AN ARCHAEOLOGICAL AND HISTORICAL INVESTIGATION OF THE BATTLE PARK PAVILION SITE (31OR639) ON THE CAMPUS OF THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

by

Andrius Valiunas

R. P. Stephen Davis, Jr.
Principal Investigator

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ABSTRACT

At the request of the North Carolina Botanical Garden, the Research Laboratories of Archaeology conducted an archaeological and historical investigation of the Battle Park Pavilion site (31OR639, RLA-Or468), located on the campus of the University of North Carolina at Chapel Hill. This investigation was undertaken as two separate projects between February and November, 2012, and its purpose was to evaluate the site's archaeological significance and make recommendations as to the suitability for constructing an educational pavilion there. The site contains ruins, constructed of stone, concrete, and brick, of a sewage disposal facility (1921–1928) and a recreational pavilion (1933–1943). It also contains intact archaeological deposits attributable to both site uses. Initial field reconnaissance and limited test excavations also suggested the possible presence of pre-twentieth century site use, represented by some of the stone foundation ruins. A second phase of investigation extensively documented the physical remains of the site, conducted a thorough study of available archival information related to the site, and determined that all of the archaeological remains at the site can be attributed to the two twentieth-century site uses mentioned above.

It is argued that these activities represented by the Battle Park Pavilion site are historically noteworthy within the narrative of the University's and Chapel Hill's development in the first half of the twentieth century, and as such may be regarded as significant at the local level. The archaeological remains of the sewage disposal plant are both remarkably intact and exceptionally well documented, and they represent an important innovation in waste management as the town and University entered a period of unprecedented growth during the 1920s. The remains of the recreational pavilion are much less well preserved, but they too speak to important issues of town-gown cooperation and the University's service to the community through its recreational resources.

Because of these qualities, it is recommended that any future site use be designed to minimize its impact on the site's archaeological resources. It educational value and the story it has to tell, if properly interpreted for visitors to Battle Park, are important. As a standing ruin beside a well-used foot trail, it attracts attention and affords an excellent educational opportunity to educate visitors about earlier land uses within Battle Park and the broader developmental history of the University and Town of Chapel Hill.

ACKNOWLEDGMENTS

On behalf of the individuals involved in the writing of this report, thanks are given to notable parties that were of exceptional assistance. Gratitude is extended to Stephen Keith of the North Carolina Botanical Garden and the dedicated Battle Park volunteers for their efforts in making the site more accessible to our research. Further, the helpfulness of OWASA engineer John Kiviniemi must be commended, as his expertise was a great benefit to the detail of this report and understanding of the site. Finally, Jay Gaidmore, Matt Turi, Sarah Bost, Jason Tomberlin and their associated staff at the University Archives and North Carolina Collection of the University of North Carolina at Chapel Hill were indispensable. Their tireless work supported many new findings and helped made this report as comprehensive as it is. We also wish to thank Wendy Hillis, Jill Coleman, and Paula Davis of the UNC Facilities Planning Department, and Dolores Hall and Susan Myers of the North Carolina Office of State Archaeology for their continual assistance with information and advice as the project developed.

Initial reconnaissance and testing was performed by Steve Davis, Brett Riggs, and Andy Valiunas; all other field work was undertaken by Steve Davis and Andy Valiunas.

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Chapter 1
INTRODUCTION

The purpose of this report is to present and interpret the results of archaeological field investigations and historical documentary research into site 31OR639 (RLA-OR468), also known as the Battle Park Pavilion site. This site contains the ruins of dry-laid stone, brick, and concrete structural elements associated with a sewage treatment facility and later recreational pavilion dating from the early 1920s to the mid-1940s. It is situated near the northwestern edge of Battle Park, a mostly undeveloped wooded tract on the campus of The University of North Carolina at Chapel Hill. The Battle Park Pavilion site and surrounding park area are currently under the care of the North Carolina Botanical Garden (NCBG). The NCBG, wishing to undertake a construction project at or near the site proper, consulted with the Research Laboratories of Archaeology at UNC to investigate the historical significance of the site and to provide recommendations for potential site mitigation and use. These investigations were undertaken in two phases between February and November, 2012, and involved field reconnaissance, archaeological testing, detailed site mapping, photo-documentation, and archival research.

Despite the site's close proximity to the University campus proper and relative ease of access, it is mostly unknown to most of the University and town populations. This unfamiliarity is even more prevalent for the site's corresponding historical background, which starting less than a mere century ago, has all but faded from memory and local town and university histories.

Within the Chapel Hill town setting, the Battle Park Pavilion site lies about 241 meters (.15 miles) south of East Franklin Street and 193 meters (.12 miles) southeast of the southeastern corner of the Park Place parking lot and bend in the Park Place road (UTM: zone 17, easting 67685, northing 3976291 [WGS84]) (Figure 1). It is situated within Battle Park, and the site, with its abandoned ruins, is the most noticeable break in the natural wooded landscape of the park. The site's altered landscape is made more noticeable when factoring in the grander context of Battle Park as a whole. This natural area was formally established by a resolution of the University Board of Trustees on February 19, 1951, to be used for park purposes only (Board of Trustees 1951). Consistent with this resolution, in 1971 the park was nominated and subsequently listed in the National Register of Historic Places as a contributing component of the Chapel Hill Historic District (Wells 1971:12).

The Battle Park Pavilion site is situated along the valley slope of Battle Branch Creek, which lies immediately to the south. The site's northern edge is bounded by an OWASA (Orange Water and Sewer Authority) easement and trail, the primary means of access to the site for both pedestrians and maintenance vehicles. Figure 2 shows the site's location relative to modern recreational trails, with the OWASA access road as the main east-west thoroughfare through Battle Park and to the Battle Park Pavilion site.

The archaeological components, features, and immediate area around the site comprise roughly 1,200 square meters (i.e., about 40 m by 30 m). Even before the extensive clearing of brush and vegetation debris by park workers and volunteers, undertaken between February and October of 2012, many of the site's stone, brick, and concrete structural elements were visible above ground. However, unknown at the time of the first investigation and well into the second,

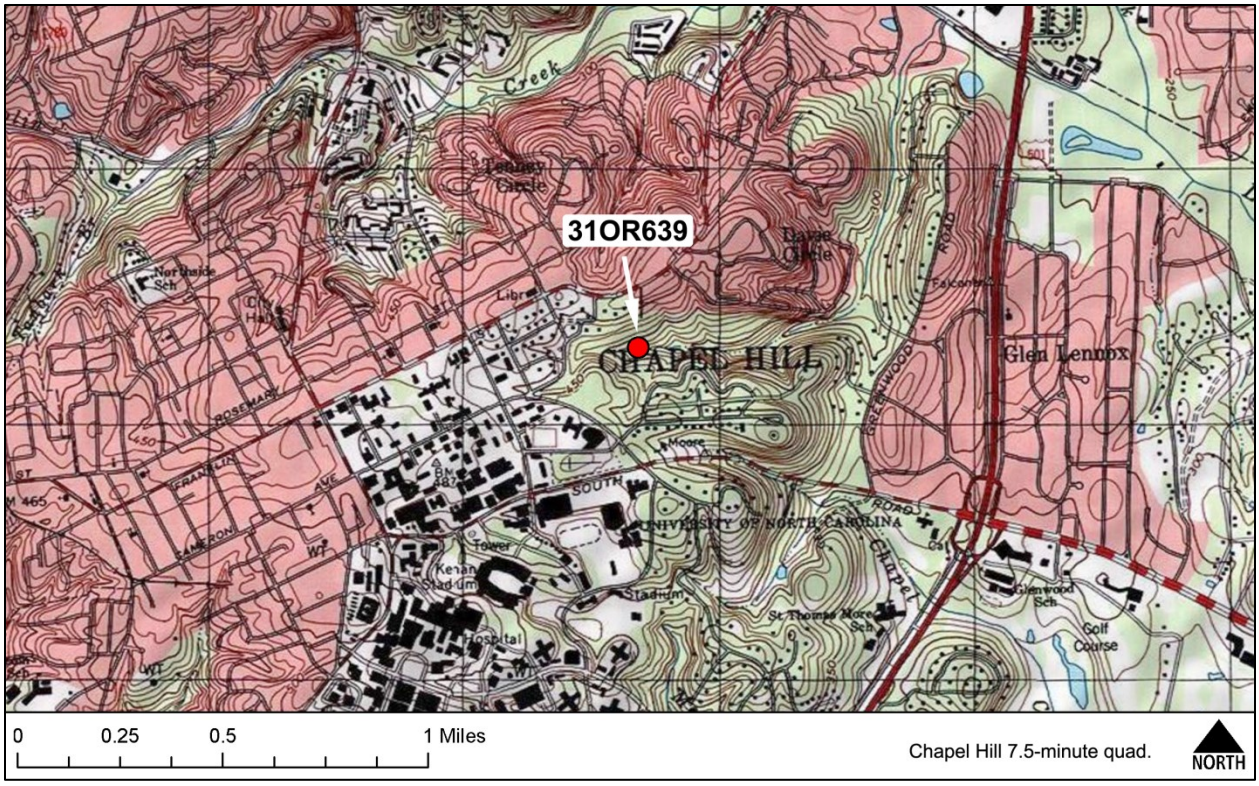

Figure 1. Section of Chapel Hill 7.5-minute USGS quadrangle showing the location of the Battle Park Pavilion site (31OR639).

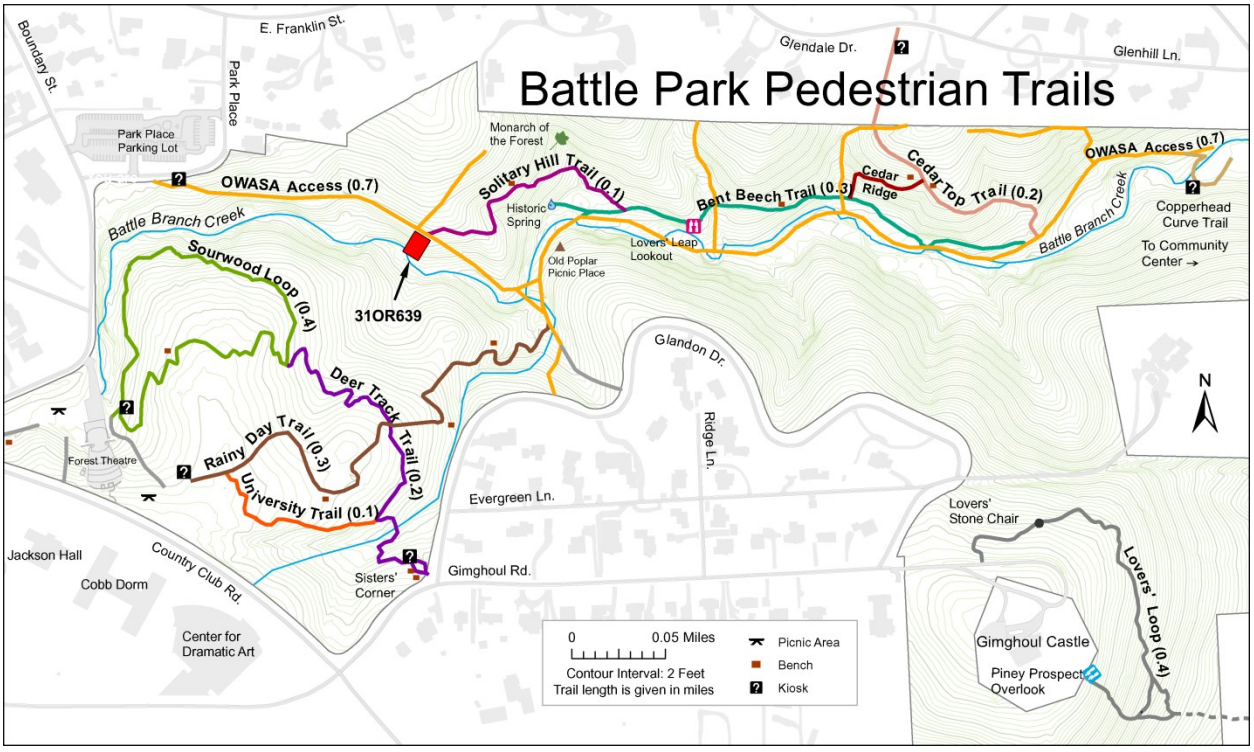

Figure 2. Map of Battle Park showing the location of the Battle Park Pavilion site (31OR639) along Battle Branch Creek (North Carolina Botanical Garden 2010).

nearly all of the features and structures that had survived from either the sewage disposal plant or the recreational pavilion were still intact and largely visible to the naked eye.

Initial archaeological field investigation, consisting of site inspection and limited test excavations, took place on February 15, 2012. A report of that work was submitted to Ms. Wendy Hillis of UNC Facilities Planning and Mr. Stephen Keith of NCBG (Davis 2012) and is included as Appendix 1 in this report. Following this first episode of archaeological and visual exploration of the site, the aforementioned visible features and structures were grouped into six components representing activities at the site that potentially extended earlier than the twentieth century (Davis 2012:1).

Aside from the remains clearly attributable to the sewage treatment facility and pavilion, other stone ruins and landscape features suggested the possible presence of much earlier activities at the site during the nineteenth and perhaps late eighteenth centuries. This was suggested by the juxtaposition of dry-laid rock construction underlying the poured concrete structures clearly associated with the sewage system. The positioning and what seemed to be the relatively older characteristics of the dry-laid rock features, in association with the adjacent watercourse, suggested the possible existence of a mill at this location.

Given this possibility, a more detailed archaeological and historical investigation of the Battle Park Pavilion site was recommended. As proposed, initial work would focus on thoroughly documenting the site through systematic photography and fine-scale planimetric and topographic mapping using a total station. This process would be coupled with exposing foundations and features by way of removing vegetation, overlying deposited soil/humus, and collapsed portions of the rock foundations. It also was recommended that more excavation units be dug in order to document potentially early construction events and recover temporally diagnostic artifacts associated with these events.

In addition to the proposed field investigations and documentation, further archival research was recommended to seek out documents related to hypothesized earlier activities at the site. This two-pronged approach of field and archival investigation led to a much quicker resolution of the hypothesis for the existence of pre-twentieth-century components, and it allowed much of the proposed fieldwork to either be adapted or foregone altogether.

While the grouping of the visible site features into construction episodes remained mostly intact (see Appendix 1), certain structural elements at the site were re-interpreted, and all of the site's structural components were ultimately attributed to just two episodes: the construction of a sewage disposal plant in 1921 and the subsequent construction of a recreational pavilion in 1933. These two facilities, and their use, account for the entirety of the archaeological record at the Battle Park Pavilion site.

So, despite the lack of fruition in terms of discovering an earlier cultural component, the research was an overwhelming success in that it: (1) achieved a complete documentation of the site's landscape and physical features/structures; (2) identified a nearly contiguous sequence of construction episodes; and (3) provided a fairly full and fluid historical narrative of the site and its associated people, places, and events. Furthermore, insight was garnered into the functional processes of both the sewage treatment plant and the recreational pavilion. This is particularly so in the case of the disposal plant, which greatly added to our understanding of this site as well as other early inceptions of septic tank systems on both a local as well as regional level.

Chapter 2

INITIAL FIELD RESEARCH AND INTERPRETATIONS

Before delving into the history of the Battle Pavilion site, a brief description of the site's features and physical characteristics is provided in order to give the reader a better context for the ensuing discussion. This description is oriented around the preliminary interpretations that were reached following initial field reconnaissance and archaeological testing, which were undertaken on February 15, 2012. The work carried out included a visual inspection of the general site and the visible, above-ground features. This was followed by the excavation of three 50x50-cm test units in areas thought to have a high probability of containing temporally diagnostic artifacts.

Initial background information on the site, provided by Giencke et al. (2010), allowed for the relatively straightforward identification of many of the visible archaeological features, and basic familiarity with the existence of the sewage disposal plant and recreational pavilion allowed for the organization of those features into components. As used here, *component* refers to a collection of site features that can be associated with a particular activity or phase of construction. These component designations were based on the relative sequence of construction episodes identified at the site, coupled with their physical characteristics. Certainly, the most significant aspect of the site, in terms of allocation of site features to sequential components, was the juxtaposition of poured-concrete versus dry-laid-stone construction methods.

An overwhelming majority of the site's archaeological features are above ground or immediately beneath the surface. The labeled contour map, shown in Figure 3, will be used in contextualizing the various archaeological features and the preliminary hypotheses that were proposed to explain them. As mentioned, the contrast of construction materials and styles quickly split the site into two general realms. Features constructed of poured concrete were attributed to the 1920s sewage disposal plant, while those of stone construction were divided into other, potentially earlier components. A total of six construction episode-based components were documented, and each of these is discussed below.

Component 1

During initial reconnaissance of the site, a linear depression in the ground was identified, originating on the south valley slope of Battle Branch Creek and crossing over at the southwestern corner of the site before joining up with a similar feature north of the OWASA easement. The characteristics of the feature suggested it was a road trace. The trace was quite faint, heavily washed out, and substantially overgrown. These signs gave the impression that the road was considerably longstanding and a potential predecessor to the sewage plant component, which at the time of investigation was the oldest dated entity at the site.

Component 2

Roughly parallel to the creek bank, a rectangular depression accentuated by what appeared to be foundation ruins was noted and designated as a possible building (Figures 4 and 5). The northern foundation was the most intact and looked as if it were a naturally retrofitted

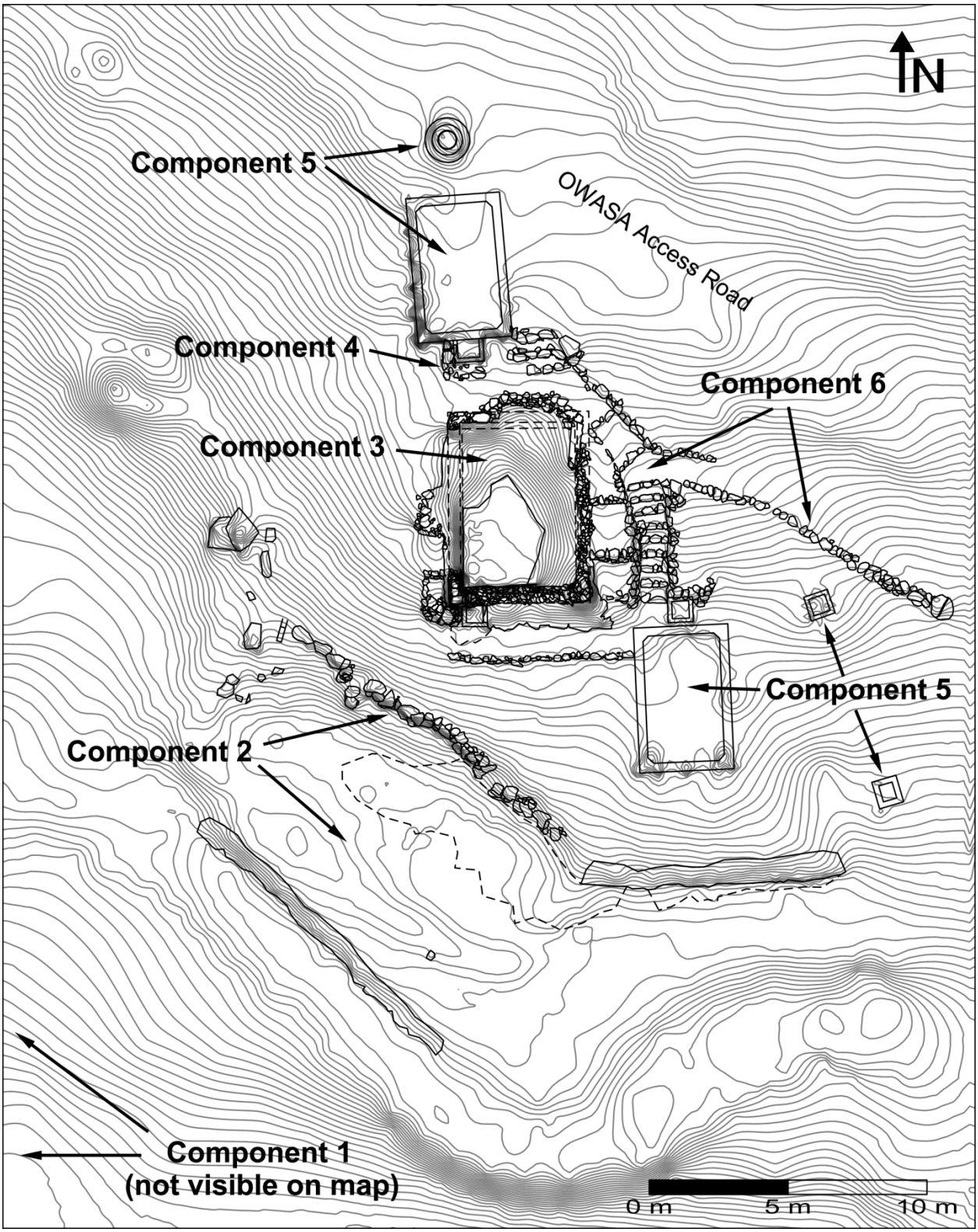

Figure 3. Contour map (at 10 cm interval) of the Battle Park Pavilion site, showing site components and other identified cultural features.

Figure 4. View of Component 2. The stacked stone retaining wall and northern edge of the sludge bed runs midway across the image. Halfway across from the left, the wall is collapsed into the sludge bed basin. Photograph taken from bank of Battle Branch Creek, facing north.

Figure 5. View of Component 2. Partially intact stacked stone retaining wall present in the bank of Battle Branch Creek directly south of sludge bed. Photograph taken from southern bank of creek, facing approximately east.

retaining wall. It was speculated that the northern wall of the postulated building had managed to remain somewhat intact, and due to its downslope position served as a makeshift catch for soil run-off and erosion further upslope, creating what at appeared like a retaining wall (Davis 2012:2). The eastern and western foundation edges appeared to be in worse shape, mostly crumbled and robbed of their stone. The southern foundational wall was identifiable only as a raised linear berm of earth, where it was thought the basal foundation stones had been covered up by sedimentary deposition. Without additional investigation and based on the timeworn physical appearance of the foundational rocks, the proposed building was hypothesized to be significantly older than the sewage disposal plant. If this was in fact the case, then it seemed possible that the building could predate the University, since there was no mention of it in the 1793–1794 Trustees' minutes regarding the purchase of the property from Hardy Morgan (see Connor 1953:257). Given its location aside Battle Branch Creek, it was tentatively interpreted as a possible mill ruin; however, as will be shown later, the Component 2 structure is actually the remains of a sludge bed for the sewage disposal plant.

Component 3

A partially above-ground, rectangular, dry-laid stone structure, located at the center of the site, was interpreted as a building foundation, most of which had collapsed into its own cellar (Figures 6 and 7). Based on *in situ* corners and edges, the foundation dimensions, measured along the outer edges, are approximately 22.4 ft north-south by 16.6 ft east-west. The cellar floor was filled in and obscured with rock rubble. Sizable slabs of concrete were also present inside the rubble-filled foundation, and these were interpreted as debris that had been tossed in following the plant or pavilion construction episodes. The contrast of the poured concrete structures alongside the dry-laid stone construction suggested that the stone foundation predated the 1920s. And, it was suggested that the stone foundation might post-date Component 2. If the northern wall of the Component 2 structure acted as a barrier, catching upslope sediment runoff, then it would have aided in the formation of the terrace into which the Component 3 foundations and cellar were dug (Davis 2012:2). Further differentiating this structure from other site elements that could be directly attributed to the sewage disposal plant was its obvious deviation from the grid orientation on which the concrete structures were aligned. Further archival research and testing determined that this structure likely was built circa 1920 as a cesspool, and it was subsequently incorporated into the sewage disposal plant and used as a trickling filter.

