Churchyard Archaeology: Archaeological Investigations at the First Baptist Church in America

Edited by
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and
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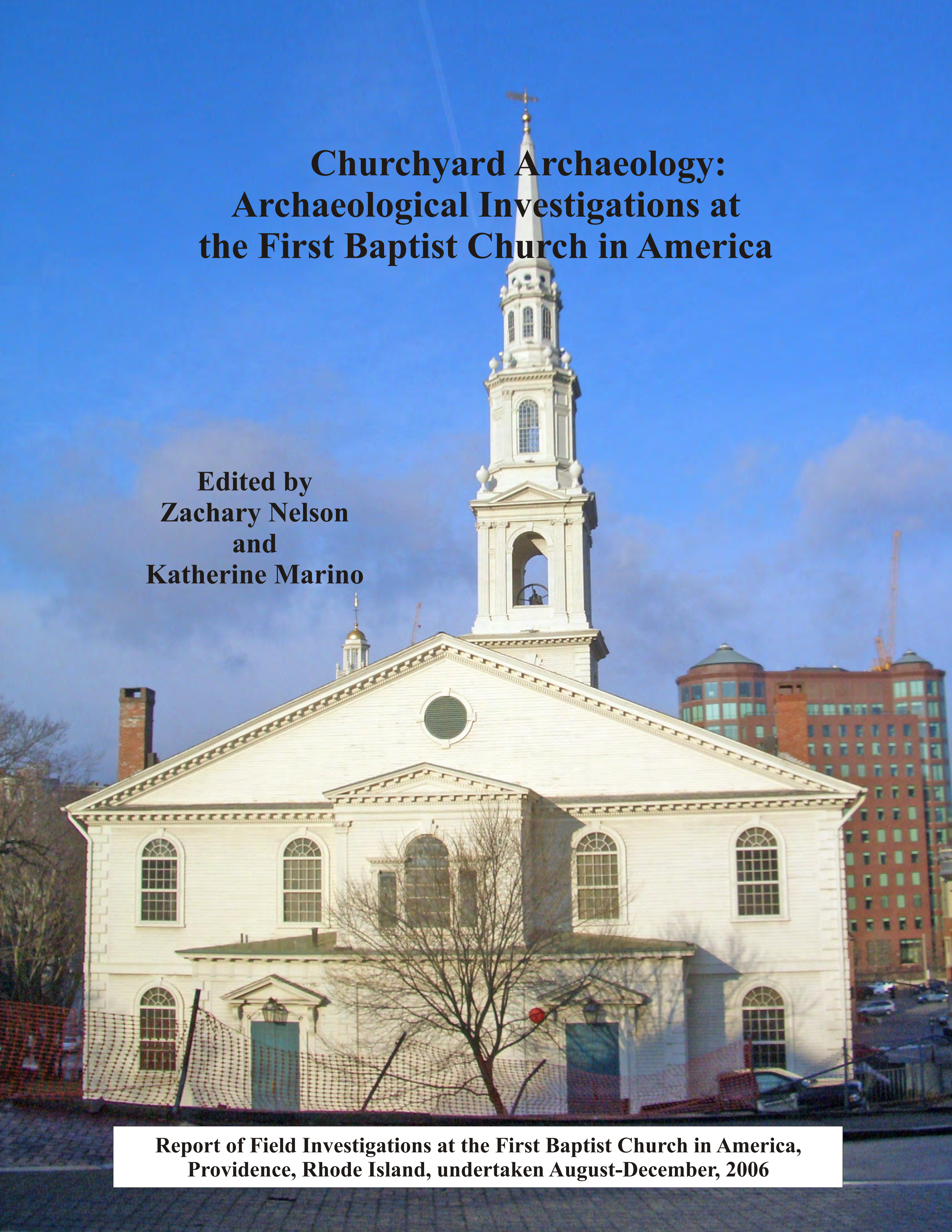

Report of Field Investigations at the First Baptist Church in America, Providence, Rhode Island, undertaken August-December, 2006

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Zachary Nelson, Principal Investigator

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Acknowledgments

There are many people and institutions who made this work possible and were crucial for supporting this project.

We wish to thank the membership of the First Baptist Church in America for allowing us the privilege of investigating their property. In particular Professor J. Stanley Lemons, Ruth Macaulay and Michael Burch were instrumental in their support, aid, and willingness to help.

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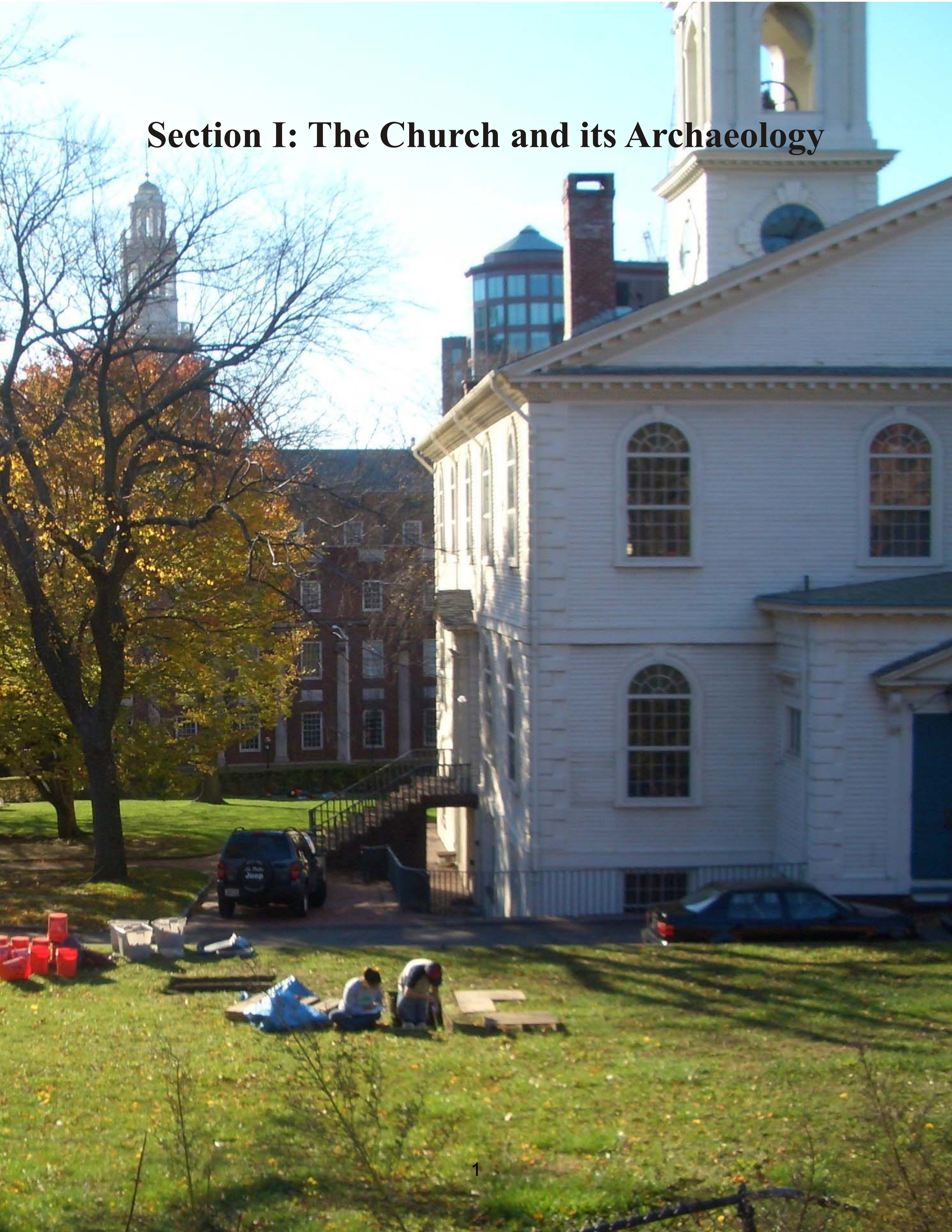
Stephen Houston, Department of Anthropology Professor, coordinated our efforts with the Department of Anthropology and benefitted our excavations with his insights.

We are very grateful to Dr. Paul Robinson and the State of Rhode Island and Providence Plantations Rhode Island Historical Preservation and Heritage Commission for approving our application and answering questions along the way.

Krysta Ryzewski, Kaitlin Deslatte and Ninian Stein provided much needed expertise on the historical aspects of Rhode Island archaeological assemblages. Their timely assistance informed our results and pointed us in the proper direction.

To all we say a heartfelt “Thank you!”

Section I: The Church and its Archaeology



Chapter 1

Churchyard Archaeology and Picnics

Zachary Nelson and Zöe Agoos

Communal land has a different archaeological signature than private land. On private land, an archaeologist can reasonably infer that the excavation will uncover a house, with the typical remains of household debris, or a barn, with its own characteristic artifacts. Communal land is very different. Communal property often has many different uses unrelated to households. It can be used for both religious and secular activities. The artifacts recovered may include a mixture of debris from the various kinds of activities that take place on public land. These activities are diverse: picnics, flower picking, assemblies, butterfly catching, kite flying, funerals, tourists, Independence Day activities, parade watching, and even fires or building demolitions. This wide range of possible activities makes the archaeologists' work harder. For example, butterfly catching does not leave many artifacts for the archaeologist to find.

The land on which the First Baptist Church in America sits is the focus of the archaeological work presented here. This project is unusual in that the main component of the land, the church building, is still standing and still in use. Excavations proceeded around the building on land that was never "improved" by construction. Previous to its claim by European settlers, it lay vacant. The original settler, Thomas Angell, grew an orchard on it, and subsequently it was incorporated into the First Baptist Church plot. As an archaeologist, this provided an exciting opportunity to excavate fallow land.

PICNIC INTERPRETATION

The diversity of artifacts encountered during excavation attests to the idea that no land in an urban environment is truly fallow. Human activities over the years leave casual artifacts on the land, which are slowly incorporated into the soil and eventually buried. This process still continues as plastic bags, newspaper remains, and cigarette butts are moved by man and the agents of nature into their final resting place. Dropped buttons, and restaurant trash flung over the west hedge still accumulate on the grounds.

In examining the kinds of artifacts found during excavation, and their relative distribution across the grounds (all presented in the next few chapters), we decided that the principle human activity that fit this particular combination of detritus was exemplified by picnics. Outdoor feasting, whether by individuals or groups, has been a common element of historic New England. Clambakes, for example, have been known since pre-Contact times and were incorporated into the traditions of colonists (see Caraberis chapter for more information). The use of picnics as a descriptive category is not meant to limit the archaeological significance of the finds, but rather as a means of classifying the majority of elements. Clearly, the brick fragments found in the test pits are not picnic remains. However, ceramics, animal bones, shell, pipes, buttons, etc. could be reasonably interpreted as picnics.

Not all outdoor activities are picnics. The First Baptist Church occasionally held its services outdoors during the summer months. Likewise, Brown University has used the church building and grounds for commencement activities for decades. Activities such as these would contribute to the archaeological record, especially if buttons or coins were lost. Similarly, communal land receives “walk-thru” trash. People drop trash as they walk on occasion, rather than depositing it garbage dumps. Thus, a few objects found might have no relation to the church property other than its moment of deposition. The charcoal pencils found in A1 might have dropped off the sidewalk by a student of the Rhode Island School of Design.

Finally, in terms of deposition, the artifacts recovered might not by in their primary context. Church buildings are often used for social gatherings wherein food plays a significant part. It is very reasonable to assume that the food remains from, for example, a wedding might have been buried in the lawn during the early nineteenth century rather than carted to a homestead's trash pile. Burning trash on property was also not unheard of in early urban environments. Under this view, the artifacts found in unit B2 may have come from a pot-luck dinner held inside the church, whose remains were deposited in an outdoor trash area afterwards.

PURPOSE AND HISTORY OF PROJECT

Archaeological investigations are not undertaken lightly. In this case, there were many reasons for excavating at the grounds of the First Baptist Church. The structure was built in 1775, and has been in continual use since. This allows us to understand deposits from ephemeral activities around a religious setting. Further, archaeological research around College Hill (the location of Brown University) is still relatively unknown. This opportunity allowed us to examine the material culture of the area. Indeed, some of the ceramic types uncovered in the excavations are on display in the Pendleton House (Van Doren, email 2007).

An addition reason was to teach future archaeologists how to excavate and analyze archaeological sites. This research occurred in conjunction with a Brown University anthropology class (AN 160) on archaeological field methods. In a class setting, finding artifacts was secondary, although it made excavations much more exciting and satisfying. Students in the class carried out excavations, screened artifacts, hauled dirt, washed artifacts, analyzed an artifact category, and wrote the following chapters. This report is their first foray into archaeology, and demonstrates the success of the class in learning archaeological skills.

The impetus for excavating at The First Baptist Church grounds came because members of the church community were interested in learning more about their past. This relationship is detailed in a memo sent to the First Baptist Church membership dated April 4, 2006:

> To: The Membership of the First Baptist Church
> From: Sue Alcock
> Director, Institute for Archaeology and the Ancient World
> Steve Houston
> Professor, Department of Anthropology
> Zachary Nelson
> Post-doctoral Fellow, Department of Anthropology
> Re: Possible archaeological investigation of the FBC site, Fall 2006
>
> In 2005, Karen Newman, then interim Director of the Institute for Archaeology and the Ancient World, drew to our attention an interest on the part of some members of the First Baptist Church community in having a small-scale archaeological project conducted on church grounds. This matched a growing concern on our part about the present lack of any archaeological training experience, in a place both interesting and accessible, for Brown undergraduates.
>
> In early February 2006, we met with Professor J. Stanley Lemons, Ruth Macaulay and Michael Burch to discuss this possibility in more detail. After a very productive meeting, in which many logistical issues were discussed, we agreed that a proposal for such work should be submitted to the full membership of the Church.

For Brown students, this location was ideal for its accessibility and potential. Past archaeological field classes from the university spent most of class time in transporting students to and from the site. Transportation was never an issue for our excavations. In addition, the potential for the First Baptist Church property to yield important artifacts was, and remains, very high. The church grounds did not have modern construction debris to sort through. Hence, artifact collection would be relatively easy, and there was a possibility for finding Native American artifacts in addition to colonial through modern artifacts. However, our excavations did not uncover any Native American artifacts.

Support from the First Baptist Church in America members was tremendous. The membership was clearly interested in our findings, and presentations given at the church on the archaeology were well-attended. Although the first “community dig” day was rained out, those attending at a later date were pleased with the opportunity to work with archaeologists in recovering their past. We are very grateful to the membership of the First Baptist Church in America for this opportunity to study their past.

Chapter 2

A Brief History of the First Baptist Church in America

Katherine Marino

The history of the First Baptist Church in America is a long one, the church having been founded in 1638, and one which is attested by a myriad of diverse sources and artifacts. The choice of what to cover in this short introduction to the Church was therefore not an easy one. In the end it was decided that the best way to complement the following sections on New England Church Architecture (Campanie, this volume) and on Maps and Pictoral Research on the Church (Charest, this volume), was to provide a general introduction to the congregation of the First Baptist Church and show how its birth and evolution have found expression in the current Meeting House. This will be done by focusing on a select group of significant personalities and moments in the church's history, the choice of which can only be considered arbitrary at worst and partial at best. Although necessarily abbreviated in scope and depth this essay owes a great deal to the wonderful book First: The First Baptist Church in America, by local Historian and Church Member, J. Stanley Lemons, in which the author weaves a coherent narrative of both the building's and congregation's history from many disparate primary sources. It is to this source that interested readers should turn for a more comprehensive and nuanced history of the First Baptist Church.

It is now appropriate to turn to the subject at hand, and there is no better place to start than with the famous founder of the First Baptist Church himself: Roger Williams. Having studied at Pembroke College at Cambridge to become an Anglican Priest

Williams was denied his Masters Degree in 1628 when he refused to swear an oath promising to obey the Bishops of the Anglican Church. Not long after he found himself among the second wave of Pilgrims to the Mass Bay Colony in February 1631. Although offered the place of Assistant Minister to the Boston Church, he refused the position on the grounds that the Church would not sever its ties with the Church of England, an institution which he perceived as corrupt.

Soon after he moved to Plymouth to be among the separatist pilgrims where he was the Assistant Minister of the church for two years until 1633, when once again he parted ways because of an ideological dispute over the interactions of the congregants with the Church of England. In August 1634 he became the minister of the Salem church only to be forced to resign in October of 1635 because of what was deemed to be the seditious doctrine he was preaching. It was decided at this point to send him back to England on the first ship in the spring, sparing him the journey over the brutal winter sea, provided he could hold his tongue. Williams would not in fact be silent and continued to preach all through the winter and it was thus decided to send him off in February on the next ship which came to Salem. Having learned of this from a concerned friend, Williams fled Salem in February of 1636, eventually being taken in by the Wampanoag Indian tribe, whose language he spoke and with whom he was friendly. He was joined in the spring by friends from Plymouth colony, and after a dispute with the colony about where he might legally set up his own town outside of the borders of the colony; he crossed the Seekonk River in the summer of 1636 and founded the town of Providence.

The only constitution for the city of Providence was that no man should be molested for his conscious, and that church should be separate from state. To that end, when a group of Antinomian religious refugees arrived in 1837, having been exiled from the Massachusetts Bay Colony, Williams welcomed them and allowed them to practice their particular form of worship, which stressed salvation by faith rather than by compulsory service. Among these refugees was Catherine Scott, an avowed and open Baptist. In 1638 she convinced Roger Williams to become a Baptist as well, along with 20 other members of the city and thus the First Baptist Church was born.

The Baptist denomination was born from the belief that only people who were old enough to understand the commitment that they were making could be baptized and welcomed into the church. The movement had first appeared in its then current form in Holland in 1609 with the church founded by John Smyth and then in England in 1611 in a church founded by Thomas Helwys. The first Baptists were known as general Baptists, meaning that everyone had an equal opportunity to be saved. The branch drew its pastors from the laity which gave the church an egalitarian and even rustic feel. In the 1630s the sect which came to be known as the Particular Baptists came about, a sect which followed Calvin in his belief that only a few "elect" people would ever have the opportunity to be saved. Although Roger Williams himself was a Particular Baptist and close follower of Calvin, the First Baptist Church was for its first 130 years a congregation of the General Baptist order.

Having been convinced by Catherine Scott in 1838 to become a Baptist Williams had a friend baptize him, after which point he baptized 20 other followers into the First Baptist Church. However, his association with the church he founded was short lived and after four months Williams broke official ties to the church. His professed reason was that any baptism which was not carried out by an Apostle of Christ or a successor thereof was not a valid baptism, and since he believed the true line of apostolic succession had been lost when Christianity became the state religion of Rome in the fourth century, he remained an unaffiliated preacher for the rest of his life, eagerly awaiting the next coming of Christ when the true church could be reestablished. Although his official involvement with the church ceased in 1638, the religious tolerance which he extended to it and which allowed its formation in the first place was to become an official part of the Rhode Island charter in 1663 when it was rewritten. Rhode Island was thus the first colony to make such religious freedom an integral part of its constitution and the First Baptist Church of Providence was the first and most enduring symbol of this progressive outlook, which is now so ingrained in our collective conscience as to often go unquestioned.

Although established in 1638 the church kept no records until 1775, and so its first 120 years of history are known only incompletely. The first meetinghouse was built by the 6th Pastor of the Church (albeit overlapping with other Pastors), Pardon Tillinghast in 1700. This first building was a small building 20 by 20 feet square and located on a plot at the corner of what is now North Main and Star streets owned privately by Tillinghast. Prior to this point members of the church had worshipped out of doors or in the homes of members. Although small, the building had a centrally located fire pit and thus was heated, unlike the meeting house which stands today when it was first constructed. The building and land were deeded to the congregation in 1711; however, the structure was soon replaced in 1726 with the next incarnation of the Meeting House, a 40 by 40 foot structure located next to the original building whose construction was prompted by competitive impulses toward the contemporaneous building of meetinghouses by Quakers, Anglicans and Congregationalists in Providence. With the building of the current meeting house in 1774-5 this second meeting house became a sugar refinery, a rag depot, a paper mill and a storehouse until it was destroyed in the 19th century.

The impulses which lead to the building of the third and final meetinghouse in 1774-1775 are several. Beginning in the 1720s a movement was afoot among urban Baptists throughout the nation stressing social respectability and decorum. Traditionally an egalitarian movement which refused to hire ministers for fear of being accused of the sin of simony, the Baptist church was often looked down on as unrefined and rural. However, members of the Baptist church in urban centers, like Providence and Philadelphia, were often wealthy business men who chafed at this label and urged their churches to refine their images. This was done at the First Baptist by abolishing some of the lesser rituals like the kiss of charity and the washing of feet, as well as by keeping lists of members and for the first time hiring ministers who were literate in the classics. The first such minister at the First Baptist Church was James Manning, a pastor sent by the Philadelphia Baptist Association in 1764 to found a New England Baptist College known as Rhode Island College and later as Brown University.

The hiring of James Manning was a controversial one in the First Baptist Church and lead to a schism in 1771 between the former Pastor Samuel Winsor Jr. and his adherents and the new charismatic Pastor hired at the urging of the wealthy urban members of the church. The issue in contention was the ritual of laying on of hands, the Baptists believing this to be essential were known as the Six Principle Baptists and at this time they moved to Johnston Rhode Island to found a new Baptist church. Eventually the sect died out in the 19th century. This was not the first, nor would it be the last schism in the history of the First Baptist Church, however. In 1652 the Particular Baptists in the church had also sheared off and formed their own church. During the Great Revival of the 1730s -40s the denomination as a whole was divided again between the Regular Baptists who did not show emotion while worshipping and the Separate Baptists who believed that excitement during worship was the Holy Spirit working within them. The Northern churches, like the First Baptist were predominantly Regular Baptists. The Baptist movement, though, is one which is characterized by a number of fissions and fusions, and the history of the First Baptist Church proves no exception to this rule.

The current meetinghouse of the First Baptist Church was built under James Manning in 1774-5 partially in response to the need to move commencement at Brown to the Second Baptist Meetinghouse due to size constraints at the First Baptist. The land was acquired in a rather oblique way from John Angell who was not a Baptist and did not like the denomination. A friend of Manning's, the Anglican William Russel, purchased the land from Angell and then sold it to the Charitable Baptist Society, the governing board of the First Baptist Church. Although building began on the church on June 3rd 1774 the acquisition of the land was not finalized until July 28th of that year. The construction proceeded under the architect Joseph Brown. Work proceeded quickly when a flood of Boston workers migrated to Providence after the port of Boston was closed in response to the Boston Tea Party. Further, members who could not afford to donate money to the building of the edifice were encouraged to donate labor.

The building was completed in 1775 and was the biggest building project in the North East at the time, seating 1200 people in a town with a total population of 4000. The building is typically viewed as a break with previous Baptist structures, in that its

Georgian and classical details were in stark contrast to the almost Quaker plainness of the earlier meeting houses, and due to its possession of a steeple – the first Baptist Church in America to possess such a feature. However, it did remain faithful to other aspects of Baptist architecture, with an 80 by 80 foot square foundation, its total lack of iconography (even a crucifix) and its possession of a pulpit rather than an altar, which emphasized the preeminent place of the spoken word over institutionalized ritual. Originally it also had a central aisle which bisected the church, however, members of the church found this too reminiscent of Catholic architecture and processing prelates and decided therefore to use the side entrances to access the building, thereby avoiding the aisle altogether.

Some of the most notable men in the church's history were not members of the church, such as Nicholas Brown, (after whom Brown University is named), who donated $2000 to buy a lot and build a parsonage in 1792, gave the pipe organ in 1834, owned multiple pews over the years including 16 in 1832 and was on the governing board of the Charitable Baptist Society for 32 years. His sister Hope Brown, who donated the chandelier in 1892 did not become a member of the church until the age of 68, and of the 12 men in charge of the building of the current Meeting House only one was a member of the church at the time when construction was begun in 1774. One reason for this break between official membership and sponsorship of projects was the difficult nature of initiation into the church, where one had to profess before a committee of church elders the workings of the Holy Spirit in one's life and had to be able to pinpoint and prove the moment at which one was converted to the church by the Holy Spirit.

Through the next two hundred and twenty years the church experienced many changes, both in regards to its physical structure and its human congregation. In 1832 the square pews were removed and seating for another 200 people added. The center aisle was eliminated at this time as was the second balcony, formerly used for minority seating, to make way for the organ. In the same year the pulpit was lowered. In 1838 a baptistry was built and 19 years later the basement of the church was excavated, making room for many women's and community outreach groups. Two years later in 1859 the church saw the addition of its first hymnals. In 1884 the baptistry was rebuilt with the addition of a now shuttered stained glass window above the pulpit, along with the organ and the church was "victorianized" in style. Thirty years later in 1914 the chandelier was electrified. In 1957 the final major changes to the structure were made when John D. Rockefeller Jr., a Brown alum who had been involved with the church as a student, financed a massive refurbishment of the structure. All the Victorian details were stripped from the building and the yellow and white interior with baroque ceiling treatment was covered by the historically accurate paint colors which are visible today.

While the interior of the church went through its cycle of elaboration and restoration, the composition and activities of the congregation itself also changed. Active in the home missionary and Sunday school movements in the 19th, the church found its once thriving community in a steady decline from the earlier part of the 20th century. William Faunce, the president of Brown University from 1899 to 1929 convinced the Rhode Island legislature to pass a bill allowing the President of Brown to not be required to be a Baptist. The University has been without a Baptist president since 1937, and in 1945 its charter was rewritten to sever all ties with any religious denomination. At the same time the growth of Brown and the Rhode Island School of Design (RISD), and the industrialization of down town resulted in the loss of the status of "neighborhood church" for the First Baptist, as students who were predominantly not Baptist moved in and the urban Baptist community moved further a-field. However, not all the changes have been negative, in 1909 the sign was hung on the front lawn of the church in an attempt to articulate more with the community, 1935 the title of First Baptist Church in America was adopted. In 1938 the church sought recognition from the Northern Baptist Convention to be named a denominational shrine. In 1987 the first woman Pastor was named to head the congregation at the First Baptist and in 2000 the organ was once again rebuilt. Today both members of the congregation and tourists visit the building regularly, and Brown commencement still takes place there, as does the annual Latin Carol service, one of the largest such gatherings in the nation.

The history of the First Baptist Church in America is one which runs parallel to that of Providence and of America herself. The church was established in the first years of European colonization of the New World, and the Meetinghouse which the congregation erected in 1774-5 came into being at the same time as the nation. Its members have been intimately connected to the foundation of the highest institutions in government and education, and have left a spiritual, documentary and architectural legacy both intricate and fascinating. It is hoped that the chapters which follow, using the perspective of archaeology, can further illuminate the history of this amazing building, and the remarkable people, both attested and silent, who have had a part in its creation and vibrancy for the past 230 years.

Standing Artifacts: New England Church Architecture

Cody Campanie

Through the early 19^{th} century, places of worship can be seen as the defining, centrifugal structures of towns and cities within New England. A colony based on strong religious traditions, Massachusetts and its surrounding colonial landscape was enveloped in Puritan ideology, as seen through the meetinghouses which served as homes for those following this belief system. Though many of these early Puritan structures no longer stand, the faith construction of a varying type of New England mindset can be seen in Providence, Rhode Island. Founded by Roger Williams, who was banished from the Puritan settlement of Salem, Massachusetts, Providence expressed open views on religion that were then reflected in the city's church architecture. In contrast to the building types of 17^{th} century Puritan design, the congregation of the First Baptist Church in Providence used ghosts of past English architecture along with new ideals to construct one of the most influential buildings of 18^{th} century New England. When viewed as an archaeological artifact, the meetinghouse of the First Baptist Church can be dissected in a way that pinpoints its architectural significance as well as its social and cultural importance to the people of Rhode Island.

To better understand the form and function of the First Baptist Church, one must look to its predecessors, the earlier meetinghouses of New England, which served a different capacity. Marian Donnelly views early 17^{th} century New England meetinghouses in direct relation to old English building traditions and early Christian basilicas. As Puritanism was supreme in most of New England during the early years of colonization, these meetinghouses reflected the Puritan ideal of returning to the simple roots of the Christian religious system, including its architecture. Because of Roger Williams' rejection of Puritan ideology, the meetinghouse of the First Baptist Church, which was founded upon Williams' concepts in the 17th century, does not identically reflect the styles seen in the rest of New England. According to Donnelly, it is a common misunderstanding that Puritan meetinghouses reject wholly and explicitly their contemporary Church of England counterparts in Britain, however, it is clear that the meetinghouse of the First Baptist Church *is* entirely a continuation and reinvention of these English building types (Donnelly 1968, 7).

In addition to the Puritan influence on these early meetinghouses, their dual function also impacted their design. Not only serving as places of worship, but also as town meeting halls, early meetinghouse architecture had to serve both of these community needs. Typical design consisted of a simple building, square in shape, with a central hall filled with box pews for seating. Early meetinghouses of New England can be understood as just that, houses where meetings were held. Many of these building types reflect colonial house construction so closely that differences beyond that of scale cannot be seen. In several smaller meetinghouses, only a single window placed behind the pulpit differentiates these buildings from houses of the period (Mazmanian 1970). Possibly borrowing from the idea recently implemented by the North Church meetinghouse in Salem, Massachusetts of May 1772, the meetinghouse of the First Baptist Church shifted from fulfilling secular and religious functions to embodying a purely religious function, ceasing to hold town meetings (Sweeney 1993). This idea of severance between church and state spread across all of New England after 1800, at which point religious toleration was seen in places other than Rhode Island. Until this time, the meetinghouse of the First Baptist Church was a leader socially and architecturally in the New England landscape.

Traditionally farming communities utilized the concept of the meetinghouse as a government hub, village center and religious gathering place. People congregated in the areas nearby the meetinghouses due to the safety they afforded as they were seen as fortresses that acted as protection against possible Native American raids (Maxmanian 1970) Close proximity to a community's meetinghouse also led to greater economic success for businesses. Though these concepts may have been true of many New England towns, can the same be said about the First Baptist Church and Providence?

The meetinghouse of First Baptist Church was constructed under a different premise than other meetinghouses of 18^{th} century New England. There was a pre-established group and congregation of the church who had grown too large for their former gathering place. In order to acquire the necessary land and funding to build a new structure, members of the church formed the Charitable Baptist Society. Enacting a decree stating, "that we will heartily unite, as one man,… particularly to attend to and revive the affair of building a meetinghouse, for the publick worship of Almighty God, and also for holding Commencement in," the group set about constructing a grand place of worship (Isham 1925, 1) This highly articulated mission of the Charitable Baptist Society furthers the belief that the new meetinghouse of the First Baptist Church did not hold great secular connections, but was focused on providing a place of worship for an ever-growing community of churchgoers in the only non-Puritan settlement of New

England.[1] The members of this church group within Providence were ambitious and planned to march straight to their dream of erecting a beautiful new place to worship the God that had led them to this city that was a haven for religious freedom from the oppressive Puritan reign.

Rapid increase in congregation members of the First Baptist Church proved to be the mitigating factor in the need to construct a new meetinghouse. The surge in congregation members was due to Rhode Island College's move from Warren to Providence in 1771, increasing the overall population of the city (Sinnott 1963, 195). The Charitable Baptist Society selected Joseph Brown, a chair of Experimental Philosophy at Rhode Island College, to be the chief draftsman and overseer of the design and planning for the project. Upon purchasing two plots of land located between Benefit Street, Thomas Street, Main Street, and what was called Waterman's Lane at the time, the size of the church was to be eighty feet square with a tower and steeple (Isham 1925, 2-5). Before the construction of the building that stands today, two meetinghouses of the First Baptists existed in Providence. The first, built in 1700 by Pardon Tillinghast was twenty feet square and was located on the corner of North Main Street and Smith Street. As the congregation grew, a larger structure sized forty feet square was built upon the same grounds as the first church in 1815 (Marlowe 1947, 122).

