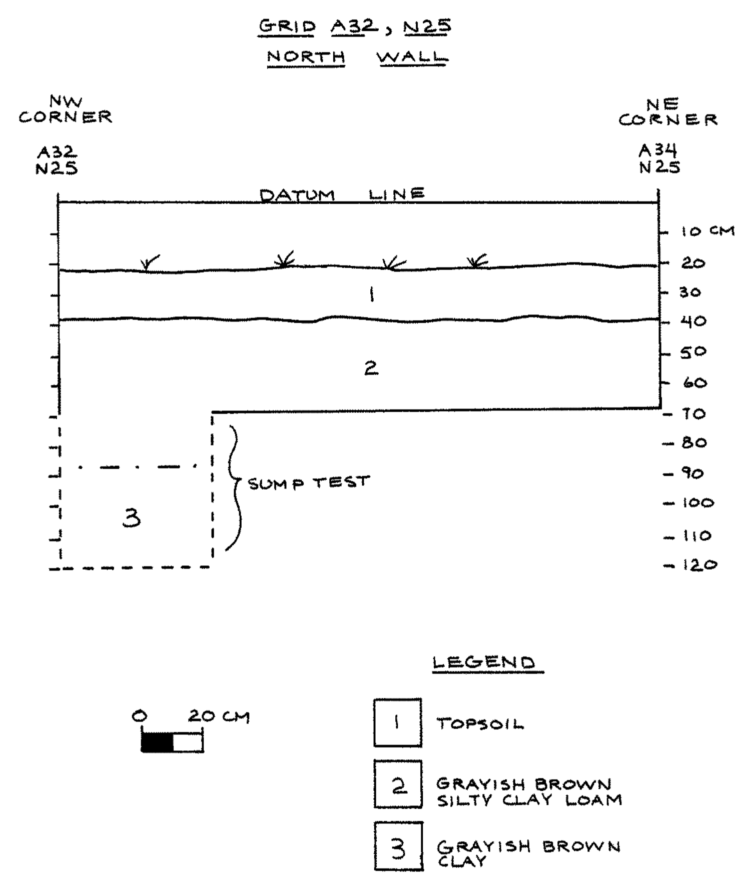
2. 40-90 cm below datum - As in the other test locations in Test Area 2, the topsoil is followed by a gray to gray brown silty clay loam. Root channels and decayed roots are common, especially toward the bottom of the horizon. Brown mottles in the soil also increase with depth. Small scattered brick fragments are the only historical debris evident in the horizon.

3. 90-100 cm below datum - This level is again a grayish brown clay. It is sterile except for the presence of a few fine bits of brick.

Figure III-13. Test Area 2, profile of Grid A32, N25.

Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA #2, CHALMETTE UNIT



Stratigraphic Observations

The stratigraphic profile exposed in this trench is almost identical to the ones found in the other two trenches. Nothing in this profile indicated the presence of archeologically important strata.

General Observations

The test excavations in Test Area 2 yielded no signs of a former battery or any other historic feature. The upper 60 to 70 cm of soil in the tests produced a random scatter of artifacts and brick fragments. Most of these were found in the topsoil, but some were also encountered in the silty clay loam. Many of the lower artifacts probably originated as surface debris that subsequently worked down soil cracks and old root channels.

After excavation of the tests began, it was learned that the initial magnetometer readings for Block 6 were false. The second magnetometer survey of the block produced no C-shaped anomaly in the area of the surface depression. In fact, the vicinity of the surface depression can be best described as magnetically flat.

Subsequent examination of a 1938 photograph (Appleman 1938: Figure 4) of this part of the park unit gave a clue to the origin of the surface depression. The photograph shows a large pecan tree located in what appears to be the present area of the depression, one of a row of pecan trees that once lined the Rodriguez Canal in this sector. It would therefore seem probable that this intriguing depression is little more than an artifact of tree removal. The numerous decayed roots and former root channels encountered in the course of the test excavations tend to support this explanation.

There was no stratigraphic evidence of a former hole for the removal of a tree. Perhaps the hole was small or the stump was simply pulled or pushed out with heavy machinery. The subrectangular plan of the surface depression does bear a resemblance to a short, shallow bulldozer swath.