Component 4

Just north of Component 3, another possible stone foundation remnant was noted. Component 4 is a roughly linear line of exposed rocks, the western end of which appears to corner and run underneath and into poured concrete structures (Figure 8). A small concrete box was poured directly onto this apparent corner, unmistakably defining the construction sequence. Also, the orientation of the linear rock feature was aligned with that of Component 3, suggesting a possible relationship between the two. The presence of a corner, the alignment, and the linear form of the rocks originally gave rise to the idea that this might be another foundation remnant, the majority of which had been destroyed by the construction of the large concrete tank directly to the north.

Figure 6. View of Component 3, taken from northern (upper) concrete tank facing south. Photographed in February 2012, prior to removal of the collapsed stone debris overlying the structure's floor. The southern (lower) concrete tank, part of Component 5, is visible in the top left of background.

Figure 7. View of Component 3, taken from the northern (upper) concrete tank facing south. Photographed in October 2012, after the removal of the collapsed stone debris overlying the structure's floor. The southern (lower) concrete tank, part of Component 5 and partially filled in with concrete slabs, is visible in the top left of background.

Figure 8. View of the western end of Component 4, lying beneath the small concrete junction box poured against the southern edge of the upper concrete tank (Component 5). View to northeast.

Component 5

This construction episode was easily defined and consists of all the structures and features made of poured concrete. It also includes a small box built of brick at the east edge of the site. Based on information provided by Giencke et al. (2010), these structures were identified as the remnants of the sewage disposal plant built in 1921. Those remnants include a brick-and-concrete manhole, two large concrete tanks, and five square boxes (four made of concrete and one of brick) (Figures 9–12). The large tanks are identical and measure 15 ft 4 inches north to south by 10 ft 4 inches east to west, on the outer edges. The northern tank is filled to the brim with coarse gravel while the southern tank features a floor made of salvaged concrete slabs roughly three feet below the brim of the tank. The filling of both tanks occurred relatively recently. The small concrete boxes are all roughly of the same size, measuring 3 ft by 3 ft on the outer edges, but some only have three sides as they were poured up against existing concrete or stone structures. The single brick box is rectangular at about 3.3 ft north-south and 3.0 ft east-west as could best be determined in its fairly damaged state. The manhole is shaped like an inverted, truncated cone, with approximate diameters of 5.3 ft at the bottom and 2.1 ft at the top.

Although the archaeological remains of the sewage treatment plant were physically well defined, how the plant functioned was less well known. The two large concrete tanks were thought to have served as settling ponds, while the five square boxes were believed to house valves used to regulate the system (Davis 2012:2). Outside of this superficial classification, little else could be determined in terms of function or if and how it was tied to the overall sewerage network of the area.

Figure 9. General view of site, facing northwest from the lower concrete tank (foreground). Other Component 5 elements include the small concrete junction boxes (at bottom right and left, adjacent to Component 4 rubble), and the northern (upper) concrete tank with the total station resting atop it.

Figure 10. South facing view of the brick-and-concrete manhole and upper concrete tank, both elements of Component 5, at the northern edge of the site.

Figure 11. South facing view of southern (lower) concrete tank (Component 5). The small concrete junction box, also part of Component 5, is partially visible at the bottom of the image.

Figure 12. North facing view of the southwestern corner of the large, dry-laid stone structure (Component 4), with a small concrete junction box (Component 5) poured up against its exterior.

Figure 13. North-facing view of stone steps attributed to the Battle Park Pavilion phase of site use (Component 6). To the left of the steps, stone-lined terraces that abut the central stone structure are visible.

Component 6

Component 6 was another set of stone structures recognized in part due to the availability of historical information and their practical contrast to the rest of the site features. These include the dry-laid rock steps running roughly parallel to Component 3, the stonework terracing perpendicular to Component 3, and the stone boundary linings of on-site paths (Figure 13).

Currently, the physical state of what was classified as Component 6 is as follows. There are nine steps nearly parallel to the eastern side of Component 3, and their descent ends flush in alignment with that component's southern edge. Two tiers of small stone wall terracing connect the steps to the external eastern edge of Component 3. The steps themselves are set some depth into the ground and both sides of the stairway are demarcated by low stone retaining walls. On the northern end of these closely grouped steps is a landing with a path leading off to the southeast. The edges of the path are also demarcated with a single line of stones. Above this Y-shaped intersection are two more broad steps before the path leads into the eastern end of the Component 4 linear formation. This edge creates a makeshift step. Immediately north are two more steps which did not exist at the time of the first field investigations; they will be elaborated upon in the discussion of the second phase of field work. An additional stone-lined terrace was constructed along the southwestern edge of Component 3, although it is now in a relatively dilapidated state. Much better preserved is a low retaining wall constructed of a single row of rocks just south of Component 3 and abutting the western edge of the southernmost large concrete tank.

Personal communications with parties that had carried out prior yet only coincidental research efforts about the site provided some limited background information (Stephen Keith

personal communication 2012). Their sources indicated the presence of a recreational pavilion constructed of wood in the 1930s and destroyed by fire in the early 1940s. It was assumed that it was located atop the physical remnants of Component 3. The stone features of Component 6, which were structurally very similar to the preceding stone components, were attributed to the pavilion construction episode for two reasons. First, the placement of these features was clearly made with reference to Components 3 and 5, and this suggested that in the sequence of site development, they likely were constructed after the sewage disposal plant. The stone features comprising Component 6 appeared to have been placed more recently, and they were built right up against the walls of Component 3. Component 6 features also were functionally distinct from other constructions at the site, in that they appeared to have been built for landscaping and aesthetic purposes. It seemed highly unlikely that stone steps and superfluous terracing would have entered the construction plans of a sewage disposal plant.

Additional Observations

Three 50x50-cm exploratory test units were dug in anticipation of recovering artifact samples from lower deposits that might indicate when the site was first occupied. The first one was placed just beyond the western edge of Component 3. Apart from the identification of three relatively uninformative soil zones, this unit produced ample container glass and some oyster shell, before hitting a dead end at 77 cm below depth due to impassible rocks. The second unit was situated just east of the theorized mill building foundations (Component 2) and was intended to reveal deposits typical of construction and use. Excavation was terminated 36 cm below surface due to soil sterility in terms of artifacts and the impeding waterlogged state of the earth, due to proximity of the creek. A stone dressing flake and one piece of container glass were recovered. The last test unit was placed near the southwestern corner of the southern concrete tank, located on the northern side of what would have been the northern wall of Component 2. Placed to sample erosional deposits and materials washed downslope from Component 3, it was excavated to a depth of 75 cm and proved to be the most lucrative unit. The screened soil produced stone dressing flakes, container glass, oyster shell, lithic flakes, and more significantly, a piece of ceramic. All of the recovered artifacts except the ceramic were either attributed to activities associated with the recreational pavilion or had no discernible temporal qualities. The sherd, however, was a lead-glazed coarse earthenware pottery fragment, which potentially could be attributed to the nineteenth century (Davis 2012:4). Nonetheless, this particular ceramic type has a very broad temporal range for manufacture and use that extends into the twentieth century.

While the results from the three test units were by no means conclusive, they did provide tentative support for some of the original hypotheses and suggested that additional testing might help identify the age of the potentially earlier site components.

Chapter 3
HISTORICAL BACKGROUND

Much of the historical information known about the Battle Park Pavilion site prior to February 2012 was based on hearsay and uncertain secondary sources, and it was not well grounded by documentary evidence. As such, part of the documentary research undertaken by this project was focused on parsing out what was really known about the site and its associations, and what was merely unfounded inference. Through this process new facts were collected and old information was verified or refuted. By combining new historical data with detailed documentation of the site's archeological record, most of the uncertainty surrounding the history of the Battle Park Pavilion site was resolved.

Early History of the Site and Battle Park

The Battle Park Pavilion site property is first mentioned, indirectly, in the historical record as part of an 80-acre tract of land sold by Hardy Morgan on July 19, 1793 for 100 pounds to the University's Board of Trustees (Battle 1907:34; Connor 1953:257, 274–275). In November of the previous year Morgan had donated 125 acres, along with several other landholders, to secure the placement of the University at New Hope Chapel Hill (Connor1953:179–180). The additional 80 acres filled a gap in University property that had gone unnoticed when the initial land donations were received.

Present-day Battle Park is contained almost entirely within the original Morgan land parcels. However, throughout the nineteenth century, the University experienced both financial shortcomings for the purposes of expansion as well as unmet debts to both institutional and private parties. One partial solution to these pressures came in the form of selling portions of the undeveloped land surrounding and owned by the University. Accordingly, parts of Battle Park were sold off to private investors, such as the Bank of North Carolina and the social organization known as the Junior Order of the Gimghoul (cited in Giencke et al. 2010:26). Retracing these property boundary shifts reveals that the area containing the Battle Park Pavilion site has not left University hands at any point after its original 1793 acquisition.

Although the site, by its default setting in the woods and then later in a public park, saw passerby cultural contact long before any formal construction, these ephemeral uses left little if any archaeological or historical record. Such contact would have included utilization of the forests for firewood by professors, an alternate partial payment system the University employed in its fledgling days (cited in Giencke et al. 2010:24).

Park Place Neighborhood

The former Park Place neighborhood, now the site of Brooks Hall and a university parking lot, stood almost 200 meters northwest and upslope from the Battle Park Pavilion site. Understanding its history, particularly its inception in the early 1920s, is directly relevant to the history of the Battle Park Pavilion site in that the sewage disposal system there was constructed to serve that neighborhood.

As the University continued to expand through the nineteenth century and into the twentieth century, the acute shortage of housing in Chapel Hill was felt by both established and particularly incoming professors and other faculty members. Around 1920 the University responded with the construction of 10 faculty houses, creating the neighborhood then known as Park Place. This was the "first genuine effort by either town or gown to practically alleviate the mad rush for housing" characteristic of that time (Prouty 1980). It is important to note that the exact start and end dates of the construction of Park Place are as yet undetermined, but documentary evidence provides us with a reliable date range.

Though no records were found detailing the University's decision to create Park Place, a combination of personal accounts and newspaper articles loosely places the start of construction sometime between late 1919 and early 1920. Also fluid is the date that construction was completed, but evidence suggests that individual houses were finished and occupied over a range of time, starting in the fall of 1920 and ending in early 1921.

The first source to help affix this date range is the September 25, 1920, issue of *The Tar Heel* newspaper. An article titled "Cottages for Faculty Completed" and authored anonymously announces that "ten new cottages for the use of the faculty which have been under construction since commencement have been completed and several of them already occupied" (The Tar Heel 1920). The article refers to the construction as having been recently dubbed "Park Place" and accurately identifies its precise location, some structural characteristics, and the original 10 inhabitants. Despite this announcement of completion, it was clearly somewhat premature when personal accounts of some of these original inhabitants are taken into consideration.

In support of the aforementioned date is a report from the University Business Manager Chas T. Woollen, describing material changes in the physical plant of the University. It is important to note that the exact date of the document comes into question since it was originally left undated, but based on contextual clues within, university archivists have deduced and attached to it a date of July 1, 1920. The report claims that "Ten faculty houses are under construction. This work was delayed three month by freight embargoes, but the houses will be ready for occupancy by the opening of the Fall Quarter" (Woollen 1920). Although Park Place is not explicitly named, the number of residences matches, and if the presumed date for the report is correct, then Woollen's stated estimate for completion aligns with the abovementioned newspaper article from *The Tar Heel*.

Following the winter of 1920–1921, W. F. Prouty moved his family, including son Bill, from the old Barbee house into one of the newly constructed houses of Park Place (Prouty 1980). Based on Bill Prouty's recollections, construction on the house was still finishing up as they moved in. Thus, *The Tar Heel* article proclaiming completion is more likely a preemptive notice that the vast majority of the residences were complete, perhaps with finishing touches still being made. The article itself suggests such a state by claiming that only several cottages had been occupied even though all had been spoken for.

This blurred date of completion is made clearer, though only slightly, by accounts of monetary attributions made by the University Business Manager and the Budget Committee on December 11, 1921, for grounds-keeping services for parks, campus greens, and University neighborhoods, including Park Place (Woollen 1921). One would think that a neighborhood would need such services only after the commotion of construction had passed, but as no earlier expense records of this kind were found, it is difficult to say. Also, revenue records from March

31, 1922, show that Park Place was already bringing in money for the University, but given the scarcity of such income files, it is impossible to know when this started (Anonymous 1922).

It is also in 1921 that the North Carolina legislature appropriated funds for the permanent improvement and expansion of the University and its facilities. The legislative act, found in Chapter 165 of the Public Laws of 1921, authorized the building program and issued $1,490,000 in support of this cause (Scott, Charnley, and Company 1922:2). As the funds became available, architect T. C. Atwood was hired on April 16, 1921, as an overall designer and logistic supervisor of the construction program. In turn, the contract for the actual construction was advertised, and T. C. Thompson and Brothers was chosen and signed with on June 17, 1921 (Executive Committee of the Board of Trustees and Building Committee 1921:2).

The construction work for the 1921 Building Program began on July 8, and the daily and monthly building progress reports from both Atwood and Thompson are ample throughout University archives, with few significant blank ranges. These reports, covering every construction activity on and near campus, extend from July 8, 1921, to well into the 1930s. Although references to faculty housing projects are prevalent, these projects all trace back to other neighborhood endeavors, particularly those on Rosemary and Pittsboro streets, and the descriptions of the houses do not match those of the Park Place residences (T. C. Thompson and Brothers 1921). It would seem likely, then, that the start or completion of Park Place would have been referenced, unless that work took place before the first reports of July 1921. This is further supported by a University Building Committee progress report for the year 1921, showing the work done on the Building Program of the university during that year. The comprehensive summary, which names and details every project, including receipts and expenditures, undertaken by either Atwood or Thompson, acknowledges no work on any housing remotely near the Park Place area (University Building Committee 1921).

While this may seem to narrow the possible date range for construction, one should still be wary. If Park Place was initiated before the approval of the state building fund, the University may have contracted with a different organization, and their progress may have been independently provided and thus not mentioned by the official University architect and contractor reports starting on July 1921.

However, there is one source that proves to muddy the logical postulation of the above paragraph. This viable source is an account balance sheet from the University, titled “Balance Improvement Fund Accounts as of September 30, 1924,” itemizing all expenditures made against the received state funds for the 1921 building program. The inclusion of a section called Park Place Fund Balances would suggest that the neighborhood was constructed as part of the state-sponsored building program starting in July 1921. The first entry in the section shows the sale of $82,200 in bonds by the University. The next entry shows an expenditure of $82,128.65 against these received monies for the funding of the Park Place housing development (Anonymous 1924). This ledger is peculiar in that it shows the University raising its own money via bond sales to support the development of Park Place. However, the title of the ledger suggests the construction was sponsored by a state initiative that did not arise until mid-1921 when Park Place was more than likely already completed.

If indeed the University contracted with someone other than Thompson for the purpose of constructing the Park Place neighborhood, then reports of this organization to the University have to yet to be found. Likewise, to the best of current knowledge, the neighborhood seems to have gone up without much planning or discussion, and certainly no fanfare on the part of

individuals and committees associated with University building projects. These parties include the Building Committee, the University Business Manager, and the Faculty Council of University Buildings and Grounds, and abundant records exist in the way of correspondences, minutes, and agendas for all of these groups. These documents, spanning all possible years for the construction of Park Place, consistently make little or no mention of this neighborhood.

Returning to the neighborhood, Park Place itself is fairly well documented, both in structural characteristics and reputation. With its inception, the neighborhood started off with a nickname of "China Town" by the default nature that "the plat had been sort of a dumping ground before the cottages were built" (Prouty 1982). Fortunately, soon after the first residents—a combination of professors, other faculty, and their respective families—moved in, a pattern to the inhabitants emerged. It seems that each of the 10 homes in the housing community averaged two to three children, and soon the reputed "Baby Hollow" became ubiquitous with Park Place (Prouty 1980). As for the actual structures, they were prefabricated kit houses from the Sears and Roebuck catalog, and all 10 were near identical bungalow-style homes (Devins 1984). A University insurance policy coverage list, dating to 1927 or after, describes the houses as "one story, frame, asbestos roof dwellings in Park Place," covering each for eight thousand dollars (Anonymous 1927). Contrary to current popular belief, not all of these dwellings were demolished to make room for Brooks Hall (UNC Press) and the Park Place parking lot. One exemplary house at address 620 Park Place still survives and has been restored and preserved through the efforts of the Chapel Hill Preservation Society (Devins 1984).

The Sewerage Disposal Plant

Regardless of when Park Place was built, it is clear that the building program initiated in 1921 resulted in the first significant construction at the Battle Park Pavilion site. The construction of a sewage disposal plant on the site to serve the Park Place neighborhood is fairly well documented. Initially, according to a schedule of foreseen expenditures adopted on May 9, 1921, the University Building Committee assigned $10,000 for the construction of the sewerage disposal plant (Scott, Charnley, and Company 1922:4). Records for the final cost of the plant have yet to be recovered.

As one of the first projects undertaken with the acquired building funds, construction of the Battle Park sewage plant seems to have begun in July of 1921 and involved both Atwood and Thompson, who provided periodic progress reports for the project. The first "Program Report to the Trustees Building Committee" was submitted by T. C. Atwood on July 8, 1921. The progress report notes that "the Battle creek sewage disposal plant has been partially re-designed and laid out, and construction begun" (Atwood 1921a:2).

This start date is supported by rough pencil drawn schematics found in the University archives (Appendix 2). Included in these are detailed plans for the construction of the poured-concrete septic tanks and their associated molds, dated to July 1, 1921. Perhaps the most informative of these files is an overall schematic diagram created on July 11, detailing the layout of the entire complex, including the central, dry-laid rock "tank". In addition, there are itemized lists for necessary construction materials which were drawn up on July 16, and these could represent either acquired materials, logged expenditures, or usage calculations. At first it seems that the dates on these schematics are in contradiction with the July 8 report made by Atwood, since construction likely would not have started if the plans were not yet finalized. Although an exact explanation is not yet known, there is logical continuity in these primary sources. Perhaps

the schematic designs are the products of the plant re-design that Atwood mentions in his report. In addition, the dates are close to one another, and construction work such as excavation and grading could have started without finalized plans or even a receipt of all the necessary building materials.

On September 7, 1921, T. C. Atwood submitted his third progress report which recounted that the work on the sewage disposal plant "has been carried on with the convicts as laborers, and has been completed with the exception of placing the filtering material in the trickling filter which will take only a few days" (Atwood 1921b:2). Along with Atwood's fourth building program progress report, an approximate date for the completion of the sewerage disposal plant can be determined. This report, dated October 12, 1921, announced that the "sewer disposal plant […] is completed and in service (Atwood 1921c:2). According to these two reports, the Battle Park disposal plant was completed between September 7 and October 12 of 1921, and most likely closer to the beginning of the range than the end, based on the context of the third report, stating that the finishing point was only days away.

The service connection of the sewage disposal plant to the Park Place neighborhood is currently established explicitly in only two primary sources, as well as by physical observation. At the time of the plant's construction, the nearest existing structures requiring sewage disposal services were the residences of Park Place. This is reinforced by Appendix 2B. The manhole (shown at the top of the page), which distributed the waste into the system, has only one permanent connection, veering off in the direction of Park Place. The others are deliberately shown as only possible future connections.

As for primary sources, perhaps none is as overt in connecting the plant to Park Place as a letter from Thorndike Saville, University professor of hydraulic and sanitary engineering, to C. T. Woollen, University Business Manager. Dated November 20, the letter opens with "I wish to call your attention to the disagreeable condition which exists at the sewage treatment plant for Park Place" (Saville 1923). In the letter, Saville discusses how he thinks the plant has gone into disarray, no longer performing as expected due to a lack of upkeep and maintenance, crucial to systems of this kind.

The Function of the Sewerage Disposal Plant

To better understand the construction sequence of the sewage disposal plant and the physical elements that comprise it, it is important to consider the overall theory and practical mechanism by which the plant operated. The following discussion is based on the topical literature about such systems and, more significantly, on an October 31, 2012, interview with Mr. John Kiviniemi, an OWASA engineer and currently manager of treatment and bio-solids recycling efforts.

First, a basic background understanding of the concept of human waste disposal is critical to parsing out the fundamental workings of the sewage disposal plant at the Battle Park Pavilion site. The excreta and waste products generated by the human body are breeding grounds for living organisms that are linked to both diseases and infections. If not handled and disposed of properly, the sedentary waste can lead to the spread of typhoid fever, cholera, dysentery, and tuberculosis, among a plethora of infectious worms. If not careful, the proliferation of such conditions can occur by human, animal, or insect contact with waste, and most commonly through tarnished water sources (Murdock 1920:3).

At the time of construction of the sewage plant in Battle Park, the current-day understanding of proper waste treatment involved a two-step process, the same fundamentals of which are still found in today's methods. The idea is to let nature take its course in a controlled and regulated environment, first by breaking down the waste and second by exposing it to organisms, bacterial and otherwise, present in the soil to neutralize the dangerous effluent.

The first process is known as putrefaction, essentially a rotting and decay of waste as it breaks down to its constituent states—gas, liquid, and solid—each thereafter treated differently. This process is accomplished by anaerobic bacteria often present in tight places lacking fresh air. The other subsequent process in purifying and neutralizing the waste is oxidation, performed by aerobic bacteria that operate in the presence of oxygen (Murdock 1920:5).

Most early twentieth-century septic tank systems, which at the time were gaining in popularity over the traditional privy and slightly more advanced cesspool methods of waste management, used a tank and filter bed system to take the sewage through both processes (Murdock 1920:5). The tank facilitated putrefaction, the liquids of which would run off into the filter bed, while the gases escaped and the solids settled to be taken care of at a later time. The filter bed brought the liquefied waste into contact with soil, naturally rich in aerobic bacteria, by way of semi-permeable pipes or tile lines. These would be shallowly buried as the most numerous, active, and thus purifying bacteria thrive close to the surface. This septic tank and drain field technique was the prototypical design as this method of waste disposal began to be adopted early in the twentieth century. Though many circumstantially adaptive variations existed, all were tank and filter bed systems at heart.

With that in mind, it is precisely in its drastic deviation from the norm of the day that the sewerage disposal plant at the Battle Park Pavilion site sets itself apart and establishes its unique existence and potential historical significance on both a regional and temporal level. The three-tank system was at its roots a modified Imhoff tank system (named for German inventor Karl Imhoff). The design is fairly remarkable for its time since it forgoes the use of a filter bed drain field, an adaptive alteration resulting from the sloped and spatially tight area it is located in (John Kiviniemi, personal communication). Due to the irregular landscape in Battle Park near Park Place, the designers did not have the luxury of a large flat area to place graded drain tile and pipe to promote oxidation. Instead, they designed a disposal system that relied more heavily on very thorough putrefaction and breakdown of the incoming waste to make up for the lack of a gradual oxidation process that would reintroduce the purified waste back into the natural environment. The sewage treatment system took the form of three tanks—two for putrefaction and a middle tank as a stopgap restraint—simultaneously promoting some oxidation and principally slowing down the flow of the material through the system. This lingering of the waste as it made its way through the plant was crucial, as it gave the waste as much time as possible to break down and made up for the lack of a proper drain field, before it was dumped into Battle Branch Creek in a neutralized state (John Kiviniemi, personal communication).