Brown's plans for the meetinghouse were not influenced by the other churches he saw in the surrounding New England landscape, but drew inspiration from the design schemes of an English architect, James Gibbs. Gibbs' St. Martin's-in-the-Fields, of 1726, provides the most apt parallel to the meetinghouse, due to its matching basilican

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[1] Commencement refers to graduation at what was then known as Rhode Island College, a Baptist school, later renamed Brown University.

plans, and the two colonnades that run the length of its interior (Isham: 1925, 4) (Figures 2.1-2.4). Another of Gibbs' English churches, that of Marybone Chapel, directly relates to the plan of the meeting house of First Baptist Church, as is seen when their cross-sections, cut on a north-south plane, are compared (Figure 2.2) The steeple design that Brown chose also came from extra designs for the steeple of St. Martins-in-the-Fields, which were published in Gibbs' book, Of Architecture (Isham 1925, 6) (Figure 2.5). Similar to Asher Benjamin's The American Builder's Companion, of 1806, Gibbs' book displayed ideas for design that could be taken and utilized by other architects for their own purposes. In reference to Brown appropriating the design for the 185-foot steeple from Gibbs, the church's booklet states, "one must not forget that Joseph Brown chose and improved it with unerring taste" (Smith 1989, 146). Though not seen as a thief of design, many do bring up the issue of Brown taking ideas for the structure of the steeple from Gibbs, with the members of the First Baptist Church displaying obvious bias in their citations on the subject (Isham 1925).

The tradition of towers and steeples as parts of New England meetinghouses can also be seen as a reflection of the classic farm architecture of the time, as explained by Arthur Mazmanian. The relationship of the outwardly vertical tower to the large, open, rectangular form of the building can be compared to the silo and barn silhouette seen across New England. Mazmanian also comments that since "…farms are in remarkable harmony with their environment and a joy to look at, the church-barn analogy is used in the most complimentary sense" (Mazmanian 1970).

The overall plans for the meetinghouse of the First Baptist Church stand apart from most other New England meetinghouses, as it does not conform to the design of earlier pre-revolution structures, or to later church designs. Its structure and features were seen as highly innovative for the time and place, and went on to greatly influence future churches across New England, especially in the urban context of Boston (Sinnott 1963, 196). Isham articulates the situation well in his statement that "…the plan of the Meeting House is pretty nearly a product of its own time and place" (Isham 1925, 5).

Although overall the plan of the building is unique, the details of Brown's design are historically typical of church architecture, borrowing several concepts from classical Graeco-Roman building types. The simplicity and clarity of structure found within the Greek ideals of architecture, and classical architectural orders are evident in the front façade of the meetinghouse of the First Baptist Church. With the row of columns holding up the cornice and frieze of the front porch of the meetinghouse and successive cornices continuing up the façade, direct reference to the Parthenon and other Greek temples can be seen. Along this front façade, a strict ordering of column design can be seen from the bottom up, starting with Tuscan columns on the porch, moving to Ionic pilasters on the first level of the steeple, and then to Corinthian pilasters on the high levels of the steeple. In relation to these ideas used by Brown in the design of the First Baptist Church, Mazmanian quotes Rykwert in stating,

> The form of a building…is not arbitrary but grows within the pattern of use, it is shaped by the movement people make inside it. The Church, therefore, took over certain architectural forms from the pagan world and used them to enclose analogous functions in the pattern of movement made by Christian worship.

Construction of Brown's modern style church was begun on June 3, 1774 and was overseen by James Sumner until its completion the next year (Figures 2.6 and 2.7). The total cost of construction is estimated to be 7,000 pounds, with 2,000 of that being raised by a lottery held by the church, a typical fundraising effort of the time. As a bit of unwanted history, a historian for the First Baptist Church said that this use of a lottery "was the first and only instance in the history of the church" (Marlowe 1947, 119). Though lotteries may not be thought of as a moral way in which to raise money, the members of the greater church community willingly utilized it at the time, as it allowed for the construction of their beautiful house of worship.

With little masonry work necessary, the foundation for the structure was laid in a short time and soon after, the nave of the meetinghouse was raised. Done in the normal "scribe and tumble" method of the time, each wall of the nave was pieced together using a mortise and tenon technique with pins at the joints. Corner posts were then used to hold each wall together after construction, making the meetinghouse's construction reminiscent of house construction in late 18th century America. The raising of the massive steeple took place in June of 1775 and according to the *Providence Gazette*,

> …lasted three Days and an Half, was finished, and from a Draft thereof, on a large Scale made by Mr. James Sumner, Master Workman from Boston, as well as from the frame now raised, 'tis thought it will be a most elegant Piece of Architecture. (Isham 1925, 14-15)

Solid in construction, the steeple of the meetinghouse holds great history. Many today still wonder in amazement at how it was raised, and that it has withstood the blasts of hurricanes in 1815, 1938 and 1944 (Marlowe 1947, 117). It was raised with surprising ease in the same method of several other steeples of the day: the great spire was constructed in six telescoping segments which were lifted separately by a windlass pulley system contained in the tower (Smith 1989, 147).

Only adding to the magnificence of the steeple, a bell weighing over 2,000 pounds and costing 160 pounds was fashioned in England bearing the "quaint inscription":

> For freedom of conscience the town was first planted,
> Persuasion, not force, was used by the people:
> This Church is the eldest, and has not recanted,
> Enjoying and granting bell, temple and steeple. (Marlowe 1947, 120)

From the bell to the large crystal chandelier located in the interior of the church, the English influences on the structure are vast, making the meetinghouse very unique and progressive for its time. These very ornamental English elements, which are also reflected in the steeple, set a standard for urban churches in New England to grow larger, more ornate and more expensive in their construction costs.

Great renovations have been made to the interior of the meetinghouse of the First Baptist Church, whereas the exterior of the structure has had few changes in its 200-year existence. One of the first major changes made to the inner space of the meetinghouse was the 1832 replacement of all 126 square pews that were located on ground level in the nave of the building. Marlowe accounts that the substitution of slip pews for the older square design can be seen as a great disappointment, though parishioners at the time felt it a necessary change, as the new pews were seen as “more comfortable and more fashionable” (Marlowe 1947, 119). Along with the replacement of the pews, came a change to the pulpit located at the eastern end of the church, with a Greek revival pulpit inserted and the old Palladian pulpit window covered (Sinnott 1963, 196).

Another great change came two years later, in 1834, when the western upper gallery of the meetinghouse was replaced by the installation of a great organ donated by Nicholas Brown II. This renovation was fueled by the intense socio-political changes that were taking place. The upper gallery, which formerly served as seating for “slaves, freedmen and Indians” was now removed by the insertion of the organ, and act which allowed for minorities to be seen as equal with the other congregation members with whom they now sat. The removal of this gallery can also be seen as an attempt by the First Baptist Church members to wipe segregation and racism from their past, as traditionally they pride themselves as a group based on freedom and toleration.

Few changes have been made to the exterior of the meetinghouse of the First Baptist Church, though in 1884 the Palladian window which was once hidden was uncovered to make way for the addition of a baptistery on the eastern side of the structure. Despite housing a stained glass window, the baptistery is often described as "awkward," as it's design structure does not correlate harmoniously with the rest of the meetinghouse (Smith 1989, 146). In 1957, with fiscal support from John D. Rockefeller Jr., a full restoration of the meetinghouse to its original state was completed.

The meetinghouse of the First Baptist Church is a landmark on the skyline of not only Providence but of all New England. Its stunning decoration, beauty, proportion and construction methods served as a benchmark for future churches built in New England. The congregation of the First Baptist Church can be accredited with pouring great effort into the creation of the building. Based on a society of toleration and what Roger Williams called "soul liberty," (Smith 1989, 146) the architecture of this grand meetinghouse still reflects the air of religious freedom untder which it was designed. Despite renovations over time, some of which do not compare so favorably against the history of architecture, or the history of social politics, the meetinghouse of the First Baptist Church still stands strong as a beacon of model church design and enduring congregational support. In honor of its one hundred and fiftieth anniversary, Norman Isham best describes the meetinghouse as a standing archaeological artifact:

> Such is the history of the meeting house fabric. If its past is safe, even with all the changes we regret, it is good to hear that the future is secure. For, well as our fathers wrought the beautiful house they have left us, their work is brought to

naught if we of this day do not preserve as well as revere and admire. (Isham 1925, 21)

Figure 2.1 Plan of St. Martin in the Fields

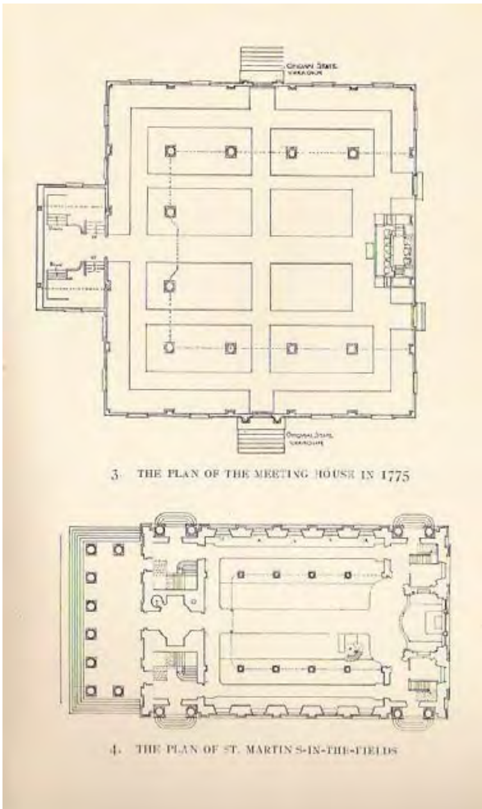


Figure 2.2 Cross Sections of St. Martin's and Marybone Chapel

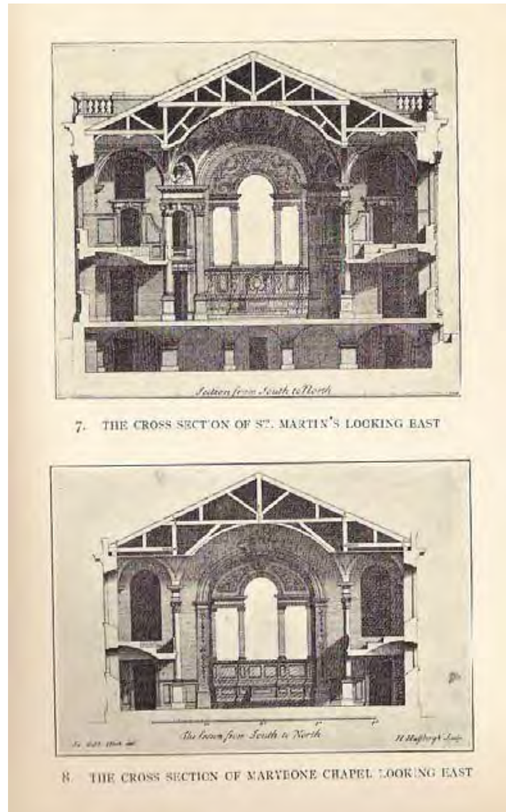


Figure 2.3 Meeting House Cross Sections

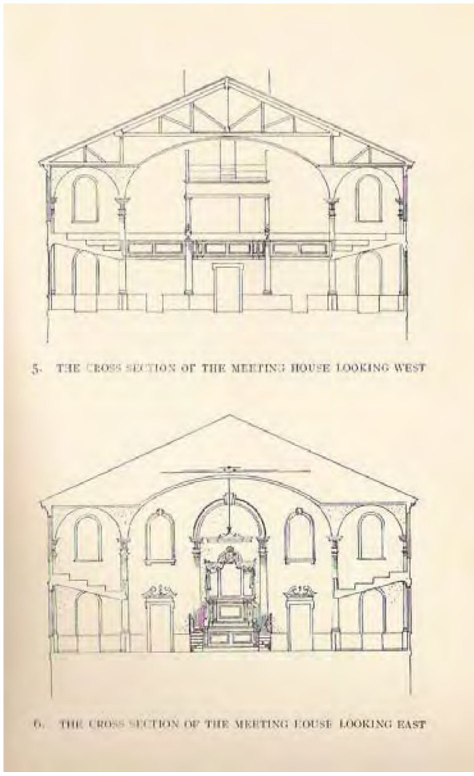


Figure 2.4 Sections of the Meeting House and St. Martin's

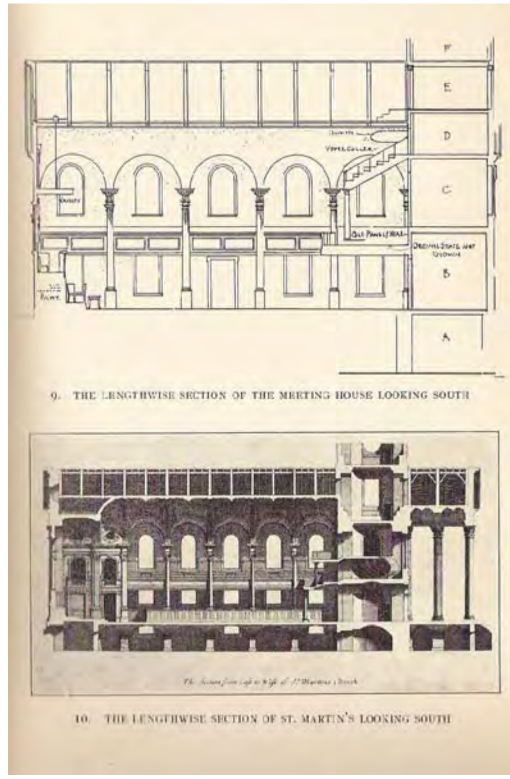
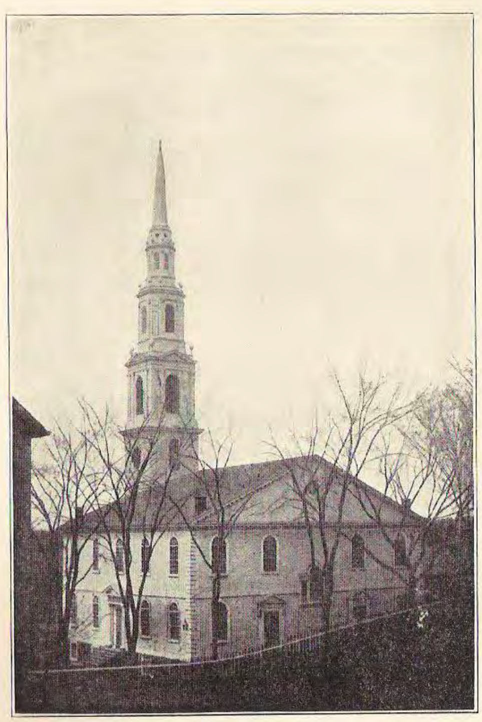


Figure 2.5 The Steeple Styles

Figure 2.6 Exterior of the Meeting House

15. THE OUTSIDE OF THE MEETING HOUSE IN THE FIFTIES



16. THE EAST END OF THE MEETING HOUSE
BEFORE THE OUTSIDE CHANGES

Figure 2.7 East End of the Meeting House

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Map and Pictoral History of the First Baptist Church

Tina Lee Charest

In any sort of archeological endeavor, it is important for the archeologist to know something about the physical property upon which he or she is working. If the archeologist knows something about the changes that have occurred on the property prior to the dig, he will be able to make more informed conjectures in regards to the meaning of his archeological finds.

In this paper are detailed many of the changes that have occurred on the church property throughout the years as determined through investigation into the map and pictoral history of the First Baptist Church. Much of the knowledge of these changes was arrived at through the usage of written documentation about the property and the decisions that the church members made in regards to it. Since there is not an extensive amount of written documentation on the changes that have occurred to the church property, another significant source of information was based on maps and pictures of the church throughout the years. In looking at these, one is able to make educated conjectures in regards to the physical changes that occurred between the moments when pictures were taken. Access to pictoral, written, and verbal documentation about changes on the church site have also afforded the opportunity to comment on the reliability of these three resource mediums and the use that each provides the archeologist in his or her studies.

The First Baptist Church was originally built as a very small structure on a lot of land on North Main St that was owned by the pastor at the time, Pardon Tillinghast. This 20 foot x 20 foot structure, built in the year 1700, was later replaced by a 40 foot x 40 foot building on land that was adjacent. While they were on the same street that the present First Baptist Church is built on (Main St.), neither of these two buildings were located on the present lot of the church. The First Baptist Church in its present incarnation was built in the year 1775. The architect was a man named Joseph Brown. The original structure included a gable-roof and a wooden frame. The entrance and the steeple were located on the western side of the building, as they are today as well.

In the 1800's many changes were made to the church, but the vast majority of these changes were to the interior. Included among them were the addition of new pews in the year 1832, an organ in 1834, gas chandeliers in the 1850's, and a stained glass window in the east wall in 1884. The pulpit of the church was also torn down and replaced in the year 1875. While renovations to the inside of the church do not directly affect the external nature of the church property, they may have indirectly left traces on the land surrounding the church. For example, during the addition of new pews and the removal of old pews, it is possible that pieces of the pews or the construction materials were dropped onto the property. Along the east side of the church, construction materials used during the installation of the stained glass window might have been dropped. Pieces of glass may have fallen onto the ground as well. It is important for archeologists to understand that artifacts recovered may be indicators of these phases of construction.

While most of the changes made in the 1800's were to the interior of the church, there were also a few changes made to the exterior of the church. At some point during the 1800's, an addition was made to the eastern end of the building. The phrase "at some point" is used because apparently conflicting information came to light on the issue. In a personal communication from Dr. Stanley Lemons it was stated that the addition was made in the year 1884. However, the church records seem to state that the addition was made in 1838. Thus, it is important that check the information which research has unearthed. It is possible that the statement of Dr. Lemons was misinterpreted and he actually was referring to the stained glass window, which was installed in 1884. It is also possible that multiple changes were made to the eastern end of the building.

Another change to the church's exterior was made in 1873 when the original clock below the steeple was removed and replaced with a new clock. Collectively, these external changes may have vast implications for the artifacts that are recovered during the dig. Knowing that an addition was made to the east end of the building gives some insight into the origins of the artifacts found in this area. If an archeologist were to find artifacts on the east side of the lot near the church, it might be reasonable to hypothesize that the placement of these artifacts could have been the result of the construction done on this end of the building. If the nature of these artifacts was in accordance with construction, this would provide further evidence supporting this hypothesis. For example, artifacts such as nails and pieces of wood would provide greater strength for this hypothesis than pieces of ceramic and bone, which are not necessarily evidence of a construction site.

Early photos of the church and its land come from the late 18th and 19th centuries. Pictoral history of the church during this time is very sparse and there are many problems inherent in these pictures. The first problem deals with drawings. When looking at drawings done by those who viewed the church, it cannot be assumed that these are exact representations of the church. The individuals who drew them may have been working while looking at the church; however, they also may have been drawing from memory. An interesting example of this can be found in a 1789 engraving done by Samuel Hill.

Hill's rendition lacks the forebuilding of the structure. It is possible that the forebuilding was not a part of the church at this time and that it was added at a later time, however, in investigating this matter, it has been determined that this is probably not the case. Thus, visual representations of the church must be approached with caution; it cannot be taken for granted that they provide an accurate representation of the church at any given time.

Another precaution that must be taken when looking at drawings created in the 19th century involves the activities that are depicted. A work, from 1830, is one of the oldest available, and appears to depict individuals digging graves along the western portion of the First Baptist Church property. It also shows numerous gravestones that seem to mark areas where people had already been buried. When the written documentation is examined no mention is made in regards to graves having been dug anywhere on the First Baptist Church property. Local cemeteries were already well-established by the time the church was built. There is no other evidence that graves were placed on the property.

If the activities depicted in the picture from 1830 were uncritically accepted as truth the subsequent actions of the archaeological investigation would be affected. For example, areas in which graves are believed to reside may not be sounded with test pits. Further, improper conjectures in regards to the nature of artifacts recovered might be made due to these illustrations. For instance, in one of the test pits on the western side of the church property, numerous bones were found. Accepting the drawings as true may lead to a hypothesis that the bones were related to the graves that were supposedly dug on the western side of the property. However since there are no written or verbal accounts to validate the images, there is no reason to believe that these bones are the remains of people. Instead the hypothesis has been put forward that these bones are the remnants of animals, an idea which is supported by osteological analysis (see Eisman, chapter 10, this volume). This example illustrates the ways that written documentation can make up for the inadequacies of drawings.

With the pictoral history and written documentation of the First Baptist Church during the 18th and 19th centuries having been explored, and investigation into the changes made to the exterior of the church and the land around it during the 20th century can be made. There are a variety of documents showing that during the 20th century the church had many problems with the trees planted on its grounds. The Charitable Baptist Society minutes state that in the year 1922, the removal of two dead trees took place on the lawn of the church. These particular documents did not state the lot from which the trees were removed. In the year 1924 there was further documentation indicating removal of more dead trees from the lot. In 1927, tree removal took place on the Benefit St. side of the lot.

The problems with the trees on the lot of the First Baptist Church have persisted throughout the years. It is helpful to know when and where these trees have been removed. When a tree is uprooted from the ground where it was planted, it disturbs the soil and the layering of the soil in the surrounding areas. Thus, if a tree has been removed from an area and artifacts are recovered here, it is entirely possible that these artifacts do not truly belong to the layers in which they are found. It is possible that during the tree's growth and uprooting, the artifacts have shifted position. Taking this fact into account can help archeologists come up with a more accurate dating of the artifacts recovered.

More information about the placement of the trees in the 1900's can be found by looking at the photographs that were taken of the property during this time. While documentation of every tree removed from the church property is lacking, photographs were very helpful in figuring when trees were present on the property and when they were not. For example, a photograph from 1947 clearly shows a great number of trees on the First Baptist Church property. However, today, there are far fewer trees on the property. Thus, although there was not documentation of it, many of these trees must have either died on their own or been taken down in a storm.

It was also determined via documentation from the Rhode Island Historical Society, that in 1927 the church had the lawn of the property ploughed up. This, for a reason similar to that of the trees, is important for archeologists. It is very possible that while the lawn was ploughed up, the top layers and those below it were disturbed and artifacts in these layers were probably unsettled as well.

A variety of repairs were made in the 1900's to the church itself. These repairs could have archaeological implications as well. In 1939, there was repair and replacement work done on the front stone walls. The church chose to replace the existing walls that had become decrepit. The walls were replaced with walls of modern materials, including more modern cement. Evidence of this repair work may have been left on the property and may present itself during the dig.

The most significant repairs on the church were done in the 1950's. Most of these repairs were made to the interior of the church. Among the internal repairs was work done on the pews and on the organ. However, while there were a great many repairs made to the inside of the church during this time, the repairs to the exterior of the church were relatively minimal. The church was also repainted during this time. The purpose of this was not to give the church a new appearance, but rather, to maintain the appearance of the last 200 years. Timber supports of the steeple were also renovated. Evidence for these two renovations would include painting supplies, pieces of timber, or other sorts of construction material.

In 1978, the church began to raise funds to repair the steeple atop the church. Fund raising continued through 1981. Through e-mail correspondence with Dr. Stanley Lemons, it was possible to ascertain that the church repaired the steeple as the funds were being raised. Thus the repairs took place during the years 1978-1981. Artifacts relating to these steeple repairs would be found in the upper layers of soil that were excavated and would probably be similar in nature to other construction artifacts (nails, wood, etc).

The Charitable Baptist Society minutes also state that in 1980, there was a collapse in the "East Wall". However, the minutes did not state what was meant by the "East Wall." This provides an example of the inherent weakness of the documentation. Written documentation is not always completely clear in regards to which part of the church to which it is referring. In this case, it was not clear whether this information referred to a certain portion of the wall lining the driveway or whether it referred to a part of the church. Thus, when reading documentation one must guard against misunderstanding its meaning.

Throughout this paper, many changes that have been made to the exterior of the church and the property surrounding it have been presented. There are still a variety of other things which could not be figured out about the exterior and the surrounding property. Even without irrefutable evidence, it is possible to make educated guesses as to when things were done on the property. For example, it was not possible to ascertain information in regards to when the driveway of the church was built. However, in using some of the written documents found at the historical society, it was possible to determine that the driveway was built before the year 1920. This conclusion was arrived at because the driveway was mentioned in documentation in the year 1920. While this does not provide a great deal of information about the building of the driveway, it does exclude some dates as possible periods of construction. Thus, even if the precise dates of construction are not known, documentation can provide information that is still helpful.

Also, although no written documentation stating that there was work done on the north side of the church in 1937 was found, a photograph from that date appears to show work being done in this area. This is very interesting since a great deal of information about changes made to the church during this time period was available, but construction to the north side was not mentioned. Thus, pictures can sometimes provide evidence that is not found in written or oral records.

Along with pictures, photographs, and written documentation, Sanborn Fire Insurance Maps that included the church property were also available. These maps, however, were not nearly so useful as the other forms of evidence. These particular maps do not show specific aspects of the church property. The most useful pieces of information provided by these maps are the dimensions of the church and the lots around it. In this case, pictures, photographs, written documentation and oral documentation are more useful than maps. The only way in which maps would be of significant use is if they were drawn in greater detail. If this were the case, the changes that occurred on the property throughout the years would be more perceptible.

To conclude, this chapter has demonstrated that it is very useful for the archeologist to understand the changes that have happened to an archeological site. These changes may affect the way in which the archeologist looks at the evidence that he excavates. Both pictures and written documentation are very useful in determining these changes, but both have their limitations as well. It is only when pictures, written documentation, and first-hand accounts are used in conjunction with one another, that an archeologist can get a reasonably accurate account of an archeological site's past.

EXPLANATION OF CHURCH CHANGES MAPS

The maps in figures 2.8-2.12 depict the changes that were made to the First Baptist Church from 1775 to the present. The base map is from a Sanborne Insurance map to ensure a proper scale. They are done in color in order to increase their clarity. They focus primarily on the external changes, but also briefly account for some of the changes made to the interior of the church. It was incredibly difficult to ascertain information for the early years of the church and this makes the earliest map of the church much less complete than the later maps.

Included in the map legends are the years during which each change took place. Along with this information are included applicable photo references. When photo references are not mentioned in the map key, this indicates that the information was obtained through written documentation (church minutes, books, e-mails, etc.) Some of the changes referenced are vague. These cases of vagueness are brought about by lack of clear information. For example, on the 1875-1925 map, "driveway built before 1920" is indicated. The first reference to the driveway was in 1920, therefore, the assumption is that the driveway was built before 1920.

Some changes which occurred are not indicated on the map. For example, as stated in the chapter, a photograph indicates that there were a great many trees on the property in 1947. Today, there are far fewer trees on the property. However, since no specific information about the removal of these trees was discovered and so many trees were removed, it would have proven very difficult to map the individual removal of these trees.

Some small assumptions were made in the drawing of the maps; specifically that "East wall collapse and repair" indicated that a portion of the church's East wall was in need of repair. It was not interpreted as the driveway being in need of repair. Thus, these maps to are as clear and complete as is possible.

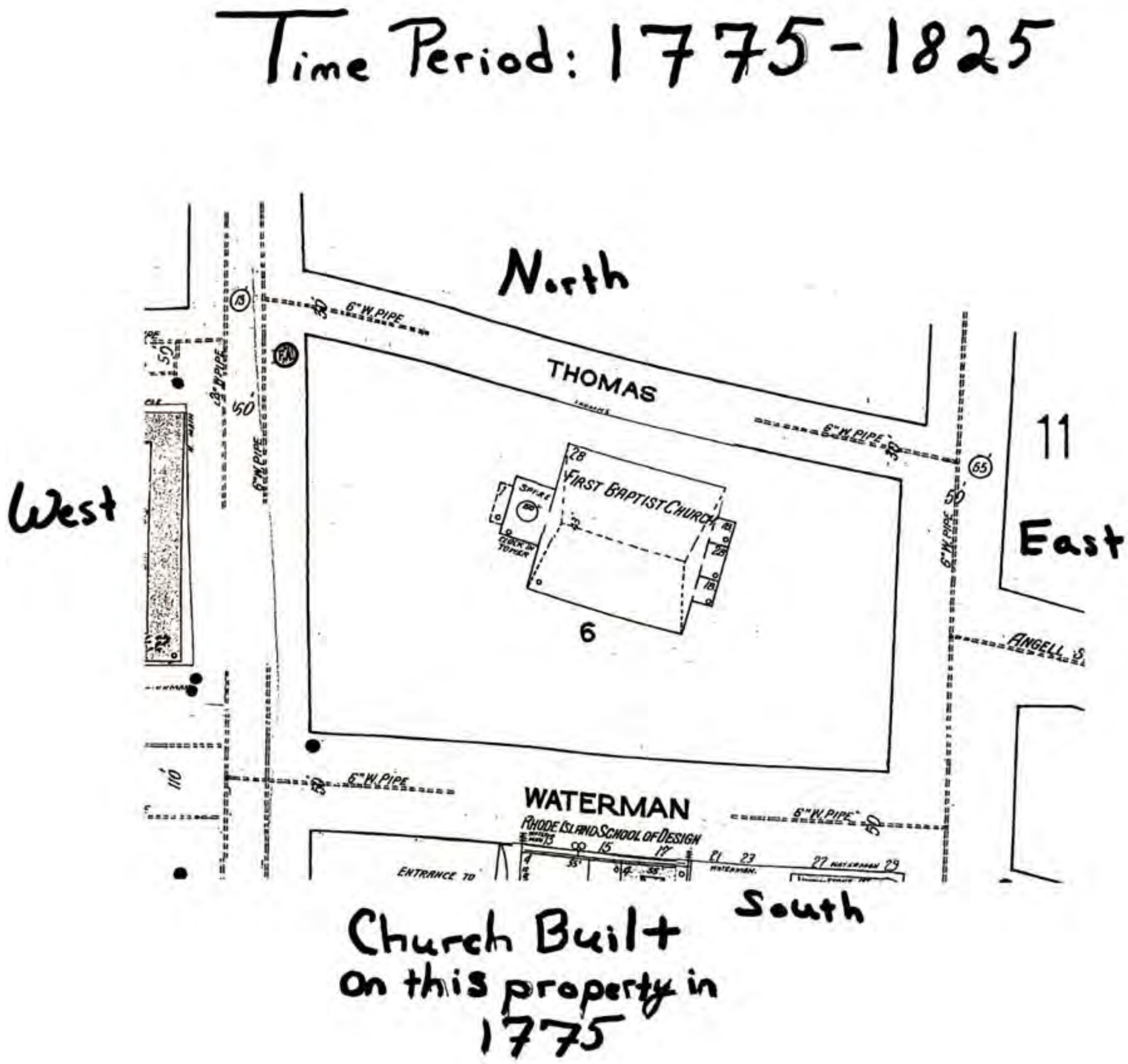

Figure 2.8: FBC 1775-1825.