Test Area 3

Introduction

The group of test pits and test trenches that was dug in Test Area 3 proved to be the most important series in the entire research effort (Map III-3). This area was chosen for investigation after the excavations in Test Area 1 failed to reveal any signs of an archeological feature that would suggest the presence of a former gun-battery position.

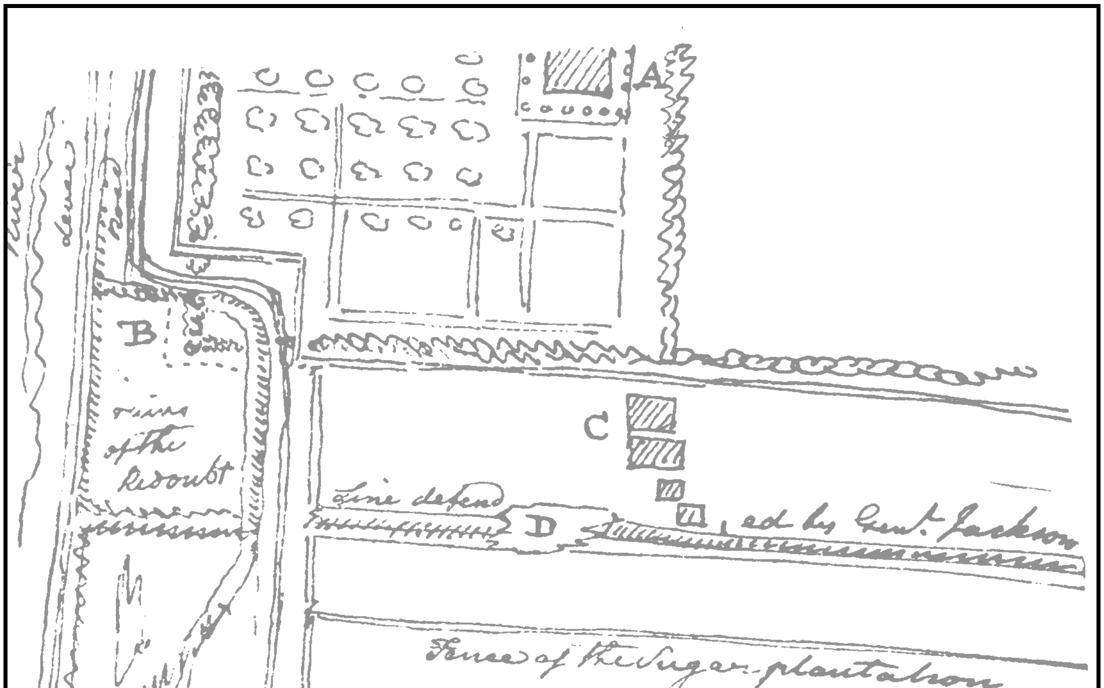
The reasons for testing this particular location were neither complex nor mysterious. The excavation team simply decided to ignore both the magnetic contours and subtle changes in the surface topography as potential clues and place full trust in Benjamin Latrobe's 1819 sketch (Figures III-4, III-5) of the abandoned and dismantled battery, a sketch which Latrobe claimed was a "very accurate" view of this battle feature (Latrobe 1951:74). Latrobe, it must be emphasized, was not just another artist, but a man of uncommon ability who is ranked among the most notable architects and engineers of his age (Carter 1985:9-14).

To replicate Latrobe's perspective more exactly, we placed upright shovels in the southwest and southeast corners of the Rodriguez House foundations. We then crossed the canal and headed in an east-southeast direction in order to closely duplicate the 30°-60° perspective Latrobe had used in his sketch of the house. At a point 30 m (98.5 ft) from the canal we stopped, for we knew from a notation at the top of Latrobe's sketch that he had drawn the view from a fence that had run parallel to and east of the Rodriguez Canal at the time of his visit. Latrobe's sketch map of the southwest portion of the battlefield showed that this fence had been situated 30 (98.5 ft) to 36 m (118.1 ft) from the east bank of the canal (Figure III-14).