The Battle Park sewage disposal plant was a fairly self-regulating and sustaining system, because at its core was a simple utilization of gravity. Although the mechanical principles behind this "gravity pull" system are quite basic, their inter-woven function was fairly ingenious at the time (John Kiviniemi, personal communication). (The reader is referred to Figure 14 and the corresponding in-text labels throughout the ensuing description of the sewage disposal plant.) The waste from the 10 Park Place homes would have flowed out of the residences and connected to a single, eight-inch, vitreous tile pipe leading to the plant. The first component of the plant to

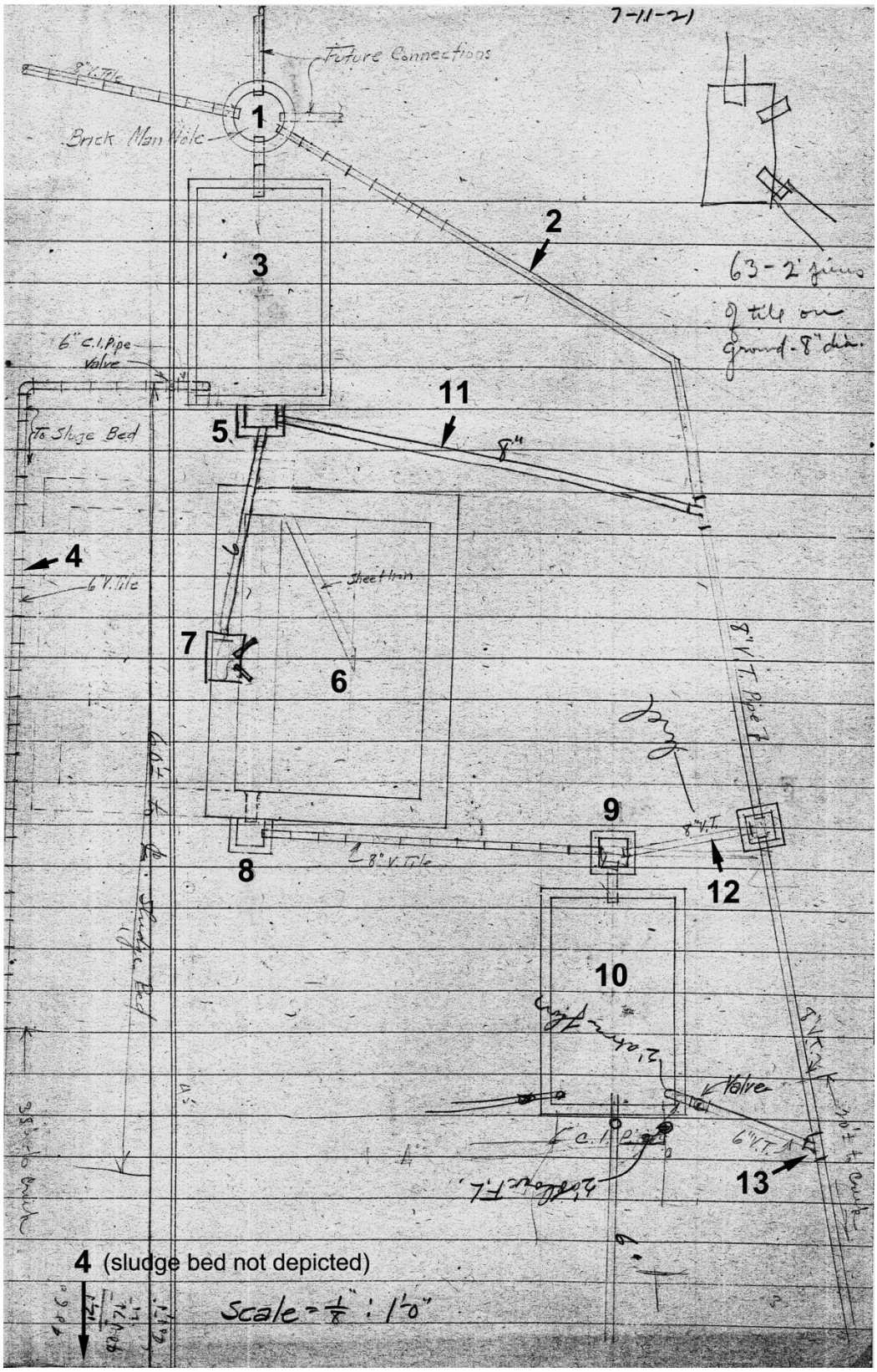

Figure 14. Schematic drawing of the sewage disposal plant, July 1921 (University of North Carolina Papers #40005, University Archives, Wilson Library, University of North Carolina at Chapel Hill). Numbered elements are described in the text.

encounter the incoming waste was a brick manhole [1] that acted as a simple regulator mechanism. If the input flow of waste was at a normal level, an amount that the plant was designed for and which would not strain it, then the incoming effluent would pass uneventfully onto the next step in disposal. However, there would be instances when more waste than the system was designed to handle would enter, due to above-average effluent levels from the homes or, more often, from storm water entering via the ground. In such cases, the manhole had a bypass valve [2] that directed the excess input straight into Battle Branch Creek, rather than clogging the plant and resulting in sewage backups at the Park Place houses. While this solution is well below modern standards, it was actually fairly common and quite safe given the presence of an active watercourse. Due to the infrequency of these events and since the waste would be quite diluted from the inundated state caused by excess rain water, it posed no danger (John Kiviniemi, personal communication).

From the input-regulating manhole, the waste entered the first (upper) concrete settling or septic tank [3]. It is here that the anaerobic environment conducive to putrefaction was created. As sewage breaks down in the presence of decomposition bacteria, it forms what is known as scum on its surface, a layer impregnable to fresh air (Murdock 1920:5). To prevent disturbance of the surface scum, which could disrupt its airtight quality with incoming waste, two design techniques were used. The first used an elbow pipe to deposit incoming sewage below the scum layer and straight into the decaying ooze. An elbow pipe was also utilized in the outflow of effluent from the tank, the opening once again situated below the sewage level**.** The outflow pipe also had an opening or vent on top to facilitate the escape of gas and pressure as effluent left the tank. Under normal conditions the tank functioned by means of the displacement method. An amount of incoming waste input forced the exit of an equal amount of output effluent that had already had time to undergo putrefaction. The second design characteristic that the Battle Park settling tanks used to preserve the scum was baffle boards. These wooden barriers, spanning the width of the tank, were interjected perpendicular to the sewage level, close to the input pipe. With space left below the bottom of the baffle board, the simple design created two quasi-compartments which acted as a barrier for the scum against the disruptive ripples caused by waste entering the tank (John Kiviniemi, personal communication). It is beneath this scum that the process of putrefaction happens, but not all waste is subject to the will of anaerobic bacteria. Some amount will not break down into either gas or liquid; instead, along with any mineral content to have entered the system, it will settle to the bottom of the tank. The settled solids would form what is known in the industry as sludge. This particular settling tank design in the Battle Park system had side walls that part way down sloped inward to create a funnel effect favorable to the collection of sludge in a single area (John Kiviniemi, personal communication). While the gas from putrefaction would bubble up and escape the settling tank naturally, and the liquid would flow off into the subsequent step in the gravity-pulled purifying process, the sludge would remain in place. In maintaining the system, it would have been necessary to deal with and proper dispose of the sludge on a regular, if infrequent, basis.

The technique employed in dealing with the sludge of the settling tanks at the Battle Park disposal plant was elementary and often used in many septic systems before and after that time. Periodically, at about annual intervals, maintenance workers would come to the plant and, using a control valve located on the southwestern corner of both septic tanks, drain the settled sludge by way of a pipe leading from those valves and down toward the creek and "sludge bed" [4]. It was on the bank of Battle Branch Creek where the sludge bed, a rectangular depression with four rough walls, had been created. The northern edge was constructed of dry-laid rock, what seems

to be a retaining wall retrofitted to this purpose, and the eastern and western edges were made of roughly piled stone and dirt. The southern edge was simply piled fill from the excavation of the sludge bed's interior. The depression inside the sludge bed would have been filled with a filtering substrate, the coarseness of which would have increased with depth. The bottom layer most likely would have been rock and stone, then rough gravel, overlain by finer pebbles, and eventually sand on top (John Kiviniemi, personal communication). The sludge from the tanks would empty into the sludge bed and be evenly spread onto this filtering medium. Any excess liquid from the sludge would filter through the medium, in theory undergoing oxidation and neutralization of harmful organisms, before eventually seeping into the nearby watercourse. The solid matter remained on the surface where it could aerate and dry in the sun and oxygen-rich environment. This served to further decompose the waste and oxidize it into a purer and less dangerous state. Following this process, the dry matter was shoveled off and removed from site by maintenance workers, to be disposed of at a dump site or other facility designed to further deal with such substances (John Kiviniemi, personal communication).

Returning to the topic of the first (upper) settling tank, the waste that neither became sludge nor escaped as a gas moved out of the tank in a liquefied state. It entered a small concrete junction box [5] directly attached to the large settling tank. The disposal plant had four such boxes, each of which housed direction-altering pipe joints, which made these sections easily available for maintenance as they were the most frequent culprits of clogs. The outgoing six-inch pipe ran above ground and directed the effluent to the middle tank, a "trickling filter" [6] and perhaps the biggest enigma both structurally and archeologically at the site. The central tank functioned as a trickling filter, the principles of which are still used in modern operations, but which would have been a fairly new innovation at the time of construction (John Kiviniemi, personal communication). Because of its position between two concrete settling tanks, it served to slow the entire plant system and extend the period of time during which the waste underwent treatment before emptying into the creek. Essentially, the trickling filter tank was a giant oxidation station. As previously mentioned, the incoming effluent began its journey at the top of the tank, where it entered another small concrete box [7] that redirected its flow toward the center top of the tank. Here, it encountered a mechanism known as a spreader, a rough sketch of which can be seen in Appendixes 2C and 2G. The spreader mechanism in most trickling filter tanks around that time functioned like an upside down sprinkler head, operating by hydraulic pressure from the incoming waste which would then be showered and spread over the contents of the tank (John Kiviniemi, personal communication). The Battle Park disposal plant spreader mechanism worked the same way in theory, but by a different and much simpler practice. The waste was dumped onto a diamond-shaped wedge which, attached to a hinge at the diamond's bottom point, teeter-tottered back and forth. As material landed on one side of the top of the diamond spreader, it gave way to the pressure of the waste hitting it, thus tilting the other top side of the diamond and exposing it to the oncoming flow of waste. Wooden supports on either bottom side of the diamond prevented the wedge from ever settling in one stationary position. The resulting seesaw action served to spread and distribute the incoming sewage over the tank's trickling filter contents below.

The tank itself was filled with a wooden matrix structure made of crisscrossing and interwoven cypress beams, chosen for their rot resistant quality (Appendix 2G). The inner walls of the dry-laid rock tank were lathed for both structural support and as part of the aforementioned wooden matrix. This wooden structure was the backbone of the trickling filter, as it provided an airy and open-spaced medium on which aerobic bacterial cultures would thrive. As the spreader

mechanism above showered the incoming sewage over the lattice construction, the liquid waste trickled through the cracks and spaces, coming into contact with oxidizing bacteria that served to filter and purify the effluent (John Kiviniemi, personal communication). The microcosm inside this tank was a perpetual filtering machine: the more sewage that passed through, the more the oxidizing bacteria would thrive, and in turn the better the function of the trickling filter would be. It is also possible that the cypress beam matrix was loosely filled with interspersed substrate such as broken tile and pipe or even sizeable rough rock. This would have provided more surface area for oxidizing bacteria to grow on (John Kiviniemi, personal communication). However, it is impossible to determine if this was ever the case, based on the present-day state of the Battle Park trickling filter. Once filtered and somewhat more purified, the effluent collected on the graded and smoothed concrete tank bottom and flowed toward the trough-shaped western edge which directed it out of the trickling filter tank and onto the next destination in its journey.

Since the trickling filter tank had only one outlet, all effluent making its way through left by way of the southwestern corner. Here, the waste entered the second small concrete box [8] housing an elbow pipe joint and continued to a third small concrete box [9]. This box housed a tee joint and directed the flow into the last processing tank, which is disjoined and just south of the box. This final concrete tank was also a septic settling tank [10], operating in the same purpose as and structurally equal to the first tank. Putrefaction occurred one last time on any solid matter that had survived the gauntlet of the first two tanks. Like the first septic tank, this one also had a valve-operated sludge drain off of its southwestern corner that led to the sludge bed. Here, the rest of the liquid effluent experienced one last bout of decomposition before it was introduced into the natural environment via a pipe into Battle Branch Creek, hopefully in a sufficiently neutralized state.

For the sake of complete thoroughness, some additional components of the sewage disposal plant should also be noted. The eight-inch vitreous clay tile pipe [11] that led off of the northernmost small concrete box [5] was another bypass measure. In cases of extreme amounts of wastewater, to the point where the bypass off of the brick manhole could not redirect enough of it straight to the creek, sewage might enter the first settling tank in excess of what the plant design was capable of handling. Instead of allowing the influx to start a cascading disruption of the entire plant, some amount of the displaced effluent could flow off straight to the creek instead of passing on to the trickling filter (John Kiviniemi, personal communication). The pipe labeled [12] in Figure 14 is fairly ingenious in that it was designed to reintroduce some of the unfiltered effluent heading for Battle Branch Creek back into the system. Even though the first two bypass routes regulated the levels of sewage entering either the first settling tank or the trickling filter, this did not mean that the third tank did not have room for some of the surplus waste. It allowed the system one last-ditch effort at treating the sewage, even if it was only marginal compared to the effects of the full plant, before it was released into the environment (John Kiviniemi, personal communication). Nonetheless, if the second settling tank was also at operational capacity, then it would simply regulate itself through displacement into the creek.

On the schematic diagram (Figure 14), the area labeled [13] depicts a regular Y pipe joint, but in reality it was contained within a brick box, much like the other small concrete junction boxes housing pipe joints throughout the plant. The omission of this component in the original plans suggests it was added at a later date, perhaps when the disposal plant was completed or near so. It could very well have been a matter of operation-induced repair. Possibly, this joint proved to be a troublesome area for clogging or some other problem, which was not anticipated in the original plans and only surfaced once the plant's regular operation

could be monitored. Accordingly, a box was built around the joint, being made of brick which would have been cheaper and easier to work with than constructing forms and pouring concrete.

Normally, settling and trickling filter tanks in septic systems of this kind operated in an open-air fashion. That is, the tank tops would remain uncovered since the scum in the settling tanks was what actually preserved the air tight conditions of putrefaction and the trickling filter would also benefit as it operated best in the presence of fresh air. However, these conditions are optimal only when the disposal plant is set some distance away from the public in an area free and clear of overhanging debris. The Battle Park plant possessed neither of these traits. Thus, all three tanks most likely were covered by planks, upon which a light layer of dirt may have been spread. This was not to contain the wafting aromas, as the prevention of odor was only a secondary objective of covers; rather, given the plant's location in a wooded environment, the tank tops were covered to prevent leaves, sticks, and similar debris from entering and disrupting the system (John Kiviniemi, personal communication).

Specific Chronology of the Central Trickling Filter Tank

While the function of the central tank is fairly straightforward, it is in its structural form and physical characteristics that questions about construction and chronology arise. There is no practical reason why the central tank would have been constructed of dry-laid rock, while the rest of the facility was made of poured concrete (John Kiviniemi, personal communication). It could be that the rough stone was used in construction to provide a more conducive area for the growth of bacteria, but trickling filter tanks at the time normally were made by the same poured-concrete method as septic tanks, differing only in the internal structure (John Kiviniemi, personal communication). Given the option of concrete and pouring molds which the designers clearly made use of, dry-laid rock construction would have been much more difficult and time consuming. Further perplexities surface when the disposal plant is viewed as a whole. The facility is built on a roughly cardinal grid, askew by only five degrees, and all the concrete structures are aligned with one another. As can be seen in Appendix 2B the only thing breaking away from this overall alignment pattern is the central dry-laid rock tank. This tank is also much larger than the others, which are identical with one another, even though once again there is no practical purpose for this in terms of function.

Apart from the structural differences with the rest of the plant, the peculiarity of the central tank's construction chronology also needs to be noted. Both the graded concrete floor and the small concrete pipe joint box at the southwestern corner clearly postdate the dry laying of the rock. Since both concrete parts are poured and lapped up against the rough rock walls, logically, they were constructed with regard for the existing rock structure. Even if, for some impractical reason, dry-laid stone was purposefully chosen for the trickling filter, the concrete floor would have been poured into place first and only then would the walls be stacked on and around it. The same is true of the concrete box, which incidentally only has three sides with the stone wall acting as the fourth. If all parts of this sewage disposal plant were erected in one construction episode, then we would expect all structures to be aligned on grid, made of concrete, and following a logical construction chronology.

These anomalies indicate that the dry-laid stone structure predates the concrete construction of the remainder of disposal plant, and suggest that it was retrofitted from its original purpose to create a trickling filter tank. However, the length of time that the structure may predate the plant is difficult to determine, given the lack of historical records associated

with its construction. Nonetheless, viewing the creation of these structures in the grander context of their serving purpose, referring of course to the Park Place neighborhood, reasonable inferences can be made. As previously mentioned, the construction of Park Place must have begun around 1920, since a September 25, 1920, newspaper article in *The Tar Heel* notes that all of the houses in the neighborhood had been completed and some were occupied. This article appeared almost 10 months before the construction of the sewerage disposal plant in Battle Park was initiated, and another three months elapsed before the plant began operation. This chronology begs the question of how the Park Place neighborhood dealt with sewage disposal before the Battle Park plant was completed.

For a somewhat isolated neighborhood, options at the time were few, yet it is unlikely that each house was constructed with a privy given the modernity of the bungalows, which had central hot-air heating systems and heated running water (Prouty 1979). Rather, a more permanent measure presumably was taken consolidate and take care of the neighborhood's waste and sewage. Given the availability of water under pressure, a common solution at the time was the use of a cesspool, a fairly primitive forerunner to the septic tank (Warren 1928:26). The descriptions associated with cesspools of that era, including their operation and construction, match perfectly with the rock-walled structure turned central trickling filter at the Battle Park sewerage disposal plant. Single home cesspools, essentially embellished holes in the ground, were usually circular and varied from five to ten feet in diameter and roughly seven to twelve feet in depth (Warren 1928:26). Given the much larger population that the Battle Park cesspool had to serve, its greater size makes sense. Cesspools were lined with stone or brick, and the "walls are laid without the use of any cementing material so the liquids can leach out into the soil" (Murdock 1920:4; Warren 1928:26). This precisely characterizes the type of construction present in the central structure of the Battle Park plant.

The explanation for the transition from cesspool to full-blown sewage disposal plant lies in the inefficiency of cesspools. The basic principle in a cesspool's operation is that liquid waste would seep into the soil through the permeable walls, in theory coming into contact with the oxidizing and neutralizing bacteria in the soil. The solid waste would accumulate at the bottom where it would fester more than decompose, until it was manually removed and properly disposed of. Along with frequent maintenance, cesspools were barely effective as the settled waste deep below the surface was hardly affected by the air and bacteria. Furthermore, although the fluid sewage was strained in passing through the walls, this did little to purify the liquid and it actually posed a great danger as it could flow into ground water, wells, and watercourses (Warren 1928:27–28).

Crucial to even the most marginal success was that "the more porous the soil the more satisfactorily the cesspool works" (Murdock 1920:4). If there was not proper drainage, the soil surrounding the cesspool would become supersaturated and the permeable walls would clog up, creating a water-tight hole prone to overflowing onto the ground surface and producing a dangerous menace to the environment (Warren 1928:27). This was very likely the fate of the Battle Park cesspool. The soil throughout Battle Park is composed of three main types that range from having moderate to very slow permeability and low to medium water-holding capacity. The Battle Park Pavilion site is situated in a Wedowee sandy loam characteristic for its moderate permeability and low available capacity for water (Giencke et al. 2010:21–22). The placement of the cesspool in such poorly draining soil made it prone to clogging and failure, and almost certainly witness to excessive nuisance and maintenance.

The lesser question still remains whether the cesspool was intended to be a permanent fixture for Park Place, or whether it was planned as a temporary measure until the disposal plant could be funded and built. Given the fact that the Park Place neighborhood relied on the cesspool for nearly a year, it likely was chosen with permanence in mind. Also, at the time the 1921 state-sponsored improvement initiative was still an unheard of option for financing, and the University lacked accessible surplus funds. However, once operations proved to be less than sanitary and convenient, due to inevitable clogging and overflow, a more adequate and permanent solution was sought. The answer, of course, came in the form of the 1921 improvement fund and respective building program, on the back of which the much more self-sustaining sewage disposal plant was built. Accordingly, the site for the new plant was surely influenced by the already present cesspool. As the settling tanks were added, the cesspool was converted into a trickling filter, thus creating the juxtaposition of dry-laid stone and poured-concrete construction that comprise the main archaeological features at the site.

Innovation and Significance

As a whole the Battle Park sewage disposal plant was rather rudimentary by today's standards of waste management, but when constructed it was somewhat ahead of its time. The idea and prototypical use of septic tanks in the United States did not originate until the end of the nineteenth century (Warren 1928:29). Even then, for a long time these were simple designs consisting of no more than a single tank connected to a filtering disposal field and with few variations. However, the sewage disposal plant in Battle Park is quite experimental in its design and operation. The overall design was an up-and-coming innovation, not at all popular or even widely implemented until the 1930s, particularly in the local region. The Battle Park plant not only used Imhoff settling tanks, only invented in 1906 (Germany), but it also was a multi-stage processing design, the very first of its kind in the Chapel Hill and Carrboro area, where mostly privies, straight output to disposal field rigs, or open-air cesspools were used (John Kiviniemi, personal communication). The use of a three-tier processing system to compensate for the impossibility of employing the standard disposal field method is truly a unique adaptive approach that further establishes the plant's distinctive position on a historical level. Even the design of the trickling filter was deemed very unusual and the only one of its type that OWASA has encountered (John Kiviniemi, personal communication).

While the description of the sewage disposal tank contained in the previous section of this report may seem overly detailed, it is rather important on several fronts. The plant is not only unique as far as disposal systems in general, but it also has local and regional historical significance, representing early innovation in a technology that is not well considered in the documentary record. The Battle Park plant is a genuine case study for some of the first regional applications of many methods and mechanics that are modern-day industry standards, such as multi-tier staged processing and trickling filter tanks.

The Abandonment of the Sewage Disposal Plant

Even though the demise of the Battle Park sewage treatment plant is only lightly documented, the reasons for ceasing its operations are fairly clear. The chief complaint was that the plant was a sensory nuisance and detrimental to the enjoyment of its natural setting. Of course, this was an obvious consequence that would result from any construction and development efforts marring the wild state of a wooded preserve. Perhaps then, it is no surprise

that the first record of complaint found against the disposal facility occurred less than two years after it began operation. In a letter, University professor Thorndike Saville informed C. T. Woollen that the plant had gone into a state of disrepair as evidenced by how it was "giving forth bad odors" (Saville 1923). He claimed that the effluent was clear, colorless, and odorless, signifying that the plant was working properly, but that the smell was due to the facility not receiving enough maintenance attention, particularly with respect to cleaning the settling and trickling filter tanks. While this may very well have been the case, the fact that there was a nuisance odor is understandable as that was the nature of the plant's design (John Kiviniemi, personal communication). Usually the negative consequence of this design characteristic was avoided by locating such facilities in fairly secluded locales, instead of in a frequently used public park. *The Chapel Hill Weekly* newspaper reported on the negative effect this plant was having on the park. A September 30, 1927, issue discussing the derelict state of the park found partial blame in the plant, writing "at times it has been odorless, and at other times not entirely so. At any rate, it has not added to the charm of the Park" (Chapel Hill Weekly 1927). However, little more could have been done in the way of extra cleaning and maintenance, particularly due to the on-site sludge bed, the principal source of the odor, as waste would bake in the sun and waft through the park. The plant was fairly rudimentary but certainly was much better than straight disposal into the creek, a practice that was not uncommon at the time (John Kiviniemi, personal communication).