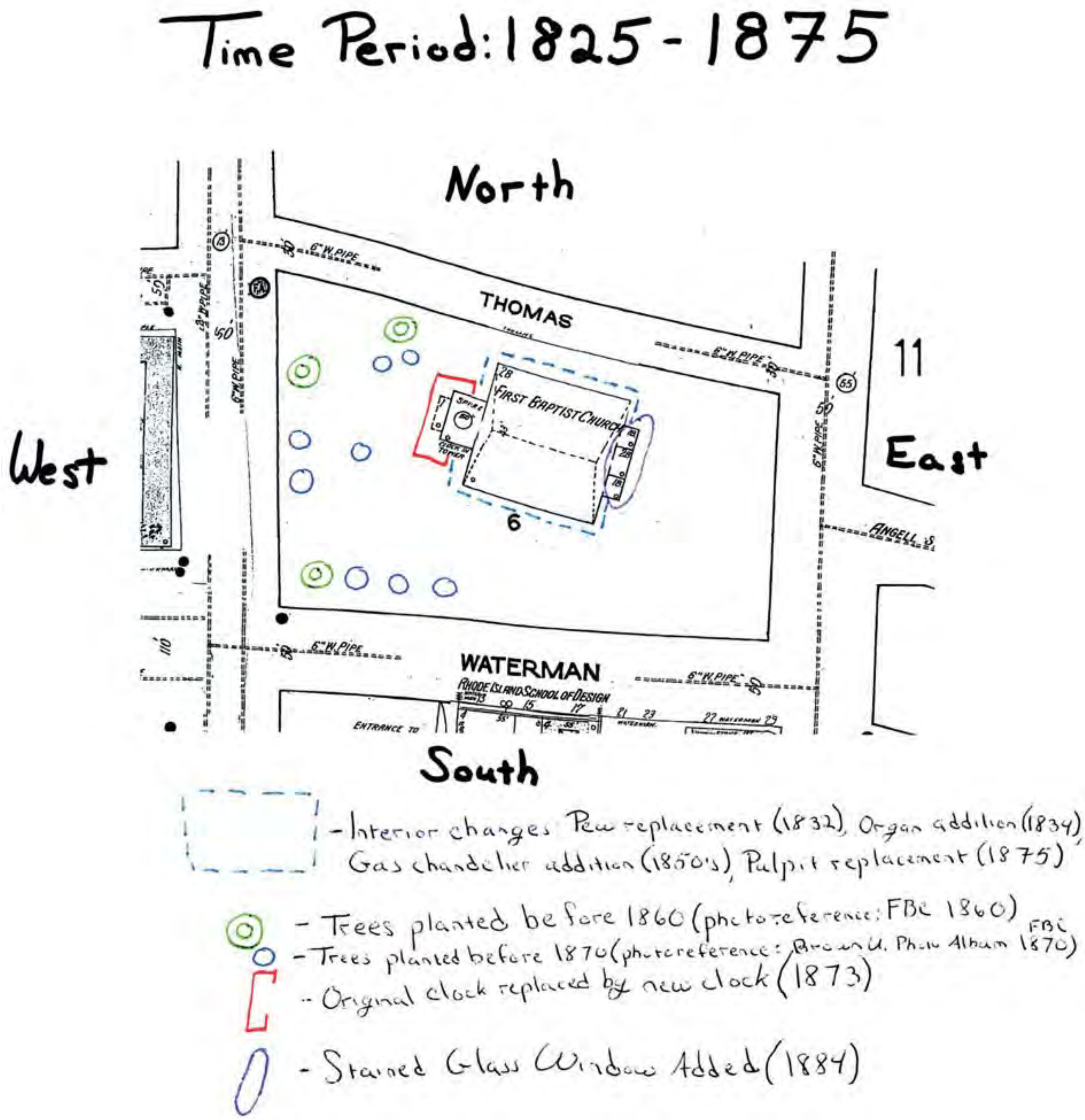

Figure 2.9: FBC 1825-1875.

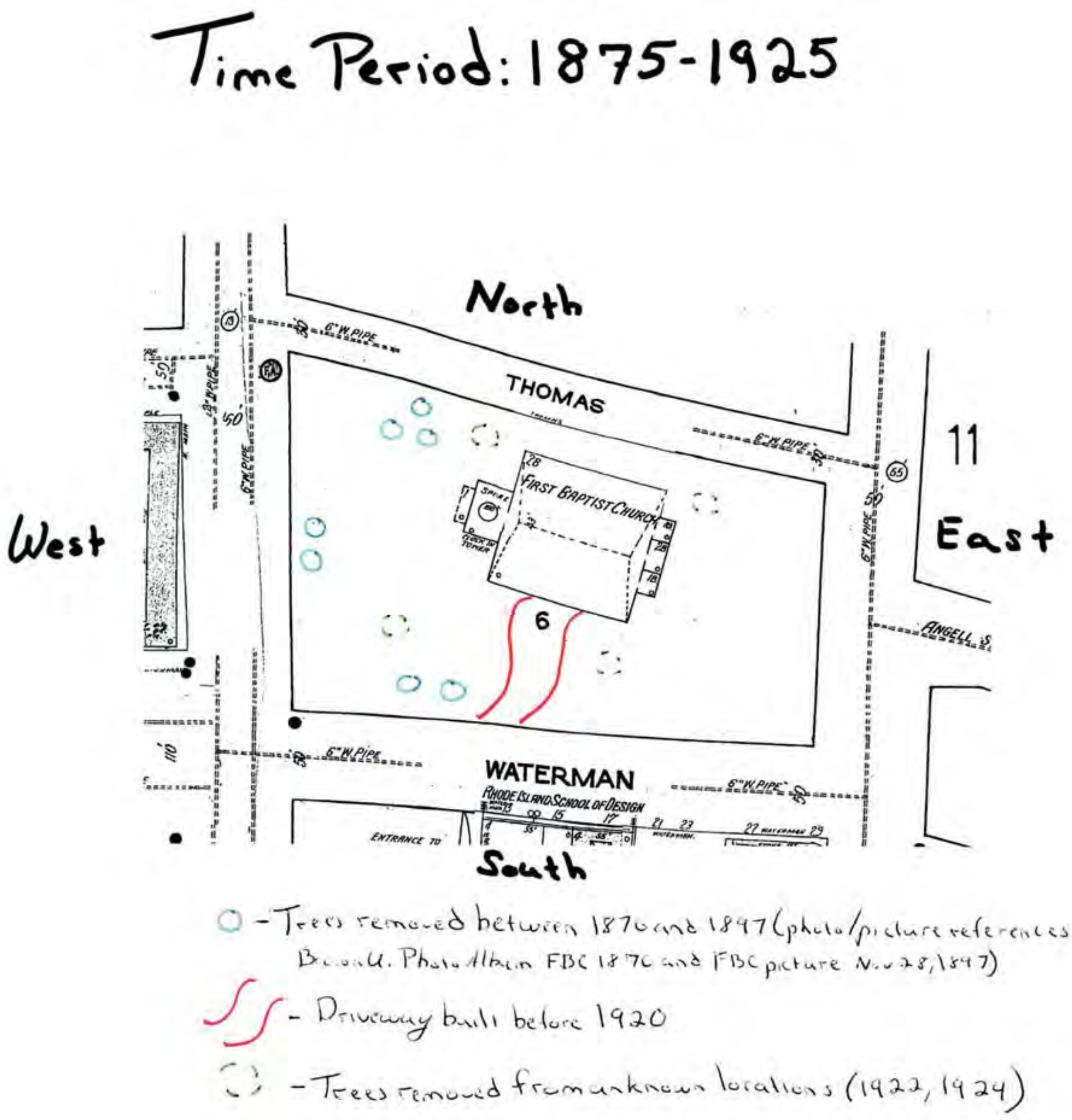

Figure 2.10: FBC 1875-1925.

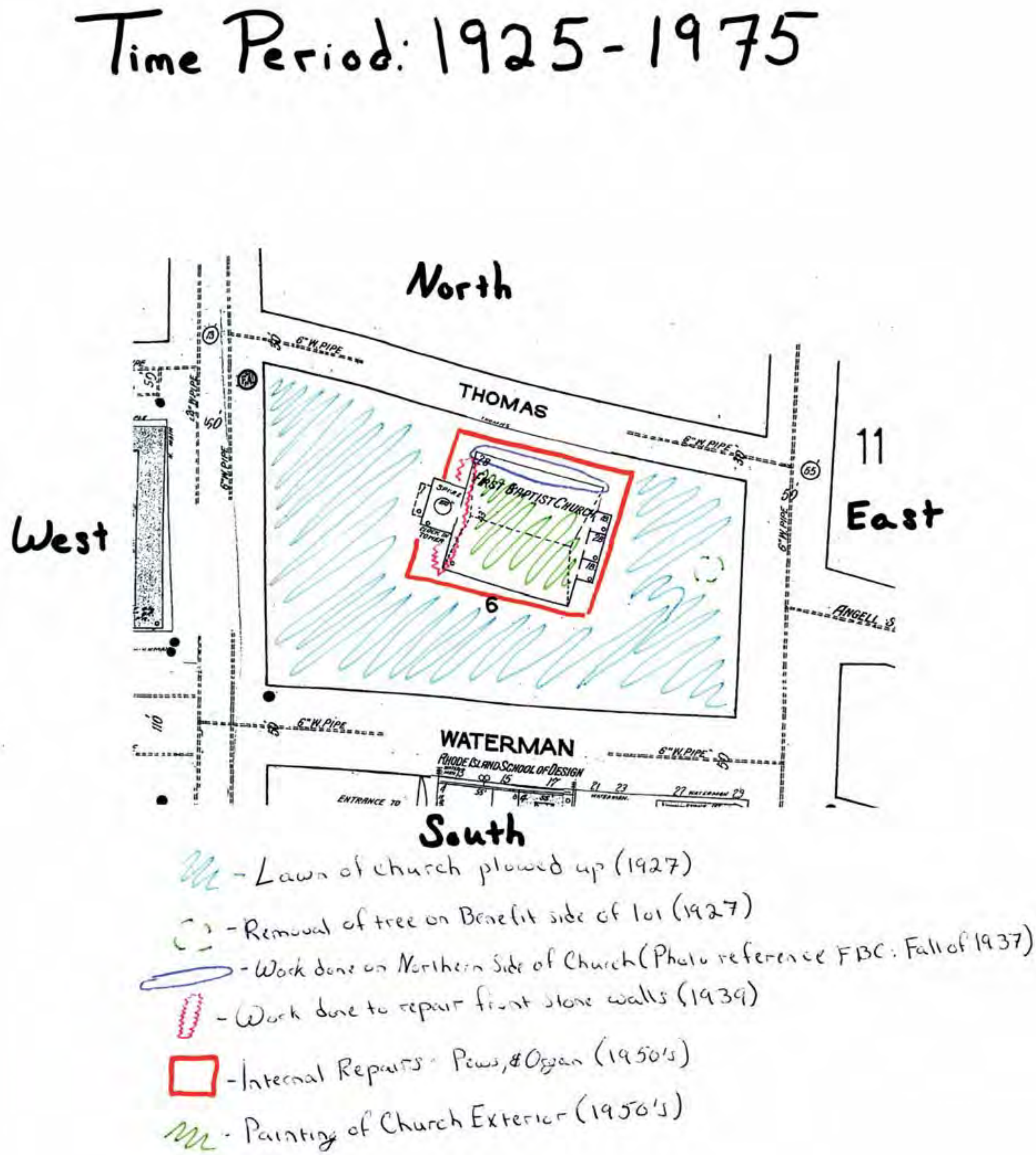

Figure 2.11: FBC 1925-1975.

Time Period: 1975-Present

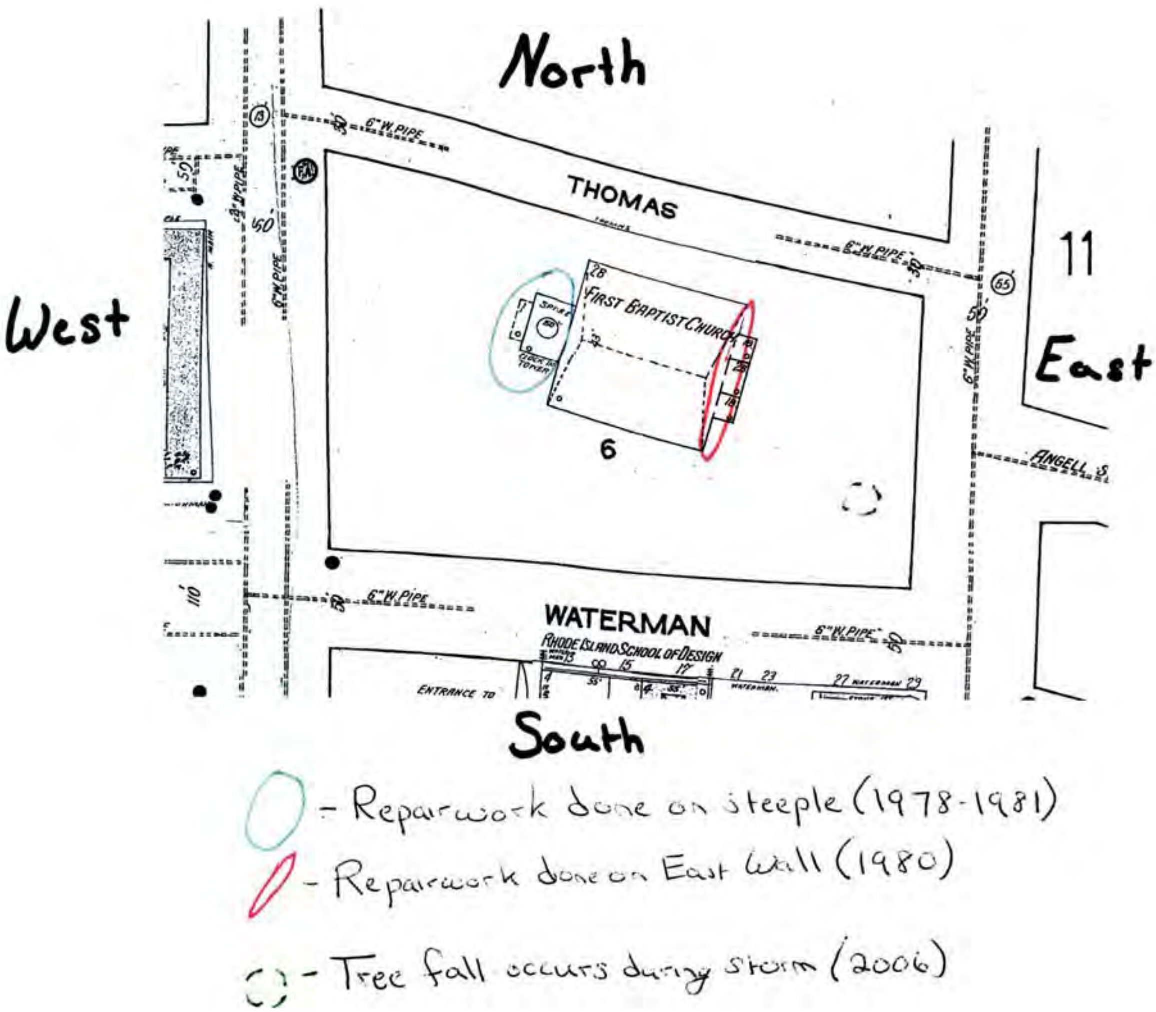

Figure 2.12: FBC 1975-2006.

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Chapter 3

First Baptist Church Geophysical Survey Report

Thomas Urban and Robert Jacob

SITE INVESTIGATION

The First Baptist Church of Providence, Rhode Island is an active church in an urban setting. The church grounds surveyed using the geophysical methods included the front, side and rear yards. The survey area was primarily grass-covered with the exception of brick paths in the side and front yards. The driveway cutting across the rear of the church was not included in the survey area.

Electromagnetic (EM) induction, a non-invasive geophysical technique, was used at the site before excavations began. The archaeologists wished to know of any possible buried features prior to excavation in order to include them in the research plan. The EM survey was performed using a multi-frequency GEM II in vertical dipole and longitudinal mode, to maximize the depth of penetration and the in-line data coherency, respectively. The instrument transmitted a EM signal which induced a secondary EM field in a conductive object. The instrument measures the secondary signal continuously. The secondary signal is comprised of two components, the inphase and quadrature (or out-of-phase). The inphase component indicates the presence of very conductive objects, such as metal, whereas the quadrature component indicates objects that are only slightly conductive, such as clay. The GEM II instrument was operated in five frequencies (450 Hertz (Hz), 1170 Hz, 3930 Hz, 13590 Hz, and 20010 Hz) because subsurface targets may produce a better secondary signal from a different transmitted signal. The magnetic susceptibility and electrical conductivity are then calculated, after the survey is complete, from the inphase and quadrature components. In addition, the results of the EM survey warranted a complementary non-invasive geophysical method, ground penetrating radar (GPR), which was used to investigate a specific anomaly.

METHODS

An 82 x 48-meter reference grid was established prior to conducting the survey. The grid was established using the visible boundaries of the property, and along the vegetation running along the southern and western walls. The origin of the grid was located in the south-western corner of the site, near the intersection of North Main and Waterman Streets. This origin point consists of a nail driven into the earth, topped with orange plastic. The heavily trafficked, paved public roads and sidewalks that surrounded the site were excluded from the survey grid. The EM survey of the First Baptist Church was conducted by walking along lines of the established grid at 1-meter intervals with the instrument held at a constant 10 cm above the ground surface. Measurements were digitally recorded and stored in the console unit of the GEM II as the operator traversed each line. The data in memory were downloaded from the GEM II console to a field computer and processed so that each measurement had a grid location. Four contour maps (one for each the inphase and quadrature components and the magnetic susceptibility and electrical conductivity) were prepared from the processed data. These maps were then analyzed to locate subsurface objects to be recommended for either archeological investigation or hazard avoidance. Sixty maps (3 survey areas, 5 frequencies and 4 contour maps) were generated and analyzed during this process. For purpose of this report only the map that presented the clearest depiction of the anomalies within a given area of the survey grid were selected for presentation as the final results of the survey. The results are provided below.

RESULTS

Figure 3.1 shows the results of the EM survey over the entire site for the 20010 Hz electrical conductivity component. The three portions of the site are discussed below with figures that best show the anomalies present.

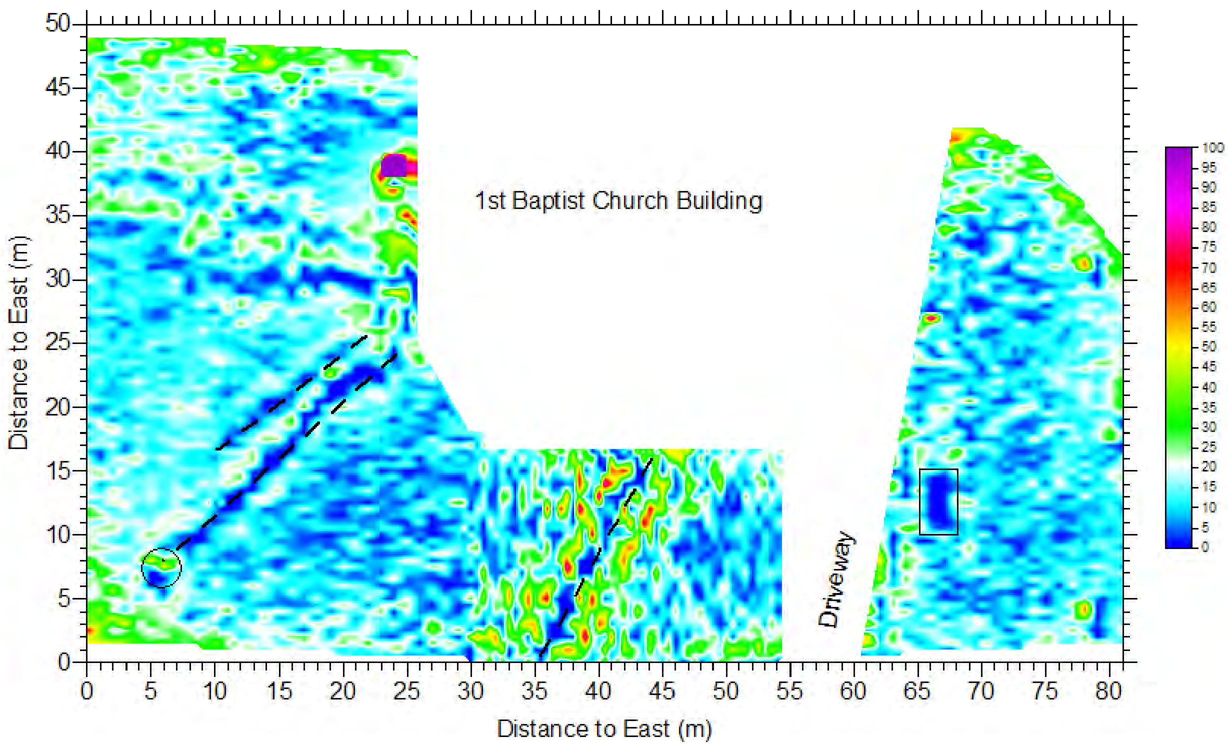


Figure 3.1. The electromagnetic survey displaying the electric conductivity for 20010 Hz at the First Baptist Church site. Three linear anomalies and a discrete anomaly to the east of the driveway are shown. The front yard is on the left side of the image, extending to 30 m East. The side yard is the portion between 30 and 55 m East, The rear yard is located to the right side of the image.

Rear Yard: The EM survey at the First Baptist Church site revealed anomalies in all three sections of the survey area (front, side, and rear yards). The largest anomaly was located in the rear yard of the church and was clearly visible on all frequencies and both components of the data in the lower left of Figures 3.2 and 3.3. Additionally, this anomaly appears as both an electrically conductive and magnetically susceptible feature, which suggests a large metallic object, possibly a storage tank. A pulseEKKO IV GPR system employing 200 MHz antennas was used to collect a single profile perpendicular to the long axis of this anomaly. Figure 3.4 shows the GPR profile. There is a clear anomaly centered at 66.5 m East, with a profile typical of a buried object. This anomaly appears as an upside down cross-section of a bowl, where the side walls of the bowl are associated with the side-looking nature of the GPR method and is typically referred to as an hyperbolic signature. Also shown in Figure 3.4, an anomaly that is located near the beginning of the profile, as half of an hyperbolic signature, which may be related to the stone wall approximately one meter west of the beginning of the profile.

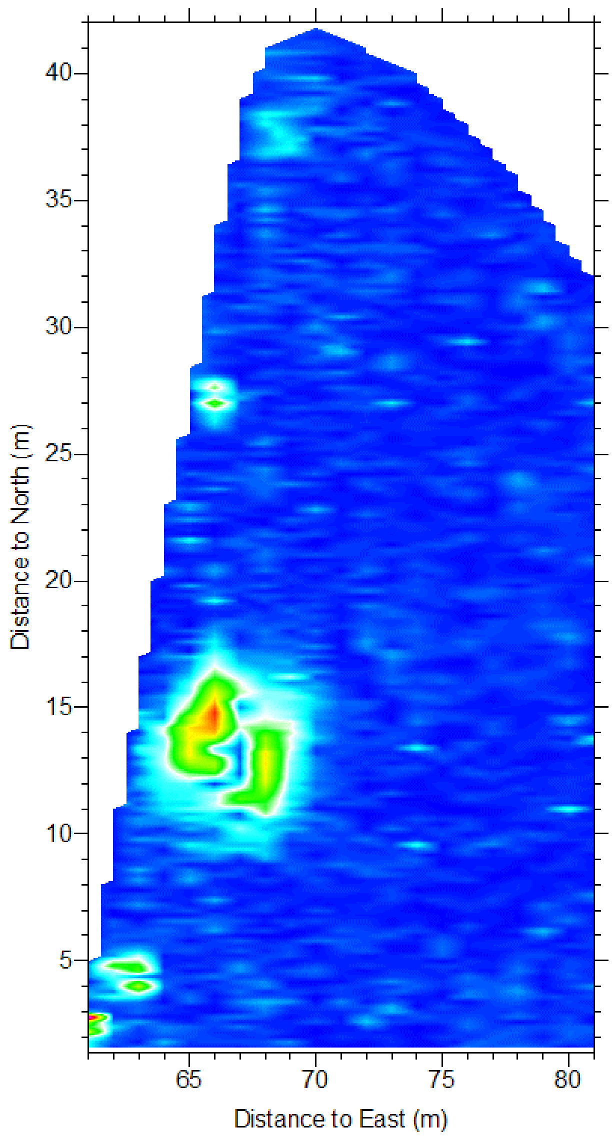
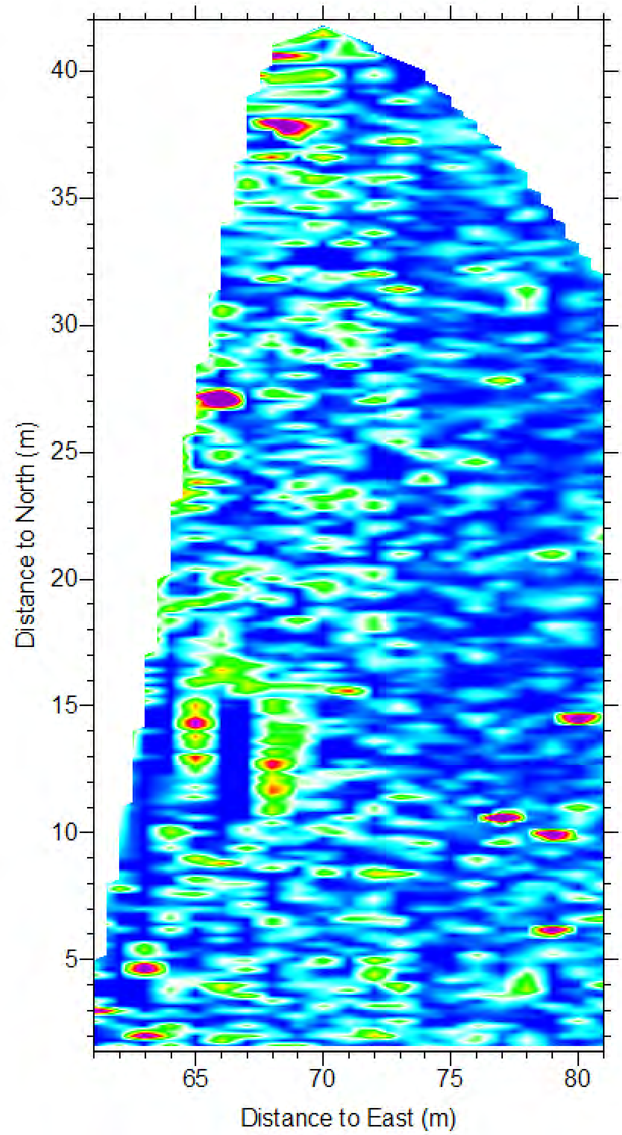


Figure 3.2. The electromagnetic survey displaying the magnetic susceptibility for 450 Hz at the First Baptist Church site. The large anomaly is discussed in the text.

Figure 3.3. The electromagnetic survey displaying the electric conductivity for 450 Hz at the First Baptist Church site. The large anomaly is discussed in the text.



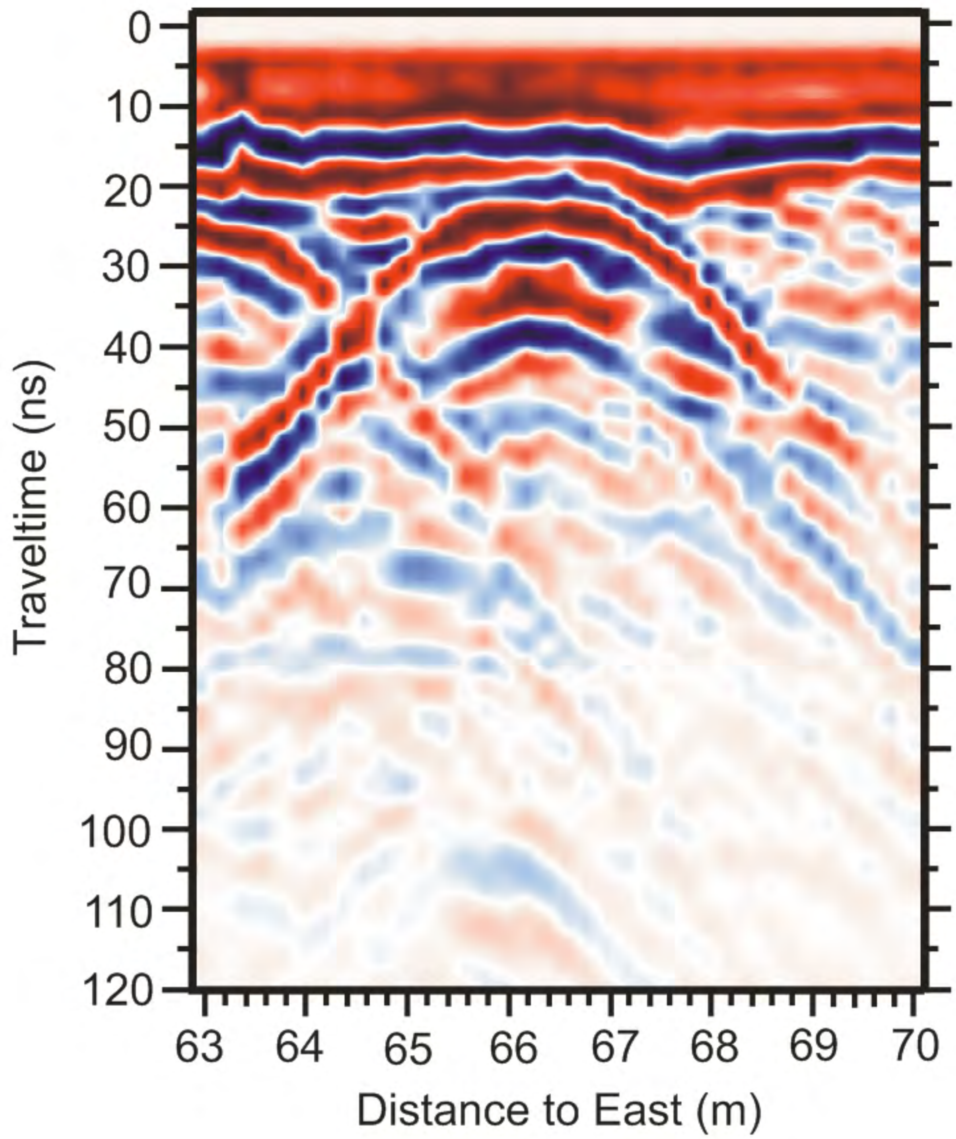


Figure 3.4. GPR profile data in the rear yard of the First Baptist Church site. The profile was collected to provide more information on a significant EM anomaly. The hyperbolic signature centered at 66.5 m East indicates the presence of a buried object.