In Latrobe's sketch of the Rodriguez House complex and the adjacent pond and gap that marked the abandoned battery, the southwest and southeast corners of the main house were placed at the end of a line of sight that ran through the approximate center of the gap. Thus, we assumed that the archeological remains of Battery 3 must be positioned along this line of sight on the west bank of the present Rodriguez Canal.

Figure III-14. This sketch map from Benjamin Henry Latrobe's *Journals* (IV, February 16-26, 1819, p. 19 [Image MS2009]) shows the southwest corner of the New Orleans Battlefield as it appeared in 1819. The large "D" marks the "pond and a Gap" in the American line that occupies the former position of Battery 3. Note how the levee road makes a jog around the former area of the American redoubt and the south end of the American line.

Courtesy of The Maryland Historical Society.



Field of Battle. —

A Mr. Montgomery's house, Head quarters

B. Ruins of the Redoubt of the right wing

C. Rodriguez, now Mr. Prevost

D. Place of the battery erected on the 26 by Henry Latrobe. — Genl. Jackson in many conversations, + Latour in his history of Louisiana, & Mr. Ascto who was on the spot also, have stated that my Son ex[illegible] with me, & bited in the erection of this battery, in the open field almost, a degree of cool courage & presence of mind which would have done honor to an o[illegible] soldier, the [illegible] only, [illegible] it is equally worthy of remark, that the g[illegible] [illegible] no one wounded around him [illegible]

At the completion of this exercise in perspective replication, we immediately dug an auger test at the projected location of Battery 3. This auger hole yielded tantalizing results. Beneath the topsoil was a 25 m thick layer of tan, sterile sand. This sand was identical to the sand fill that had been found in association with the asphalt path construction 18 m (59 ft) to the south in Test Area 1. What was striking here, however, was its depth. The sand was 15 cm thicker than any observed occurrence in Test Area 1. It was obvious that the sand had been used to fill some kind of surface depression or swale in the bank that would have altered the relatively level approach of the National Park Service walking path.

Subsequent to the auger test, a series of meter grids running from east to west, from A34, N85 to A44.5, N85, were laid out (Figure III-15). The idea was to approach the target feature from the west by following the top of the dark gray clay layer that was assumed to be a natural soil horizon in this sector. Any continuous and noticeable drop in the elevation of the surface of this layer would indicate that we were approaching the western edge of the filled-in hole we thought would mark Battery 3.

A second series of grids was also opened up 5 m to the north of the first series (Figure III-7). This grouping of six 1 m grids was defined on the northwest by A38, N92 and on the southeast by A41, N90. This grid series was laid out to explore a small, oblong magnetic anomaly that occurred at this location.

Removal of the 10 to 12 cm of topsoil in the southern trench revealed only one feature between Grids A34, N85 and A42, N85. This was a section of the shallow path-side ditch that had already been encountered in the excavations in Test Area 1. It measured 30 cm in width and had been dug 7 cm into the dark gray clay that underlay the topsoil. As in Test Area 1, the tan, clean sand associated with the pathway construction began on the ditch’s east side.

This ditch segment contained a dark brown trash fill and produced an expended shotgun shell casing from near its bottom. Its east edge was located at A41, N84, and from the ditch segment’s position relative to the one in Test Area 1, it was apparent that this ditch ran roughly parallel to the present pathway. More than likely, the ditch had been cut to drain water away from the path.

A second feature emerged at the base of the topsoil horizon in the northern grid grouping. This consisted of a small concentration of yellow pebbles that measured 30 by 45 cm. The top of the pebble deposit was 17 cm below ground surface. Again, this probably represented a recent feature, perhaps debris from the construction of the nearby path. It was located immediately east of A40, N91.

In the linear grid series to the south, the tan sand level under the topsoil became increasingly thicker east of A41, N85. At the west edge of the pathway, or A43.5, N85, it reached a maximum thickness of 27 cm. Further excavation showed that this sterile sand rested on an eastward-dipping, dark trashy layer of silty clay. Between A43.5 and A44.5, the top of the silty clay exhibited two parallel oblong indentations. Close examination of these depressions soon revealed that these were no more than the impressions of two side-by-side tires, most likely left by a heavy truck with dual rear wheels—perhaps the dump truck that had delivered the sand some twenty-five years earlier.