If the plant did indeed reach a decrepit state, then it was most likely a matter of inadequate maintenance coupled with overutilization. The plant was designed to take care of no more than a dozen businesses or dwellings, and the 10 houses in Park Place neighborhood comfortably fit within this range (John Kiviniemi, personal communication). Still, as the years went on it is likely that the facility was forced to service over its capacity as the University or town tied more residences into the plant's lines. Such a development is partly supported by a document from an unknown author or group reporting on accomplished work since the appropriation of the state funds in 1921. This report was written sometime after July 1, 1921, and states: "A sewage disposal plant has been constructed to take care of the ten faculty houses in Park Place and a number of residences on Franklin and Battle Street which are not reached by the town mains" (Anonymous 1921a). According to this report, the disposal plant hardly stood a chance at successful operation, as it was overstrained right from its outset. If, as Saville claimed, the disposal facility was under-serviced, it also was unavoidable that it reached an unsatisfactory operational condition. Regardless of the fact that the plant was a modern innovation, it was not entirely self-sustaining and did to some degree need frequent attention. Outside of occasionally draining the settling tanks and cleaning out the sludge bed, the plant also had to be periodically examined for malfunctions (John Kiviniemi, personal communication).

Anyway, it did not take long after installation until the disposal plant was disapprovingly targeted for tarnishing Battle Park. The earliest known record regarding disoperation or relocation of the sewage disposal plant dates to October 11, 1923, a mere two years after the plant began service. Apparently the University Building Committee discussed the notion at one of their periodic meetings, recording in the minute book that "W. C. Coker, C. T. Woollen, T. C. Atwood were appointed a committee to look into moving the disposal tank from Battle Park and joining in with the Gimghoul Order in building a new tank beyond Battle Park" (University Building Committee 1923). It seems that despite initial intent of action, neither of these two plans would be pursued in any notable way for approximately five years.

A newspaper announcement on April 27, 1928, provides a second account regarding moving the Battle Park plant. The article discusses the plan to restore Battle Park to its pristine beauty by moving the sewage disposal plant and upgrading the septic system serving the Gimghoul colony (Glandon Drive neighborhood). Although the article opens with a discussion about relocating the plant and upgrading the other system, the solution described further on in the same article involves abandoning both and simply rerouting the waste via proper piping to one of the town's municipal plants to the east (Chapel Hill Weekly 1928a). The proposal is brought up again about a month later on May 25. This article announces the acceptance of the aforementioned plan and says that it is assured to be carried out. Although this article once again announces the "removal of the sewage disposal plant," the actual plan discussed further on is as mentioned before, "the pipe will lead to the municipal plant in Strowd's lowgrounds" (Chapel Hill Weekly 1928b). The article mentions that this strategy was made possible by a financially cooperative "tri-partite agreement by the University, the town, and the Gimghouls."

The abovementioned plan to reclaim Battle Park was a success. *The Chapel Hill Weekly* announced on Friday July 13, 1928, that "the new pipe line, connecting with the municipal disposal plant in Strowd's Lowgrounds, was completed this week, and the plant in the park, now no longer needed, will be demolished" (Chapel Hill Weekly 1928c). The exact day the sewage disposal plant went inactive is not known; however, it seems likely it would have to been only a few days preceding this newspaper announcement, so as to not interrupt sewage service for the houses that the plant served. The Strowd's Lowgrounds municipal plant which is mentioned in this and the preceding articles refers to the town's first advanced sewage treatment complex, built on Plant Road where the Chapel Hill Community Center currently stands (John Kiviniemi, personal communication). This complex handled the sewer lines from the University and the town, processing the combined waste before discharging it into Bolin Creek. The preceding articles mention the dismantling of the defunct Battle Park disposal plant, the most recent publication even touting a subtitle of "disposal plant that has disfigured woodland will be demolished" (Chapel Hill Weekly 1928c). Nonetheless, based on the present-day state of the plant site and the archaeological record, such an attempt was never made. Abandoned, the site did not witness any further development until 1933.

The Battle Park Association

The next episode of development at site 31OR639 was brought about by the Battle Park Association (BPA), a volunteer group of faculty, staff, and townspeople concerned with the deteriorating conditions of Battle Park experienced through the 1920s and into the early 1930s. The founding and internal function of the BPA is well documented, while details trail off at the group's operational agendas and eventual conclusion. A well-written history of the organization was compiled in *Conservation Project: Battle Park* (Giencke et al. 2010); some of the group's highlights are reviewed below, including newly found material particularly as it pertains to the Battle Park Pavilion site.

The earliest reference to the creation of the BPA occurs on April 10, 1931, in the form of a public newspaper announcement stating that "whoever is interested in restoring Battle Park as a woodland retreat is invited to come to Colonel Pratt's home at 8 o'clock this (Friday) evening. The plan is to form the Battle Park Association" (Chapel Hill Weekly 1931a). The date of this first interest meeting is recognized as the establishment of the Battle Park Association. Colonel Joseph Hyde Pratt, the driving force and eventual first president of the BPA, enlisted a group of people with a "considerable interest in the idea of restoring Dr. Battle's paths and bridges," a

rather simple but principled goal. Initial plans were to restore the splendor and accessibility of Battle Park by reopening old trails, creating new ones, and replacing or fixing benches and bridges.

The Battle Park Association wasted no time in getting down to business, and by autumn of the same year, their promises had been kept. An October 20 issue of *The Chapel Hill Weekly* reported that "new walks have been made and old walks cleared, and bridges have been built over the brook, by the volunteer platoons" (Chapel Hill Weekly 1931b). A December 4 article from the same paper outlined the Association's achievements in greater detail, asserting that old paths had been cleared up or re-routed to avoid troubling areas, that three miles of new trails had been opened, and that the cedar bridges spanning the creek were rebuilt (Chapel Hill Weekly 1931c). The article also commends the Association for the exceptionally frugal manner in which they achieved their outcomes, an apparent trait of the volunteer group. Further, this article is the first recorded mention of the BPA diversifying in the scope of their projects, including the plans for a recreational pavilion at site 31OR639. In the aforementioned April 10, 1931, newspaper article, Association president Pratt stated that one aim Kemp P. Battle had was not only to keep the woodland in a natural state but also to make it easier for people to approach (Chapel Hill Weekly 1931a). With this idea in mind, and with the declining public care for and use of the park, the BPA started expanding their projects from humble upkeep to proactive endorsement. These projects developed the park area to a certain degree, keeping in mind the pinnacle rule that the property was only ever to be used for park purposes only.

Before delving into the specific facts regarding the pavilion, it is beneficial to round out the history of the Battle Park Association. Outside of the restoration work and planning of the pavilion, the BPA sought to improve the park in other ways. The group created a picnic ground with fireplace for outdoor cooking sometime before December 4, 1931, a feat that was described in the newspaper article of the same date (Chapel Hill Weekly 1931c). A correspondence letter between BPA president Colonel Pratt and President of the University Frank Porter Graham, dated to May 28, 1932, once again extolling the accomplishments of the Association, mentions a second, successfully developed picnic ground (Pratt 1932). The year 1932 was truly a busy one for the Association, to the point that they even branched out from the sole care of Battle Park to promoting ventures on other University properties. The previously mentioned letter discusses a joint resolution from February, 1932, between the BPA and Chapel Hill Ornithological Club which urged the University to create a monitored bird sanctuary in the water reservoir property on Morgan Creek (Anonymous 1932).

The chief development concerning the Battle Park Association in 1932 was an internal one, as the group appealed for incorporation into the University, as non-profit and official stewards of all that concerned Battle Park. The earliest identified reference of this appeal is once again in the May 28, 1932, letter from Pratt to Graham. Pratt referred to a resolution passed by the BPA at one of their regular meetings, which stated the Association's desire for "some definite action by the Board of Trustees of the University in regard to placing the care and maintenance of Battle Park under the jurisdiction of the Battle Park Association" (Pratt 1932). The formal resolution agreed upon by the BPA for incorporation was enclosed with the letter to Graham, but unfortunately it was not dated, leaving it unclear at which Association meeting the decision was first reached.

Record searches have found no references to this plan prior to late January of the following year, but it is evident that in this interim the Association drew up a certificate of

incorporation. On January 24, 1933, the Board of Trustees held a meeting and, as is recorded in the minute books, the Certificate of Incorporation of the Battle Park Association was presented and duly approved (Board of Trustees 1933). The certificate (Appendix 3) proclaimed the Battle Park Association as a corporation in the non-profit employ of the University, and went on to detail assumed responsibilities, general agendas, and operational limitations. The approved Certificate of Incorporation was officially filed with the State of North Carolina on April 6, 1933, and was certified by the Secretary of State on April 7 (Wade 1933).

After this milestone for the Association, business resumed as usual until a change in presidential leadership a few years later. Sometime after April 7 and before September 29, 1933, Pratt moved to Washington, DC, to take a position as an engineering consultant for the United State Geological Survey (cited in Giencke et al. 2010:41). While Pratt held onto the position of president of the BPA until June 15, 1934, he appointed Richard Julius Mendenhall Hobbs as his proxy during his leave of absence. In a letter to Hobbs dated September 29, 1933, Pratt outlined in extensive detail the internal structure of the BPA and provided thorough instructions on how to best care for Battle Park (Pratt 1933). The presidency eventually and officially passed to Hobbs at an Association meeting on June 15, 1934, as reported by a June 29, 1934, newspaper article (Chapel Hill Weekly 1934b). An article from the day of elections, June 15, 1934, included an updated list of finished projects, many at the hands of a temporary joint partnership with the Civilian Conservation Corps from outside of Durham. The completed work included another picnic ground featuring a table and fireplace for cooking, new trails and bridges, repair of old trails and bridges, drainage ditches, post markers for points of attraction and paths, as well as general upkeep of the grounds (Chapel Hill Weekly 1934a).

Following this undertaking, the fervor with which the Association took to improving Battle Park died down rapidly. Such an observation is suggested by the pattern of dwindling references to the group in archival records of the second half of the 1930s. A couple of loosely referenced paragraphs in a secondary source suggest that Charles Phillips Russell took over as president of the BPA in 1936 (Giencke et al. 2010:46). This is based solely on a June 11, 1936, letter to Russell from the Association's secretary Guelda Elliott promising to turn over to him some documents associated with the BPA (Elliott 1936). These very same files were indeed found in C. P. Russell's archived papers, but the secondary source goes on to assume that this document transfer suggests he "was the last person to serve in the capacity as president for the Association" (Giencke et al. 2010:46). This claim is entirely unsupported and as of yet it is not known if there even was a subsequent BPA president following R. J. M. Hobbs. More than likely, Russell was simply tending to the residual affairs of the fading Association.

Nevertheless, the last currently known reference to the Battle Park Association, an article from the October 23, 1935, issue of *The Chapel Hill Weekly*, suggests the group was still routinely active. The article discusses recent committee appointments to look after repairs and improvements of trails, bridges, and the outdoor fireplace and pavilion (Chapel Hill Weekly 1936). Still, a closer read of the article conveys the sense that public and volunteer involvement with the Association was declining. The need for prompt repair committees suggests the park was not undergoing continuous maintenance. This notion is supported by the article's announcement that "if all members pay their dues there will be sufficient funds for making urgent repairs" and an appeal encouraging people to become members of the Association. Such statements express the waning public involvement with the BPA and in turn the lessening role of the group's stewardship of Battle Park.

It seems that Joseph Hyde Pratt was not only the ideological pioneer behind the movement to save the park, but he was also the principal driving force that kept the Association intact. Even after his move away from Chapel Hill, he kept tabs on the BPA as a member of the corporation's board of directors and as the advisor to the president. Still, as time passed, his involvement lessened and the organization weakened. So began the decline of community participation in the Battle Park Association, and the group's activities eventually ceased (Giencke et al. 2010:47).

In line with this internal shift, the decision-making ability of the Association may have been somewhat detained by changes in the bureaucratic structure of the University, setting the stage for the Association's cessation. A memorandum sent on September 18, 1933, by President Graham to the Committee on Buildings and Grounds informed them that due to the growth and expansion of the University the group is to be "redesignated" the Faculty Committee on Grounds, Buildings, Fields, Forests, and Lake Area (Graham 1933). The letter explained that "this committee is charged with full responsibility for the development and improvement of these properties and the uses to which they are to be put." Furthermore, a reference to the BPA was specifically included to solidify their newly demoted middleman status on matters regarding the park. It read, "The cooperation of the Battle Park Improvement Association is appreciated, subject to final decision by the committee under the authority of the faculty, the administration and the Board of Trustees." This effectively stripped the BPA of any direct say in the state of Battle Park, undermining the organization quite early on in its inception, and making membership and efforts essentially impractical.

The Battle Park Pavilion

The first recorded mention of a pavilion to be constructed at the site of the former sewerage disposal plant is in the December 4, 1931, issue of *The Chapel Hill Weekly* newspaper. According to the article the project was part of the BPA movement to revitalize interest in park use and make the newly cleared trails more beneficial to the community. The pavilion must still have been in the primary stages of planning since the information provided somewhat conflicts with subsequent articles. Regardless, this initial plan discusses placing the pavilion on "the site of the second of two old concrete tanks," which is quite vague, but seems to implicate the southernmost settling tank as the location. Specific details of construction indicate a simple design with an "oak floor, a railing, and a roof," and expenditures estimated by BPA president Colonel Pratt were at $175 (Chapel Hill Weekly 1931c).

The next mention of the pavilion is an announcement of its completion on April 7, 1933, once again in *The Chapel Hill Weekly*. Based on available documentary records there is a period of almost one and a half years with no archival references to the pavilion. It seems improbable the building of such a relatively simple structure would have spanned the entirety of this interval; rather, construction of the pavilion likely was not begun until sometime after the December 4, 1931, announcement of intent, leaving the sequence of construction imprecise. As for the actual April newspaper article, it is very informative, and despite contradicting some aspects with the previous article, it comprises the majority of the historical information that is known about the Battle Park picnic pavilion. More credibility is placed on the contents of this news piece as opposed to the first one, because of its logical consistency with the archaeological record found at site 31OR639.

According to the April 7 narrative, the structure was built out of cedar rather than oak as suggested by the December 4 article. While the explicit choice of material is not known, it can be inferred by some indirect evidence contained in the previously discussed September 29, 1933, letter from Colonel Pratt to R. J. M. Hobbs describing the particulars of the Association and proper park care. In discussing the cutting of dead trees and removal of fallen timber, Pratt wrote that "The men are not allowed to cut dead cedar trees. We need all of these for construction work in the Park" (Pratt 1933). This letter postdates the completion of the pavilion, but it would seem that Pratt had instilled a preference for cedar use in the Association's construction plans. More than likely this would have included any necessary repairs to existing structures, such as the pavilion, that might be needed. As is characteristic of the BPA, the construction was kept to a thrifty budget and "the outlay of money was only a few dollars" (Chapel Hill Weekly 1933). A combination of contributions from the University building department and President Pratt collecting many of the construction materials from the woods of Battle Park achieved this construction result.

The newspaper article provides further specifics of interest to the historical narrative. The floor and the roof of the pavilion were heavily coated in creosote to prevent rot and improve longevity of the structure, a fact that would be decisive in the future of the building. A description of the premises noted that "a circular stair of stone leads to a lower level," an element clearly visible at the archaeological site. Inclusion of this feature in the article reaffirms that construction of the stone-laid stairs was indeed specifically for the picnic pavilion center. This is a fairly obvious assumption, rather than inclusion of intricate steps for a sewage disposal plant, but the article is still a welcome confirmation.

Placement of the pavilion was also mentioned, albeit indirectly and again with some contradiction to the December article. The April issue reported that the "two abandoned concrete cesspools nearby have been filled with rock and earth and planted over with flowers" (Chapel Hill Weekly 1933). Not only was this an ingenious solution to the now defunct and unaesthetic tanks, but it singled out the central stone structure as the foundation of the pavilion. The central trickling filter tank, as the pavilion's foundation, is the one location that is not only consistent with the archeological record discussed later on in this report, but also with the remainder of the newspaper article's account of the structure. The explanation that the stone stairs led to a lower level makes sense if the pavilion was mounted on the stone structure, since the stairs begin at the northeastern corner of the central tank and end its southern edge.

The matter of size is also relevant, since placing the pavilion on either of the two concrete tanks would simply make it too small to house all the described assets. Apparently the pavilion featured lockers, a built-in table, and an outdoor grill (Chapel Hill Weekly 1933, 1943). The Battle Park Association also held meetings in the pavilion, an affirmation to the structure's size if it included the listed picnic features and could still shelter a meeting's worth of people (Chapel Hill Weekly 1934a). It may not be that the entirety of the group was within the pavilion, and the specifications of size and form are by no means detailed, but it is clear from the description and the present state of the archaeological site that the pavilion utilized the central stone tank as its foundation.

It is unclear if the Battle Park Association kept detailed records of their meetings, since no archival material of the sort has been found. However, a couple of loose lists of plans in the papers of Charles Phillips Russell provide insight into further ideas the group had for the Battle Park Pavilion site. A hand-written and undated list indicates that the BPA wanted to create a

wading pool below the pavilion (Anonymous n.d.). Although archaeological evidence for the wading pool is non-existent, a map made by Roland M. Trimble and dated May,1933, depicts a dammed area indicative of a wading pool just south of the pavilion. The April 7, 1933, issue of *The Chapel Hill Weekly* made no mention of a wading pool, despite detailed description of the rest of the pavilion area. It seems the list of plans and construction of the wading pool dates to the period between announcement of the pavilion's completion and the creation of Trimble's map. The list also indicates that an eventual second pavilion at a place called Debaters Plateau was in the works, but there is no evidence on the Trimble map or otherwise that this structure was built.

Another interesting facet of Trimble's map is that it shows all the existing trails at the time and helps explain one of the archaeological components recognized during the initial reconnaissance of the site. According to the map, it is evident that Component 1 is not an aged and worn road trace but actually the overgrown remnant of a former park trail. The section of the map shown in Figure 15 clearly depicts the pavilion, wading pool, and surrounding trails .

No other records have been found referencing the pavilion until October 23, 1936, when a newspaper article recapped a Battle Park Association meeting in which committees were formed to oversee urgent repairs needed throughout the park. One such committee, headed by R. J. M. Hobbs, was "to restore the damage done to the outdoor fireplace and the cedar pavilion," apparently the result of vandalism as well as natural wear (Chapel Hill Weekly 1936). The plan to stop the vandalism, which was an eventual outcome for most reclusive structures, was to enlist the help of the local Boy Scouts in patrolling and reporting duties.

The final mention in documentary resources of the Battle Park pavilion occurred in an issue of *The Chapel Hill Weekly* printed October 31, 1943. The report covered a fire that broke out during the night between the 29th and 30th and claimed the pavilion in its entirety. Apparently a "party of picnickers" making use of the outdoor grill failed to completely douse the fire before leaving for the night, and the fire eventually re-ignited and proceeded to raze the structure. Undoubtedly the fire was spurred by the highly flammable creosote covering the pavilion, which ironically enough was intended to help preserve it. The flames were first noticed at five in the morning by J. C. Russell, who along with R. J. M. Hobbs and George Critz, managed to subdue the blaze but not before "The roof of the pavilion had fallen in and the structure was totally destroyed" (Chapel Hill Weekly 1943).

No further remarks about the pavilion have been found in archival materials, and the same is true of the area in general. Both the pavilion and the earlier sewage treatment plant slowly began to drift away from public memory. There is no indication that the location was used in any other formal capacity, and subsequent interaction with the site was most likely limited to general cleanup and grounds maintenance, particularly after the fire. Of course, the peculiar contrast the site has with its wilderness surroundings has made it a reference point of curious attraction for the general public, even though the historic particulars had mostly been lost.

Inclusion of Battle Park in the National Register of Historic Places

In 1971, The University of North Carolina campus proper, most of East Franklin Street, the neighborhoods to the south of East Franklin Street, and Battle Park were nominated and placed on the National Register of Historic Places as the Chapel Hill Historic District (Figure 16). Battle Park was included "as the last vestige in Chapel Hill of the vast forest that originally

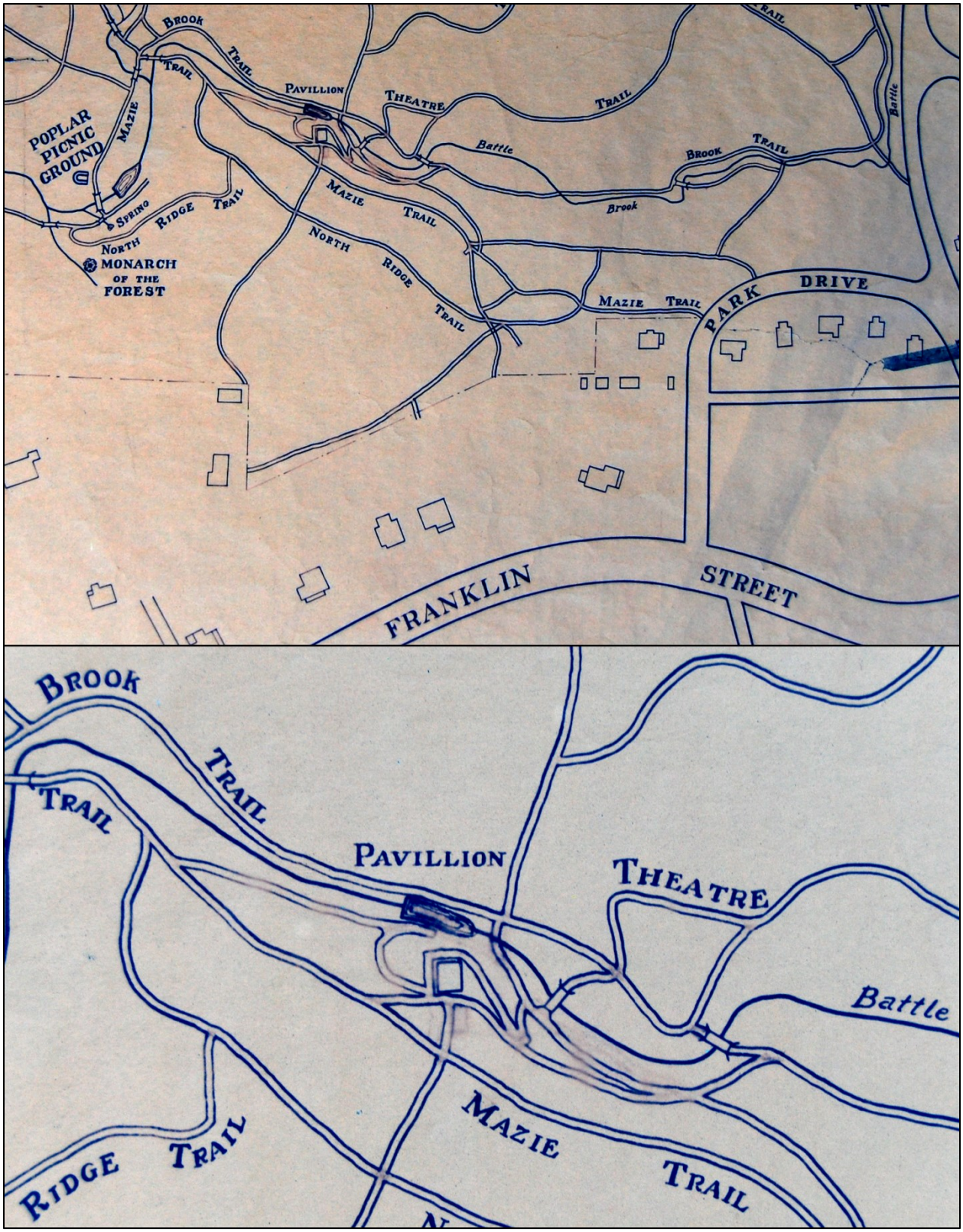

Figure 15. Two sections of a map titled "Map of Battle Park, Prepared for the Battle Park Ass'n, Inc., by H. M. Trimble, Date: May 1933." The top section shows the relative location of the pavilion to Park Drive; the bottom section is an enlarged view of the pavilion and premises, showing dammed wading pool and surrounding trails. Courtesy of the North Carolina Collection, The University of North Carolina at Chapel Hill.