Side Yard: Figures 3.5 and 3.6 presents the electrical conductivity and magnetic susceptibility components at 13950 Hz from the EM survey of the Side Yard. There is a linear anomaly trending from south-west to north-east and is clearly visible over a range of frequencies and also in both the inphase and quadrature data. This linear anomaly coincides with a known underground power line,

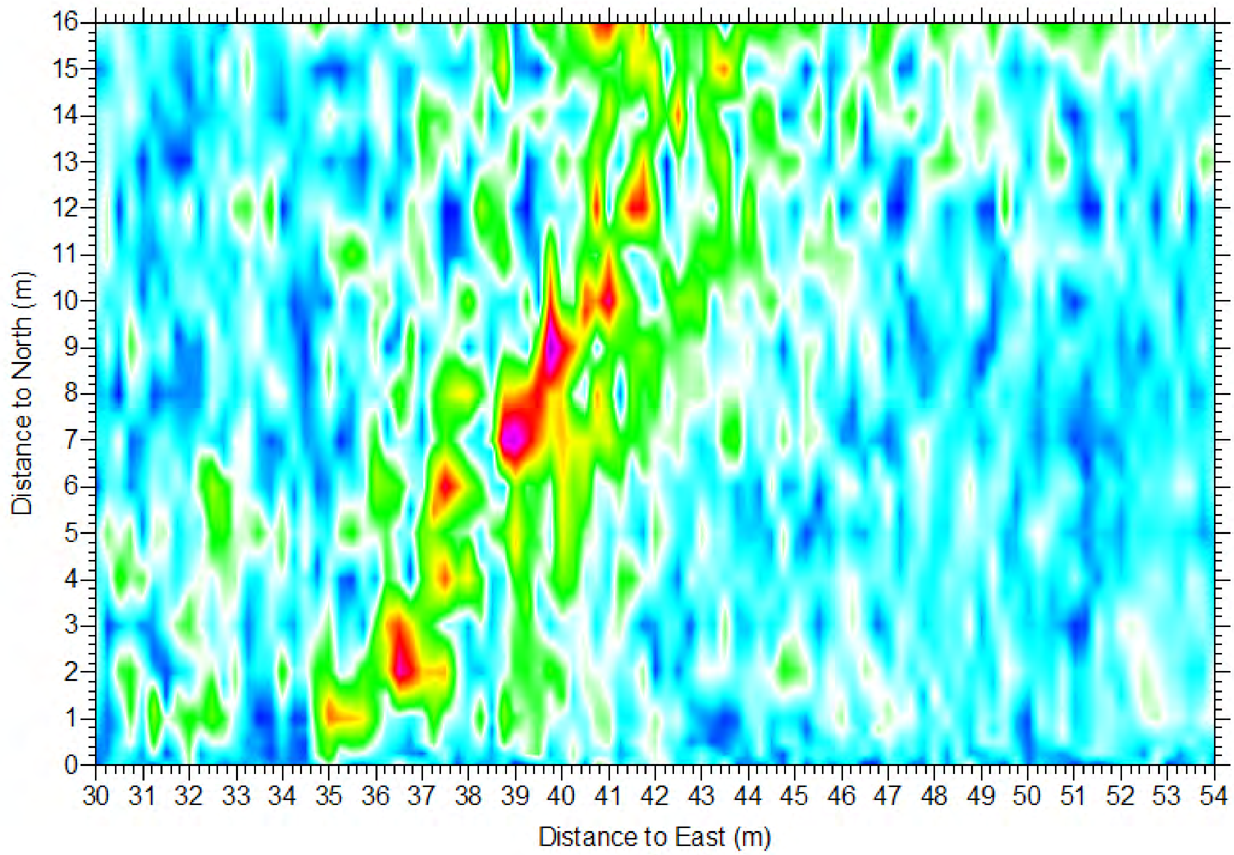


Figure 3.5. The electromagnetic survey displaying the magnetic susceptibility for 13950 Hz at the First Baptist Church site. The linear anomaly is discussed in the text.

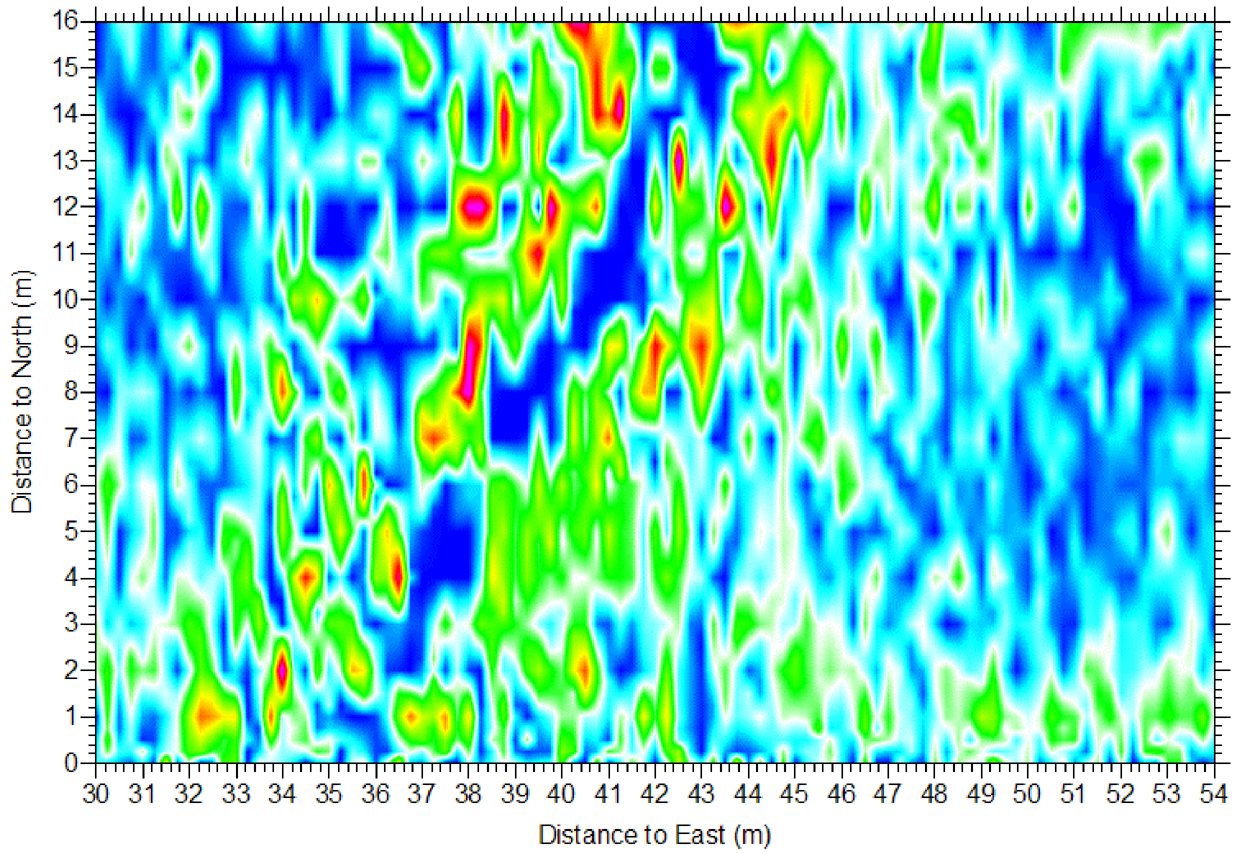
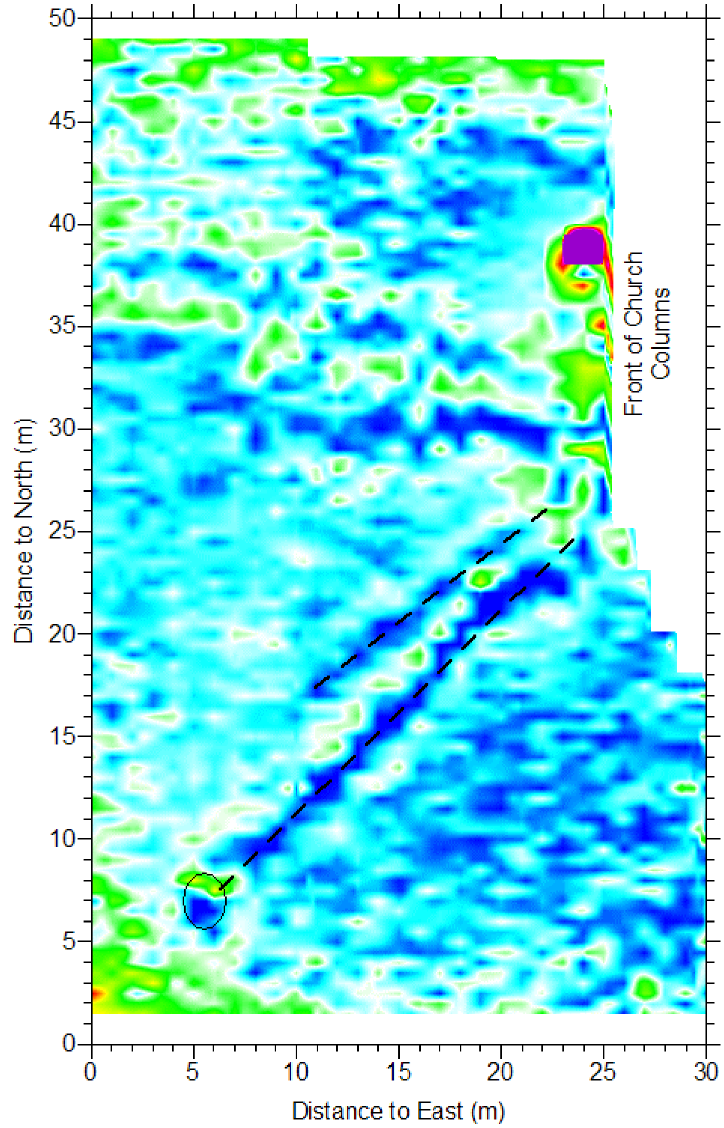


Figure 3.6. The electromagnetic survey displaying the electric conductivity for 13950 Hz at the First Baptist Church site. The linear anomaly is discussed in the text.

Front Yard: Figure 3.7 presents the electrical conductivity at a frequency of 20010 Hz and indicates several linear features. Two of these linear features have been highlighted in Figure 3.6. These two anomalies terminate into an observed lighting box in front of the church and the church sign. These two features are most likely the electric power cables connecting to the lighting fixtures. Other linear anomalies in the front yard corresponded to storm drains described by the caretaker of the church and potentially the flagstone path.

Figure 3.7. The electromagnetic survey displaying the electric conductivity for 20010 Hz at the First Baptist Church site. The linear anomalies are discussed in the text.



CONCLUSIONS

The anomalies in the front and side yards reveal areas that were avoided during excavation to lessen the chance of damaging the operational infrastructure of the church. The anomaly in the rear yard was not suggestive of the types of archaeological features normally of interest to historical archaeologists, however, the anomaly warranted further investigation. Subsequent excavation by archaeologists revealed a metal storage tank estimated to be between two and three hundred gallons buried approximately one meter below the surface.

Chapter 4

Mapping and Testpit Descriptions

Zachary Nelson

MAPPING THE GROUNDS

An important element of archaeological research consists in knowing the topography of a site and its physical layout. The First Baptist Church grounds lie within Providence, Rhode Island. The extent of the property is evident by a cursory look at a city map (Fig. 4.1). The property is bounded on the North by Thomas Street, on the south by Waterman Street, on the West by North Main Street, and on the East by Benefit Street. Thus, the size of the site is one city block.

The topography of the grounds is that of a hill side (Fig. 4.2). The land slopes downward from east to west. A few blocks west of the church is the bay to the Atlantic Ocean. This makes the height above sea level on the west side, approximately 3m. The eastern rise is approximately 15m above sea level. Because elevation changes are important to stratigraphy, the entire church grounds were surveyed. Professor Stephen Houston lent the project his Topcon Total Station 4B with its data collector. The origin for the survey was placed at the same point used for the remote sensing: On the sw corner of the site, inside the stone retaining wall, about 20 cm diagonally in (i.e., ne) from the corner. Its coordinates were artificially placed as 0m, 0m, 0m. This point is marked by a nail with orange string attached to it. Another point was located straight up the northern edge of the property, inside the hedge and near a sapling. This point was the backsight, and its coordinates were 0, 18.11, 1.75m. Mapping of the surface topography proceeded from these two points. In all, 941 topographic points were collected on the property (Fig. 4.3). The data was processed by ArcGIS 9.0 into a digital elevation model. In addition to the topographic data, the coordinates of each corner of each testpit were also collected. This allowed us to situate our excavations in context with both the remote sensing, and internally within the spatial confines of the property with an accuracy of a few centimeters. The topographic data did not include artificial features. No topographic points were taken on the driveway, the sidewalks, or the church stairs. We wanted the topographic map to accurately reflect the current ground surface, not present day construction.

TEST PIT PLACEMENT AND DESCRIPTION

Test pits, or units, were placed in accordance to Dr. Zachary Nelson's desires. The testpits placed on the eastern side of the church were labeled A1-A4. The testpits placed on the western side of the church were labeled B1-B4. In general, test pits were excavated in arbitrary 10 cm increments. Where clear stratigraphic changes occurred in the soil, excavators dug in natural layers. Individual test pit descriptions follow. The excavation notes and lot forms from each test pit are available on-line at: http://proteus.brown.edu/archaeologyofcollegehill/Home An artifact inventory can be located in the appendix.

Unit: A1

Location: Eastern side of property, near middle.

SW corner NEZ: 19.766, 79.397, 9.078m

NE corner NEZ: 20.878, 81.170, 9.328m

Reason for location: This unit was situated at the point where Waterman Street as it descended down the hill jogged northward to become Thomas Street, but on church grounds. Because it was likely that these streets followed Native American or early Colonial trails, situating the testpit here could provide information about the trail. It was also hoped that artifacts would be recovered from “sidewalk zones” along Benefit Street.

Size and Orientation: 1.5m by 1.5m

Stratigraphic Description: There were four main stratigraphic layers (Fig. 4.4). The first was humus, or an organic topsoil layer. The second was a greyish colored soil layer, followed by a brown-gray layer. The last layer was lighter brown consisting of compact, culturally sterile material.

Artifact quantity: 200 artifacts

Chronological information: Perry Davis Glassware fragment was found in A1-2/3 , which dates to 1880's. A1-3 had a pipestem whose bore could date to 1710-1750.

Unit: A2

Location: In the eastern lawn, on the south side.

SW corner NEZ: 9.843, 64.370, 6.970m

NE corner NEZ: 11.074, 66.183, 7.098m

Reason for location: This unit was placed based upon the remote sensing results. The unit clipped the southern side of the anomaly found.

Size and Orientation: 1.5m by 1.5m

Stratigraphic Description: This unit had five different strata (Fig. 4.5). The first stratum was composed of humus, or an organic topsoil layer. The next layer was light brown, followed by a darker brown layer. Under this layer was a red-brown soil layer with a modern oil pipe running through it. Underneath this one was a sandy yellow soil.

Artifact quantity: 170 artifacts

Chronological information: Although there were some obvious disturbances to the soil, due to placing a pipe in it, overall the chronology of the unit is consistent. A dime dating to 1935 was found in A2-1. A2-3 had Pearlware, Rockingham, and Whiteware ceramics dating from 1820-1900 in it.

Unit: A3

Location: This test pit was placed on the grass island in the middle, i.e., west-east, along the south side of the property. The island is bounded on the east by the driveway, on the west by a paved sidewalk, on north by the church and on the south by Waterman Street.

SW corner NEZ: 3.157, 46.255, 5.150M

NE corner NEZ: 4.505, 47.889, 5.303m

Reason for location: This unit was placed in an area that could contain trash from commencement activities and possibly from buggies parked there in the past.

Size and Orientation: 1.5m by 1.5m

Stratigraphic Description: There were four main stratigraphic layers (Fig. 4.6). The first was humus, or an organic topsoil layer. The second was a tannish-grey colored soil layer, followed by a gray layer. The last layer was lighter brown. The large quantity of tree roots in this unit made excavation difficult.

Artifact quantity: 164 artifacts

Chronological information: A plastic pipe stem was found early on, perhaps dating to 1930s. A3-2/3 has Whiteware dating to 1820-1875. A3-6 has porcelain that dates from 1660-1800.

Because the church was not built until 1775, I think the upper range (1770-1800) more likely than the lower range (1600-1770).

Unit: A4

Location: Unit A4 was placed 1.5m north of Unit A2.

SW corner NEZ: 12.575, 66.119, 7.075m

NE corner NEZ: 12.763, 69.198, 7.388m

Reason for location: This unit was placed in the middle of the anomaly located by remote sensing, as a narrow trench. The trench was placed over the "wall" of the anomaly, so that its outside and inside could be evaluated. An underground oil tank was discovered in the western side of the unit.

Size and Orientation: 1.0m by 3.0m

Stratigraphic Description: There were five main stratigraphic layers (Fig. 4.7). The first was humus, or an organic topsoil layer. Under this stratum was a brownish layer that was deeper on the east than on the west. Beneath this stratum things were mixed up. Outside the "wall" was a brown-red soil similar to A2. Inside the anomaly, were two strata side by side. The farthest west was a mixed soil layer older than the middle, intrusive soil, layer. The middle soil layer boundary was the "wall" detected by the remote sensing. Beneath these two layers on the western edge was a large oil tank.

Artifact quantity: 179 artifacts

Chronological information: The natural stratigraphy of the unit was badly messed up when the oil tank was placed. There is no really good artifactual chronological information.

Unit: B1

Location: This unit was placed at the southwest corner of the property, near the grid origin, and in front of the information placard of the church.

SW corner NEZ: 2.648, 1.293, 0.255m

NE corner NEZ: 4.157, 2.585, 0.464

Reason for location: This unit was placed to explore the corner of the property, and as a reasonable place to expect roadside trash to accumulate.

Size and Orientation: 1.5m by 1.5m

Stratigraphic Description: There were numerous stratigraphic layers (Fig. 4.8). The first was humus, or an organic topsoil layer. Under this layer were several thin layers of alternating black and red. Then a deep layer of light brown, followed by alternating black and red layers. Then a light gray-purple layer, followed by a red layer. Last uncovered was a red-brown layer.

Artifact quantity: 304

Chronological information: The chronology of this unit has some difficulties due to the abundance of datable remains. In B1-2, Pearlware Blue Transfer ceramics were found. These date to 1820-1830. In B1-4, a Marble toy was found which dates to approximately 1850. In addition, several ceramic sherds were recovered suggesting a date range for the layer from 1830-1850 (Black Transfer, Whiteware, 1830-1850; Pearlware, Hand-Paint Blue Underglaze, 1775-1830). In B1-6, several overlapping ceramic styles were recovered. These indicate that a range from 1770s-1830 would be appropriate for this lot (Whiteware, DS Transfer Red Print: 1829-1839; Blue Pearlware, Hand Pained Anular, Underglazed, 1775-1830; Creamware 1762-1820).

Unit: B2

Location: This unit was placed in the middle of the west lawn, close to the north hedge.

SW corner NEZ: 21.118, 1.200, 0.240m

NE corner NEZ: 22.697, 2.685, 0.384m

Reason for location: The purpose of this location was to understand the refuse accumulation of the front lawn, in line (generally) with A1 and B3 to form a west-east profile of the hill.

Size and Orientation: 1.5m by 1.5m

Stratigraphic Description: There were eight main stratigraphic layers (Fig. 4.9). The first was humus, or an organic topsoil layer. Under this layer was a gray-brown layer, followed by a darker brown layer. Beneath this layer was a wide dark brown layer. Next was a thin orange layer followed by a deep gray-brown one - where many animal bones were discovered. Beneath this layer was a tan layer followed by a gray-tan layer on the bottom. Future excavation of this area is advised.

Artifact quantity: 1532 artifacts

Chronological information: This unit was quite complex, but its chronology is straight-forward. B2-2 ceramics date to the late $19^{th}/20^{th}$ Century. B2-4 dates to the 1890's by the presence of milk glass. B2-5 had some English Salt Glaze ceramics from 1850's. Lot B2-6 has some ceramics from 1795-1830 in it (Pearlware, White Pearlware, and Hand Painted porcelain). B2-7 had some ceramics and pipe fragments in it. The ceramics dated to 1795-1820, while the pipe stems dated to 1710-1800. B2-9 had some pipe stems which dated to 1710-1750. This was the most interesting unit of the excavation in terms of chronology, and materials.

Unit: B3

Location: Placed in the west lawn close to the southwest corner of the church, but still in the lawn.

SW corner NEZ: 21.381, 15.045, 1.764m

NE corner NEZ: 22.669, 16.773, 1.917m

Reason for location: This unit was part of the long west-east profile of the site. Also, it was hoped that sidewalk trash from the structure would be found. This area could also be explored more.

Size and Orientation: 1.5m by 1.5m; really more of 0.75 x 0.75m

Stratigraphic Description: There were five main stratigraphic layers (Fig. 4.10). The first was humus, or an organic topsoil layer, which was deeper here than elsewhere. The next layer was a narrow band of gray material, followed by a deep layer of gray-brown soil. Next was a thin intrusive layer of grey dirt, over a layer of tannish soil.

Artifact quantity: 128 artifacts

Chronological information: The top two layers had modern beer bottle fragments. The B3-5 lot had a Whieldonware ceramic fragment which dates to 1740-1770.

Unit: B4

Location: This unit was placed toward the northwest corner of the property, near Thomas Street and North Main Street junction.

SW corner NEZ: 45.384, 4.582, 0.528m

NE corner NEZ: 46.837, 6.188, 0.685m

Reason for location: This spot was chosen as a probable location for parked carriages along the road, and as a location for road-side trash.

Size and Orientation: 1.5m by 1.5m

Stratigraphic Description: There were three main stratigraphic layers (Fig. 4.11). The first was humus, or an organic topsoil layer that had an unexpected depth. The second was a grey-brown layer over a tannish layer. The large quantity of tree roots in this unit made excavation difficult.

Artifact quantity: 72 artifacts

Chronological information: The chronology of this unit is questionable. B4-1 had a piece of Whiteware in it which dates to 1829-1839. Below this was found a 1918 penny in lot B4-3.

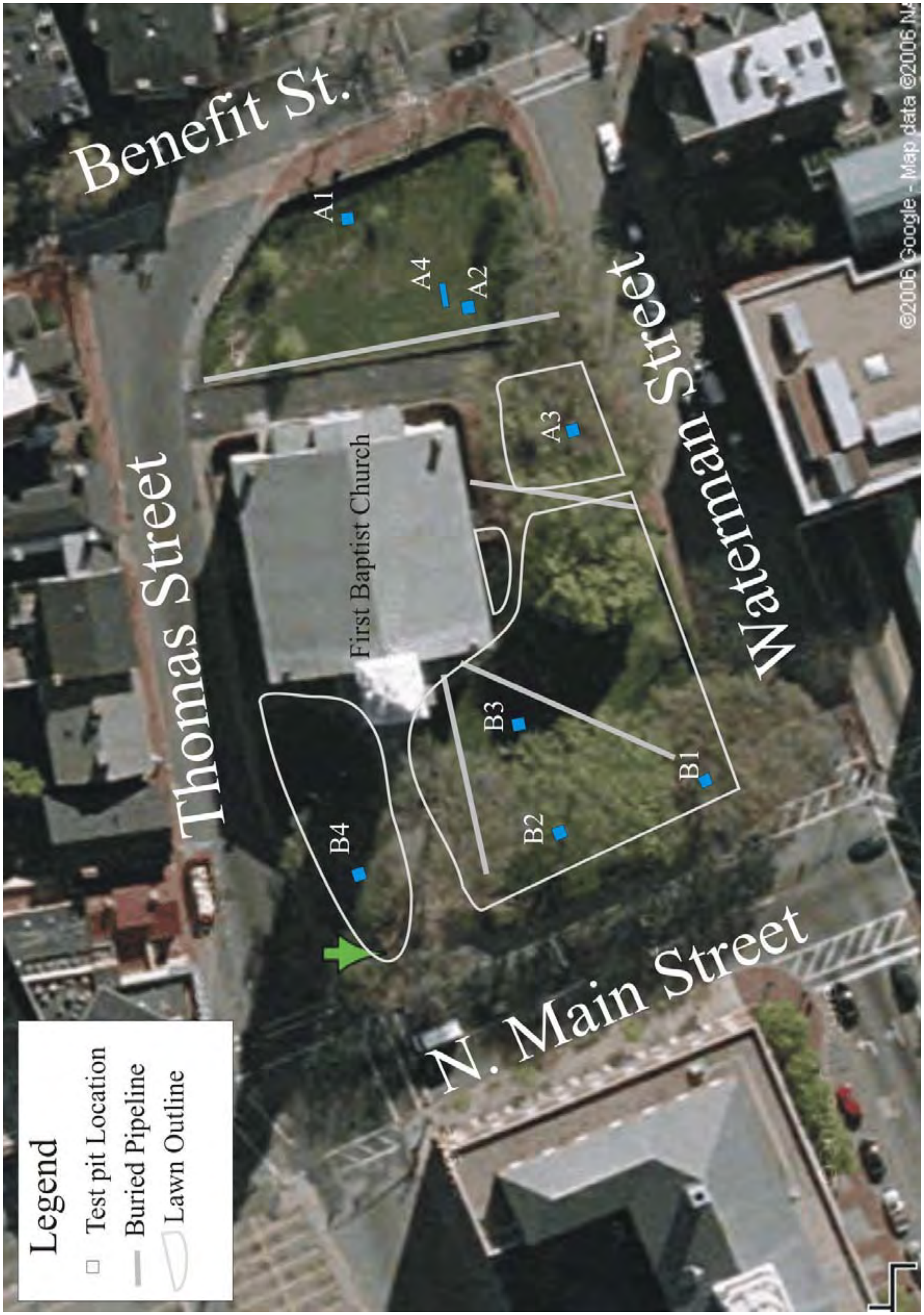


Figure 4.1: First Baptist Church grounds. Background image from Google.

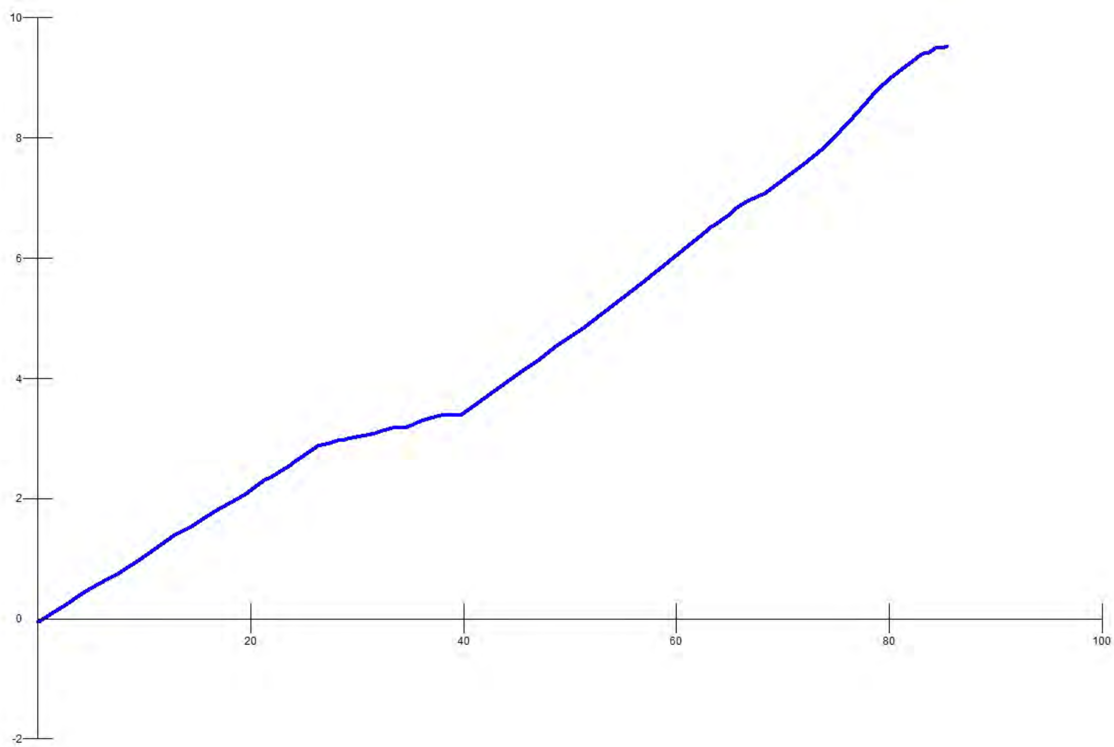


Figure 4.2: Hill slope running west to east through the First Baptist Church grounds

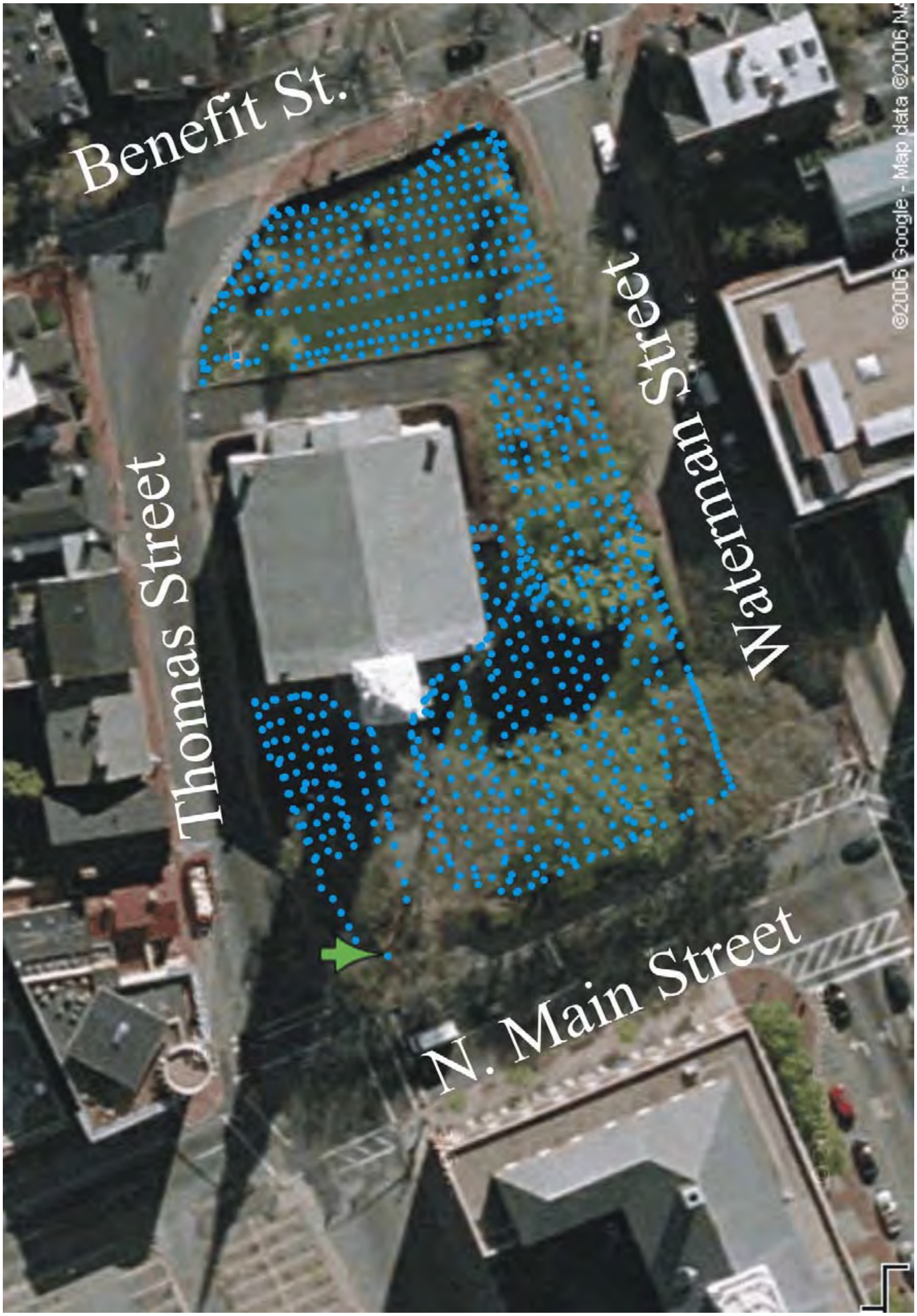


Figure 4.3: Topographic points at the First Baptist Church. Background image from Google.