Excavation was then continued through the trashy silty clay into an underlying gray silty clay loam. Further excavation in this layer soon revealed the tops of several cypress palings. These formed a line with an orientation to the north-northeast.

To follow the palings, a new meter-wide trench was staked out to the north. This ran 6 m from A42.5, N85 to A42.5, N91. As more features came to light, including a second line of palings, this trench was eventually extended westward and connected to the original group of northerly exploratory grids (Figure III-15). With certain exceptions, largely confined to the first 30 cm below ground surface, excavation proceeded by means of natural levels. Most of the fill was removed by careful troweling. Screening was attempted at intervals, but the constant rains combined with the gummy nature of the soils made this a nearly impossible task.

Because the formal excavations extended below the water table to a maximum depth of 75 cm below ground surface, a four-horsepower pump was a constant companion to the work (Figure III-16). A gradually sloping sump trench was dug along the east wall of the north-south trench to facilitate the pumping effort. At its southern end, this sump trench reached a depth of 115 cm below ground surface.

Figure III-15. Test Area 3, plan view of the test excavations.

Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA # 3
CHALMETTE UNIT

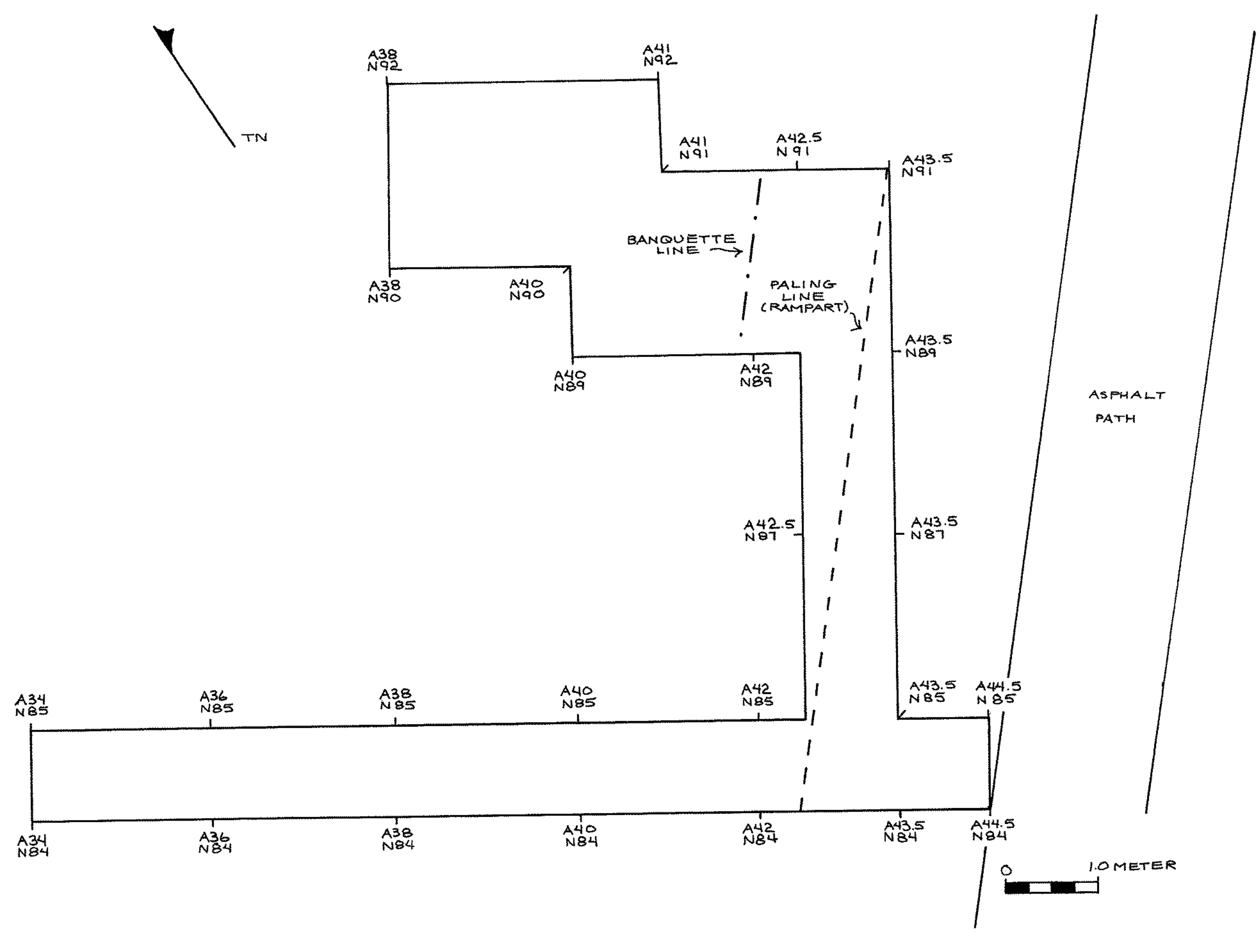


Figure III-16. Mike Comardelle of the Louisiana Archeological Society in the main trench of Test Area 3. Note the hose at his feet leading to the pump. The small wooden flagpoles mark the paling positions along the rear of the American parapet. The view is to the south-southwest.

Photograph by Ted Birkedal, National Park Service.

The pages that follow further document and interpret the findings in Test Area 3. The tests at this location encountered a hole or "gap" in the west bank of the Rodriguez Canal that conformed closely to the type of feature that was expected to mark the former location of Battery 3. Nothing in the surface topography of the area indicated the presence of this feature because the builders of the National Park Service pathway in the late 1950s had viewed the remnant swale as an impasse to the construction of a level walkway. Consequently, they had gone to great efforts to obliterate the telltale swale by filling it with clean levee sand. Their efforts were in vain, however, for it was the depth of this sand fill that provided the first substantive archeological clue in the search for Battery 3.