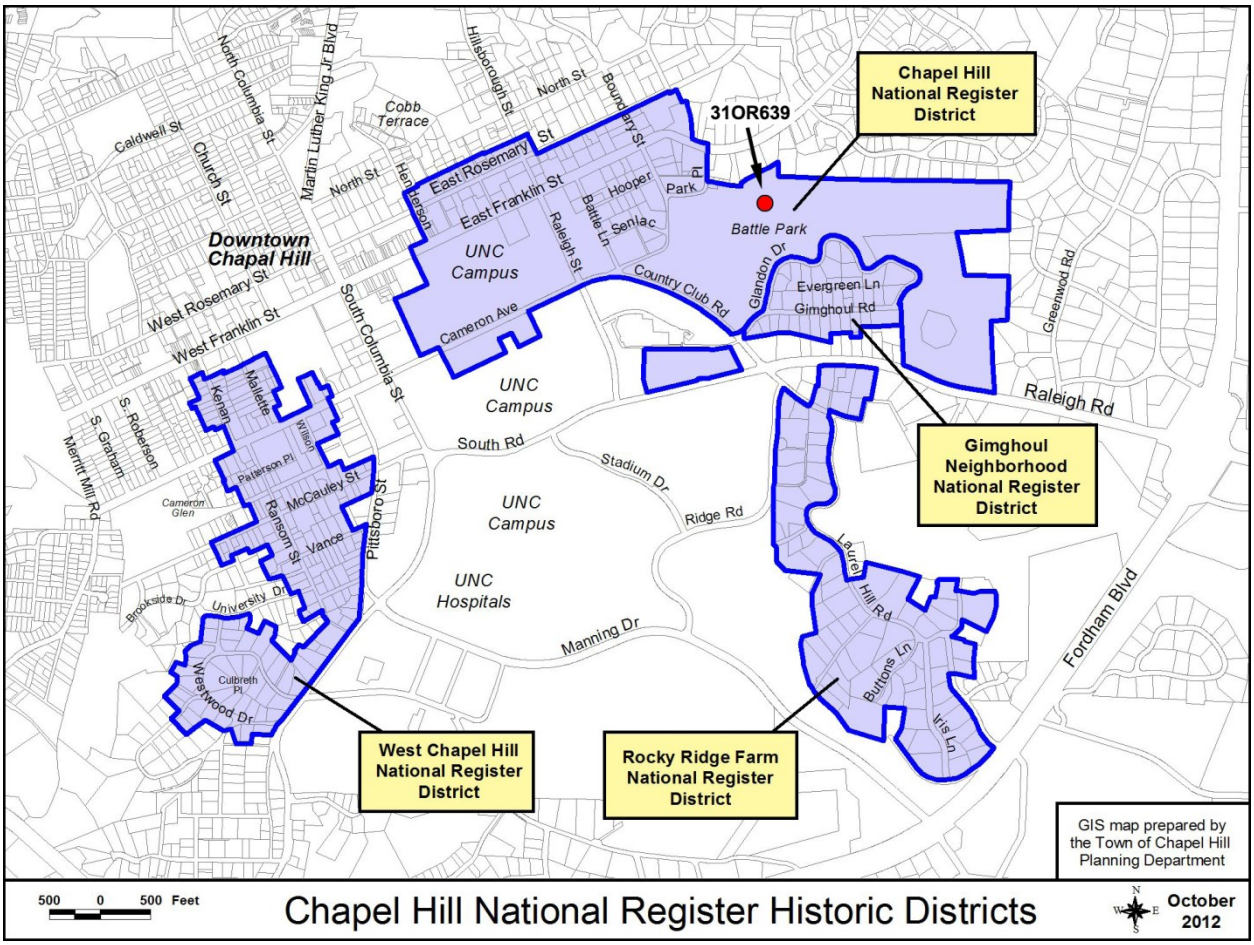

Figure 16. Map depicting the inclusion of Battle Park into the National Register of Historic Places as part of the Chapel Hill National Register District (Town of Chapel Hill n.d.).

covered the entire area" (Wells 1971:12). Described as a primeval, Eden-like landscape, the park was not only set aside as a natural preserve, but its pristine natural state was also regarded as an enduring icon of the town and the University.

As a component of the Chapel Hill Historic District and a state-owned property, Battle Park, and by extension the Battle Park Pavilion site, is afforded protections as outlined in the *Protection of Properties in the National Register* (North Carolina General Statutes, Chapter 121-12[a]) and the *Archaeological Resources Protection Act* (North Carolina General Statutes, Chapter 70, Article 2), respectively. These protections provide for the formal review of proposed undertakings that may have an adverse effect upon the qualities that render a property significant and eligible for inclusion in the National Register of Historic Places.

Chapter 4

ARCHAEOLOGICAL FIELD METHODS AND FINDINGS

The single most important finding that resulted from initial archaeological reconnaissance and testing was the need for further investigations, both historical and archaeological. While the fieldwork identified most of the significant archaeological features at the site, many of those features could not be adequately interpreted, and the full chronology of site use was not known. Furthermore, the available historical information about the site did little to address those lingering questions. Because the North Carolina Botanical Garden was exploring the possibility of constructing a new pavilion at the site, it became imperative that the site be more fully understood in order to determine if such an endeavor was appropriate. Further study focused on documenting in detail the existing state of the site, mapping the landscape and all cultural features, and, finally, conducting additional excavations to determine the temporal and functional dimensions of the site.

Between February, 2012, when the initial investigations were conducted, and September, 2012, when archaeological investigations resumed, the site underwent some significant cosmetic changes, and to a lesser extent, permanent and damaging alteration. Battle Park volunteers and North Carolina Botanical Garden workers did much to make the site more accessible to research and analysis. Low-lying brush and vegetation was cleared away, as were rotting logs and fallen trees. Additionally, the stone rubble covering the interior of the dry-laid stone structure was removed from the southern edge of the structure and restacked along the inner southern and eastern walls. In the southwestern quadrant more than a quarter of the structure's floor deposit was revealed and made accessible for excavation. However, in the absence of supervision, one undesirable outcome of the interim work was the destruction of possible deposits associated with what was then regarded as Component 4. The visible eastern end of the component forms a linear outcropping of rock creating a makeshift step. This "step" is on a rough path connecting with the 11 pavilion-related steps to the south. To the north was a fairly steep ascent to the OWASA access road, which was made more accessible by grading and interjecting two more steps, effectively destroying any deposits that may have been there. While nothing significant likely was affected, the location may have been informative on whether or not the Component 4 feature was related to the larger stone structure of Component 3 directly to the south.

Site Mapping

The first phase of research was to create a detailed topographic map, permanently recording the current state of the site, including landscape, relative elevations, and overall spatial distribution of both natural and cultural site characteristics. A roughly one-meter square grid was adhered to in collecting fine-grained topographic data, while specific features were mapped to much greater detail. Using a total station, over 3,500 xyz data points were collected over a roughly 40 m by 30 m area encompassing the site. The resulting map is shown in Figure 3 (also see Appendix 4). Some points provided strictly topographic information; others provided both topographic and planimetric delineation of both manmade and natural features at the site.

As is evident in the three-dimensional representation of the site (Figure 17), the fine-grained topographic information seemed to bolster some of the initial hypotheses developed following initial fieldwork. The stone and earthen linear features that formed Component 2,

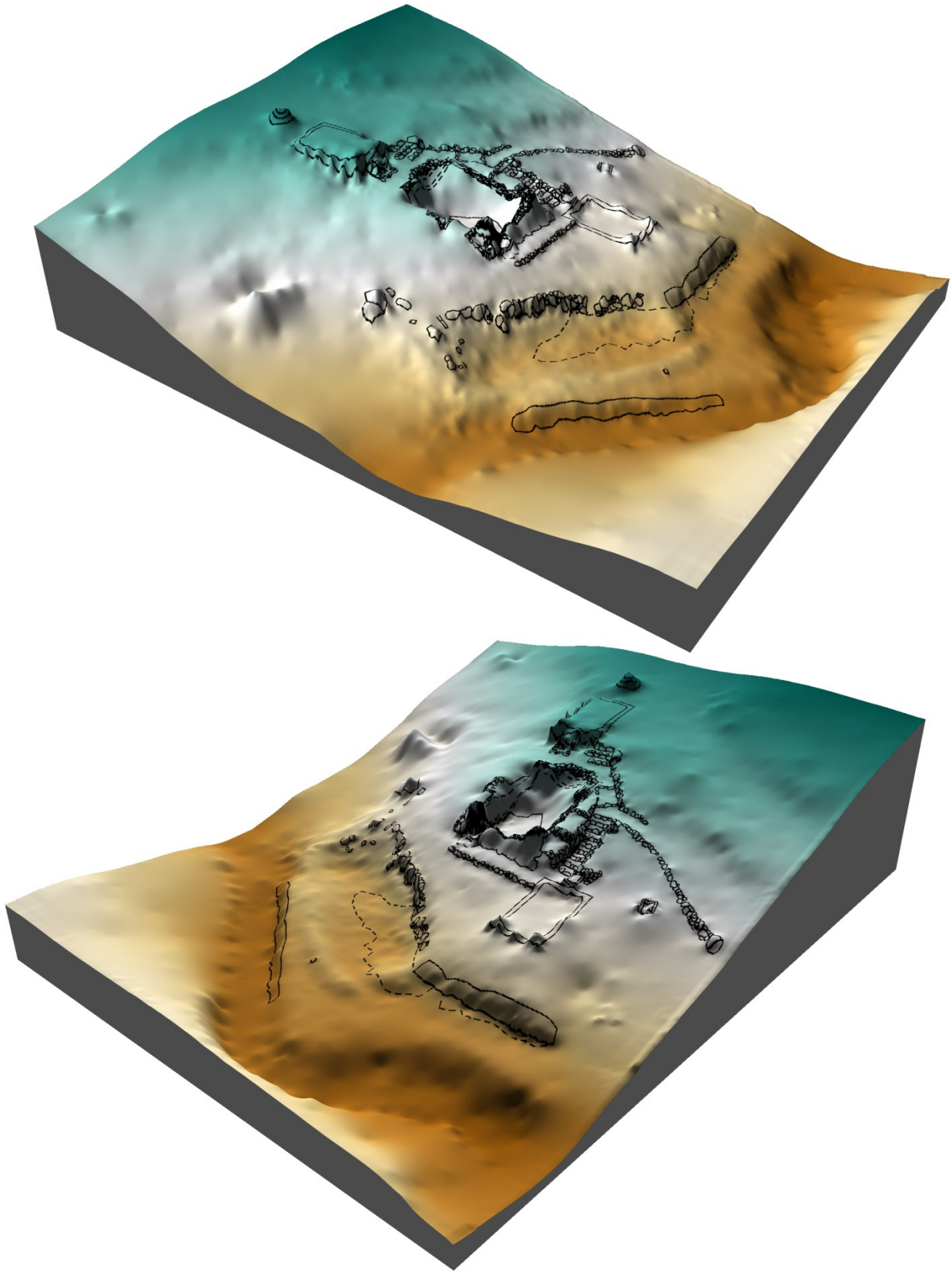

Figure 17. Three dimensional representations of site 31OR639, with features outlined. Upper image approximately faces northeast and the lower image faces northwest.

initially thought to be a possible mill foundation and now known to be the edges of the sewage plant's sludge bed, were clearly defined by mapping. And, the initial interpretation of Component 3 as a possible dry-laid stone house foundation was supported by the discovery during mapping of a rectangular stone feature along the exterior west edge that might have supported a chimney. Archival research revealed that this stone structure actually was the base for the trickling filter's spreader mechanism.

Photographic Documentation

Another method used to document the current state of the Battle Park Pavilion site was detailed photography. Prior to the documentary findings and adaptation of field work, the plan was to delineate the site proper, inclusive of all cultural surface features, into one-meter-square units and photograph each unit individually. Normally, such dense coverage would allow for the creation of a site mosaic, but the slope of the site would have made such a map far too distorted to be of any use. Instead, vertical mosaic photographs were taken only of the cultural features, and these were used to enhance the detailed topographic and planimetric mapping of the site (Appendix 4). Numerous oblique photographs also were taken to document all the cultural features and other landscape modifications to the site. In all, approximately 270 photographs were taken.

Soil Probing

Although topographic mapping is a relatively routine practice, the systematic coverage of the site during the course of several weeks provided the opportunity for continuous scrutiny of the site. Given this level of attention, additional site features were found that prompted a reassessment of the initial hypotheses regarding overall site chronology, function, and complexity. The first discovery occurred by happenstance, during planimetric mapping of the foundation walls of Component 2, which is now recognized as the sludge bed. An *in situ* pipe line was discovered leading from an outflow opening in the northwest corner of the rectangular "foundation" encompassing the sludge bed. This meant that if it was actually a building foundation, it had been thoroughly disturbed by the later sewage disposal plant. It also happened to open up precisely where excavation of the first test unit was planned. A metal probe was used to trace the clay pipe line, and this showed that it led back to the northernmost concrete tank.

Following this discovery, the metal probe was used to trace out other pipe lines. This gave insight into which features were still *in situ* given the disruptive construction of the plant, and accordingly locations where test unit placement would have a better probability of yielding undisturbed deposits. Probing eventually led back to the creek bank where the hypothesized mill foundations (Component 2) were located . The earthen berm that was thought to cover the southern foundation proved to be just that, a linear pile of dirt. The probe hit no substantial rocks within or below the berm; instead, it encountered basal stream gravels. The Component 2 "building" suddenly had no evidence for a southern wall, replaced instead by what seemed to be excavated spoil from the central depression. The depression was also probed to see if maybe the foundational stones had tumbled inwards, but throughout the entirety of the area the probe encountered only gravel.

Excavation Within Component 3

With these discoveries, we decided to probe the interior of Component 3 before excavating a test unit there. Botanical Garden volunteers had previously removed a two-foot thick layer of rock debris (and a couple of snakes) from the southwestern corner in anticipation of our excavating there. Given that this stone structure was hypothesized to be the remains of a house foundation, the purpose of this excavation would be to retrieve artifacts from the cellar floor and determine how that floor was constructed. Probing quickly indicated that the floor was only about 20 cm below the current surface and appeared to be very uniform. Also, the sound of the probe encountering the floor suggested that it might be made of concrete rather than stone or brick. To test this, a small area along the west wall was excavated. A solid, poured-concrete floor was encountered below a deposit of quite organically rich soil dense with construction debris and broken and burned glass. Uncovering and cleaning the edge of the floor immediately put the construction sequence in order, as the concrete was poured and smoothed up against the dry-laid rock walls, a condition possible only if the walls predated the concrete (Figure 18).

The excavation was expanded to an area measuring approximately 0.8 m by 2.1 m at the southwest corner of Component 3. None of the fill was screened. This excavation revealed a floor that tapered to a shallow trough, and this trough led to a pipe that penetrated the dry-laid stone wall to the concrete valve box abutting the southwest outer wall (Figure 8). The remainder of the concrete surface was graded, rising in elevation from west to east, effectively catching and directing the run off from the trickling filter above. The concrete itself was made of a very fine substrate, well smoothed to facilitate the flow of liquids towards the outlet pipe at the southern end of the trough valley. This verified that Component 3 was an integral part of the sewage treatment plant, but left unanswered the question of whether or not it was constructed about the same time as the concrete structures.

The discovery of a concrete floor within Component 3 was not the only valuable information gathered during the brief excavation. As noted above, the overlying soil was not just rich in organic material, the unmistakable mark of the trickling filter; it also was brimming with various refuse, much of which was quite informative. Perhaps the most telling find was the overabundance of broken container glass, a good portion of which was burned. The burnt glass is a critical piece of evidence that indicates the recreational pavilion, which burned in 1943, stood atop the Component 3 stone walls. Although this spot was suggested by NCBG workers at Battle Park, it was at the time more or less an assumption. In the documentary sources found to date, the explicit identification of the trickling filter as the base for the pavilion is never made.

It is locally understood that the pavilion was a gathering place for student socialization, usually of an imbibing variety, and that it was built upon one of the three large structures (Stephen Keith, personal communication). The evidence—glass from beverage bottles and drinking ware—is plentiful to the point that it hemorrhages out of the ground in several places around the site. The area surrounding the southernmost tank is relatively clean, while the soil within and around the central tank contains much glass. This decreases the likelihood that the southernmost tank was the pavilion base and points to the stone structure. Nevertheless, it could very well have been that the pavilion rested on the northernmost concrete tank and partygoers simply tossed their trash into the abandoned central structure below. This is where the presence of ample burnt glass buried beneath the interior soil fill and rubble of the dry-laid stone structure is critical. As already discussed, the recreational pavilion was completely burned in 1943. It

Figure 18. Post-excavation images of the unit in the southwestern corner of the dry-laid stone structure (Component 3).

Top frame shows the concrete floor poured up against the inner rock wall. The view is due west and a prism rod is included for scale.

Left frame, facing approximately south, displays the trough-shaped floor leading into an outlet pipe exiting the trickling filter tank.

appears probable that the glassware present that night, both from accumulated trash and maybe even garbage left behind by the unintentional arsonists, is the source of the deposits. This event is the only known source of a fire that would have been intense enough to leave behind as much melted glass as it did, which then settled into the inner cavities of the stone tank.

If the pavilion stood on the northern concrete tank when it was consumed by fire, it is unlikely that the central tank would have such large quantities of burnt glass buried so deep within it. Much more likely then is that the pavilion stood on the remnants of the trickling filter. Secondary support for this placement also comes from the debris-dense soil scraped off of the stone structure's concrete base. Along with the glass there were also plenty of rusted nails, aiding in verification that wooden structures were once in the vicinity. This would include both the pavilion above as well as the wooden trickling filter lattice system inside. Sections of rebar and loose concrete chunks both within and at the base of the interior rock rubble are most likely from the spreader mechanism and the pipe joint box leading into it.

Furthermore, where they have not collapsed inwards, the top surfaces of the dry-laid stone walls are covered in concrete. This concrete could have served in creating a level surface for the boards covering the trickling filter and supporting the spreader mechanism. Equally, the jagged top surface of the rock walls may have been leveled with concrete to create an even and secure surface for placing the pavilion atop it, given the unstable nature of dry-laid stone construction. The original purpose is still unclear, but the composition of the concrete does not match the type used in the poured concrete tanks/boxes or the trickling filter's floor. If the structure was at one point a cesspool before the full disposal plant was put it place, it would have no need for the top to be secured with concrete. This leaves only the time period after the use and disuse of the plant, where the only known construction at the site was the pavilion. Accordingly, the presence of this concrete supports the idea that the pavilion rested on the dry-laid stone trickling filter.

Additional Archival Research

Before undertaking any further excavations, a search of historical documents in the University Archives was undertaken in the hope of locating a construction plan for the sewage disposal plant. To this point, the archaeological research had been guided by the results of a study of Battle Park conducted by NCBG staff (Giencke et al. 2010) which presented the history of the park, including the sewage disposal plant and later recreational pavilion. Their study presented some documents from the University Archives relating to the plant's construction, but the researchers apparently did not find detailed information about how the plant was laid out and how it functioned. A more thorough search at the archives located several additional, critical documents, including an overall schematic diagram of the plant, material requisition lists, and component outlines, which made it clear that the dry-laid stone construction was a part of the 1921 sewage disposal plant, regardless of exactly when it was built.

These documents also demonstrated that, with the exception of the landscape features associated with the 1930s recreational pavilion, all of the features—stone, concrete, and brick—at the site are clearly attributable to the sewage disposal plant. The hypothesis that the dry-laid stone structure might be a pre-twentieth century foundation no longer seemed plausible given its incorporation into the disposal plant; however, it was still possible that the structure was built earlier and retrofitted for use in the sewage disposal system. Early on in the field efforts, it was noticed that the stones comprising the Component 3 structure simply did not display the level of

wear and weathering that is typical and thus expected of construction of this type, particularly if it dated to either the eighteenth or nineteenth centuries. While this observed condition was inconsistent with the working hypothesis, it was laid dormant to be viewed again in the light of more research. With the recovery of the disposal plant plans, the relatively "fresh" character of the structure's building materials made a lot more sense and suggested that, if the stone structure was earlier than the concrete structures, it might only be a few years, and not decades, earlier. The disparity between when Park Place and the sewage disposal plant were constructed, coupled with the physical characteristics of Component 3 as discussed earlier, strongly suggest that the stone structure was built at the same time as Park Place and served as a cesspool for the neighborhood until the sewage disposal plant was operational.

This stone structure (Component 3) was not the only feature that made more logical sense given the site's primary use as a sewage treatment facility. The inclusion of an area on the schematics labeled as a sludge bed cleared up the uncertainty concerning the features adjacent to the creek (Component 2). Rather than structural ruins with the entire southern side of the foundation missing, it can be demonstrated that the rectangular feature was created for the purpose of the disposal plant. The northern retaining wall may have already been in place prior to placement of the sludge bed, to support the surrounding soil into which the dry-laid stone cesspool to the north was dug. The elongated area directly south of the retaining wall was hollowed out to some degree, and the spoil dirt was mounded to create the other three sides of the basin. That the sludge bed was located there would also explain the results of the extensive probing, where only gravel was encountered beneath the surface throughout the rectangular feature. This was most likely the filtering medium laid into the hollow to aid in the drainage of the sludge that was deposited there.

In the aftermath of these revelations, with both hypothesized pre-twentieth century components (Components 2 and 3) firmly interpreted as part of the sewage disposal plant and clearly representing the first historical activity at the site, the fieldwork strategy was adapted to the new situation. It was no longer necessary to excavate test units, since their original purpose was to uncover diagnostic artifacts attributable to pre-twentieth century site use, a situation no longer present on site. As for subsurface testing on behalf of the known construction episodes, research efforts would be more fruitful elsewhere. Since only activities from the 1920s and onward were represented, the most useful and abundant data would be documentary in nature.