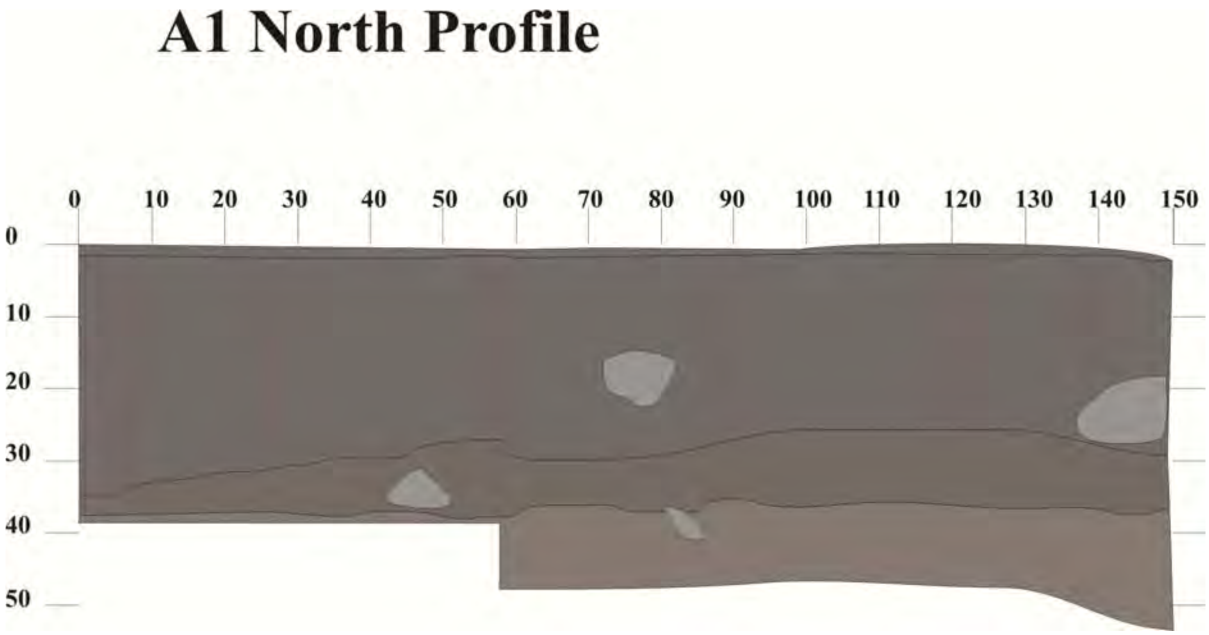


Figure 4.4: Unit A1 profile running west to east.

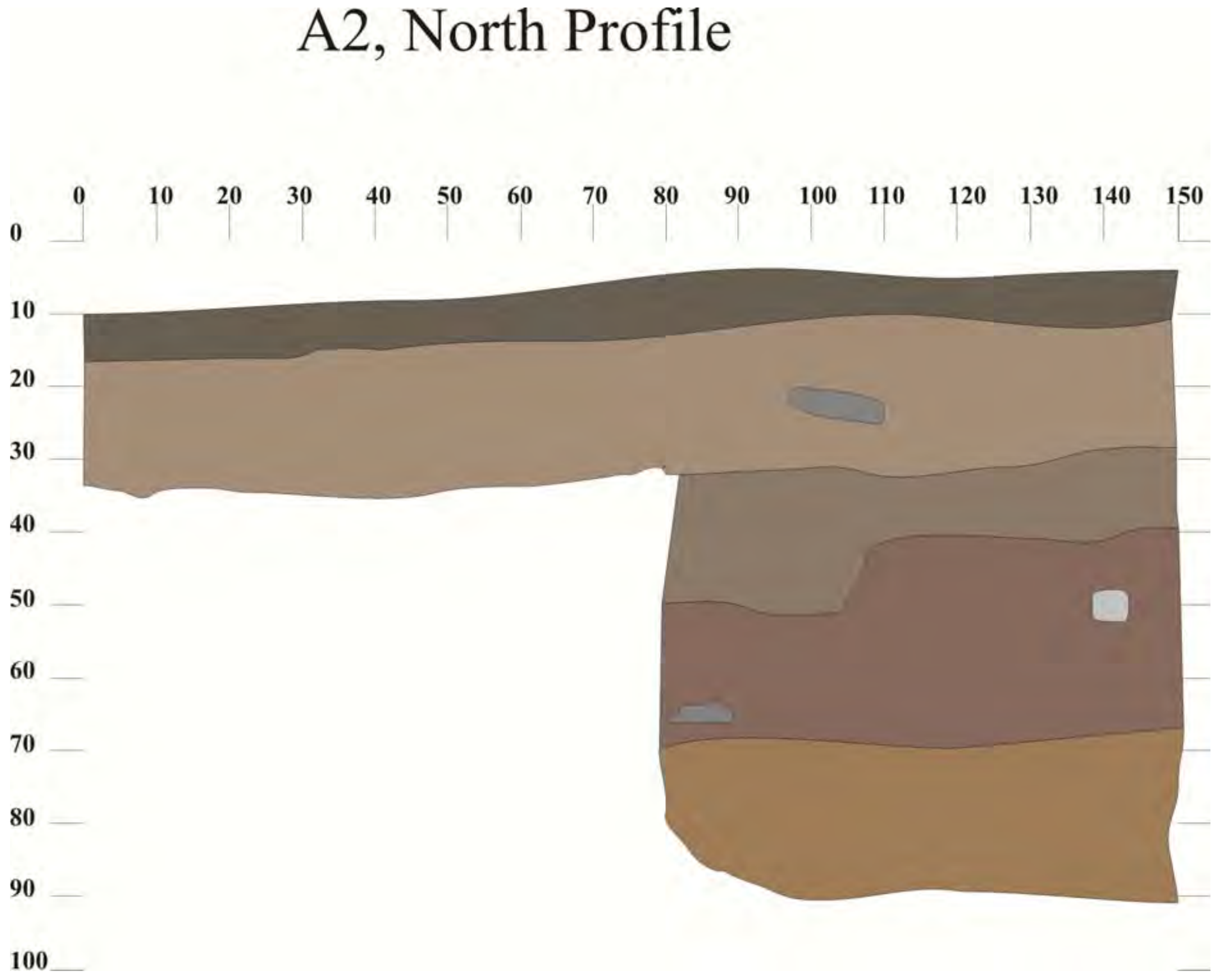


Figure 4.5: Unit A2 profile running west to east.

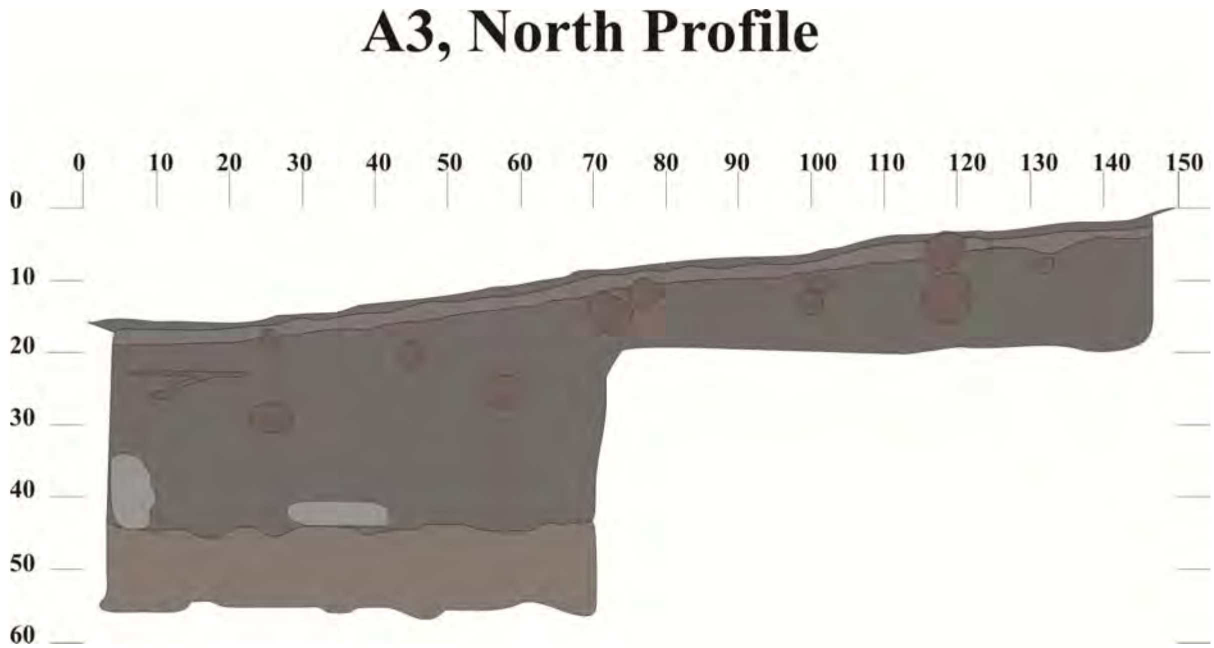


Figure 4.6: Unit A3 profile running west to east.

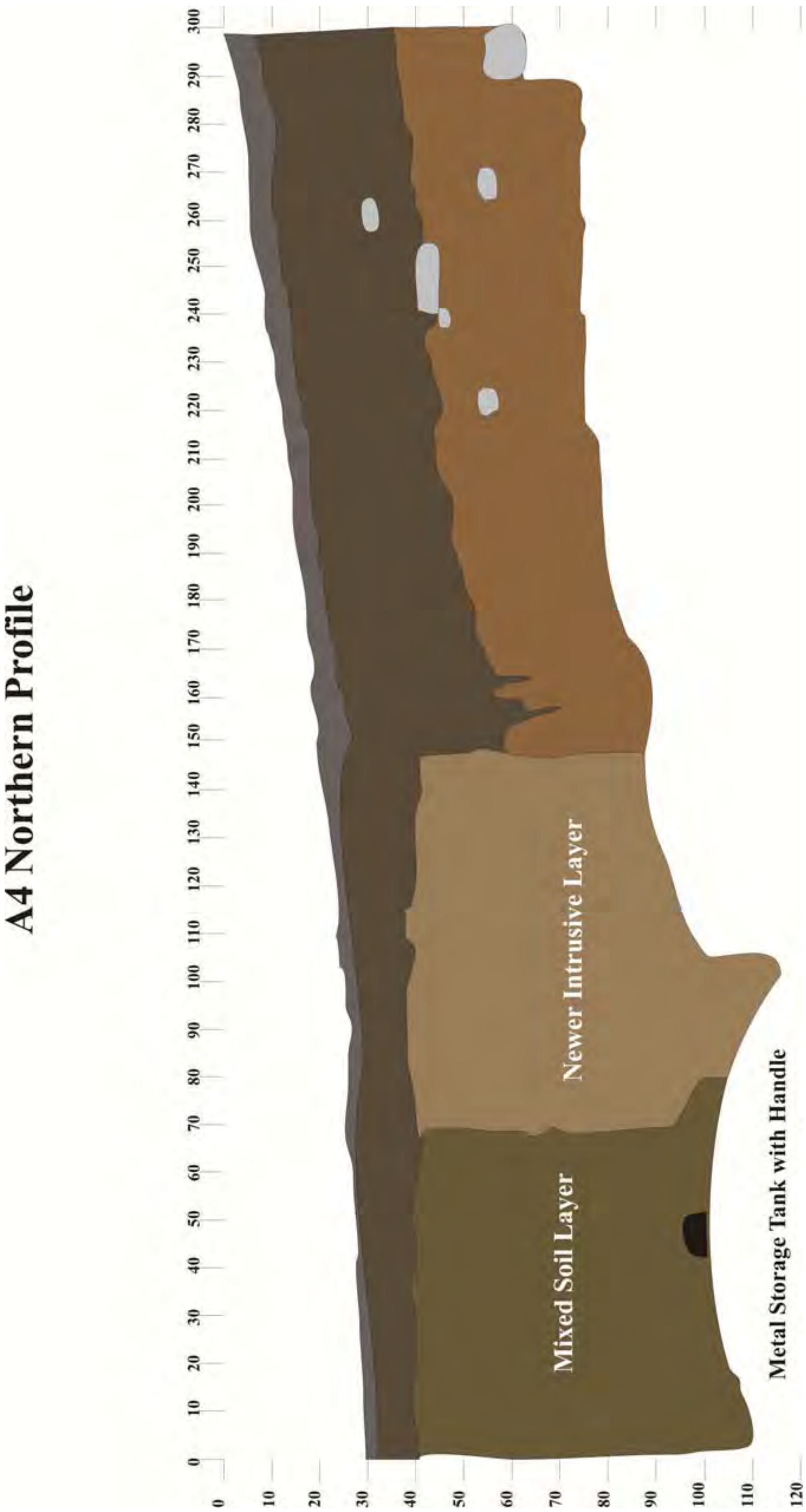


Figure 4.7: Unit A4 profile running west to east.

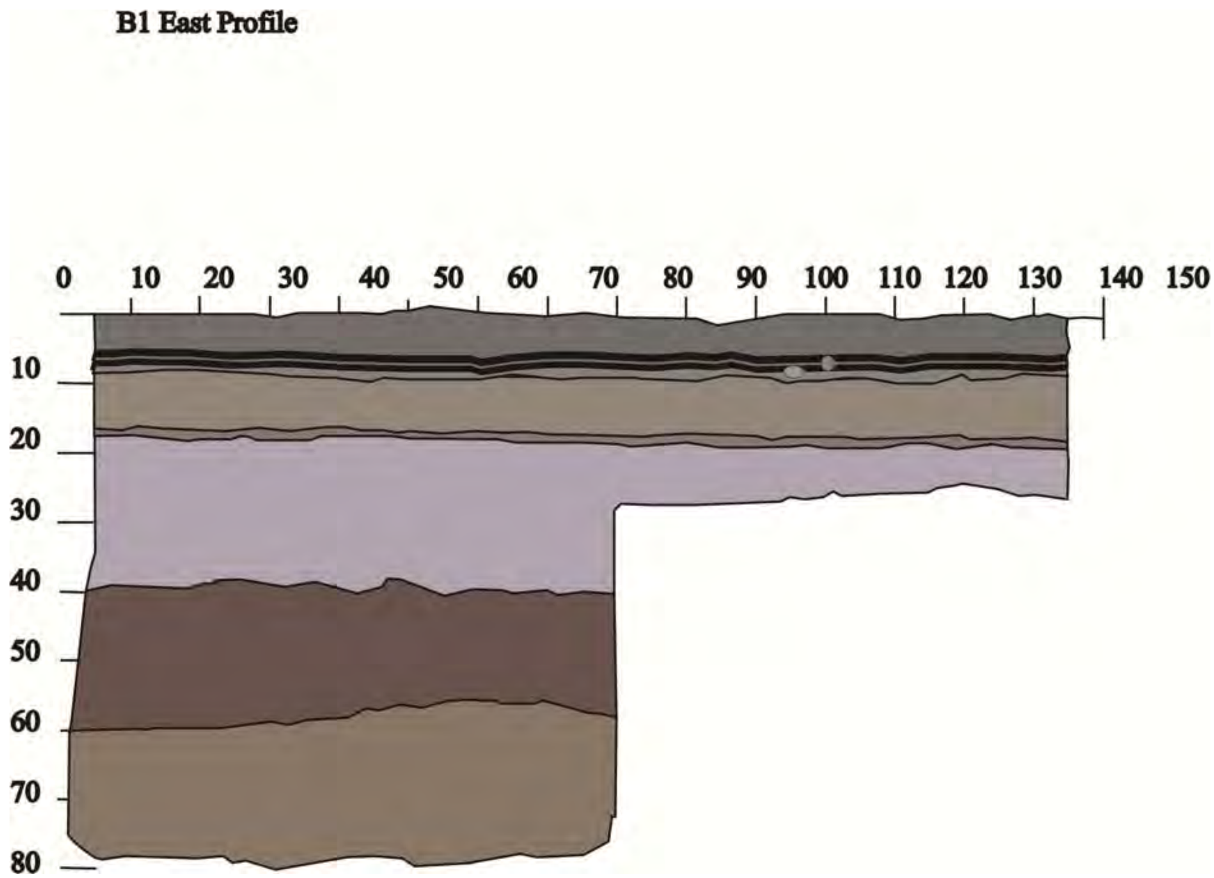


Figure 4.8: Unit B1 profile running north to south.

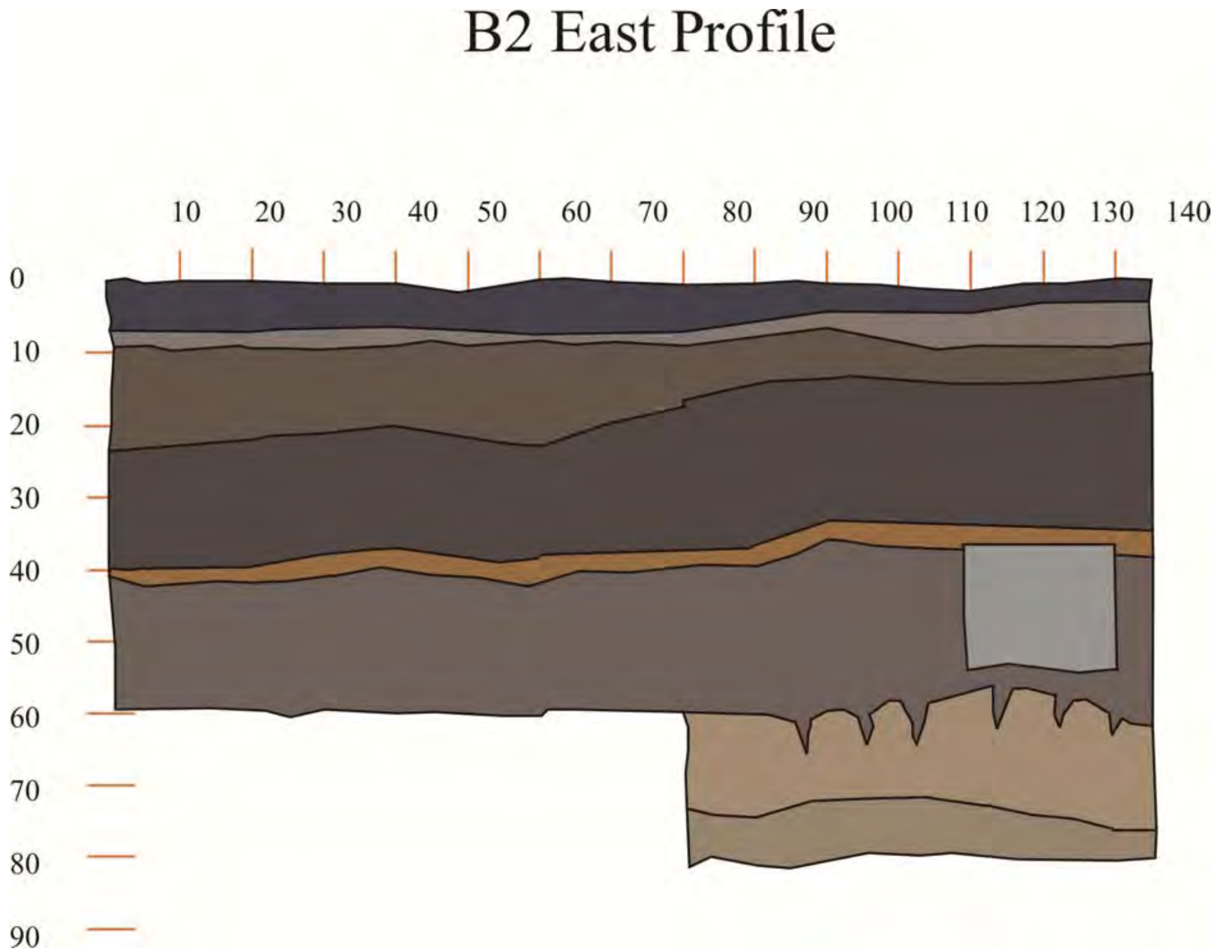


Figure 4.9: Unit B2 profile running north to south.

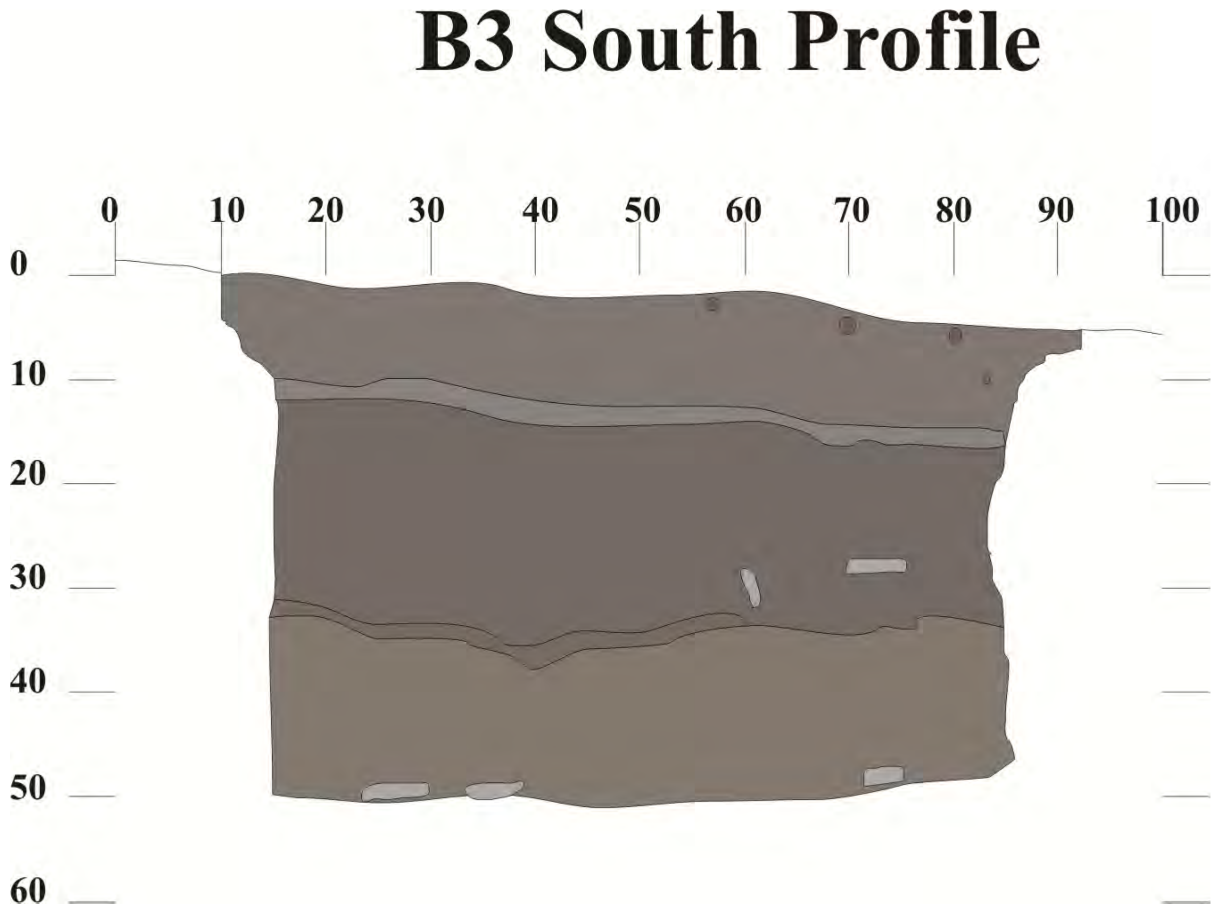


Figure 4.10: Unit B3 profile running east to west.

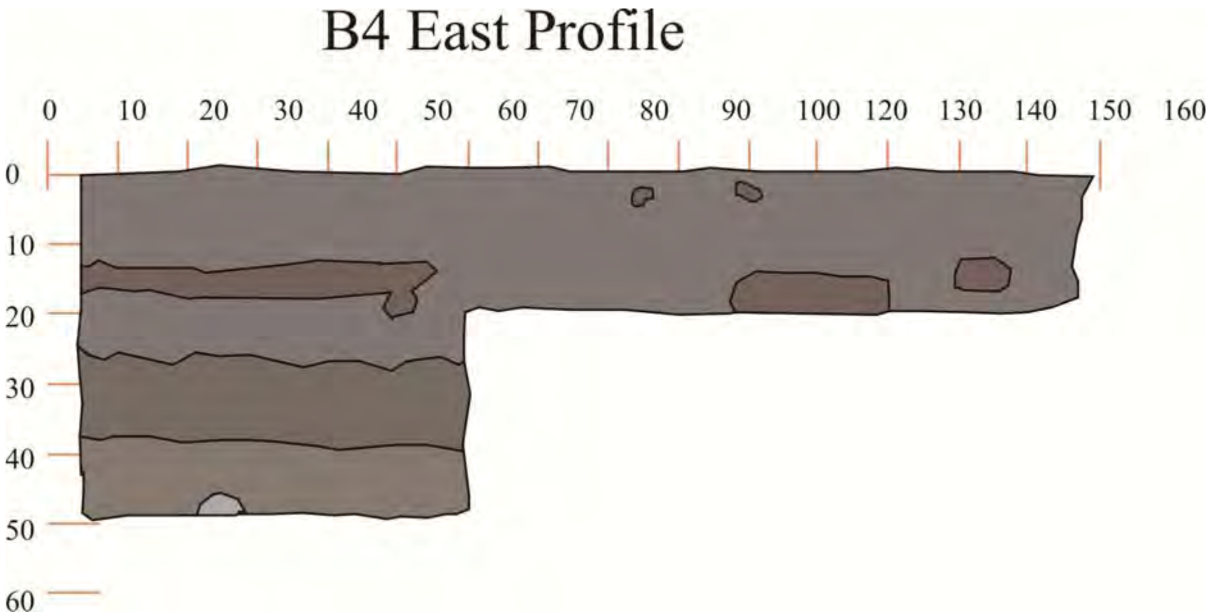


Figure 4.11: Unit B4 profile running west to east.

Soil at the First Baptist Church in America

Adam Bravo

SOIL FORMATION

Although several definitions for the word soil exist, this paper will deal primarily with the pedological meaning: "a product of weathering consisting of a layer(s) or horizon(s) of mineral and/or organic constituents of variable thickness, occurring at the immediate surface of the earth in sediment and/or weathered rock" (Stein 1992: 195). For the term sediment the "implicit focus is placed on the fact that the material has been transferred"--that it "came from a source, was carried to this site, and was deposited" (Stein 1992: 195). The term organic matter "refers to all living organisms, as well as to all the dead residues of plant and animal tissues," while soil organic matter (SOM) is "the accumulations of dead plant and animal matter, partially decayed and partially resynthesized plant and animal residues, as well as the completely decayed residue called humus, which is a complex and rather resistant mixture of brown to dark brown amorphous and colloidal substances" (Stein 1992: 195-196). Soil organic matter "accumulates on a stable landscape," i.e., one that is neither being eroded nor buried, and "in an archaeological site can be from a combination of sediment and soils" (Stein 1992: 196, 198). This organic material "is brought to a site by people during occupation, and some of it is added later when weathering begins and vegetation takes root on a stable surface," and thus "soils, and the organic matter associated with them, are formed in sediments (parent material) after their deposition" (Stein 1992: 197).

Organic matter, "almost instantaneously" after the death of the organism which produced it, begin to decompose by several means: microorganisms, mammals, insects, and earthworms (Stein 1992: 198). Microorganisms will decompose most organic matter, even if it is buried deeply enough to protect it from mammals and plants (Stein 1992: 199). Microorganisms break down the more complex compounds, such as "proteins, glucose, carbohydrates, fats, tannins and lignin in the fresher organic matter" until it is transferred into the more resistant "humus, a substance composed of humin, humic acid, and fulvic acid" (Stein 1992: 199). Carbon dioxide is constantly released during this process, some of which is released as gas and escapes from the soil, while some may be absorbed into soil water, "to produce carbonic acid and low pH" (Stein 1992: 199-200). The rate of decomposition "is affected by environmental factors, especially temperature, moisture, and available oxygen," which, as their availability increase, "so does the rate of decomposition" (Stein 1992: 199). In the soils themselves, replacement materially is added annually by "50 percent to 80 percent of the organic matter lost" (Stein 1992: 200). Since, "as more organic material is added, more microorganisms can be supported," which, in turn, process the larger amount of material at a faster pace (since the population will grow), a "steady state of organic matter cycling" will be maintained as long as material continues to be deposited (Stein 1992: 200). This means that if material is added at varying rates over time, the population of microorganisms also changes proportionally, and the overall rate of decomposition remains the same, provided that at least some material is added continually (Stein 1992: 200). If the source of the organic matter is cut off (either by being buried or eroded), then the decomposition rate and accumulation rates will be in disequilibrium, and the decomposition will run until everything is broken down into carbon dioxide and humus (Stein 1992: 200).

In addition to these organic processes, soil undergoes a number of changes due to physical and chemical reactions. Wind and water both add and removed elements and particles on soil surfaces (Wright & Sautter 1988: 12). As water percolates through the soil, it often moves "such soil constituents as clay, organic matter, iron, calcium, and magnesium from the A horizon to the B horizon" along with it (Wright & Sautter 1988: 12). Chemical reactions also occur, such as the oxidation of iron and, over long periods, "primary minerals such as feldspars and micas are transformed to clay type minerals during the weathering process" (Wright & Sautter 1988: 12). All of these aspects of soil, soil formation, and the organic matter contained therein can provide information not only to the archaeologist attempting to reconstruct a site's physical landscape and geologic history, but also to the archaeologist attempting to reconstruct living and usage patterns of the people who lived on now-buried soils.

RHODE ISLAND GEOLOGY

The underlying bedrock in Rhode Island comprises four major types (4.12 and 4.13). The Blackstone series, a metamorphic rock, represents the oldest, found in pockets in the Blackstone Valley and in the southern portion of the state (Rector 1981: 2). The various types of granite in the western part of the state are somewhat younger, while along the southern coast even younger granite rock can be found (Rector 1981: 2). All of these rocks "have been relatively resistant to weathering and erosion," and despite the glacial scour which leveled them some, "they remain the framework for upland terrain in the north and western part of Rhode Island and control the orientation of local stream/river drainage patterns and gradients" (Baxter, et al. 2005: 2.5). Sedimentary rock forms the "Rhode Island formation" which stretches in a band six to ten miles wide from the northeast corner of the state southwards across the Narragansett basin (Baxter, et al. 2005: 2.6). This rock shows much variation in texture and generally does not resist erosion well (Baxter, et al., 2005: 2.6).

The Wisconsin ice sheet advanced and retreated twice during the last glacial period, 10,000 to 12,000 years ago, and the deposits left from these actions form much of the parent material for current soil types in Rhode Island (Baxter, et al. 2005: 2.1). These deposits were left either as glacial till, i.e., unstratified but "well-graded mixture of gravel, sand, silt, and clay" (Baxter, et al. 2005: 2.1) or glacial outwash, which is generally poorly graded, often stratified sand and silt which was carried from the glacier as it melted (Rector 1981: 84). Glacial outwash overlays much of the bedrock of downtown Providence, in some places in layers up to 200 feet deep (Baxter, et al. 2005: 2.2). Rector further divides glacial till (Fig. 4.14) into "upland till plains," which are the "most extensive example" in Rhode Island, whence Canton and Paxton soils derive, and the "Narragansett till plains" around Narragansett Bay and form the Newport soils (1981: 2). An estimated 65 percent of soils in Rhode Island have developed from glacial till (Wright & Sautter 1988: 13). Glacial outwash, since they "are deposited by the receding ice sheet, . . . are generally found overlying the till deposits" (Baxter, et al. 2005: 2.11). Glacial moraines, which are "accumulations of glacial drift caused when the ice front stayed at the same place for a long time but the ice itself continued to bring up boulders, sand and silt," exist in the Charlestown and Block Island areas (Rector 1981: 2).

Over all of this material often lies on more recent deposits, which "may include a wide range of soils including organic deposits, alluvial deposits, marine deposits, and fill" (Baxter, et al. 2005: 2.12). In Rhode Island, most urban areas "contain a layer of surficial [sic] fill overlaying native soils," where "fill refers to any material that is placed by mankind . . ." (Baxter, et al. 2005: 2.12). Fill can contain any number of things, from organic material such as leaves and trees to construction debris and refuse, but may be very difficult to recognize if it "consist purely of native soils" (Baxter, et al., 2005: 2.12).