The Stratigraphy of the South Profile

This section documents the stratigraphy exposed in a 2.5 m section of the south wall of the southern east-west trench, between A41, N84 and A43.5, N84 (Figures III-15, III-17).

Stratigraphic Description

(Datum: 17 cm above ground surface, 2.5 m above MSL)

1. 17-30 cm below datum - This level is a dark grayish brown silty clay loam topsoil. It contains grass roots and soft red brick fragments. It averages 10 cm in thickness.

2. 30-55 cm below datum - This next stratum is a tan sterile levee sand that has been obviously added to the original soil sequence to provide a level base for the National Park Service walkway. It displays a maximum thickness of 27 cm on the eastern end of the profile; on the west, it becomes increasingly thinner and plays out as it approaches A41, N84.

3. 55-60 cm below datum - Stratum 3 is a dark grayish brown to dark gray silty clay (Soil Sample 3 in Appendix B). This level has a high artifact content and has the appearance of a trash deposit. It averages 5 cm in thickness, but in places it reaches a maximum thickness of 8 cm. On the west side of the profile, it is somewhat indistinct and emerges from the top of the underlying dark gray clay. In the first 1.5 m, from west to east, it drops a total of 28 cm before leveling out. The upper 2 cm of the stratum is dark grayish brown, the lower part is dark gray. However, there is no sharp break in color: The shift is gradual.

4. 32-92 cm below datum - Stratum 4 (western two-thirds of profile) is relatively sterile. It is a gray to dark gray clay with fine brown mottles. Its top surface follows a gradual slope toward the cypress paling line. The stratum ends abruptly 4 to 5 cm west of this line.

5. 60-80 cm below datum - This soil horizon (Stratum 5) is a gray silty clay loam with brown mottles. It contains a high number of artifacts and a sizable quantity of soft red brick fragments. It begins as a narrow lens in the west half of the profile where it emerges between Strata 3 and 4.

6. 80-92 cm below datum - Stratum 6 only occurs to the east of the cypress paling line. It consists of a gray silty clay loam that is very similar to that found in Stratum 5. The only clear difference is that this level exhibits light gray pockets and streaks that indicate a higher water content. The break between Stratum 5 and Stratum 6 is somewhat indistinct and appears irregular. Small brick fragments occur in this level, but the overall artifact content is relatively low.