Chapter 5
CONCLUSIONS AND RECOMMENDATIONS

At the project's outset, the archaeology of the Battle Park Pavilion site promised to be quite extensive, given the potential for site usage predating the construction of the sewage disposal facility in the early 1920s and the subsequent construction of the Battle Park Pavilion in the early 1930s. Initial field reconnaissance identified evidence for two contrasting building methods—dry-laid stone and poured-concrete—at the site, and the first method could not be confidently attributed to twentieth-century site developments. With this in mind, it was hypothesized that the stone structures, represented by Components 2 and 3, likely were earlier and could be substantially earlier. While initial test excavations had failed to support this hypothesis, a program of more extensive excavation was proposed that would sample more deeply buried deposits adjacent to the stone foundations. If these structures were indeed early (i.e., pre-twentieth century), it was likely that temporally diagnostic artifacts would be recovered that could be used to date them.

Before undertaking those excavations, the site was cleared of all undergrowth by Botanical Garden employees and volunteers, and a detailed topographic survey was performed to document the site's present condition. During this survey of the newly cleared site, several additional features were noted which brought into question the hypothesized age of the stone structures and suggested that they might instead be attributable to the sewage disposal plant. Subsequent test excavation within one of the stone structures (Component 3) confirmed its use as part of the disposal plant but also indicated that it may have been built before the rest of the system. Clarification of the entire archaeological record at the site came shortly thereafter, with the discovery of a detailed schematic diagram of the disposal plant in the University Archives that apparently had been overlooked by the 2010 study of Battle Park (Giencke et al. 2010). This important document accounted for most of the significant archaeological features at the site; further research into the Battle Park Pavilion and other park development activities by the Battle Park Association during the early 1930s provided reasonable explanations for the remaining archaeological features. Without conducting the more extensive archaeological excavation as had been originally planned, it can now be concluded with confidence that all of the cultural features at the site are associated with the Park Place sewage disposal plant (either the initial stone cesspool or the modified Imhoff septic tank system that replaced it) and the recreational pavilion.

Specifically, the cesspool is represented by the large stone structure (Component 3) at the center of the site. The stone retaining wall just southwest of the structure (originally identified as part of Component 2) and the stone alignment just north of Component 3 (identified as Component 4) also may date to this period of site use (see Appendix 4A). The modified Imhoff septic tank system, built shortly after the cesspool in 1921, is represented by the following archaeological features: the retrofitted stone cesspool; two large concrete tanks; four small concrete pipe junction boxes; a small brick pipe junction box; the brick-and-concrete manhole; the rectangular sludge bed (Component 2) along Battle Branch Creek; and several of the pipe lines that connect these structures (see Appendix 4B). The Battle Park Pavilion is represented by: the large stone structure (Component 3), which served as the pavilion's foundation; the stone-lined steps, paths, and terraces just east and south of the pavilion (Component 6); other

paths around the site, including the archaeological feature initially identified as Component 1; stone retaining walls south of the lower concrete tank and along Battle Branch Creek; the upper and lower concrete tanks, which according to archival records were used as planters; and artifacts contained in shallow soil deposits within the stone structure and around its periphery (see Appendix 4C).

By themselves, these two site uses—waste disposal and recreational—may not seem historically important; however, they are certainly noteworthy within the narrative of the University's and Chapel Hill's development in the first half of the twentieth century, and as such may be regarded as significant at the local level. With respect to the sewage disposal plant, its archaeological remains are both remarkably intact and exceptionally well documented, despite the directive in 1928 that the plant's infrastructure would be completely dismantled. As a cultural resource, it represents an important innovation in waste management as the town and University entered a period of unprecedented growth during the 1920s. The remains of the recreational pavilion, consisting largely of the debris resulting from its use and destruction, are much less well preserved, but they too speak to important issues of town-gown cooperation and the University's service to the community through its recreational resources.

Because of these qualities, any future use of the site should strive to minimize its impact on the site's archaeological resources. While the archaeological research potential of the site is not extensive, its educational value and the story it has to tell, if properly interpreted for visitors to Battle Park, are important. As a standing ruin beside a well-used foot trail, it attracts attention and affords an excellent educational opportunity to educate visitors about earlier land uses within Battle Park.

The sewage disposal plant, along with a single house, are the sole surviving elements of the Park Place neighborhood, one of the first University-sponsored actions to relieve the housing pressure experienced by an expanding campus and growing faculty population. The plant itself was innovative, being the first of its kind in the local area, until the town and its neighborhoods were all tied into a main sewer line in the late 1920s. Furthermore, the plant utilized treatment and disposal methods not popular until the 1930s, incorporating septic techniques that were only up-and-coming in the field of sewage sanitation. As for the actual sewage disposal facility, it was unique, at least on a regional scale, in how it used a three-tier treatment approach and bypassed the need for a conventional drain field. Deemed as truly unique by contemporary sanitation engineers, the study of this disposal system is important not only to the history of Chapel Hill and the University, but also to the larger subject of sanitary sewage management in general. Perhaps due to the somewhat unglamorous nature of the matter, the early rise and adoption of sewage disposal plants and related practices are not as well documented as they ought to be. While the methods and science of such systems are understood, their history is far more obscure, especially with regards to local implementation. The research presented above concerning the sewage disposal plant at the Battle Park Pavilion site is an important entry into a referential and permanent compendium on the subject.

As for the Battle Park Pavilion, its historical significance is rather unmistakable for both the town and University. The meager narrative included in this report is a testament to just how little is known about a twentieth-century structure commissioned by a University-affiliated organization on University property. This very lack of knowledge verifies significance, since the Battle Park Association surely did not construct the pavilion in secrecy from the University. The events concerning the pavilion occurred not so long ago so that they should now rest in nearly

complete obscurity. Standing for a decade, the pavilion may not have seen much official use, but unofficially it was important to town folk and some groups of students. Judging by the abundance of beverage container glass on site, the pavilion was certainly a student gathering place and thus an intricate piece of the local social scene and history. Still, the lack of even a single picture of the pavilion shrouds it in relative ambiguity. In addition, the life of the Battle Park Association, a group run entirely by staff and faculty, is undoubtedly a piece of the University's history, the legacy of which is still remembered by some, but not documented as well as it should be. Fading from existence as calmly as it has, some of the group's last existing remnants are in the ruins of the Battle Park Pavilion site.

The purpose of the archaeological and historical investigations described above was to assess the potential significance of the Battle Park Pavilion site and to determine the effect that a planned new recreational pavilion might have on the site. Our conclusion, based on that research, is that the site is significant at the local level, in that it provides a touchstone to important aspects of town and University history, and all attempts should be made to avoid disrupting, removing, or obscuring the archaeological features that comprise the site. Those features include not only the stone structures and landscape features associated with both the sewage disposal plant and the recreational pavilion, but also the concrete structures used with the disposal plant. An effort also should be made to minimize disturbance of artifact-bearing deposits which mostly contain broken glass and other remains from use of the pavilion and lie near the site surface. If structures are to be built that encroach on the site, they should be designed so to minimize ground disturbance and avoid obscuring the visible site features. Of course, it would be far preferable to place any new construction (i.e., pavilion, viewing platform, etc.) next to the site rather than within it. Of the areas near the site and south of the OWASA easement, the area west of the upper concrete tank would be most preferable, since no archaeological features were found there and visitors could easily access it without crossing the site.

Any development near the site that will invite or encourage public access also will need to consider the impact of foot traffic on the site and potential hazards. The steps built for the recreational pavilion provide a durable and safe pathway to the middle of the site and the lower concrete tank, and it is unlikely that increased traffic would adversely impact them. Access to the sludge bed area and adjacent creek is a bit more problematic, as visitors would need to traverse the relatively steep slope that forms the northern edge of that feature. For access to this part of the site, it might be preferable to create a path that begins further down the OWASA easement to the southeast and follows the relatively level surface along the north bank of the creek back to the sludge bed. An alternative route for a path could approach the lower part of the site along the north side of the creek from the northwest.

The greatest hazard at present is the central tank constructed of dry-laid stone, which has partially collapsed. In order to stabilize it and reduce risk of visitors falling into it, our recommendation is that it be filled with clean fill dirt to just below the tops of the walls, but sloping downward toward a depressed center. Another solution would be to construct a railing around it, but this would necessitate periodic cleaning to remove accumulated leaves and other debris. A third alternative would be to combine both approaches, partially filling in the tank to a level surface well below the tops of the wall, and also constructing a railing to prevent visitors from falling in.

The Battle Park Pavilion site is an archaeological property with great potential to interest and inform visitors to Battle Park about the park's history, and thus should be viewed as a positive educational asset to the University. While it is not as old or architecturally significant as many structures on campus, and is not directly associated with prominent individuals, it nonetheless represents important aspects of community life and archaeologically can be considered a unique resource. It is our hope that the University, as stewards of Battle Park, will choose to preserve it.

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APPENDIX 1

SUMMARY REPORT OF ARCHAEOLOGICAL INVESTIGATIONS AT THE BATTLE PARK PAVILION SITE

R. P. STEPHEN DAVIS, JR.
FEBRUARY 17, 2012

On February 15, 2012, Brett Riggs, Steve Davis, and Andy Valiunas conducted a brief archaeological investigation of the Battle Park Pavilion Site on the University of North Carolina campus. The site consists of a complex of concrete and stone structures situated along the north slope of Battle Branch Creek between an OWASA easement and trail immediately to the north and the creek immediately to the south. Aside from subsequent recreational activities, the site appears to have been abandoned following a fire in 1943 that destroyed a small pavilion at this location (Stephen Keith, personal communication). The earliest use of the site, or how it was used, is not known.

The purpose of the investigation was to obtain artifact samples that could be used to determine the probable age of the stone foundations at the site. Work consisted of digging three test units adjacent to, and downslope from, the foundations (Figure 1). We also visually inspected the above-ground stone and concrete features in order to determine a probable relative sequence of construction events at the site.

Brief Description of Visible Site Components

Five discrete episodes of construction activity, or components, can be identified at the site. The potentially earliest two components are an abandoned road bed of unknown age which crosses Battle Branch Creek at the upstream edge of the site and a large, rectangular stone foundation along the creek bottom. The roadbed descends the south valley slope at the upstream edge of the site, crossing the creek at a slight angle, and ascends the north valley slope in a northwest direction. The presence of hand-made brick fragments in the stream bottom at this location hint at its possible age, and it likely intersected with an abandoned but clearly visible roadbed that runs parallel to and several meters north of the OWASA easement. The large, rectangular stone foundation (Component 2) consists of alignments of large stones along its west, north, and east sides, and a low earthen berm which may contain foundation stones along the south side. This foundation has not yet been mapped, but its approximate size and location are shown in Figure 1. While the north foundation wall appears as a retaining wall, and is labeled on David Swanson's map of the site (see Figure 1) as "possible Remnant of old stone terrace wall," archaeological testing (described below) suggests that it may have been a standing stone wall that was partially filled in along the upslope side by colluvial wash. This wall appears to have contributed to the creation of the current site surface by stabilizing topsoil and spoil dirt resulting

from the construction of later site components. This effect is particularly apparent at the west and east ends of the wall, where the slope of the ground surface abruptly changes. This suggests that the upper rectangular stone foundation (Component 3) may post-date construction of the lower, large stone foundation (Component 2), and that the two may not be directly associated with one another.

Component 3, a rectangular stone building foundation with a rubble-filled basement or cellar, is one of the more prominent, and enigmatic, features at the site. It measures about 18 ft (east-west) by 24 ft (north-south) (measurements estimated from Swanson's map, Figure 1). Most of the foundation consists of dry-laid stone; however, the top stones have been secured by mortar. This foundation also is surrounded by a low foundation or retaining wall that extends about a meter beyond the foundation's outer edge. This wall is clearly visible along the west and south sides; stone-lined terraces and stone steps run along the east side, and no other stone features are visible along the north (upslope) side. The mortared stonework, the retaining wall, the terraces, and the steps appear to be associated with the adaptive use of the stone foundation represented by Component 5 (see below).

A second, possibly related stone feature (Component 4) is visible immediately to the north and lies partly beneath a small concrete box attached to the south end of the upper concrete box (see below). This superpositioning indicates that it must predate construction of the concrete box. This stone alignment appears related to another stone feature mapped by Swanson just southeast of the upper concrete box, and together they may be remnants of another building foundation. If so, this building would have been oriented in the same direction as Component 3.

The structures designated as Components 2, 3, and 4 likely pre-date the twentieth century, given that they were constructed of dry-laid stone. This type of foundation construction is well documented at nineteenth and late eighteenth-century sites on the UNC campus (Davis et al. 2010).

Component 5 consists of two large, rectangular concrete boxes to the north (upper) and southeast (lower) of Component 3 and several smaller concrete boxes. All of these were poured in forms. The upper concrete box is situated atop Component 4. Historical records indicate that these were part of a sewer system, built in the early 1920s, that served the Davie Circle neighborhood (situated upslope from the site) until it was abandoned in the early 1930s (Stephen Keith, personal communication). The large concrete boxes measure about 10 ft by 15 ft and were used as cesspools, or settling ponds; the smaller boxes, about 3 ft by 3 ft, may have housed valves for regulating the system. One small concrete box is located on one end of each large box, and a third small box is located at the downslope (south) end of Component 3, where it was constructed (i.e., poured in place) against the existing stone foundation wall.

The final component of the site, Component 6, was an adaptive reuse of the site in 1933 as a recreational pavilion. According to Stephen Keith, records indicate that a creosoted, wooden floor was constructed atop the upper stone foundation (Component 3) and that a roof of pole construction was built over it. This structure stood for about a decade and in 1943 burned. It is likely that several of the stone "landscaping" features at the site date to this period. These include: the low retaining wall around the upper stone foundation, which tightly abuts the small concrete box adjoining the stone foundation; a low retaining wall which abuts the lower, large concrete box near its northwest corner; and both the stone steps and terracing along the east side of the upper stone foundation (Component 3).

Test Excavations

Three test units were excavated to obtain temporally diagnostic artifacts that might allow us to date the earlier period of site use (i.e., prior to the uses represented by Components 5 and 6). All three units measured 50 cm by 50 cm and were dug to varying depths. All soil from these units was screened through ¼-inch mesh to recover artifacts. The soils within these units and the artifacts they contained are described below. Only one artifact was recovered that can be clearly associated with pre-20th century site use.

Test Unit 1

Test unit 1 was dug along the west site of the upper stone foundation (Component 3). This location was selected in the hope that it might contain artifacts associated with that structure's use. Three soil zones were identified; however, we were unable to reach undisturbed subsoil due to pit depth and the presence of large stones. Zone 1 was a dark brown humus that measured about 15 cm in thickness. It contained numerous fragments of beverage bottles, drinking glasses, and an oyster shell, and these are attributed to the use of the site as a recreational pavilion. Zone 2 measured about 48 cm in thickness and consisted of an unconsolidated mixture of yellowish brown gritty sand, yellow clay, and rocks. Zone 3 contained similar soil but fewer rocks; its excavation was terminated after removing 14 cm of fill (at a total depth of 77 cm) and encountering large rocks. Zones 2 and 3 represent spoil dirt from excavation for either the upper concrete box or the upper stone foundation. Both of these zones were devoid of artifacts except for a very small bottle glass fragment found at the top of Zone 2.

Test Unit 2

Test unit 2 was dug in the creek bottom just outside of (i.e., downstream from) the east wall of Component 2. This unit was positioned to recover artifacts associated with this structure. Zone 1 was a brown humus that measured about 20 cm in thickness. It contained a fragment of brown bottle glass and a stone dressing flake. Zone 2 was a fine brown alluvial sand that did not contain any artifacts; 16 cm of this zone was removed before terminating excavation. A soil auger probe of this unit indicated that this zone became waterlogged with increasing depth.

Test Unit 3

Test unit 3 was positioned between the north wall of Component 2 and the south wall of Component 3, an area thought to contain colluvial soil deposits and perhaps artifacts from around the foundations of Component 3. The uppermost 14 cm of fill was a dark brown humus that was designated Zone 1. It contained beverage bottle glass, an oyster shell, and two stone dressing flakes. The glass and oyster shell likely are associated with the use of the site for a pavilion. Zone 2 represents spoil dirt similar to that observed in test unit 1, except that it contained far fewer rocks. It was 31 cm thick and is attributable to excavation for either the lower concrete box or the upper stone foundation. Zone 2 contained occasional rocks, two possible stone dressing flakes, and a small light green bottle fragment (likely 20th century). At the base of Zone 2 was a lead-glazed coarse earthenware pottery fragment that likely is attributable to the 19th century, or perhaps earlier. The break between Zones 2 and 3 was abrupt. Zone 3 was a light brown sandy loam that may be colluvium which built up along the upslope side of Component 2's north wall. Two stone dressing flakes and three prehistoric rhyolite flakes were recovered from this zone. Zone 3 was excavated to a depth of 30 cm, at which point the test unit became too deep to continue. The overall depth of test unit 3 was 75 cm.

Summary

Test excavations did not provide the information needed to determine the age of the stone structures (Components 2, 3, and possibly 4); however, we were able to identify and determine the probable relative chronology of building episodes at the site, as well as recover a single artifact (i.e., the lead-glazed coarse earthenware potsherd) that suggests an earlier age for at least some of the site's components. And, through archaeological testing, we gained useful insights into overall site structure. The most important finding was a recognition that the entire site is situated on a partly artificial landform, created following the construction of the lower stone foundation (Component 2). Colluvium was trapped behind the north wall of this structure, and this is reflected both by the topography of the land surface and the depositional history inferred from the deposits in test unit 3. The archaeological implication is that artifacts associated with the period of construction for Component 3, as well as Components 2 and 4, are deeply buried more than a half-meter beneath colluvium and spoil dirt from later construction activities.

Accordingly, further archaeological effort to find and sample strata dating to the period of earlier construction activities at the site will require opening a much larger excavation area and excavating substantially deeper.

Recommendations

Given the results of the investigations just completed, it is recommended that the following tasks be undertaken in order to gain additional archaeological information about site age and adequately document the physical characteristics of the site. Depending upon the results of the proposed archaeological excavation and documentation, additional investigations may be needed to mitigate specific adverse impacts caused by future site development.

Task 1. Photographically document the current conditions of the site.

Task 2. Conduct a topographic survey of the site in order to construct an accurate map which depicts all major stone and concrete structures. As part of this survey, portions of foundations which are currently buried will need to be exposed. This survey also should map the alignments of the roadbed that crosses Battle Branch Creek at the site and the roadbed located to the north of the site.

Task 3. Remove a portion of the stone rubble from the interior of the upper stone foundation in order to document the depth of the building's interior and to ascertain floor characteristics. This task may also result in artifact samples that could shed light on this structure's age and original function.

Task 4. Remove topsoil in the vicinity of Component 4 in order to expose and map more of the potential structure foundation and determine its overall size.

Task 5. Excavate a larger area in the vicinity of test unit 3 in order to sample the underlying undisturbed soils and obtain a better artifact sample for dating the lower and upper stone foundations. This excavation would need to be at least 1 m by 2 m in dimension and perhaps larger, and it would likely extend to a depth of more than one meter. This area probably has the best potential for containing artifacts in undisturbed contexts that are associated with the initial use of the site.

References Cited

Davis, R. P. Stephen, Jr., Patricia M. Samford, and Elizabeth A. Jones
2010 The Eagle and the Poor House: Archaeological Investigations on the University of North Carolina Campus. In *Beneath the Ivory Tower: The Archaeology of Academia*, edited by Russell K. Skowronek and Kenneth E. Lewis, pp. 141–163. University Press of Florida, Gainesville.

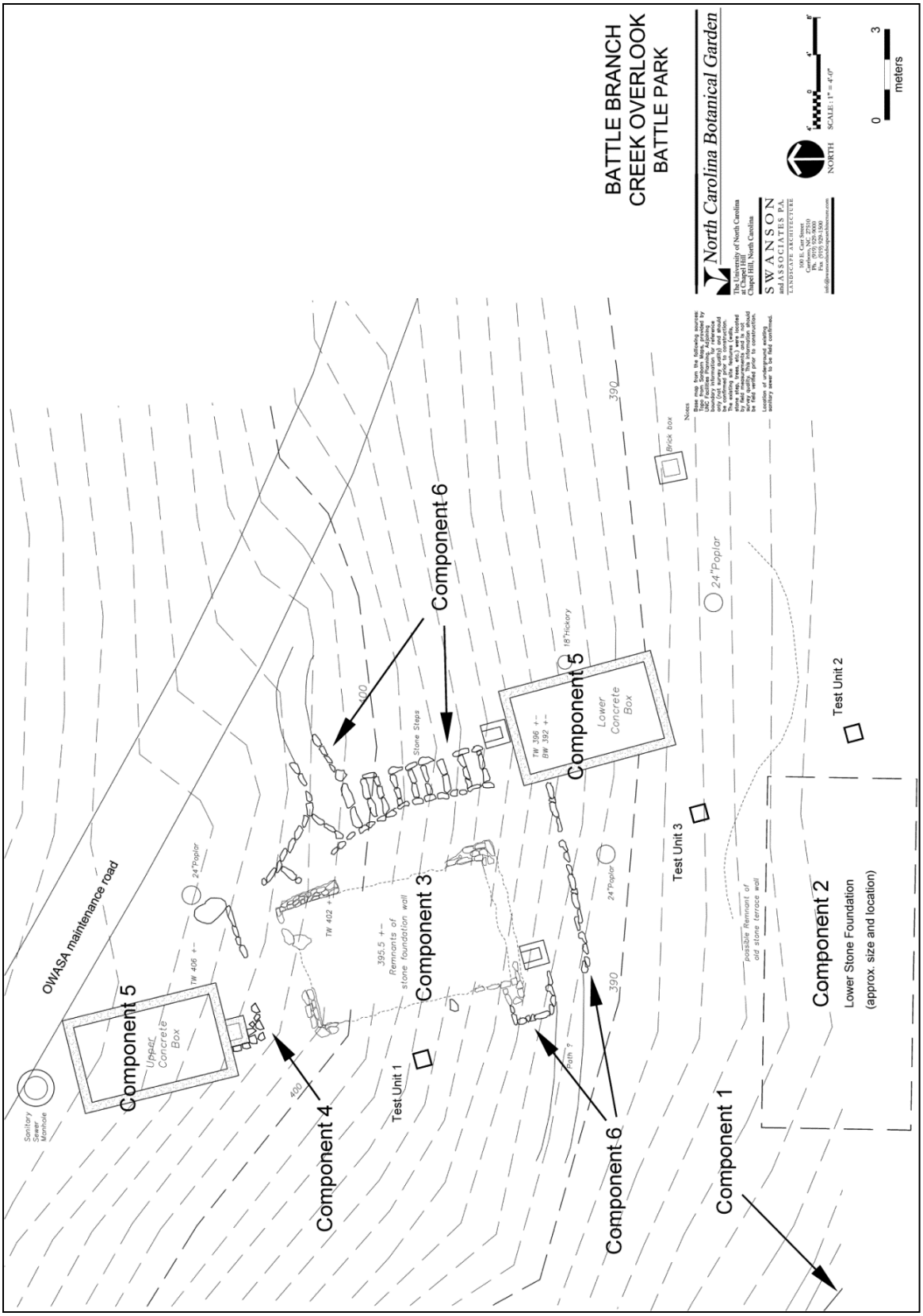
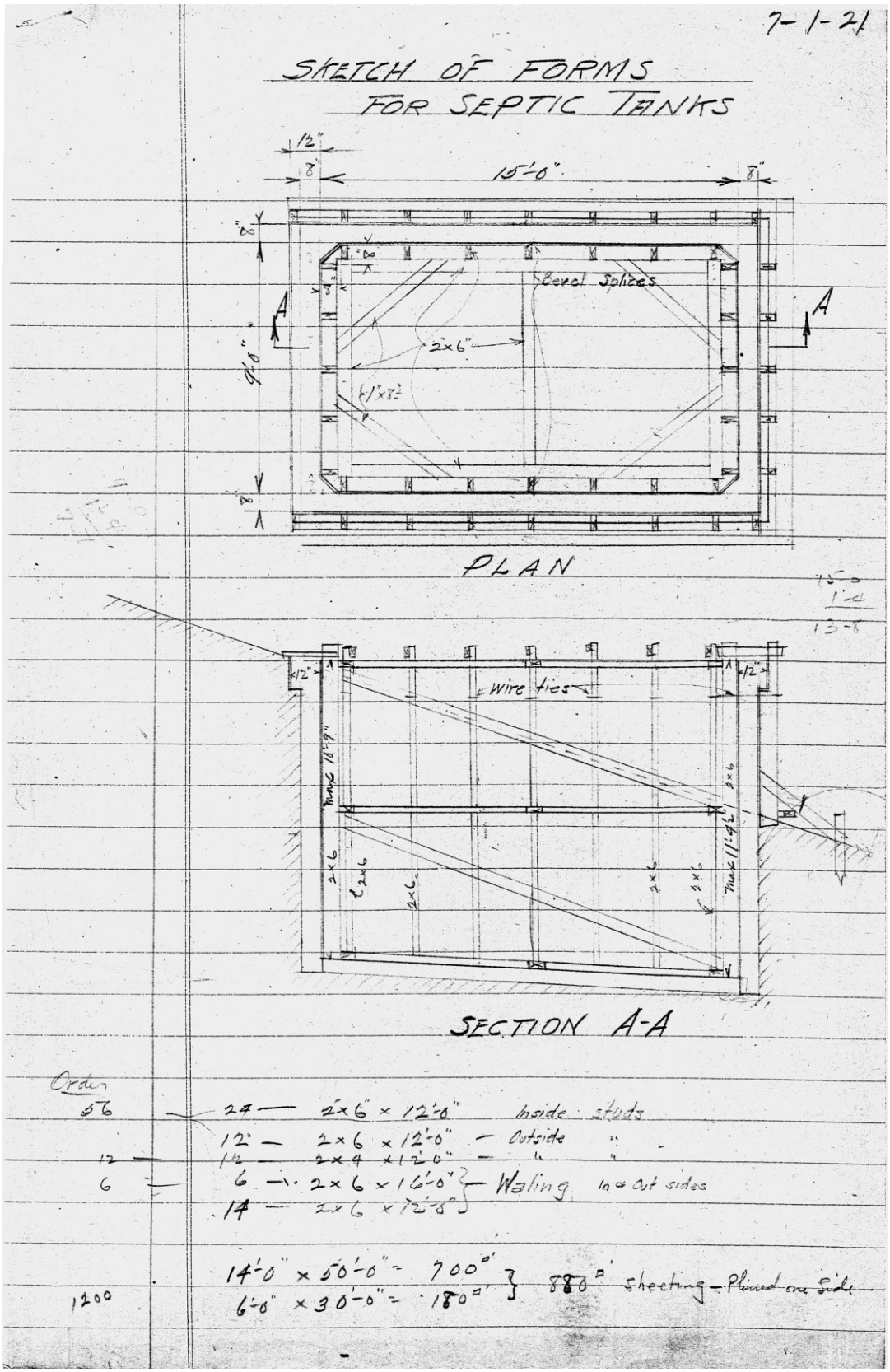


Figure 1. Map of Battle Park Pavilion site showing site components and locations of archaeological test units.