SOIL TYPES IN RHODE ISLAND

While the 1981 Soil survey of Rhode Island (Rector) has been superseded by the 1996 U.S. Department of Agriculture's Soil Survey Geographic (SSURGO) database, it remains useful for its detailed descriptions of soil types and series (and is now available online in PDF form). The SSURGO dataset is available in several forms: from the University of Rhode Island's web site as part of RIGIS, from the "official" USDA-NRCS Soil Data Mart as tabular and spatial data, from the USDA-NRCS Web Soil Survey via a web-browser based viewer, and from the Rhode Island Department of Environmental Management's web site via a different web-browser based viewer (see bibliography). According to the National Resources Conservation Service, "Rhode Island is the first State to have digital soil data available for all it's (sic) land areas" (2006).

Soils are classified on a number of criteria, primarily: color, texture, structure, and drainage (Wright & Sautter 1988: 18-31). While color does little to affect the soil's physical properties, it easily helps classify a soil and is primarily determined by organic matter and iron oxides (Wright & Sautter 1988: 18). The amount of iron oxides and the type are results of the drainage and the aeration of a soil: poorly aerated soil caused ferrous iron to occur and give "grayish to bluish hues to the soil body," whereas seasonally-fluctuating water tables cause the iron content of a soil to both move and oxidize, creating "rust-colored mottles" (Wright & Sautter 1988: 18-19). On the other hand, soil texture--whether a soil is sandy, silty, or clay-like--depends on particle size and does not usually change over time, though surface soil may be eroded or buried (Wright & Sautter 1988: 21). The structure of a soil refers to how the particles are arranged in the soil and can undergo significant changes due to the "results of the soil forming processes of wetting and drying, freezing and thawing, and other physical and chemical changes" (Wright & Sautter 1988: 22). A complex set of variables cause soils to have different drainage characteristics, which leads to classification of soils ranging from "excessively drained soils" to "very poorly drained soils" (Wright & Sautter 1988: 24-27).

The process of properly surveying soil types at a site requires a great deal of information be collected, the details of which can (and quite literally do) fill a book (see Schoeneberger, et al. 2002). At the time of the survey, many details about the site and conditions must be recorded, from light conditions to air and soil temperatures, since all of these factors influence the appearance of the soil in situ (Schoeneberger, et al. 2002: 1.1-1.4). The site's morphology, patterns of erosion, runoff, water table, and even vegetation must be recorded as well (Schoeneberger, et al. 2002: 1.4-1.27). In the case of test pits or trenches, such as at the First Baptist Church, profiles of the various soil horizons are readily available for study. Careful descriptions of the different soil characteristics, including color of the soil matrix, mottles, redoximorphic features, consistence, structure, concentrations (minerals, concretions, etc.), and moisture contents must be noted, since these features may not only become less apparent when the soil dries out but in some cases radically alter as chemical reactions occur as the soil comes in contact with air (and as water is removed) (Schoeneberger, et al. 2002: 2.1-2.24). The familiar horizon designations (O, A, A/B, C, etc.) are only assigned after the morphology is recorded (Schoeneberger, et al. 2002: 2.2). Some chemical analysis can be conducted in the field, such as field pH, salinity testing, and effervescence testing (Schoeneberger, et al. 2002: 2.70-2.73). Soil samples may also be collected to perform more extensive tests in the lab.

Figure 4.15 summarizes the major types of soil found in Rhode Island. The soil on and around College Hill consists of two broad types: Paxton-Urban land complex (PD) and Urban land (Ur) (RIGIS database, see Fig. 4.16). "Urban land" has been heavily built upon and used for the past several centuries, several different soil types have been intermingled such that areas are so small they cannot easily be mapped, and "included in this unit are . . . Udorthents; somewhat excessively drained Merrimac soils; well drained Canton, Charlton, and Newport soils; and moderately well drained Pittstown, Sudbury, and Sutton soils" (Rector 1981: 42). Paxton-Urban land complex "consists of well drained Paxton soils and areas of Urban land," and the map units also include "areas, up to 10 acres in size, of well drained Broadbook soils, moderately well drained Woodbridge and Sutton soils, and Udorthents" (Rector 1981: 30). Generally, Paxton-Urban land complex "is about 40 percent Paxton soils, 30 percent Urban land, and 40 percent other soils" (Rector 1981: 30).

For Paxton soils, usually "the surface layer . . . is very dark grayish brown fine sandy loam about 5 inches thick" with subsoil that is "brown and yellowish brown fine sandy loam 18 inches thick" on top of a substratum which "is light brownish gray, yellowish brown, and grayish brown fine sandy loam to a depth of 60 inches or more" (Rector 1981: 30). They are "formed in compact glacial till derived mainly from gneiss and schist" and are usually "on the sides of slopes and crests of glacial till upland hills and drumlins" (Rector 1981: 71).

Udorthents are "moderately well drained to excessively drained soils that have been cut, filled, or eroded" by more than 2 feet of material, on "glacial till plains and outwash terraces" (Rector 1981: 79). Woodbridge soils are "moderately well drained soils formed in glacial till derived mainly from schist, gneiss, and phyllite" and are found on "lower slopes and crests of upland hills and drumlins" (Rector 1981: 81). Sutton series are "coarse-loamy, mixed, mesic Aquic Dystrochrepts . . . formed in glacial till derived mainly from schist, gneiss, and granite" (Rector 1981: 78). Broadbook soils are well drained, "formed in a silt mantle over compact glacial till derived mainly from schist, gneiss, and phyllite . . . on the side slopes and crests of drumlins" (Rector 1981: 62).

To nearly the immediate north of the First Baptist Church, on the other side of Steeple Street, behind a row of houses, lies the western portal to the East Side Railroad Tunnel (not to be confused with the East Side Bus Tunnel), which was built from 1906 to 1908. The entrance lies immediately below Benefit St., and the tunnel runs 5,080 feet (just shy of a mile) through College Hill, emerging under Gano St., where it connects to the Seekonk River Railroad Bridge (Fig. 4.16). The details of the excavation and construction of the tunnel were published and offer a unique profile of the complex structure of College Hill. Instead of solid bedrock which would need no timbering or lining, as the engineers building the tunnel had originally anticipated, they found some rock whose "stratification was very irregular and variable, which , with the peculiar quality and other conditions encountered, made the excavation difficult and dangerous..." (Dawley 1908: 307). Dawley continues:

> The rock was chiefly a species of soft shale in strata from a small fraction of an inch to several feet thick, with thin seams of graphite material between them. Several geological faults were found in the vicinity of the tunnel, and the rock was folded and distorted into all shapes. In some cases, a complete "S" was formed in 20 ft., bringing the strata alternately into horizontal and vertical planes and through all intermediate angles. The rock was found to be very treacherous and unreliable, and even when comparatively sound after excavation soon deteriorated, so that large masses might be pushed in by lateral pressure over the inclined seams lubricated by the graphite; or masses in the roof, which appeared to be solid, after a few days became loosened and fell if not supported.

(1908: 307-308)

The floor of the tunnel cuts through College Hill at an elevation of 22 feet in the west to 30 feet in the east, with the ceiling of the tunnel just over 24 feet above that (Dawley 1908: 298). Dawley summarizes the different types of material encountered heading east to west:

> Very fine sand saturated with water [i.e., quicksand, 15 ft. deep: 316]; glacial till; grit and fine seamy conglomerate; fine grit and hard shale with some graphite, laminated; carboniferous shale, principally graphite; fine sandstone; increasing quantity of graphite; carboniferous shale, principally graphite near roof, wet and very heavy; talc, schist, rotten slate and quartz, very heavy; carboniferous shale and sandy schist, with some talc and considerable graphite, wet and heavy; water veins, slate, hard and comparatively dry; hardpan and rotten stone; shale, talc, and schist; veins of graphite in considerable quantities in fine sandy dry shale, liable to slip and requiring enormous timbering; sandstone; graphite with large veins of quartz; fine sandstone, with thin seams of graphite; water-bearing carboniferous shale, with veins of graphite, laminated. (Dawley 1908: 308)

SOIL AT THE FIRST BAPTIST CHURCH

Soil samples were taken from all pits except for A2, which lies close enough to A4 that its stratigraphy should be nearly the same. Three sets of samples taken from A4 in order to collect each different soil present in the profile at the middle and each end. The 53 samples were placed in sealed plastic bags and then returned to the lab for color determination, using the 2000 edition of the Munsell Soil Color Charts (see Table 4.1). While great care was taken to ensure the colors were correlated correctly, several factors may have distorted the assignment of Munsell colors: color readings were taken under fluorescent lighting, condensation formed inside the sealed plastic bags, both drying and oxidation occurred when the soil was exposed to air when sampled, and each person perceives colors slightly differently. Since the main purpose of taking soil samples at this site was to correlate the different strata between test pits, these sources of error in color assignment should not greatly affect the results. Correlation with other sites, however, may prove difficult since the colors assigned probably do not represent the color of soils as they would immediately appear upon excavation. The problem of the soil drying and oxidizing upon exposure to air can readily be seen when comparing the color of the soil in the lab to the descriptions in the field logs and on profile drawings--often distinct, occasionally bright, colors quickly fade to the gray seen in the lab. Finally, an attempt was made to digitally photograph and use a computer to determine the Munsell colors, but this proved impractical due to lighting conditions and the camera's ability to accurately reproduce the color (or for the computer monitor to properly display it).

Profile drawings were made at the end of the excavation of each test pit, which have been scanned at 600 dpi, turned into vector-based graphics files (by tracing over the individual lines of the scanned drawings in Adobe Illustrator or CorelDraw), and then rasterized to 300 dpi with each stratum being filled with the appropriate CMYK equivalent of the Munsell color assigned to the stratum or colors from field photographs as appropriate (Fig. 4.17-4.19).

Analysis of the soil color and texture across the site reveals that generally three major layers are present: a humus layer with many small roots; a finer, medium layer; a courser, yellow-red sand layer at the bottom. The A4 area has been deeply disturbed, and it is not possible to tell whether the sand at the bottom of the east end of A4 is natural or if it is fill. The A1 trench, interestingly, does not show the lower sand layer; considering its location on the top of the slope, and the large number of small pebbles found during sifting on the lower lots, it seems possible that the material is more glacial till than glacial outwash starting around this point upwards (Fig. 4.23).

While B1, B2, B3, B4, and A3 share the same lowest strata (sand, sometimes with clay inclusions), differences exist between the pits. Many trees have grown (and died) around A3, contributing organic material to the area making the soil darker and also disturbing the strata as roots pull material up and down through the levels. The pit is located next to a walkway and may have accumulated runoff from the driveway and automobiles parked to the east of it up the hill. The anomalous stratum 2 of this pit--with sand material near the surface--may perhaps be explained partly by sediment from construction further up the hill, such as the retaining wall at the driveway or the burial of the oil tank under A4. The layers underneath this, though, correspond nicely to the lower strata of B3 and B1 (Fig. 4.21).

B1 also shows strange upper strata, with many thin layers of differently colored soil within the first 15 cm. These strata, mostly between 7 and 10 cm, covered by the humus, could be seen quite distinctly upon excavation and were thin bands of orange and black material. Unfortunately, once exposed to air the differences between the thin individual levels quickly faded, and all of the samples appeared as dark, grayish browns with nearly no distinction between them (see Table 4.1). The clay inclusions in the sand at the lowest levels of B1 also quickly faded from the original very light gray color to a gray which was much darker. While a few of the strata of this pit correlate to others nearby (see Fig. 4.21-4.22), they do not match completely nor particularly strongly. The proximity to Waterman and South Main St., the lighted sign at the corner of the property, and the small retaining wall at the west end of the property above the sidewalk of Main St., this area may have been subject to disturbance in the past. Its location also makes it likely to have received more sediment, both airborne from traffic and as runoff down the hill.

The other pits, B2, B3, and B4, generally correlate well with each other, though not perfectly (Fig. 4.20). Stratum 1 matches well between all three pits, but stratum 2 of B4 matches B3 stratum 2 (somewhat) and 3 (closely), while stratum 3 of B4 matches only stratum 2 of B2. It looks, therefore, as if stratum 3 of B4 and stratum 2 of B2 were deposited, but the layer was not deposited (or was eroded away) from B3. After this, B3 and B4 accumulated another layer which is not present at B2. The humus layer was deposited across all of these, with variation, essentially, only due to the organic material (trees surround B4). Under all of these strata, though, the same red-yellow sand layer exists, though at B4 and B3 the color is not as intense as B2.

CONCLUDING REMARKS

Although not a glamorous aspect of archaeological investigation, even simple soil evaluation can prove tremendously useful. In the case of this excavation, the sampling of soil from the strata of each test pit allows a site-wide correlation, so that datable material (ceramics, glass, pipe stems, etc.) in one pit can help date objects found in different pits. The sampling, combined with careful recording of the profiles of each pit, allows a relative, chronological framework to be constructed across the site. Disturbances, created by natural forces and by man, can make the stratigraphy much more complicated (e.g., pit A4 or A3), as can errors in profile mapping, sample collection, and color assignment. Ultimately, though, the reconstruction of the stratigraphy at this site should prove useful, and perhaps further soil analyses may provide an even fuller picture of the historic and possibly even prehistoric use of this site.

FIGURES

TABLE

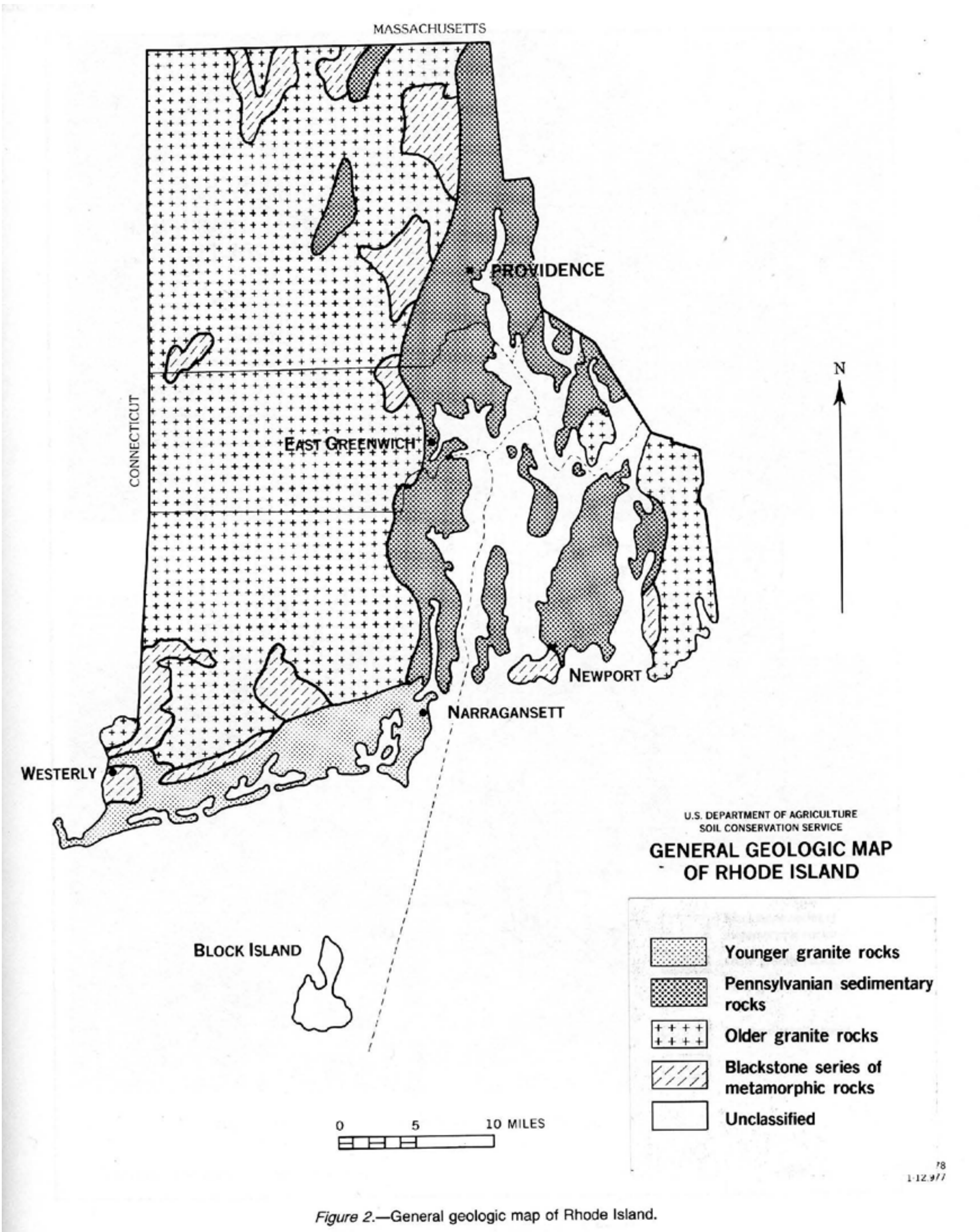


Figure 4.12: Four types of bedrock of Rhode Island (Rector 1981: 89).

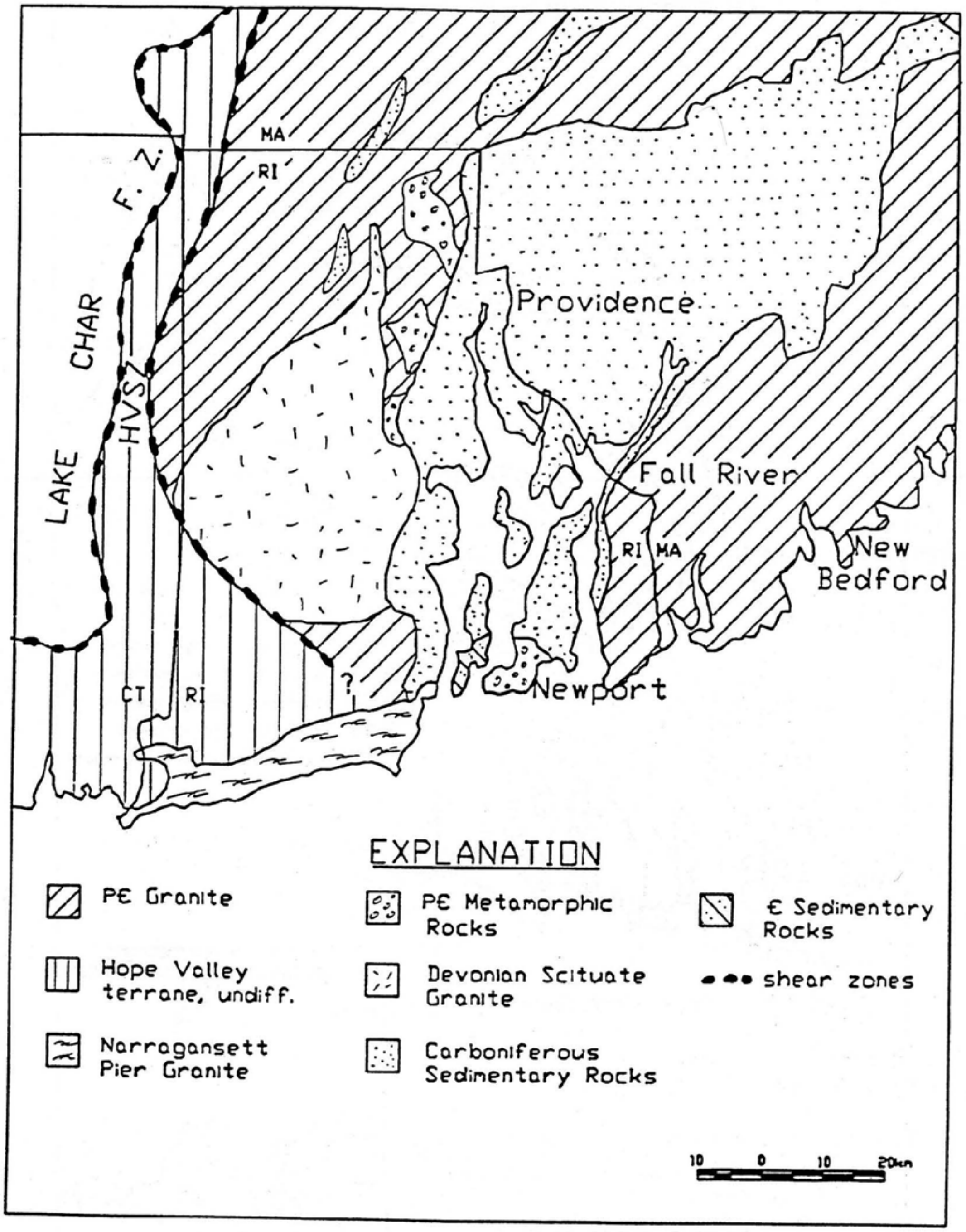


Figure 4.13: Detailed description of Bedrock of Rhode Island (Murray 1988: 35).

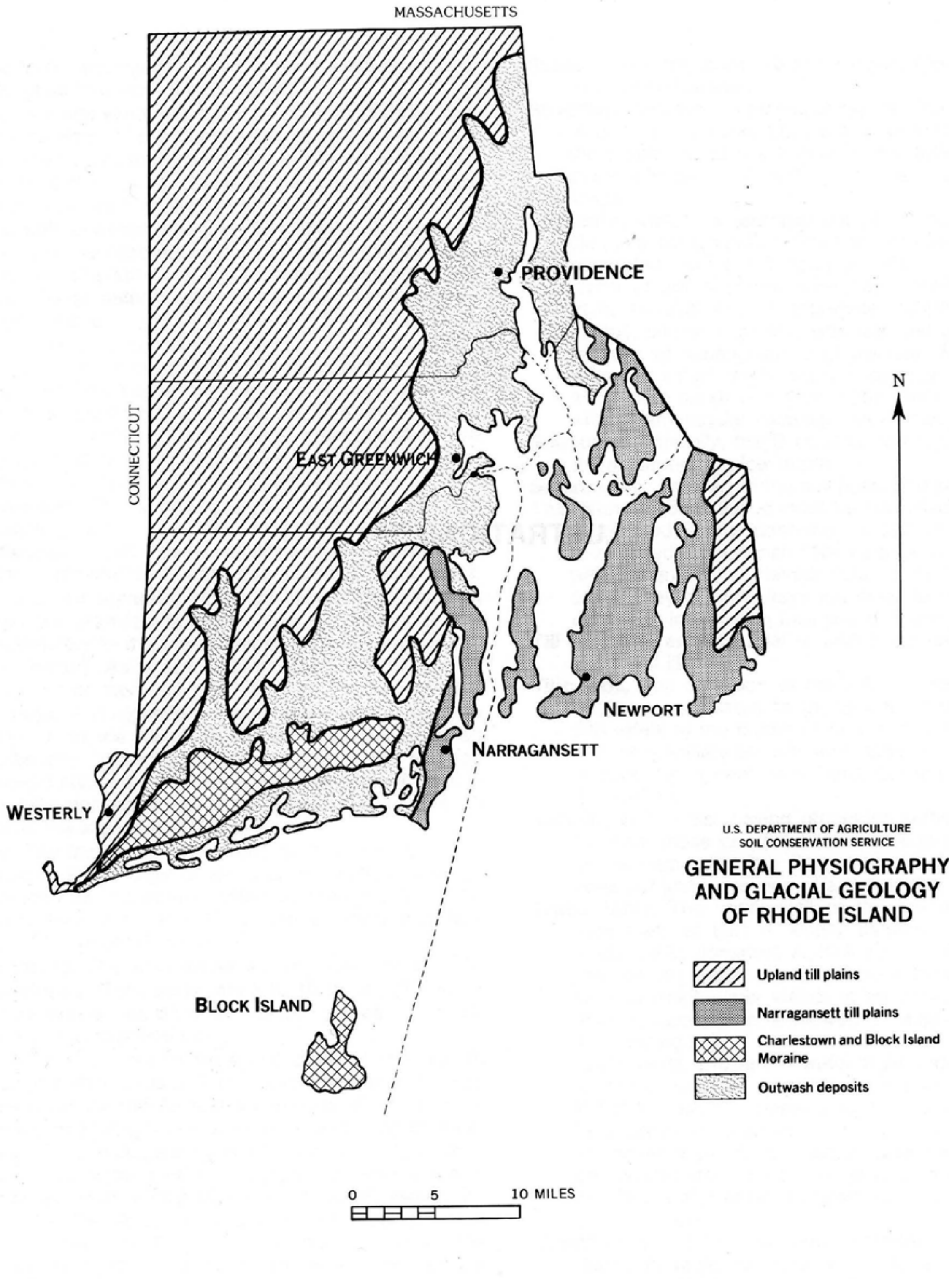


Figure 1.—General physiography and glacial geology of Rhode Island.

Figure 4.14: Glacial deposits of Rhode Island (Rector 1981: 88).

Series	Family	Series	Family
*Adrian**	Sandy or sandy-skeletal, mixed, euic, mesic Terric Medisaprists	*Paxton*	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Agawam	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts	Pittstown	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Birchwood	Sandy, mixed, mesic Typic Fragiochrepts	Podunk	Coarse-loamy, mixed, mesic Fluvaquentic Dystrochrepts
Bridgehampton	Coarse-silty, mixed, mesic Typic Dystrochrepts	Poquonock	Sandy, mixed, mesic Typic Fragiochrepts
Broadbrook	Coarse-loamy, mixed, mesic Typic Fragiochrepts	Quonset	Sandy-skeletal, mixed, mesic Typic Udorthents
Canton	Coarse-loamy over sandy or sandy skeletal, mixed, mesic Typic Dystrochrepts	Rainbow	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Carlisle	Euic, mesic Typic Medisaprists	Raypol	Coarse-loamy over sandy or sandy-skeletal, mixed, acid, mesic Aeric Haplaquepts
Charlton	Coarse-loamy, mixed, mesic Typic Dystrochrepts	*Ridgebury*	Coarse-loamy, mixed, mesic Aeric Fragiaquepts
Deerfield	Mixed, mesic Aquic Udipsamments	*Rumney*	Coarse-loamy, mixed, nonacid, mesic Aeric Fluvaquents
Enfield	Coarse-silty over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts	*Scarboro*	Sandy, mixed, mesic Histic Humaquepts
Gloucester	Sandy-skeletal, mixed mesic Typic Dystrochrepts	Scio	Coarse-silty, mixed, mesic Aquic Dystrochrepts
Hinckley	Sandy-skeletal, mixed, mesic Typic Udorthents	*Stissing*	Coarse-loamy, mixed, mesic Aeric Fragiaquepts
Ipswich	Euic, mesic, Typic Sulfihemists	Sudbury	Sandy, mixed, mesic Aquic Dystrochrepts
Leicester	Coarse-loamy, mixed, acid, mesic Aeric Haplaquepts	Sutton	Coarse-loamy, mixed, mesic Aquic Dystrochrepts
Lippitt	Loamy-skeletal, mixed, mesic Typic Dystrochrepts	Tisbury	Coarse-silty over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts
Mansfield	Coarse-loamy, mixed, mesic Humic Fragiaquepts	*Walpole*	Sandy, mixed, mesic Aeric Haplaquepts
Matunuck	Sandy, mixed, mesic Typic Sulfaquents	*Wapping*	Coarse-loamy, mixed, mesic Aquic Dystrochrepts
Merrimac	Sandy, mixed, mesic Typic Dystrochrepts	Whitman	Coarse-loamy, mixed, mesic Humic Fragiaquepts
Narragansett	Coarse-loamy, mixed, mesic Typic Dystrochrepts	Windsor	Mixed, mesic Typic Udipsamments
Newport	Coarse-loamy, mixed, mesic Typic Fragiochrepts	*Woodbridge*	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Ninigret	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts		

**Soils of major extent which occur on the General Soil Map of Rhode Island are printed in italics.*

Figure 4.15: Brief descriptions of major soil series (Wright and Sautter 1988: 34).

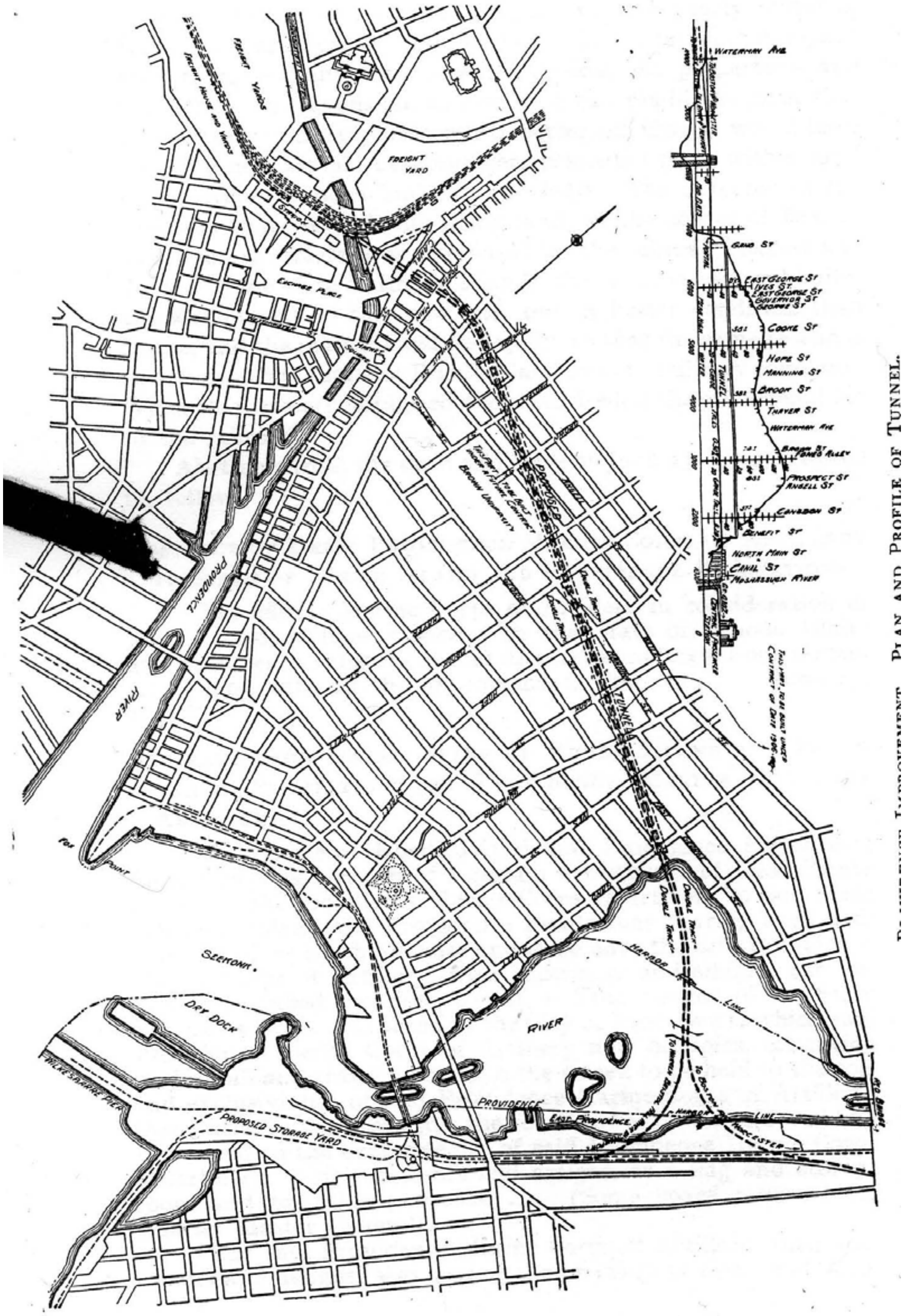


Figure 4.16: Alignment of East Side Railroad Tunnel and profile (Dawley 1908: 298).