Figure III-17. Test Area 3, south profile.

Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA #3 CHALMETTE UNIT

SOUTH PROFILE

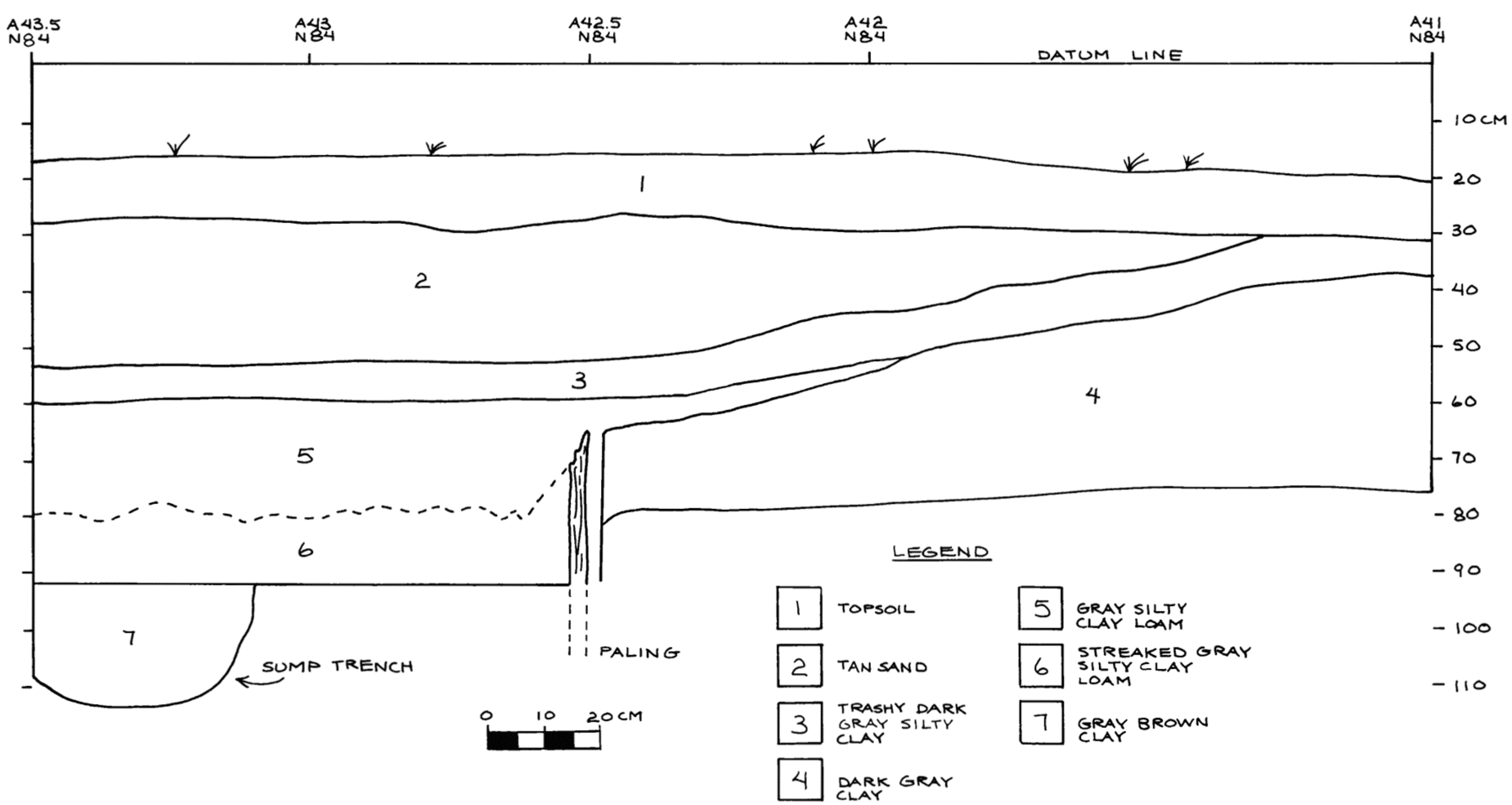
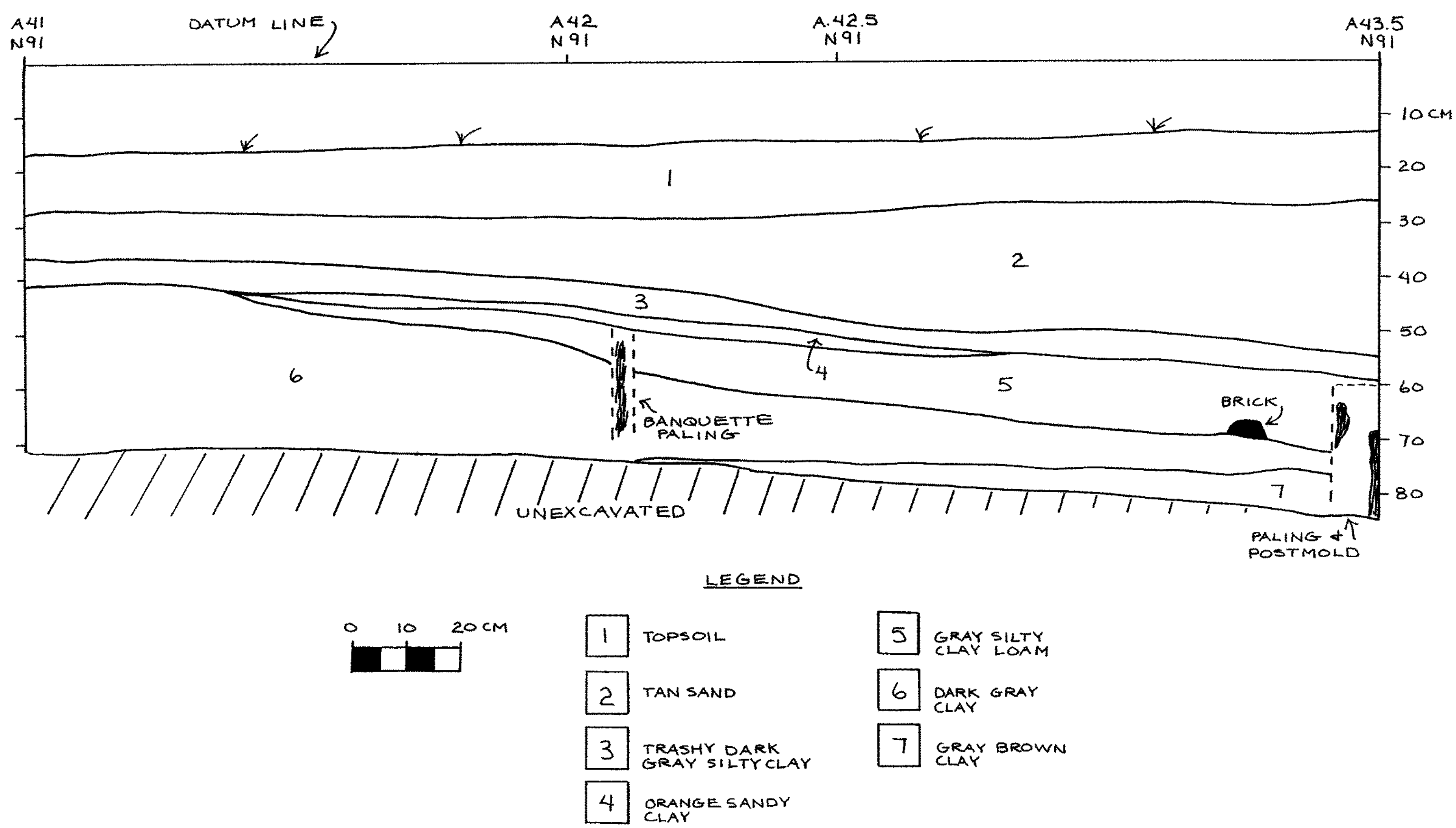


Figure III-18. Test Area 3, north profile.