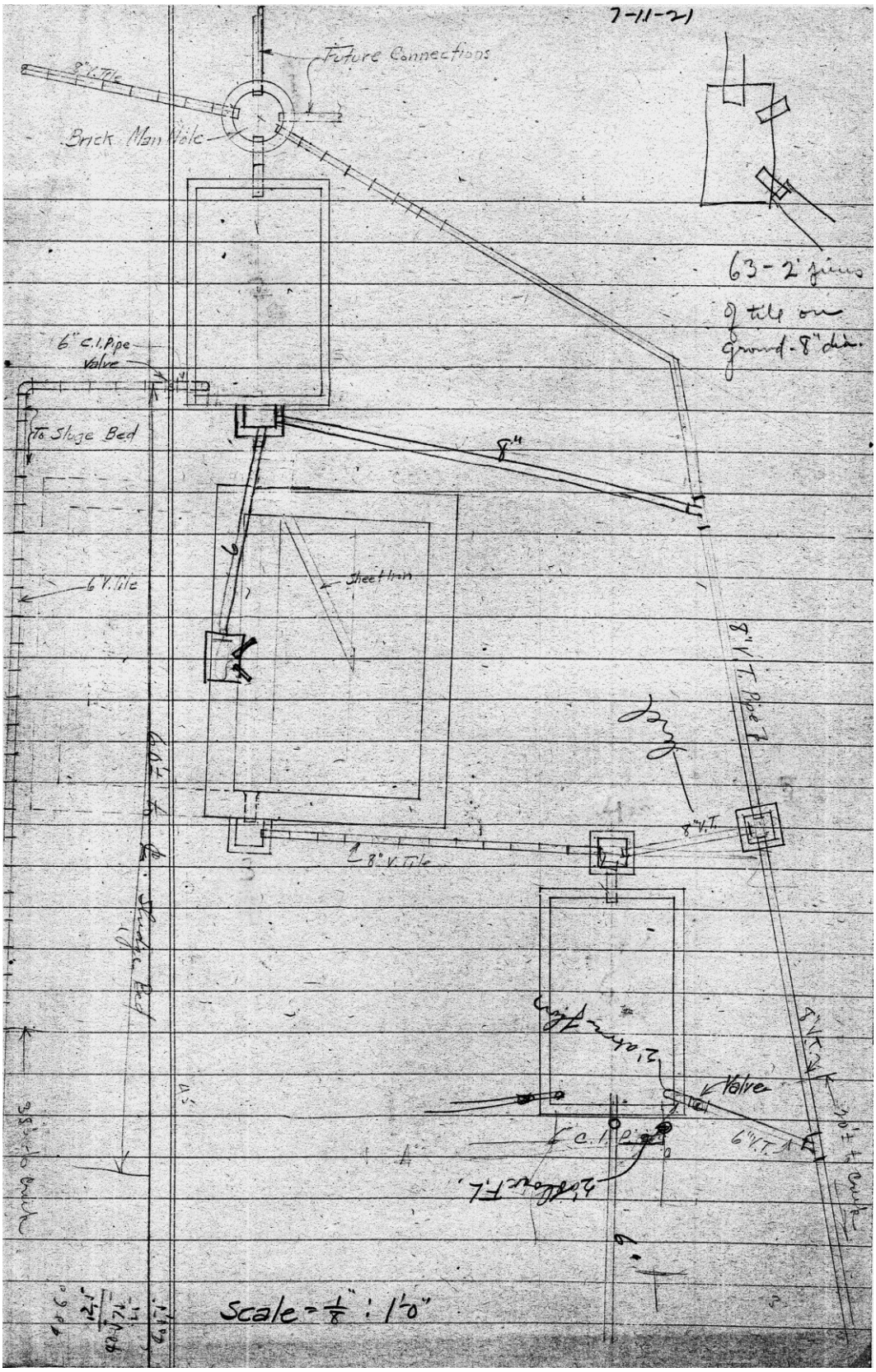
APPENDIX 2

Sewerage Disposal Plant Schematics and Drawings,
1 July 1921.

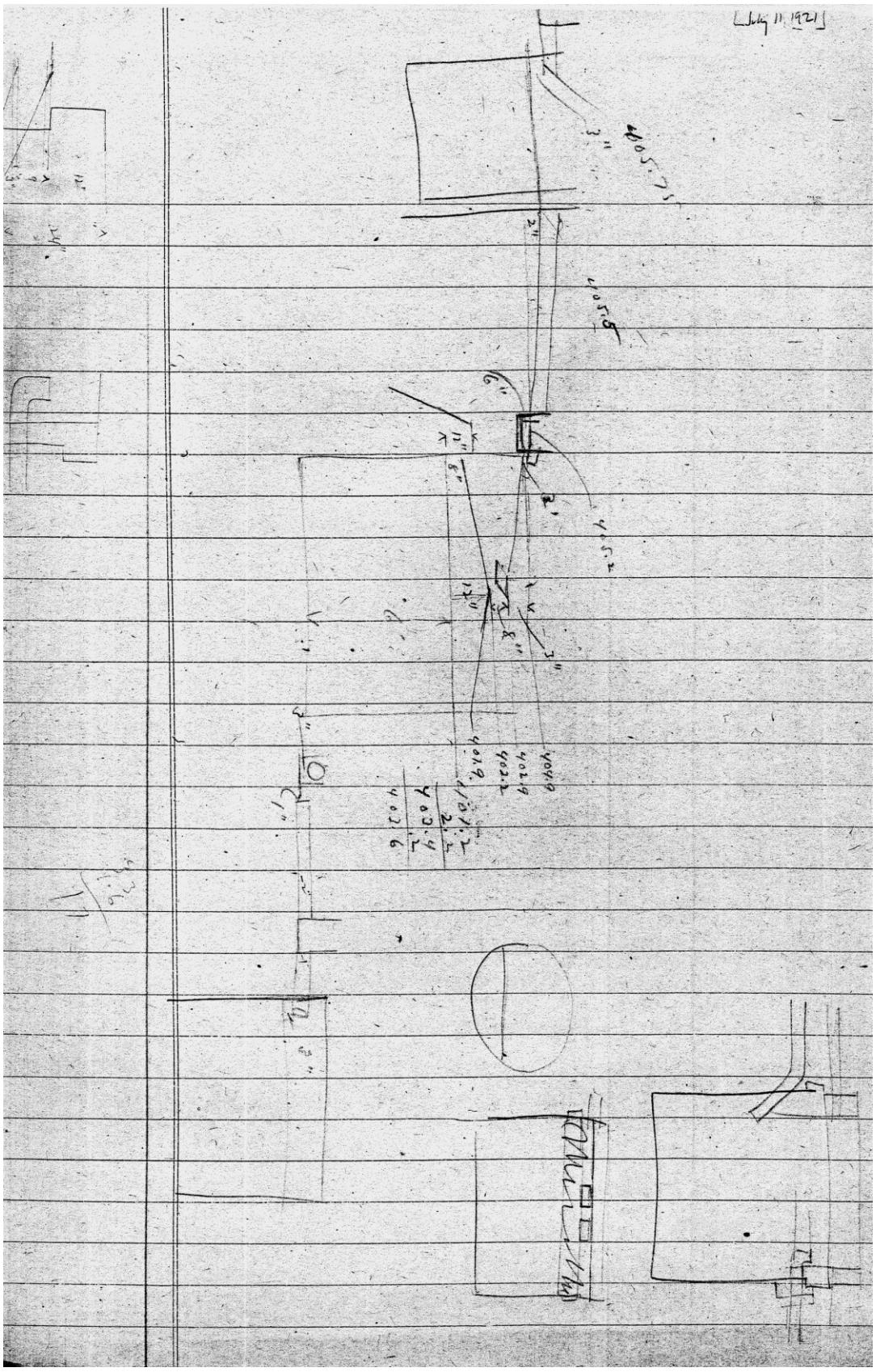
University of North Carolina Papers #40005,
University Archives, Wilson Library,
University of North Carolina at Chapel Hill



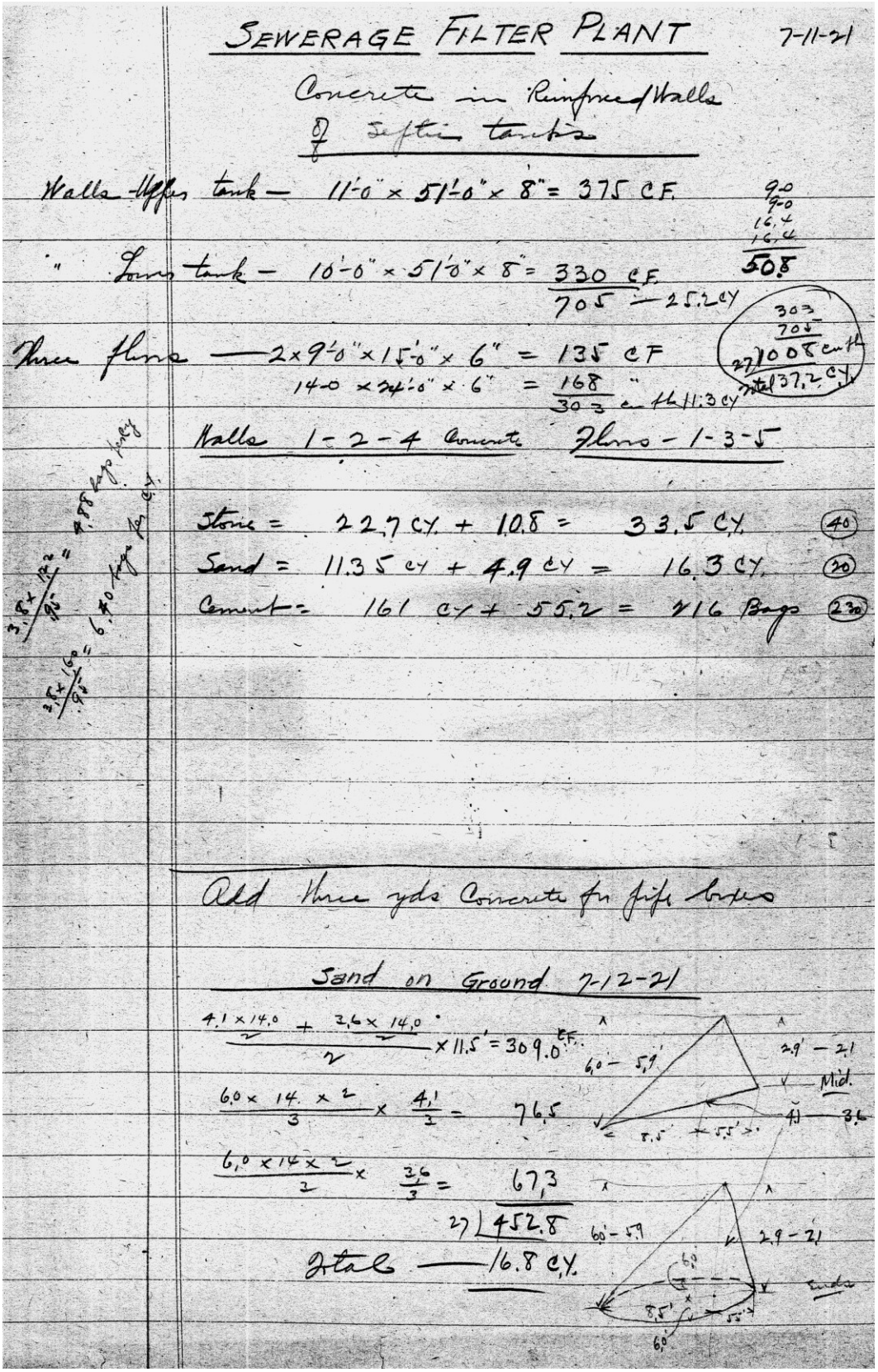
Appendix 2A. Diagrams and associated calculations for the large septic tanks and the concrete pouring molds necessary to create them.



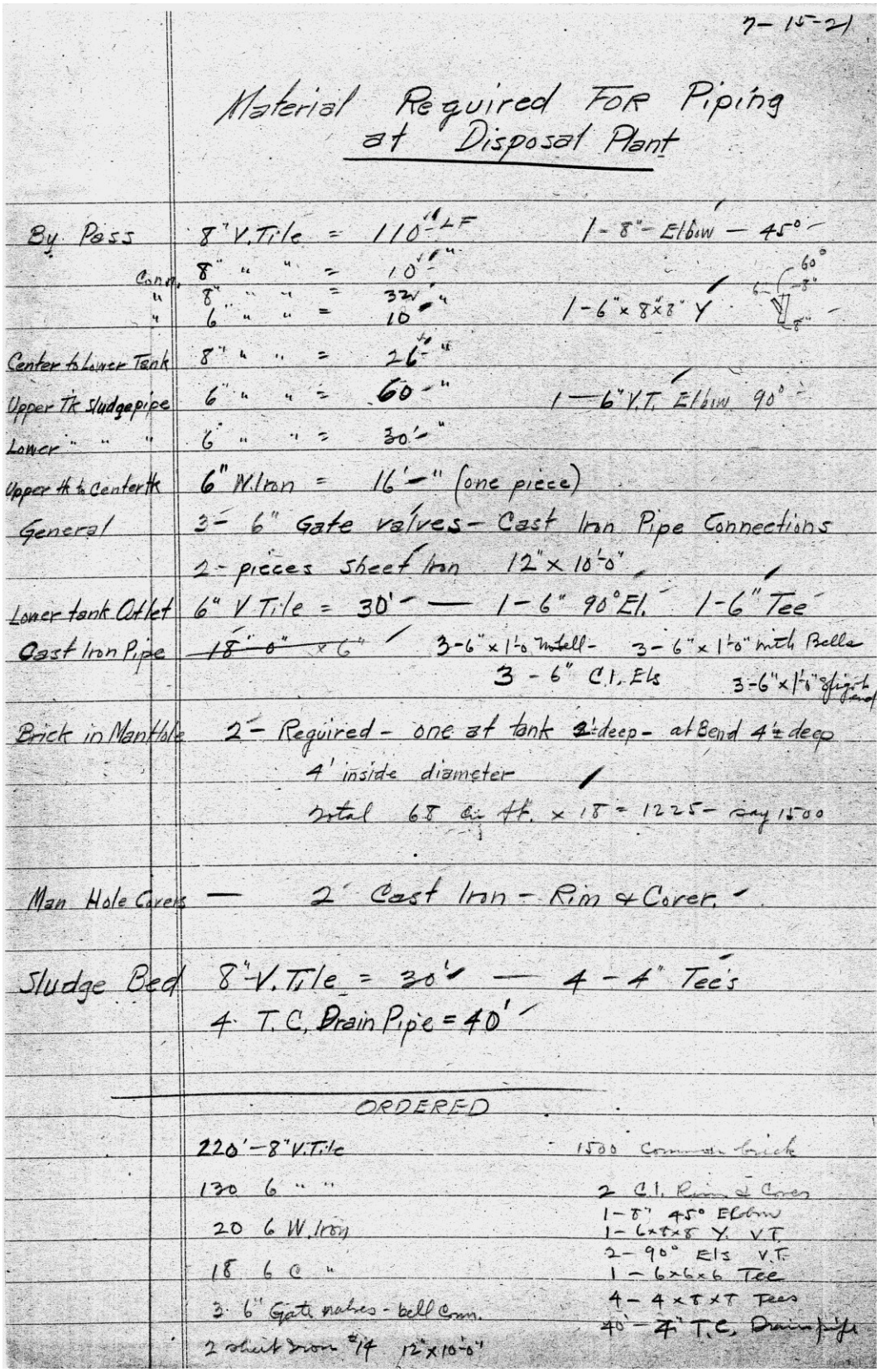
Appendix 2B. Areal schematic drawing showing the overall layout of the sewage disposal plant and the constituent parts relative to one another.



Appendix 2C. Rough planning profile sketch of sewage disposal plant.



Appendix 2D. Construction-related calculations for the disposal plant, including concrete mixing ratios and necessary raw material amounts based on tank necessities.



7-15-21

Material Required FOR Piping at Disposal Plant

By Pass — 8" V.Tile = 110'-0" LF — 1-8" Elbow — 45°

Conn. " " 8" " " = 10'-0"

" " 8" " " = 32'-0"

" " 6" " " = 10'-0" — 1-6"×8"×8" Y

Center to Lower Tank — 8" " " = 26'-0"

Upper Tk Sludgepipe — 6" " " = 60'-0" — 1-6" V.T. Elbow 90°

Lower " " " — 6" " " = 30'-0"

Upper Tk to Center Tk — 6" W.Iron = 16'-0" (one piece)

General — 3-6" Gate valves - Cast Iron Pipe Connections

2-pieces Sheet Iron 12"×10'-0"

Lower tank Outlet — 6" V.Tile = 30'-0" — 1-6" 90° El. 1-6" Tee

Cast Iron Pipe — ~~18'-0" × 6"~~ 3-6"×1'-0" Mell - 3-6"×1'-0" with Bells

3-6" C.I. Els 3-6"×1'-0" Spigot end

Brick in Manhole — 2- Required - one at tank 3' deep - at Bend 4' deep

4' inside diameter

Total 68 Cir. Ft. × 18 = 1225 - say 1500

Man Hole Covers — 2' Cast Iron - Rim & Cover

Sludge Bed — 8" V.Tile = 30' — 4-4" Tee's

4" T.C. Drain Pipe = 40'

ORDERED

220'-8" V.Tile

130 6" " "

20 6 W.Iron

18 6 C "

3 6" Gate valves - bell Conn.

2 sheet Iron #14 12"×10'-0"

1500 Common brick

2 C.I. Rim & Cover

1-8" 45° Elbow

1-6×8×8 Y V.T.

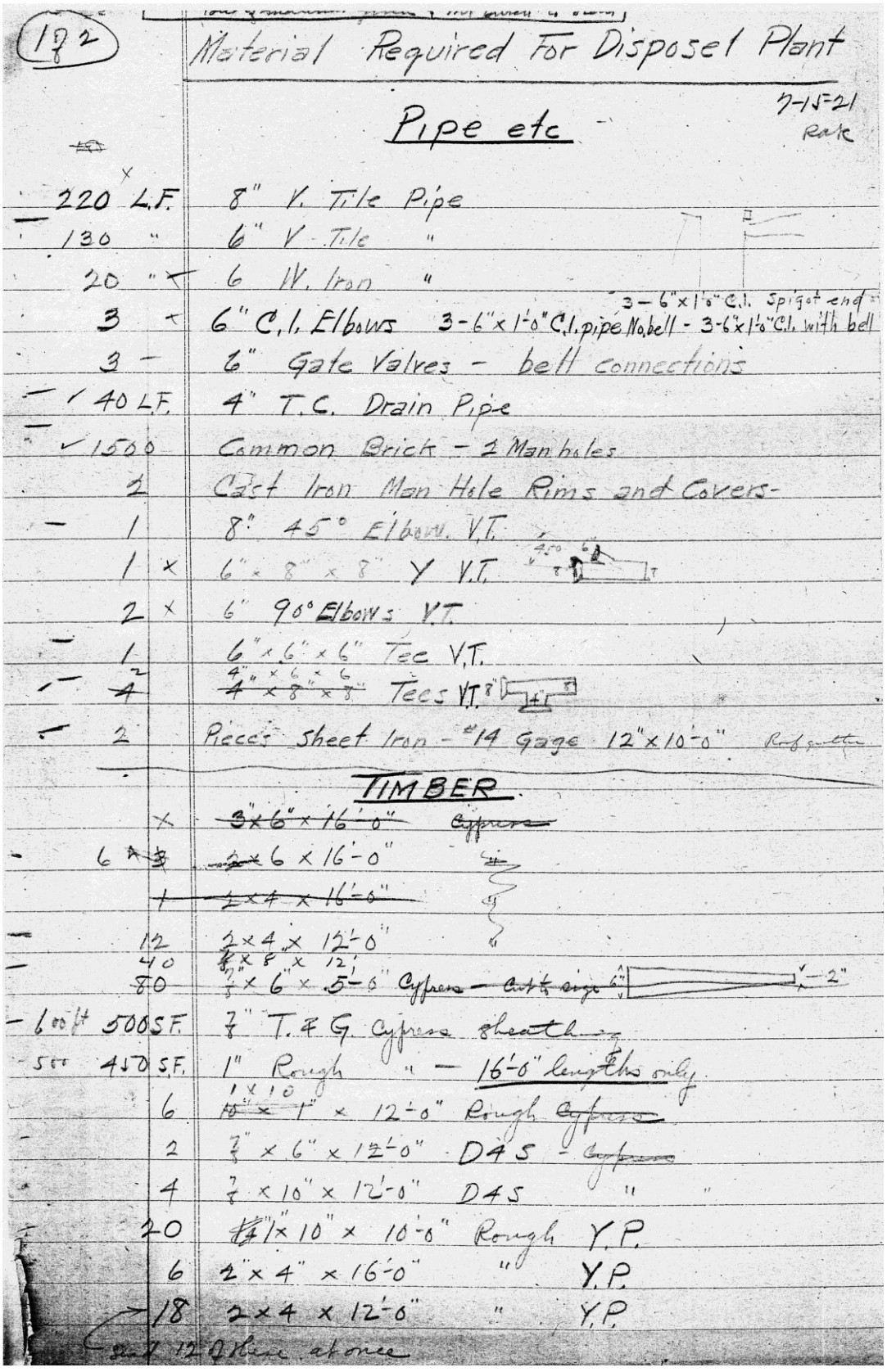
2-90° Els V.T.