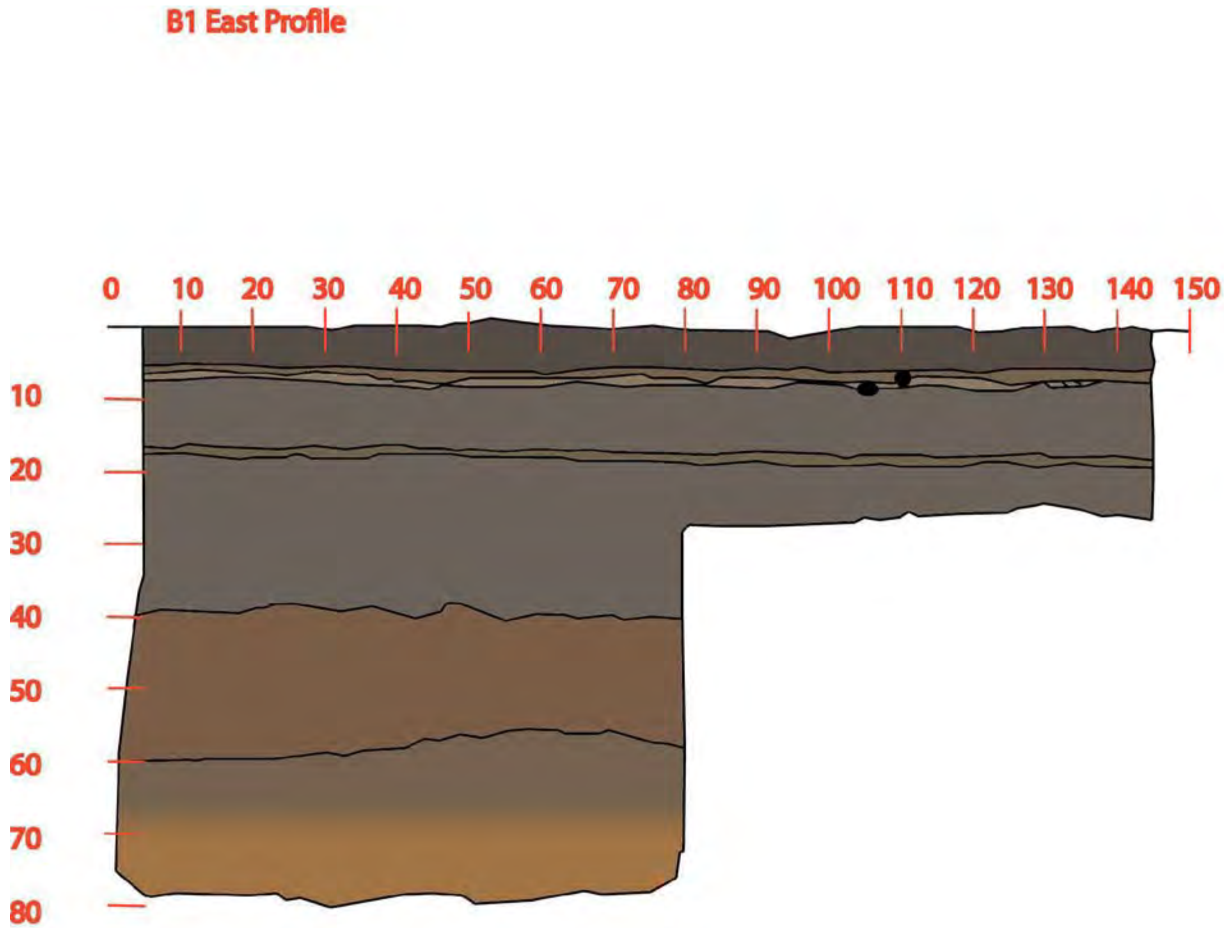


Figure 4.17: East profile of B1 (in cm.), with division between strata emphasized.

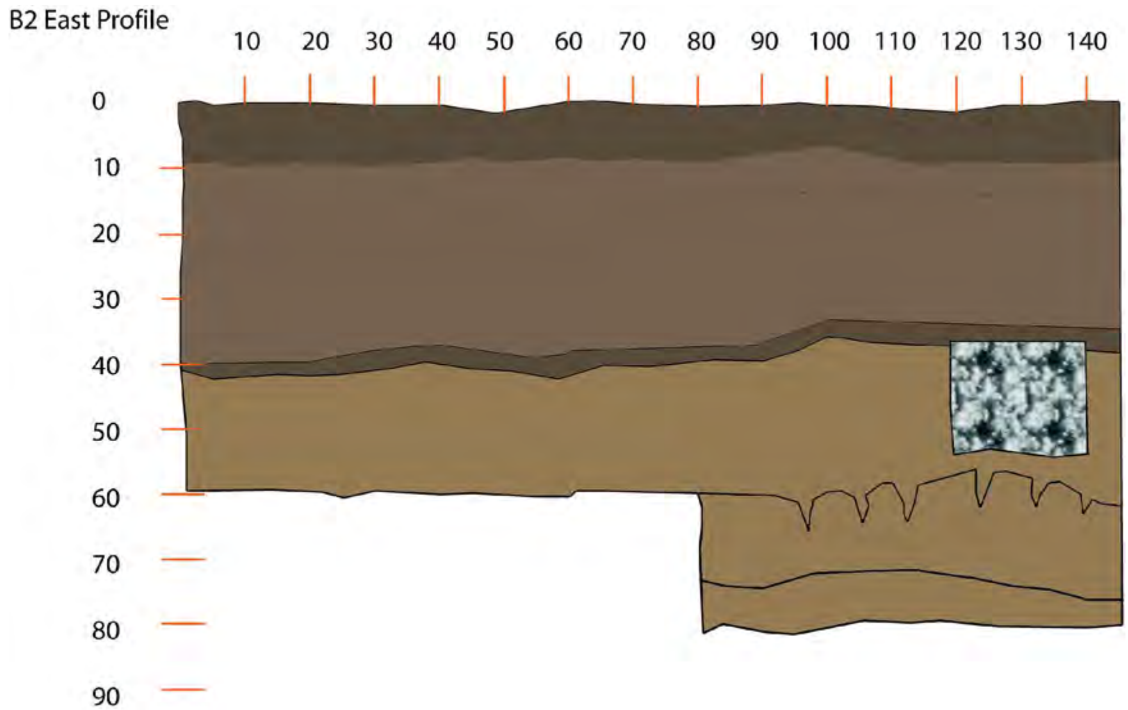


Figure 4.18: East profile of B2 (in cm.), with division between strata emphasized and rock designated.

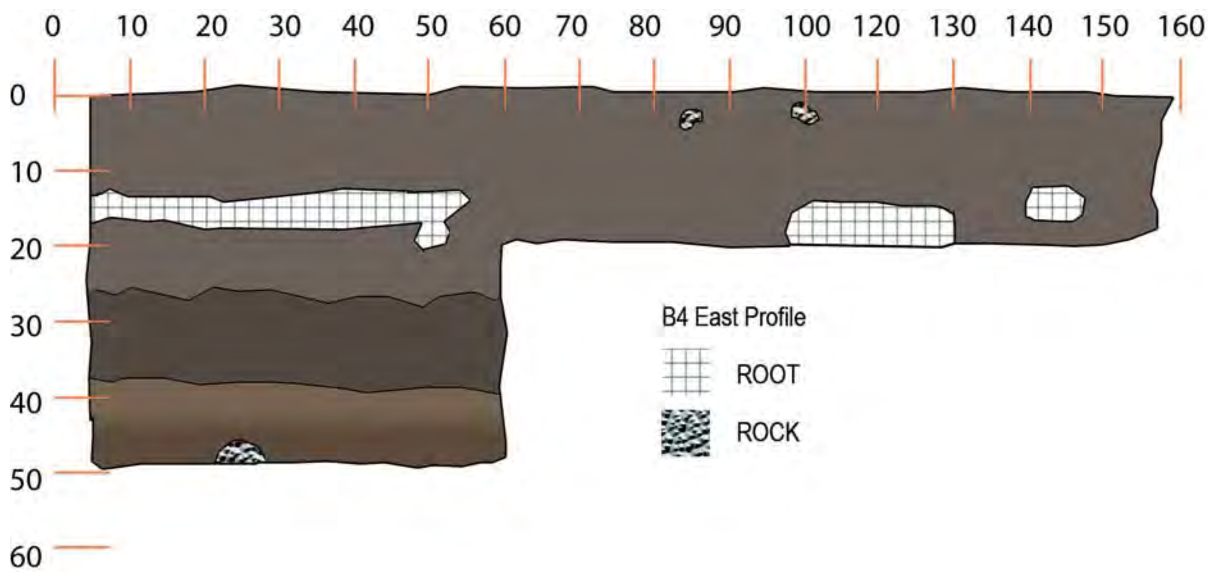


Figure 4.19: East profile of B4, (in cm.), with division between strata emphasized, root and rock designated.

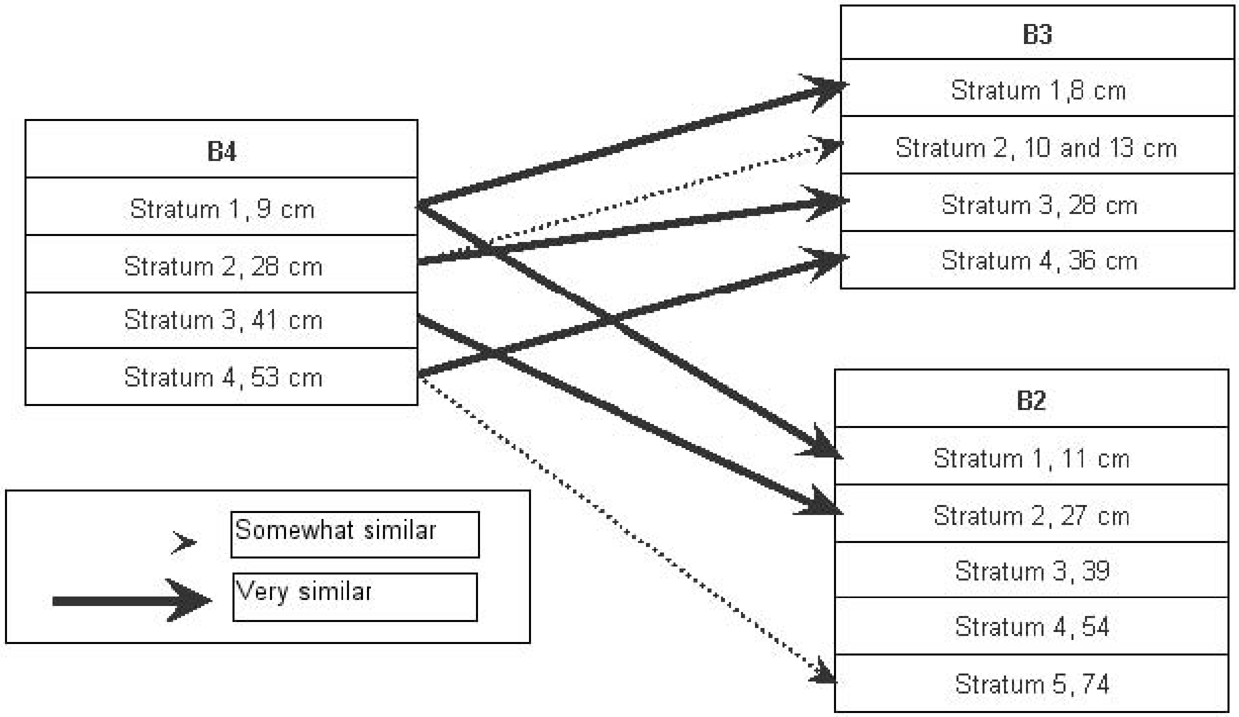


Figure 4.20: Strata correlation from pits B4 to B2 and B3
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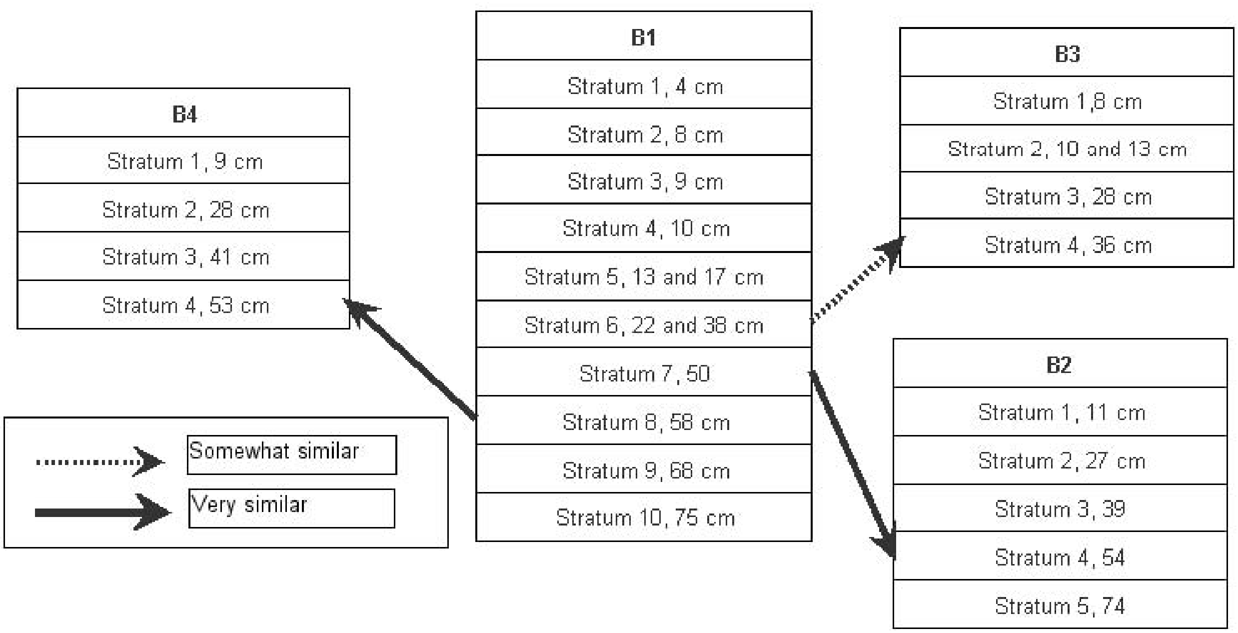

Figure 4.21: Strata correlation from B1 to B2, B3, and B4.

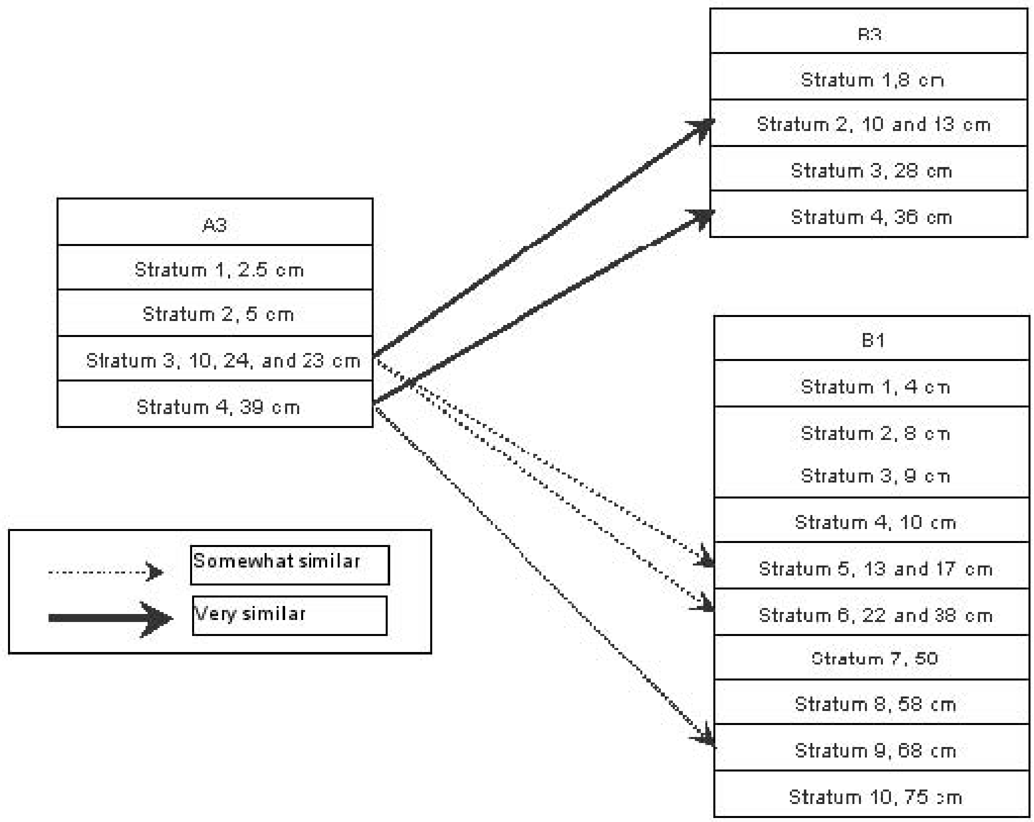

Figure 4.22: Strata correlation from A3 to B1 and B3.

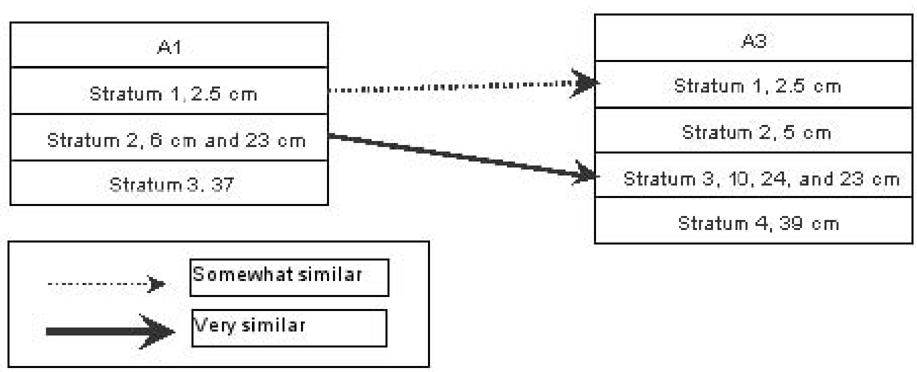

Figure 4.23: Strata correlation from A1 and A3

Table 4.1: Summary of assigned Munsell soil colors (2000 edition) by test pit, sample depth in cm.

Unit	Sample	Strata	Depth	Munsell	Color	Note
A1	1	1	2.5	10YR3/1	very dark grey	Includes roots
A1	2	2	6	2.5Y3/1	very dark gray	somewhat fine
A1	3	2	23	2.5Y3/2	very dark grayish brown	somewhat clumpy
A1	4	3	37	2.5Y4/2	dark grayish brown	clumps
A3	1	1	2.5	2.5Y3/1	very dark gray	
A3	2	2	5	10YR4/2	dark grayish brown	
A3	3	3	10	10YR3/1	very dark gray	
A3	4	3	14	2.5Y2.5/1	black	
A3	5	3	23	2.5Y3/1	very dark gray	
A3	6	4	39	10YR4/2	dark grayish brown	
A4-A	1	1	1	7.5YR2/1	black	contains roots
A4-A	2	2	7	10YR4/1	dark gray	fine
A4-A	3	2	10	10YR4/1	dark gray	fine
A4-A	4	3	23	2.5Y3/1	very dark gray	
A4-A	5	4	42	10YR4/3	brown	sandy
A4-B	1	1	0	10YR3/1	very dark grey	Includes some roots
A4-B	2	2	9	10YR3/2	very dark grayish brown	includes roots
A4-B	3	3	20	10YR5/4	yellowish brown	coarse, sandy
A4-B	3/I	3/I	38	10YR4/3	brown	somewhat sandy, inclusion
A4-B	4	4	65	10YR4/2	dark grayish brown	sandy
A4-B	5	5	70	7.5YR3/3	dark brown	sandy
A4-C	1	1	8	10YR3/1	very dark grey	
A4-C	2	2	19	10YR4/2	dark grayish brown	
A4-C	3/I	3/I	52	10YR4/4	dark yellowish brown	inclusion
A4-C	3	3	61	10YR4/2	dark grayish brown	sandy
B1	1	1	4	10YR3/1	very dark grey	Includes roots
B1	2	2	8	10YR4/2	dark grayish brown	includes roots
B1	3	3	9	10YR4/1	dark gray	includes roots
B1	4	4	10	10YR5/2	grayish brown	fine, includes

Unit	Sample	Strata	Depth	Munsell	Color	Note
						some roots
B1	5	13	2.5	Y4/1	dark gray	fine, includes roots
B1	6	5	17	2.5Y4/2	dark grayish brown	mostly fine, with some roots
B1	7	6	22	2.5Y4/1	dark gray	
B1	8	6	38	2.5Y3/1	very dark gray	
B1	9	7	50	7.5YR4/3	brown	fine, sandy
B1	10	8	58	10YR4/2	dark grayish brown	clay inclusions
B1	10/I	8/I	58	5Y6/1	gray	inclusion
B1	11	9	68	7.5YR5/6	strong brown	somewhat coarse
B1	12	10	75	10YR4/4	dark yellowish brown	sandy
B2	1	1	11	2.5Y3/2	very dark grayish brown	fine
B2	2	2	27	10YR4/2	dark grayish brown	
B2	3	3	39	2.5Y3/2	very dark grayish brown	
B2	4	4	54	10YR5/4	yellowish brown darker	inclusions
B2	4/I	4/I	54	10YR2/1	black	inclusion in strata
B2	5	5	74	10YR5/4	yellowish brown	
B3	1	1	8	10YR4/2	dark gray	includes some fine roots
B3	2	2	10	2.5Y4/1	very dark gray	fine
B3	3	2	13	2.5Y3/1	very dark gray	
B3	4	3	28	10YR3/1	very dark gray	
B3	5	4	36	10YR4/3	brown	somewhat sandy
B4	1	1	9	10YR4/1	dark gray	includes roots
B4	2	2	28	2.5Y3/1	very dark gray	clumpy
B4	3	3	41	10YR3/2	very dark grayish brown	somewhat sandy
B4	4	4	53	10YR4/2	dark grayish brown	clay inclusions (small)

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Section II: Human material culture from the Church grounds

Chapter 5

Human Material Culture

Zachary Nelson

The artifacts found at the First Baptist Church in America indicate the wide range of goods available from colonial to modern times. The following chapters discuss the kinds of material remains found on the grounds. Each chapter highlights one kind of data set, which together form a snapshot of activities around the grounds of the church.

The chapter on human personal items include artifacts that are commonly worn or carried. Buttons, belt buckles, marbles, pipes are all examples of this kind of artifact. Next, the chapter on coins describes the money found during excavation. Moving farther afield from small portable objects, the section on ceramics deals with the general types found in the units. Ceramics are very diverse, and change frequently over time. For this reason, three sections are devoted to particular kinds of ceramic objects. Next, the chapter on glassware describes the bottles and shards recovered. Glassware is more difficult to type than ceramics, and less information is known about their chronology. Next in the sequence comes faunal artifacts. These include animal bone and shell artifacts. Faunal remains provides clues as to what people were eating in their "picnics" or dining activities on the grounds.

The final three chapters in this section deal with construction and heating. Metal objects were found in the units. Most were nails that we think were used in constructing the church and nearby buildings. Brick fragments are also common in the artifacts. These are the real building blocks of Providence, and there presence in the units shows their abundance in the area. Finally, coal pieces were also discovered. Coal was the principle form of heat in the region for many decades. Their presence indicates the kind of heating material used at the church, at different periods of its life.

"What did you find?" This section provides the answer.

Chapter 6

Human Personal Items From the First Baptist Church

Jenna Berthiaume

The following report is meant to elaborate on the uses, manufacturing methods, origins, types, chronology, and appropriate curation methods of human personal item artifacts found on the grounds of the First Baptist Church in America, Providence, Rhode Island. The land has been the site of the First Baptist Church in America and its churchyard since 1775. Prior to this the Providence-area Angell family used it as an orchard. The churchyard was often utilized by the church community for such events as local gatherings, picnics, fundraisers, weddings, town meetings (although the original 18th century owner of the land, John Angell, was promised otherwise), and impromptu gatherings of congregation members after religious services. The presence of human personal items such as beads, buckles, buttons, combs, dolls, dress fastenings, gaming pieces (dice or marbles), keys, jewelry, needles, pins, pipes, rings, shoe fastenings, thimbles, and whistles in the archaeological record at any early American site indicates a pattern of use of that site by human inhabitants. It is possible, even, to make reasonable predictions of what will be recovered at the site. We may expect to find more buttons in the archaeological record at the site than we find gold chains, as buttons would have had less significance and a higher degree of replaceability than a family heirloom gold chain and locket. If a community member lost the former he may get it replaced, but he may search the grounds for the latter, recovering it and thus removing it from the archaeological record. While determining worth in this comparison is intuitively obvious, we must, through research, gain the same knowledge of value, importance, use, and origin of other personal items found at the site. In the archaeological record of the First Baptist Church, we uncovered items left behind by people who accessed the area. By recovering, cataloguing, researching, and curating these artifacts, we reconstruct personal histories and life stories of the community.

BUTTONS AND FASTENINGS

Buttons were a part of Early American dress and were certainly present in the clothing worn by congregation members at the First Baptist Church. Other religious sects in America, such as the Pilgrims that first immigrated to America in the 17^{th} century, expressed their disdain for excess and worldly decadence by removing all fashionable ornaments such as decorative buttons, braid, ribbons, and lace from clothing (Warwick et al. 1965: 96). We know that the congregation members at the First Baptist Church did not subscribe to this restraint. Buttons were used both for utility and decoration and could be made simply of cast metal or elaborately embellished with cloth, tinsel, gold leafing, and other adornments. In America in the seventeenth and eighteenth century, most if not all, buttons were imported from Europe. In fact, even after the American Revolution, America would rely upon Great Britain for this import, primarily because Great Britain supplied the majority of Europe with buttons as well.

In the eighteenth century, Casper Wistar, responsible for the establishment of one of America's first glass manufactures, also made buttons in Philadelphia. Thus, colonial metal workers domestically manufactured buttons using sand molds or in two- or three-piece hand molds buttons during the eighteenth century (Noël Hume 93). An apprentice to Casper Wistar, Henry Witeman established a brass-button making business in New York City. By the end of the eighteenth century, British button makers Cornwall and Martin set up shop in New York City making gilt and plated buttons in a large-scale, machine-operated business (Noël Hume 1991:

92-3). Buttons from the sixteenth and seventeenth century usually are of brass or white metal cast in two pieces and braised together. “The shanks were normally of brass wire and were flanked by two holes which served to let gases escape when the parts were being joined together. The same technique of manufacture continued into the eighteenth century, though the buttons became larger and ovoid in section” (Noël Hume 1991: 88). Buttons are difficult to date, though sometimes they are used to commemorate certain historical events like the rule of a king or the restoration of a royal line. One example is the Restoration of Charles II in 1660 (Noël Hume 1991: 89).

Also, the shape of buttons can lend dating information; oval sleeve buttons, for example, became popular in the second half of the eighteenth century and were most popular in the 1770’s. Hollow cast buttons of brass or white metal, generally with an embossed decoration, whether plain or gilded, were popular during the first half of the eighteenth century. Flat copper-alloy-made buttons, which increased in size as the years passed, were common during the second half of the eighteenth century (Noël Hume 1991: 90). Silver-plating was invented in 1742, while gilding buttons was popular by 1818, and electroplating was invented and used in button manufacture in 1840. Before electroplating made silver-plating buttons more practical, a button maker would achieve a similar aesthetic effect by tinning them.

In the archaeological record, buttons found with a gray, silvery coating on both sides are tinned, and were popular during the mid- or later eighteenth century. Silver buttons found in the archaeological record generally would have turned black because of the silver sulphide in the coating. Buttons of the British Army in the Revolutionary War period were white-metal, flat-faced, with a pronounced boss on the back into which an iron-wire eye is anchored. In comparison, the Continental Army’s buttons were cast in one piece out of soft white metal and show a mold seam across the diameter of the disc; also, the buttons tend to be molded with the letters USA, although the A was dropped in the production of buttons for the War of 1812 (Noël Hume 1991: 91-92).

Because the most common buttons during this time period are metal, metal conservation techniques are best employed to preserve the integrity of the artifact. Any metal object must be treated with special care, especially those that are rusted or corroded. If corroded, excavators must take care not to try to remove the corrosion, even if the original intention is to further identify the artifact. A conservator, using a scalpel and a microscope, can clean metal objects in a laboratory. Metal objects such as buttons should never be placed in plastic bags, because moisture will collect in the bag and may damage the artifact. Artifacts of copper, silver, or gold should be removed from the site immediately once exposed, as processes of decay will commence at a faster rate at the artifacts' exposure to air. A conservator in the laboratory can clean artifacts that are slightly corroded. Acid-free packaging should be used to transport metal artifacts such as buttons to the lab (Hester et al. 1997: 151-3). Buttons should be measured, drawn, and photographed for comparisons with existing chronologies and typologies, such as the typology of button characteristics by Stanley South, director of excavation for the North Carolina Department of Archives and History, based upon 18th and 19th century examples found at two North Carolinian sites (Figure 6.1).

Six buttons were found at the First Baptist Church site. One white button was found in unit A3, at a depth of 20 to 30 cm below datum point. The button is about 1.25 cm across. It has four holes. It is bright white in color and holds a shine. It is made of glass, possibly of the opaque pressed variety. Buttons are notoriously hard to date, and there is no conclusive date for this button (Figures 6.4, 6.5, and 6.6). A heavily-designed metal button was found on the western side of unit A4 in lot 8, at a depth of 75 to 80 cm below datum point. It measures a little over 2 cm across. It has two holes and an elaborate design worked into the metal. It is possibly aluminum or brass—aluminum buttons, which were more costly than both gold and silver buttons, were stamped with delicate designs like this one, and were popular in the later nineteenth century (Anon 1992)(Figures 6.7, 6.8, and 6.9). A curled-up and fragile black plastic button was found in unit B1 at a depth of 30 to 40 cm in lot 4. It has two holes and measures about 2 cm across. Plastic and synthetic buttons tend to have a date post-1930, although the material of this button is somewhat unusual and therefore unclear (Figures 6.10 and 6.11).

Another metal button was found in unit B3 in lot 4 at a depth of 30 to 40 cm measured below the datum point. It is simple and utilitarian in design, measures just above 1 cm across, and was probably cast in two pieces, which may indicate a date after 1860. It may be made of brass, the most common metal used for buttons (Figures 6.12, 6.13, and 6.14). A white button was recovered in unit B4 in lot 1, at a depth of 0 to 10 cm below datum point. It has four holes, measures slightly above 1 cm across, and may be modern. This button appears to be plastic, although it has a sheen which is made to look like mother-of-pearl shell. Plastic buttons tend to date to after 1930 (Figures 6.15, 6.16, and 6.17). Finally, a button made of metal with an intricate triangular design was found in unit B2, in lot 4" at a depth of 30-40 cm below datum point. It now appears black, although research indicates that silver buttons would appear black in the archaeological record because of silver suphide content. It measures to about 1.25 cm. It is difficult to date because of the widespread use of metal in buttons (Figure 6.18, 6.19, and 6.20).