Drawn by Lyndi Hubbell for the National Park Service.

TEST AREA #3, CHALMETTE UNIT
NORTH PROFILE



7. 92-115 cm below datum - This level was only exposed in the sump trench. The stratum is a gray brown (mottled) clay. It contains a few scattered brick flecks, but is comparatively free of artifacts. The lowest depth given for this horizon represents no more than the lowest depth of excavation.

The Stratigraphy of the North Profile

The north profile in Test Area 3 is very similar to the south profile wall (Figure III-18). There are a few differences, but these are minor. The basic sequence is the same and this is described below. The profile spans the 2.5 m between A41, N91 and A43.5, N91.

Stratigraphic Description

(Datum: 14 cm above ground surface, 2.4 m above MSL)

1. 14-25 cm below datum - The first stratum is a dark grayish brown silty clay loam topsoil. This topsoil displays an average thickness of 13 cm. It contains scattered small brick fragments and grass roots.

2. 25-55 cm below datum - As in the south profile, a thick layer of tan sterile levee sand follows the topsoil. It is less than 10 cm thick on the west and expands to a maximum thickness of 30 cm on the east edge of the profile wall.

3. 55-59 cm below datum - This thin eastward-dipping level is identical to Stratum 3 in the south profile. It never exceeds 6 cm in thickness and is comprised of silty clay. The level grades from dark grayish brown at the top to dark gray at the bottom. Small brick fragments and artifacts are common.

4. 52-55 cm below datum - Stratum 4, an orange sandy clay, only occupies the middle portion of the profile. It is 140 cm in length and pinches out at both ends. The maximum thickness exhibited by the level is 3 cm. The lens's orange color and sandy texture is produced by a high density of small bits of soft red brick.

5. 59-74 cm below datum - This stratum corresponds to Stratum 5 in the south profile. It consists of mottled gray silty clay loam. The layer begins as a thin lens 40 cm east of A41, N91 and slopes gradually to the east. It contains numerous fragments and chunks of soft red brick. The artifact content is also high.

6. 42-75 cm below datum - Stratum 6 appears to be a natural soil horizon of dark gray clay. Its upper surface slopes down toward the east and, at the same time, the stratum narrows from 33 cm in thickness to 4 cm in thickness. The eastern edge of the level abuts with a cypress paling postmold. It contains a few brick flecks and fragments. The lower part of the stratum is essentially sterile.

7. 75-85 cm below datum - The last stratum of the exposed sequence consists of a gray brown clay. It is identical to Stratum 7 found in the south profile. This soil horizon appears to be a naturally occurring soil. Its upper surface is relatively level. With the exception of a few brick fragments, the horizon is sterile.

The Stratigraphy of the West Profile

The west profile wall spans the majority of the distance between the south and north stratigraphic profiles. It starts on the south at A42.5, N85 and ends on the north at A42.5, N89 (Figures III-15, III-19). This 4-meter stratigraphic section cuts perpendicularly across the same strata that have been described earlier. Here the strata are viewed face on, rather than from the side. The resultant profile appears more static, but it is nonetheless informative.

Stratigraphic Description

(Datum: 15 cm above ground surface, 2.4 m above MSL)

1. 15-25 cm below datum - The first stratum is a dark grayish brown silty clay loam topsoil. It contains scattered fragments of soft red brick.

2. 25-52 cm below datum - This is the same tan, sterile levee sand that dominates the south and north profiles. The sand is 27 cm thick on the south end of the profile; on the north end, it decreases to a thickness of 21 cm.

3. 52-63 cm below datum - This trashy, artifact-bearing level correlates with what is designated Stratum 3 in both the north and south profiles. It is a dark grayish brown to dark gray silty clay. The first 2 to 3 cm of the horizon is darker than the lower part. In depth, the stratum rises 9 cm from the south to north on the 4 m profile wall.

4. 63-70 cm below datum - Stratum 4 is a gray mottled silty clay loam. It corresponds to Stratum 5 in the south and north profiles. Artifacts and fragments of soft red brick are common in this level. The base of this level varies between 70 cm below datum on the south to 64 cm below datum on the north.