1-6×6×6 Tee

4-4×8×8 Tees

40'-4" T.C. Drain pipe

Appendix 2E. Material requisition list detailing necessary parts and amounts for each element of the sewage treatment facility. Some pending orders at the time are also itemized



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Material Required For Disposel Plant

7-15-21
Rak

Pipe etc

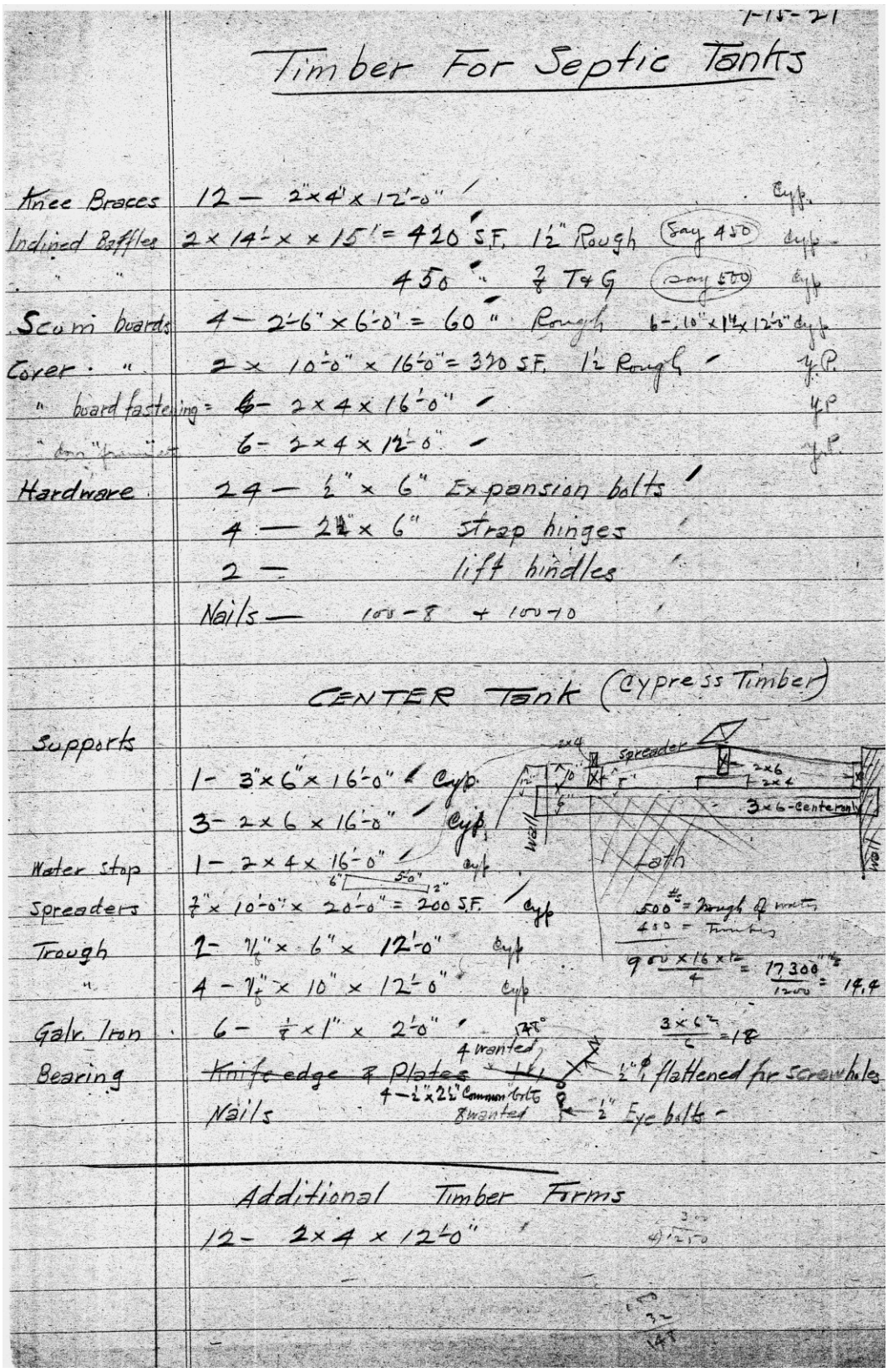
220	L.F.	8" V. Tile Pipe
130	"	6" V. Tile "
20	"	6 W. Iron "
3		6" C.I. Elbows 3-6"x1'-0" C.I. pipe No bell - 3-6"x1'-0" C.I. with bell 3-6"x1'-0" C.I. spigot end
3		6" Gate Valves - bell connections
140	L.F.	4" T.C. Drain Pipe
1500		Common Brick - 2 Manholes
2		Cast Iron Man Hole Rims and Covers
1		8" 45° Elbow V.T.
1		6"x8"x8" Y V.T.
2		6" 90° Elbows V.T.
1		6"x6"x6" Tee V.T.
4		~~4"x8"x8"~~ 4"x6"x6" Tees V.T.
2		Pieces Sheet Iron - #14 Gage 12"x10'-0"

TIMBER

		~~3"x6"x16'-0" Cypress~~
6		~~2~~ 6 x 16'-0"
		~~2x4 x 16'-0"~~
12		2x4 x 12'-0"
40		2"x8" x 12'
80		2"x6"x5'-0" Cypress ~~cut to size~~
1600	SF.	⅞" T. & G. Cypress sheeting
500	450 SF.	1" Rough " — 16'-0" lengths only
	6	1x10 ~~10"x1"~~ x 12'-0" Rough ~~Cypress~~
	2	⅞"x6"x12'-0" D4S ~~Cypress~~
	4	⅞"x10"x12'-0" D4S " "
	20	~~1"~~ 1"x10"x10'-0" Rough Y.P.
	6	2"x4"x16'-0" " Y.P.
	18	2x4 x 12'-0" " Y.P.

Start 12 O'Clock at once

Appendix 2F. Continuation of list cataloging necessary building materials and foreseen usage.



Appendix 2G. Itemized timber needs for the sewage plant. Included on the bottom half of the page is a detailed list of materials used in the retrofitting of the central tank, as well as a rough sketch of the associated spreader mechanism.

APPENDIX 3

Certificate of Incorporation for the Battle Park Association Filed and Certified by Secretary of State, 7 April 1933.

Office of President of the University of North Carolina (System): William C. Friday Records #40009, University Archives, The Wilson Library, University of North Carolina at Chapel Hill

Certificate of Incorporation

of

Battle Park Association.

This is to certify, that we, the undersigned _____ in number, all of whom are residents of Orange County State of North Carolina, do hereby associate ourselves into a corporation under and by the laws of the State of North Carolina as contained in chapter 22 of the Consolidated Statutes of North Carolina and amendments thereto, and to that end do hereby set forth:

1.

That the name of the corporation shall be Battle Park Association, Incorporated

2.

The location of the principal office of the corporation shall be in the Town of Chapel Hill, County of Orange and State of North Carolina.

3.

The period of existence of the corporation shall be sixty years.

4.

The objects and purposes for which the corporation is formed are as follows:

(a) To improve, preserve and care for those areas of the property of the University of North Carolina known as "Battle Park", "Lake Reservoir Region", and such other areas as may be designated by the University Trustees, subject to the approval of the Association, by building and maintaining trails, walk ways, bridges and bridle paths therein, by removing obstructions to the streams, by improving the natural springs, by clearing out dead and fallen timber and the removal of brush, and by

Appendix 3 continued.

the maintenance of healthful and sanitary conditions therein, by protecting the birds and game, and by developing these regions in such a manner, by planting and otherwise, as to serve as far as possible as arboretums and botanical gardens, and bird and game sanctuaries, for study and investigation.

To mark the main entrance to Battle Park with an appropriate tablet commerating the interest in and the care taken of, the park by Dr. Kemp P. Battle; To suitably mark such other areas as may be under the jurisdiction of the corporation in commemeration of certain individuals; also to mark, name or otherwise designate the trails and paths therein; To stimulate a greater use of the facilities of Battle Park for recreational purposes by students of the University of North Carolina and by others; To develop in the users of Battle Park and the other areas a greater care and regard for the trees and shrubbery therein:

(b) To do and perform any and all acts and things necessary or reasonably incident to the accomplishment of the aforesaid objects and purposes of the corporation not inconsistent with the laws of the State of North Carolina and to cooperate with other organizations and agencies in carrying out the purposes of the corporation.

5.

The corporation shall be a non-profit corporation having no capital stock and receiving no compensation from the University of North Carolina nor from the State of North Carolina, nor shall any operations be carried on by the corporation for monetary profit.

6.

The names and post office addresses of the members of incorporators are as follows

Appendix 3 continued.

State of North Carolina
Orange County.

This is to certify that on this the _____ day of _____ 193_ before me _____, a notary public, personally appeared

who, I am satisfied are the persons named in and who executed the foregoing certificate of incorporation of the Battle Park Association, and I having first made known to them the contents thereof, they did each acknowledge that they signed, sealed and delivered the same as their voluntary act and deed, for the uses and purposes therein expressed.

In testimony whereof, I have hereunto set my hand and affixed my official seal this the _____ day of _____ 193_.

_____
Notary Public

Appendix 3 continued.

7.

The Board of Directors of the said corporation shall consist of 5 members which said number may be, from time to time, increased as provided by the Bylaws. Said Board of Directors shall have power by vote of a majority thereof to make, alter, amend or rescind the Bylaws of said corporation, which shall remain in full force and effect until amended by the Board of Directors or the members thereof.

In witness whereof, we have hereunto set our hands and affixed our seals this the _____ day of _____ 193_

_____ Seal

_____ Seal

_____ Seal

_____ Seal

_____ Seal

_____ Seal

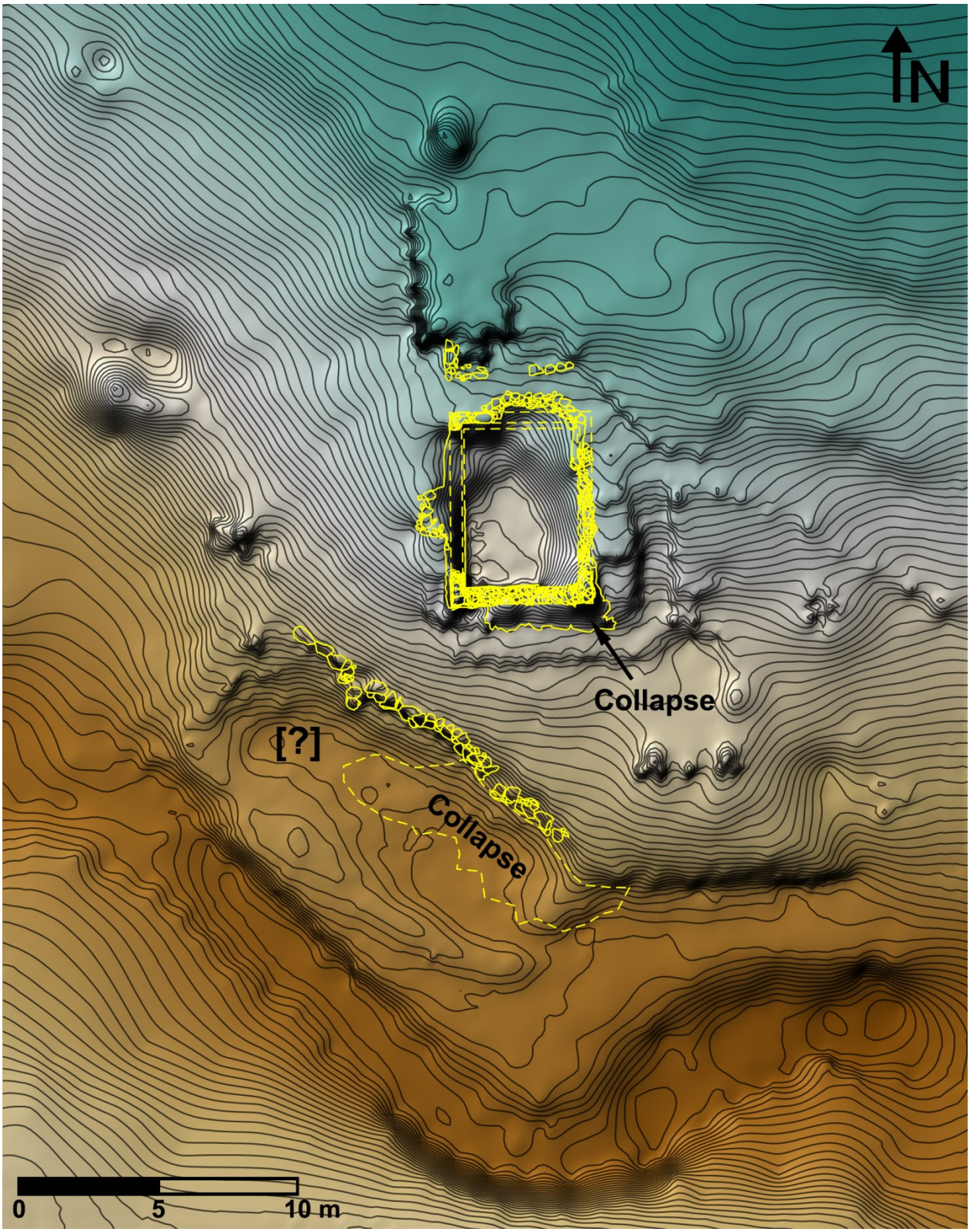
_____ Seal

_____ Seal

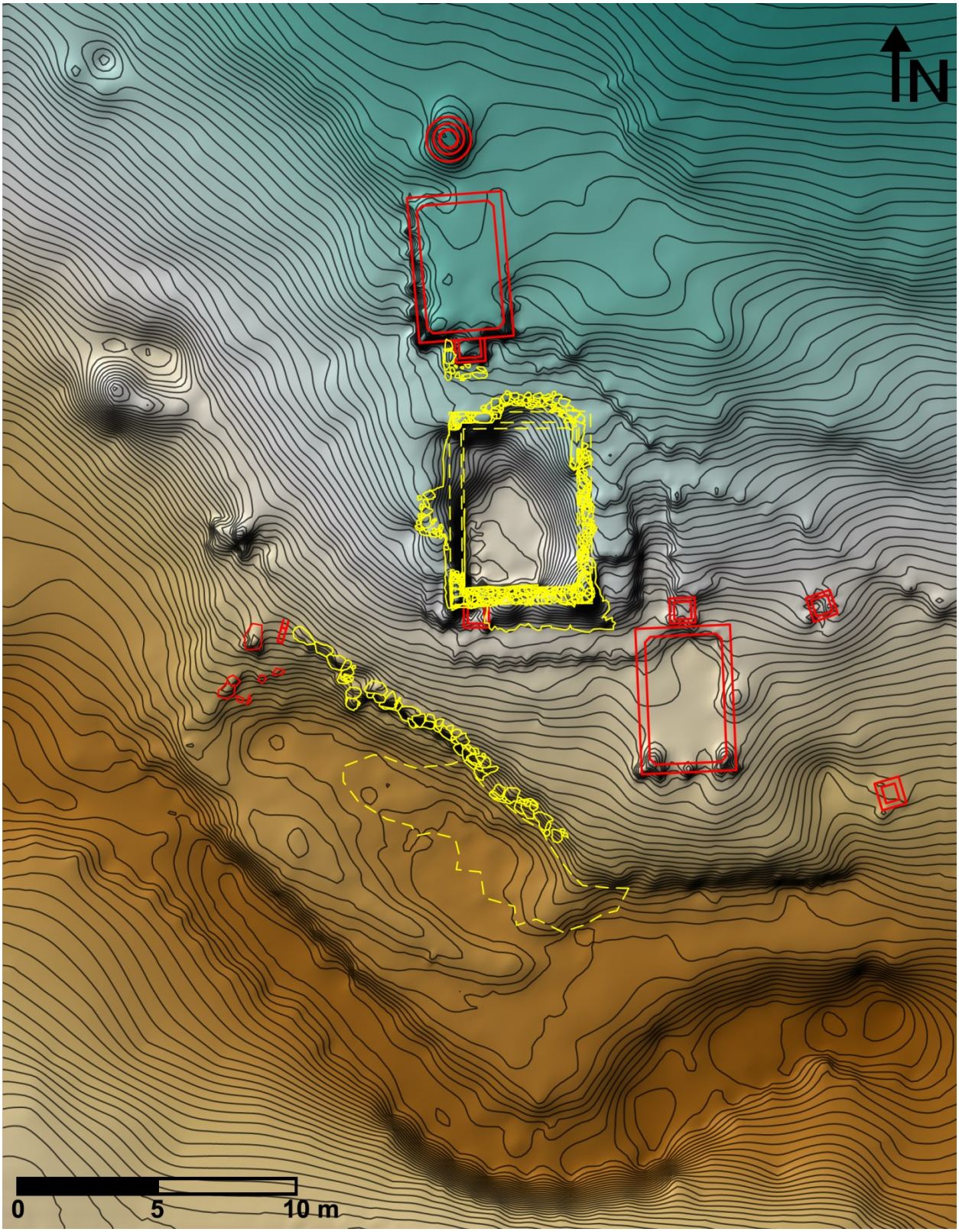
Appendix 3 continued.

APPENDIX 4

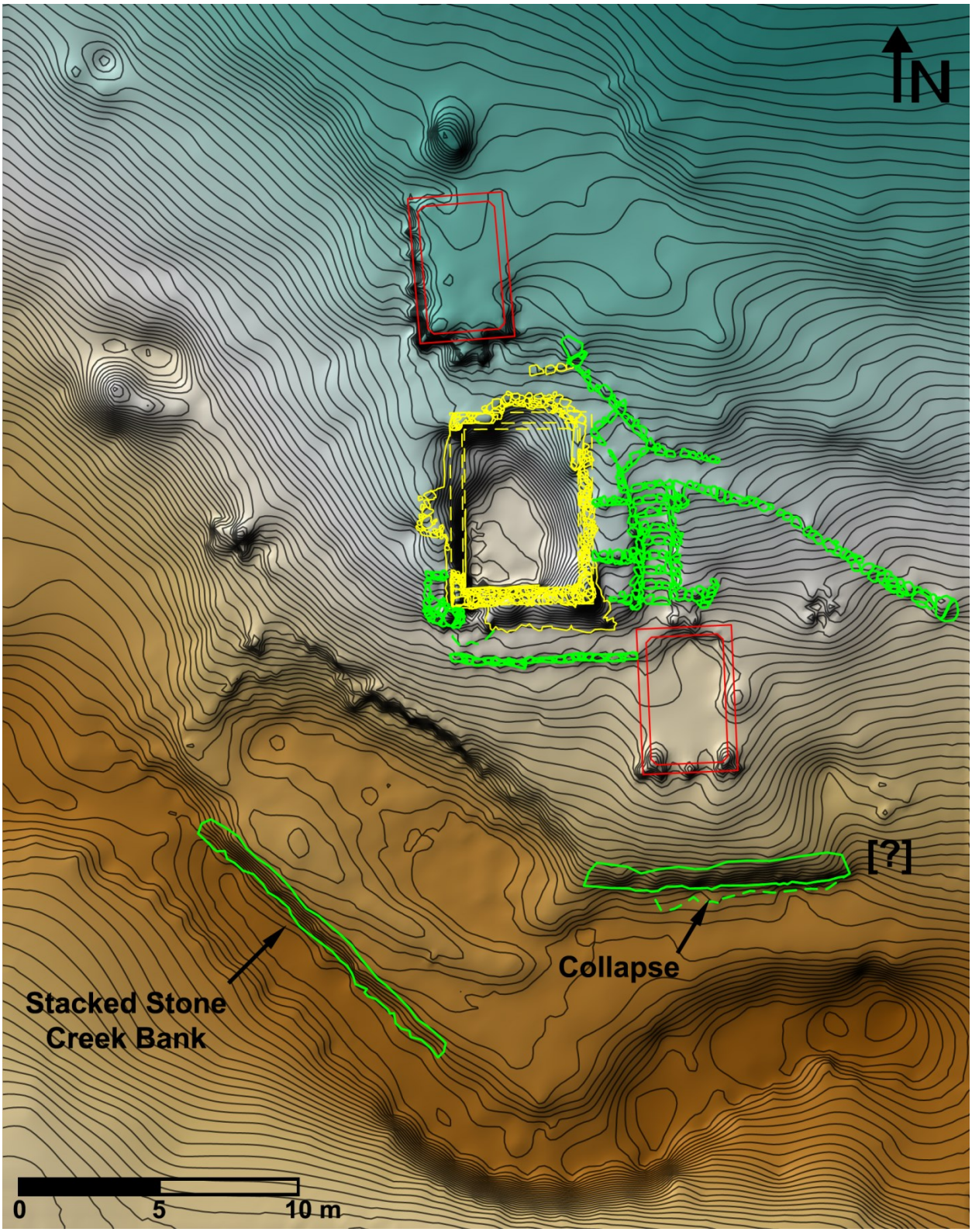
Shaded-Relief Contour Maps of the Battle Park Pavilion Site Showing Archaeological Features Associated with the Initial Cesspool, the Ensuing Sewage Disposal Plant, and the Eventual Recreational Pavilion



Appendix 4A. Shaded-relief map of site 31OR639 with contour overlay (10 cm interval), showing features attributed to the construction and use of the cesspool component outlined in yellow. Symbol [?] denotes uncertainty as to whether the adjacent retaining wall feature was constructed as part of this component or the subsequent one.



Appendix 4B. Shaded-relief map of site 31OR639 with contour overlay. Outlines depict features attributed to the use of the site for the sewage disposal plant component. Red represents features constructed specifically for the disposal plant while yellow shows retrofitted aspects of the site from the previous cesspool component.



Appendix 4C. Shaded-relief map of site 31OR639 with contour overlay. Outlines depict features attributed to the use of the site for Battle Park Pavilion component. Green represents features constructed specifically for the pavilion. Red and yellow denote features from the cesspool and disposal plant, respectively, that were subsequently reused for the pavilion component. There is some doubt whether the retaining wall left of symbol [?] belongs to the pavilion construction episode or a preceding component.