HAIR COMBS

Hair combs were used by people to untangle or put in order their hair, or to hold up pieces of hair into a hairstyle. Hair combs play an integral part in personal grooming, either in private or in public. During the eighteenth century, for example, it was fashionable for a man to have a great comb for putting his periwig in order, an action that was often performed in public (Warwick et al. 1965: 171). According to a source written by Randle Holme in 1682, referenced in Ivor Noël Hume's *Artifacts of Colonial America,* the single tooth comb, double tooth comb, head comb, and close and narrow tooth comb are all different terms used to describe hair combs. Also of note, combs were generally made of wood (such as black thorn or box tree or cocus wood); horn (from ox and cow horns); ivory (from elephant ivory); bone (from the shank bones of horses or other large animals); tortoise shell; and counterfeit tortoise shell (made of horn and stained with colors to resemble tortoise shell) (Holme quoted in Nöel Hume 1991: 36).

The examples found throughout the seventeenth and eighteen century are shaped as a rectangle and have teeth of different sizes along the two sides. These double-edged combs, usually made of bone, or around and after 1860 in vulcanite, were used into the late nineteenth century by poor people. Wig combs tend to have wider spaces between teeth, which were each rounded (Nöel Hume 1991: 175). While the earliest combs were of bone, ivory, and wood, tortoise shell and horn were increasingly used, becoming the most common material from which combs were made in the early to mid-nineteenth century. Both tortoise shell and horn were advantageous because they became soft and pliant by heating, and so could be shaped and contoured. Combs were produced in Colonial America by horn-smiths and comb-makers. One of the earliest American comb-makers was established in Needham, Massachusetts. Later, comb-maker Charles Michael Crouse arrived in Pennsylvania from Germany and set up his comb-making business in Philadelphia sometime before the American Revolutionary War. That business stayed in the family until 1954, and by that time comb production used steam-driven machinery (Denning 2001: 1). Therefore, it is safe to assume that while some combs were undoubtedly imported, a substantial domestic market existed.

Combs made of wood, if an excavator has the fortune of recovering one, must be treated very carefully in the field and in the lab. Wood very rarely survives in the archaeological record, except under unusually dry conditions, which aid preservation. Wood combs found during excavations should be brushed lightly and placed in a stable container to prevent breakage. If the wood is excavated from damp soil, it needs special handling in the field: it should be kept in that wet or damp condition until it is brought to the laboratory, where special processes for waterlogged wood will be employed. Shell combs should be packed in a stable container and kept dry. Bone combs should be dried slowly if wet, and treated delicately. As combs are particularly rare at the First Baptist Church site, effort should be made to record the precise location of the artifact and its context. Also, combs should be excavated using the pedestal technique and be photographed *in situ* once fully revealed and cleaned of excess soil.

One comb fragment was recovered from the First Baptist Church site. It measures approximately 3 cm from the top to the end of the two teeth. It is obviously incomplete and missing teeth. It is frail and delicate in design, and its material composition is unknown, although we can rule out authentic turtle shell or horn (Figure 6.21, 6.22, and 6.23).

MARBLES

Marbles are commonly made out of glass, clay, agate, or steel. They generally measure about 1.25 cm across, although they range from 0.635 cm to over 7.75 cm. They were traditionally used in a children's game of the same name. One popular version of the game, called "ringer," uses a small circle drawn on the ground as the ring of game play. Players take turns knocking marbles out of play. Many versions of games involving marbles exist.

Marbles are produced in three general ways. They can be hand-made, machine-made, or semi-machine-made. Stone and ivory marbles can be made by grinding, while clay, pottery, ceramic, or porcelain marbles are made by hand rolling the material into a ball and firing it or letting it air-dry. These types can be painted or glazed. Glass marbles are made by stacking colored glass rods into the desired pattern and cutting the rod using marble scissors. Machine-made marbles were mass-produced. Marbles were most commonly made of stone, metal, or glass until the eighteenth century. Ceramic marbles became popular during the eighteenth century, and beginning in the 1870s they were mass-produced. China marbles were produced in the 1840s. Glass marbles were first made in Germany. They were mass-produced in the early twentieth century. The mechanized way of making glass marbles was pioneered by American technology when imports from Europe were stopped because of World War I.

Two marbles were recovered at the First Baptist Church site. Both were found in Unit B1, in Lot 4. The depth at which they were found is between 30 and 40 cm. One of the marbles is glass, whereas the other has been identified as china. The glass marble is broken in half, measures about 2 cm across, and is made of green and yellow glass (Figures 6.24, 6.25 and 6.26). The china marble has been identified as identical to one found in the Cuyahoga Valley National Park in Ohio (Figures 6.30 and 6.31). It is referred to as an unglazed pinwheel china marble, and has a manufacture date between 1846 and 1870, according to that source. Its counterpart is visible in a photograph taken by the Midwest Archaeological Center. It measures roughly 1.5 cm across (Figures 6.27, 6.28, and 6.29).

These marbles were probably used in a children's game at a church event, such as a picnic. Because they were found in the farthest corner from the entrance, the game might have been clandestine.

SMOKING PIPES

According to Diane Dallal's essay in *Smoking & Culture: Archaeology of Tobacco Pipes in Eastern North America*, pipes serve at least two functions. The first, of course, is utilitarian, in the sense that pipes are meant to hold tobacco that is then lit and smoked. The second function, however, is social, and the meanings of each particular pipe are interpretable by the maker, user, and the group to which the user belongs. When smoked in public or in front of peers, a pipe may indicate class, ethnicity, group affiliation, ideological values, and even acknowledge past events of mythical or historical proportions. To an archaeologist, pipe fragments serve a very important and easily definable purpose: dating, with relatively high precision (Dallal 2004: 208). Fragments of smoking pipes are frequently found at historical sites. They were cheap, expendable, very fragile, and often discarded, all variables that ensure a likely place in the archaeological record. Also, rough transportation methods over large distances caused a large volume of pipes to crack and be discarded before they were ever smoked, thus increasing the amount of pipes potentially in the archaeological record. In addition, unsold excesses of pipes may be discarded as well (Cessford 2001).

The production of clay pipes is relatively simple. Clay is rolled into a stem and a bowl-shaped end was fashioned. Although frequently believed otherwise, the length of the stem has no bearing on the size of the bowl, although the stem length does affect the size of the hole that passes through it. While the stem is still in the mold, a wire is pushed through the solid length of it. In short stems, a large hole could be made, and a thick wire was therefore employed. Later, when stems became longer, a thin wire was used to pass through the length of it, as a thin wire was less likely than a thick wire to accidentally break the sides of the stem (Nöel Hume 1991: 296). Deetz notes that the lengthening of the stem relates to the greater availability of tobacco over time and thus the enlargement of pipe bowl sizes (Figure 6.2); a larger bowl would be hotter than a smaller one, and so a long stem kept the hot bowl further from the mouth, and allowed less smoking tobacco debris to travel up the stem and into the mouth (Deetz 1996: 28).

The dating of pipes originally focused on the size of bowls, as they did appear to increase in size over the years. A bowl can be imprecisely dated by its diameter, although the chronology is not as definite as the one later formed for dating pipe stem bores. Also, the maker's mark, if it were to exist, would be apparent on the bowl and may aid in dating the piece. The problem with this method is that a substantially smaller amount of pipe bowls or whole pipes are recovered in comparison to the multitude of pipe stem fragments. J. C. Harrington, an officer of the United States National Park Service in 1954, offered a chronology based upon the diameter of the bore in the stem after a careful study of a large amount of both American and English pipes (Nöel Hume 1991: 298). He concluded that bore diameter became smaller at a measurable rate as time passed. Thus, by measuring the bore diameter of any pipe stem, one may determine within a few decades its date. His time periods and average diameters are represented in Figure 6.3.

This dating method was improved upon by Dr. Lewis Binford, who generated a straight-line regression formula based upon Harrington's chart. The formula is $Y = 1931.85 - 38.26X$. In this equation, Y is the mean date for the group, the theoretical date in which the bore would disappear completely, and 38.26 is the number of years between each sixty-fourth-of-an-inch decrease. X should represent the mean bore diameter for the group to be dated. X is arrived at by determining the bore size of each fragment, multiplying the number of fragments by the number of 64ths of an inch. All of these products are added together, and the total number of fragments is found. Then, the summation of the products is divided by the total number of fragments. This number is the X variable, and Y, once solved for, will represent the date in years of the group. However, for this method to be accurate within a few years, roughly a thousand fragments should be analyzed using this method (Nöel Hume 1991: 299). With a smaller assemblage, the date will only be within 40 or so years. This method, like most other dating methods, does have its disadvantages, such as the necessity of a large assemblage, but it is not without merit and should be considered.

Clay pipes are ceramic. They should be handed similarly to pottery sherds in the field. They generally can be bagged without immediate treatment. They may be washed in the lab with soft brushes, although hard scrubbing with a stiff-bristled brush may degrade a possible maker's mark on a stem or a pipe bowl. It is paramount that the precise location and specifically the context of the artifact in levels are dutifully recorded, and also the presence of other artifacts in the immediate area should be noted. Because a pipe fragment often lead to accurate dates, its associations within the archaeological record are important to consider.

We found 6 ceramic pipe bowl sherds distributed over units B2 and B4, at depths ranging from 20 to 30 cm, 40 to 50 cm, 60 to 70 cm, and 66 to 80 cm below datum point. A brown plastic pipe stem was recovered in unit A3, at a depth of 30 to 37 cm below datum point (Figures 6.32, 6.33 and 6.34). We found 13 ceramic stem fragments, 11 of which had an intact bore, over units A1 and B2, at depths ranging from 20 to 80 cm depth measured below datum point (Figures 6.35, 6.36, and 6.37). The measurable pipe bores ranged from 4/64th to 5/64th to 6/64th an inch, 4/64th being the most common and corresponding to a dating period of 1750 to 1800 (Table 6.1.)

There were two 6/64th inch pipe stem bores, which are dated the earliest, between 1680 and 1720. These were found at a depth of 50 to 60 cm measured below datum point in unit B2. The table of the bore measurements with corresponding depths and dating does not strictly follow a straight-forward stratigraphy, in which the newest material is at the top and recovered material becomes progressively older at deeper levels. For example, two of the 4/64th inch pipe stems (dated the latest) are found at 60 to 70 cm in depth, below the 6/64th inch pipe stems, which should, by the principle of stratigraphy, be the deepest. These were found at 50 to 60 cm in depth. This may indicate a disturbance in the deposition of objects, which is common. It was determined that this assemblage is far too small to make good use of the Binford equation as a dating method (Figure 6.38 and 6.39).

MISCELLANEOUS OTHER RECOVERIES

In addition to the artifacts identified in the aforementioned categories, a group of miscellaneous items were unearthed at the First Baptist Church site. One such item is a pencil top with an eraser, found in unit A1 at a depth of 20 to 30 cm. Two tubular metal pieces were found, one in unit B1 at 30 to 40 cm deep, and one in unit B2 at 30 to 40 cm deep (Figure 6.40, 6.41 and 6.42). The use of these pieces, which may be only part of a larger object, is unknown. It was suggested that they were used as vintage lipsticks, although further research and comparison yielded no results. It was also suggested that they were parts of bullet casing, although this was also inconclusive in comparison to known bullet casing artifacts. A gum wrapper was also recovered in unit B2, at a depth of 10 to 20 cm below datum point (Figure 6.43, 6.44, and 6.45). In addition, 21 pieces of thick, gray chalk were recovered in unit A1, at depths ranging from 10 to 43 cm measured below datum point (Figure 6.46, 6.47, 6.48).

CONCLUSION

The recovery of human personal items is particularly meaningful, as people relate more closely to objects with which they are familiar, such as buttons, marbles, or combs, rather than with artifacts such as pottery sherds, coal, or rusted nails. By unearthing and displaying these artifacts, community members could relate on a more personal level with the archaeological project as well as with the history of their church. The analysis of these artifacts found at the First Baptist Church provides the project with invaluable information regarding the dates of levels, the use of the site as a place of recreation and meeting, and the socioeconomic status of the people making use of the site. When accurately recorded, analyzed, catalogued and curated, these most personal and most frequently used items produce a closer and clearer view of the site and its use in antiquity, and can help reconstruct the life stories of past members of the church congregation and Providence community.

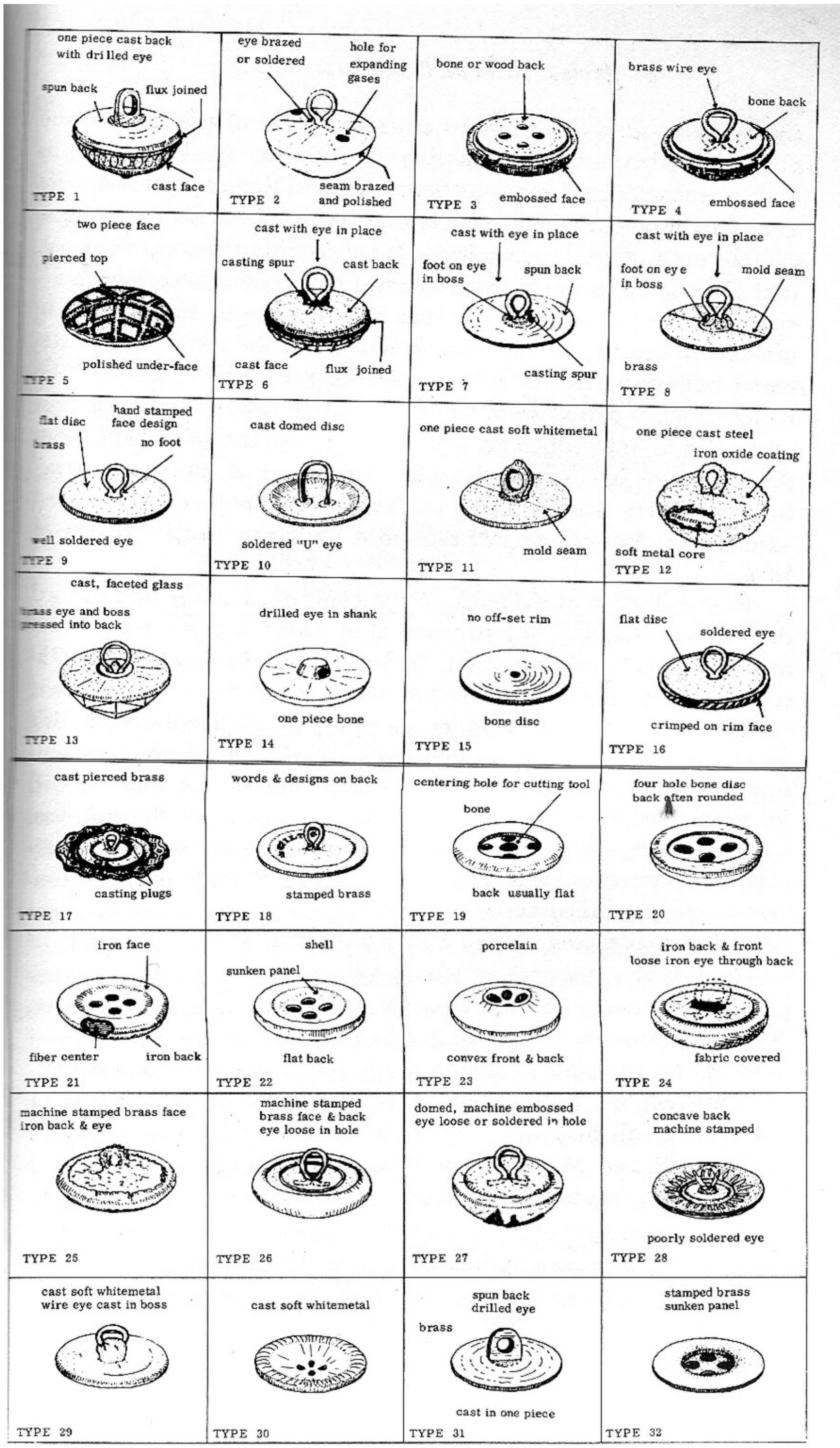

Figure 6.1: Stanley South's, director of excavation for the North Carolina Department of Archives and History, typology of button characteristics based upon 18th and 19th century examples found at two North Carolinian sites

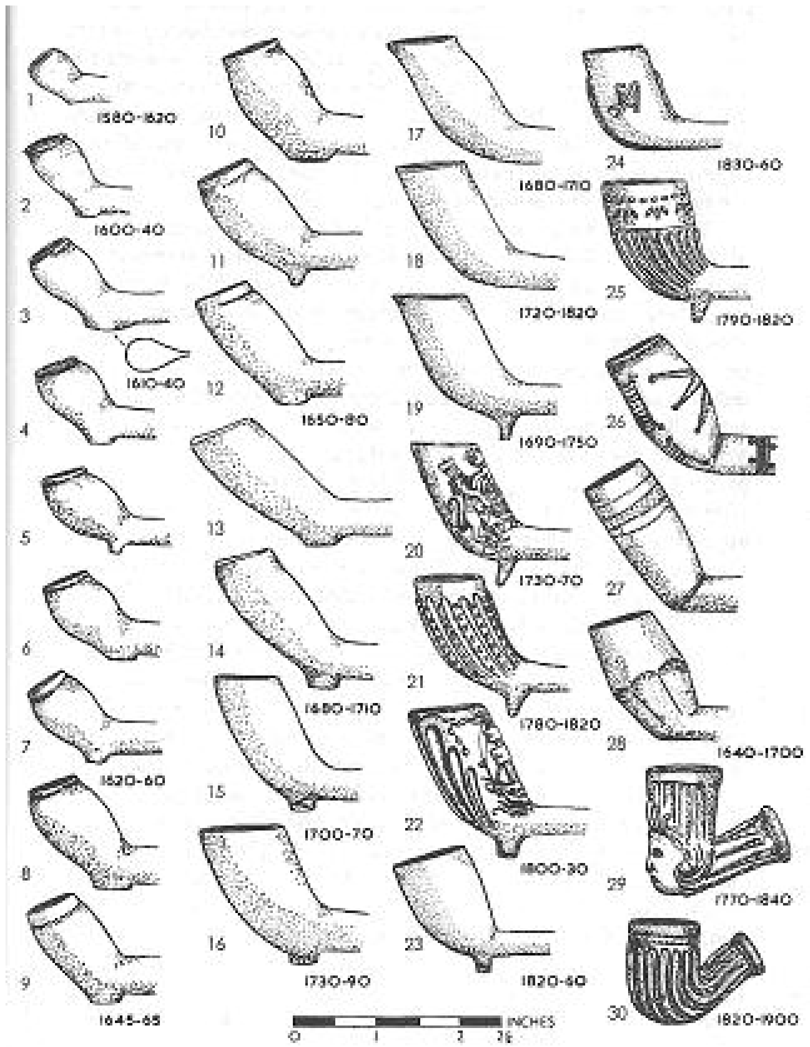

Figure 6.2: Adrian Oswald's study of bowl evolution published in 1951; a series of English and American pipes. No. 1 – 24 are English, while 25 – 30 are American. (Nöel Hume 1991: 302).

Diameter (in)	Dates
9/64	1590 – 1620
8/64	1620 – 1650
7/64	1650 – 1680
6/64	1680 – 1720
5/64	1720 – 1750
4/64	1750 – 1800

Figure 6.3: Diameters in inches of bore sizes of pipe stems, and the corresponding dates, based upon J. C. Harrington's study (Deetz 1996: 28).

Figure 6.4

Figure 6.5

Figure 6.6

Figures 6.4, 6.5, 6.6: White glass button, found in unit A3, at a depth of 20 to 30 cm below datum point.

Figure 6.7

Figure 6.8

Figure 6.9

Figures 6.7, 6.8, 6.9: A heavily-designed metal button found on the western side of unit A4 in lot 8, at a depth of 75 to 80 cm below datum point.

Figure 6.10

Figure 6.11

Figures 6.10 and 6.11: A curled-up and fragile black plastic button found in unit B1 at a depth of 30 to 40 cm in lot 4.

Figure 6.12

Figure 6.13

Figure 6.14

Figures 6.12, 6.13, 6.14: Simple metal button found in unit B3 in lot 4 at a depth of 30 to 40 cm measured below the datum point.

Figure 6.15

Figure 6.16

Figure 6.17

Figures 6.15, 6.16, 6.17: A white button recovered from unit B4 in lot 1, at a depth of 0 to 10 cm below datum point.

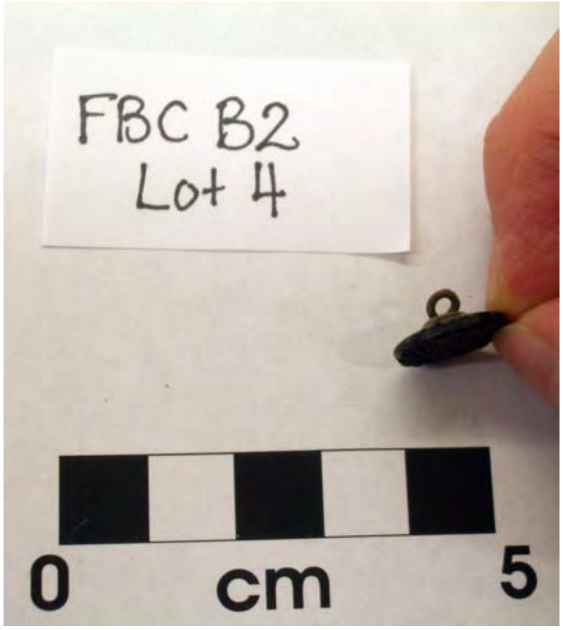

Figure 6.18

Figure 6.19

Figure 6.20

Figures 6.18, 6.19, and **6.20**: A button made of metal with an intricate triangular design found in unit B2, in lot 4" at a depth of 30-40 cm below datum point.

Figure 6.21

Figure 6.22

Figure 6.23

Figures 6.21, 6.22, and 6.**23**: Comb fragment found in unit A3 at a depth of 10 to 20 cm below datum point.

Figure 6.24

Figure 6.25

Figure 6.26

Figures 6.24, 6.25, and **6.26**: Green and yellow glass marble found in Unit B1, in Lot 4 at a depth of 30 to 40 cm.

Figure 6.27

Figure 6.28

Figure 6.29

Figures 6.27, 6.28, and 6.**29**: An unglazed pinwheel china marble.

Figure 6.30

Figures 6.30 and **6.31**: These marbles were found at the Cuyahoga Valley National Park in Ohio. A marble identical to the one found at the First Baptist Church present in each of these photographs, taken by the Midwest Archaeological Center. Identified as an unglazed pinwheel china marble, and has a manufacture date between 1846 and 1870. Marble circled in photographs.

Figure 6.31

Figure 6.32

Figure 6.33

Figure 6.34

Figures 6.32, 6.33, and **6.34**: A brown plastic pipe stem recovered from unit A3, at a depth of 30 to 37 cm below datum point.

Figure 6.35

Figure 6.36

Figure 6.37

Figures 6.35, 6.36, and **6.37**: A pipe stem recovered from unit B2 at a depth of 50 to 60 cm below datum point. An example of the many ceramic pipe stems with an intact, and therefore measurable, bore.

Figure 6.38

Figure 6.39

Figures 6.38 and **6.39**: A pipe bowl recovered from unit B2 at a depth of 60 to 70 cm below datum point. This bowl is stamped with an unidentified seal.

Figure 6.40

Figure 6.41

Figure 6.42

Figures 6.40, 6.41, and **6.42**: Unknown cylindrical metal material.

Figure 6.43

Figure 6.44

Figure 6.45

Figures 6.43, 6.44, and **6.45**: Gum wrapper found in unit B2.

Figure 6.46

Figure 6.47

Figure 6.48

Figures 6.46, 6.47, and **6.48**: An example of one of the 21 pieces of chalk found in unit A1.

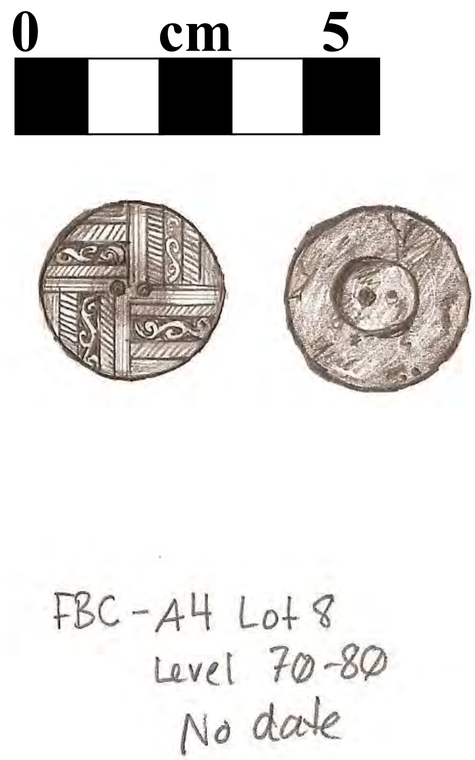

Figure 6.49 **Figure 6.50**

Figures 6.49 and **6.50**: Drawings of two of the artifacts in the Human Personal Items category found at First Baptist Church.

Table 6.1: Pipe bore measurements (in sixty-fourths of an inch) taken from the pipe stems found at the site, along with their estimated dates based upon the Harrington table.

Pipe Bore Measurements					
Measurement	**Unit**	**Lot**	**Depth cm bdp***	**Date Found**	**Estimated Date Range**
4/64th inch	FBC-A1	3	20-30	2-Oct-06	1750 – 1800
4/64th inch	FBC-B2	5"	40-50	10-Nov-06	1750 – 1800
6/64th inch	FBC-B2	6	50-60	30-Oct-06	1680 – 1720
4.5/64th inch	FBC-B2	6	50-60	30-Oct-06	1720 - 1800 (?)
6/64th inch	FBC-B2	6	50-60	30-Oct-06	1680 – 1720
5/64th inch	FBC-B2	6'	50-60	9-Nov-06	1720 – 1750
4/64th inch	FBC-B2	6"	50-60	10-Nov-06	1750 – 1800
4/64th inch	FBC-B2	7"	60-70	11-Nov-06	1750 – 1800
4/64th inch	FBC-B2	7"	60-70	11-Nov-06	1750 – 1800
5/64th inch	FBC-B2	9	80-90	9-Nov-06	1720 – 1750
5/64th inch	FBC-B2	7	60-70	30-Oct-06	1720 – 1750

*below datum point

Human Personal Remains - First Baptist Church (FBC) 2006

Artifact Type	Artifact	Unit	Lot	Depth cm bdp	Date Found	Number of Artifacts
Chalk	Chalk	FBC-A1	1	0-10	18-Sep-06	2
	Chalk	FBC-A1	2	10-20	25-Sep-06	4
	Chalk	FBC-A1	3	20-30	25-Sep-06	3
	Chalk	FBC-A1	3	20-30	2-Oct-06	10
	Chalk	FBC-A1	7	?-43	23-Oct-06	2
Comb	Comb Fragment	FBC-A3	2B	10-20	2-Oct-06	1
Pipe Materials	Pipe Stem Frag.	FBC-A1	3	20-30	2-Oct-06	1
	Pipe Handle	FBC-A3	2	30?-37	16-Oct-06	1
	Pipe Stem Frag.	FBC-B2	6	50-60	30-Oct-06	3
	Pipe Stem Frag.	FBC-B2	7	60-70	30-Oct-06	1
	Pipe Frag. (Bowl & Stem)	FBC-B2	9	66-80	30-Oct-06	2
	Pipe Stem Frag.	FBC-B2	6'	50-60	9-Nov-06	1
	Pipe Frag. (Bowl & Stem)	FBC-B2	5"	40-50	10-Nov-06	3 bowl, 1 stem
	Pipe Stem Frag.	FBC-B2	6"	50-60	10-Nov-06	1
	Pipe Bowl Frag. Stamped	FBC-B2	7"	60-70	11-Nov-06	1
	Pipe Frag. (Bowl & Stem)	FBC-B2	7"	60-70	11-Nov-06	2 stems, 1 unknown
	Pipe Frag. Bowl	FBC-B4	4	20-30	30-Oct-06	1
	Pipe Stem Frag.	FBC-B2	6	50-60	30-Oct-06	3
Pencil Frag.	Pencil Top	FBC-A1	3	20-30	25-Sep-06	1
Buttons	White Button	FBC-A3	3D		2-Oct-06	1
	Metal Button (Designed)	FBC-A4	8	75-80 (western side)	9-Oct-06	1
	Curled Black Plastic Button	FBC-B1	4	30-40	2-Oct-06	1
	Metal Button	FBC-B3	4	30-40	11-Nov-06	1
	White Button (Plastic?)	FBC-B4	1	0-10	25-Sep-06	1
	Metal Button (Triangular Design)	FBC-B2	4"	30-40	11-Nov-06	1
Marbles	Glass Marble (Broken)	FBC-B1	4	30-40	2-Oct-06	1
	Marble (Complete) not glass	FBC-B1	4	30-40	2-Oct-06	1
Metal	Unknown Metal Tubular Piece	FBC-B1	4	30-40	2-Oct-06	1
	Unknown Metal Tubular Piece	FBC-B2	4'	30-40	6-Nov-06	1
Wrapper	Gum Wrapper	FBC-A1	1	10-20 (?)	25-Sep-06	1

Table 6.2: All Human Personal Item artifacts found at the First Baptist Church site, listed with type, unit, lot, depth, date found, and frequency.

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Chapter 7

United State Coinage: A Study of Coins from the Past and the Present

Lindsey Fernandez

Money is a large component of our daily lives, yet we rarely take the time to understand how we came upon these colorful discs and green slips of paper. When did America create an independent currency? How are these items produced? And most importantly, what changes have occurred since the early production of money? This chapter will focus on coins discovered during an archaeological excavation at the First Baptist Church during the fall of 2006. This discussion of American coinage begins with the history of money in the United States.

BACKGROUND

When the early settlers first arrived in the New World, they had limited access to coins and had to make use of the items that were available to them. The colonists used substitutes for money, such as Indian wampum, animal skins, produce, tobacco and the bartering of one item in exchange for another. In the mid-1600's bartering became less frequent in metropolitan areas, but would continue in many rural communities for the duration of the colonial period (Newman and Doty 1976: 15). Indian wampum, a small shell bead, was the first early American coin. The settlers were first introduced to wampum in 1627. The beads were either purple or white and, like other forms of money, varied greatly in quality and value (Newman and Doty 1976: 20-21).

By 1700, many of the alternative forms of money were no longer sanctioned, and this further amplified the scarcity of money. To lessen their burden the colonist began to mint their own currency despite laws prohibiting this practice. These mints were privately owned and were only able to produce a limited amount of money (Massey 1968: 10, 14).

Americans established the United States Mint because they believed a national coinage was an attribute of sovereignty. Furthermore, it was believed that a national mint would acknowledge the United States' independence from England (Newman and Doty 1976: 209-210). The creation of the United States Mint was troublesome however, and the early Americans encountered several obstacles. One problem they faced was creating a coinage system that was exchangeable with the current coins in circulation. This was a great challenge because consideration had to be given to the various values of coins in use (Massey 1968:76-77). Thomas Jefferson proposed the plan to construct the United State Mint system in 1776, but Alexander Hamilton was responsible for establishing the mint (Massey 1968: 87). To assist in this endeavor, Hamilton encouraged the passage of the Coinage Act of 1792. This Act established the Federal Government as the exclusive legal producer of the United State's currency. The Coinage Act also stated that within three years, no foreign coins, with the exception of the Spanish silver piece, would be of legal tender (Massey 1968: 93). By the early 1800's the United States had an established mint system, but the majority of the coins produced during this time were not put into circulation. These coins were stored in bank vaults to secure the value of paper bills, which were gradually replacing coins (Massey 1968: 108). By 1811, half of the available coins were locked away in banks and this further encouraged the people's dependency on paper money. With this said, it is important to note that coins found on archaeology sites might be of an older age (Massey 1968: 116). The following paragraph will briefly describe the production of coins. (Additional information can be found on the United States Mint website and in books on American coinage.)

THE COIN MANUFACTURING PROCESS

Coin manufacturing is a difficult task, but the process has become less labor intensive with the use of machinery. The first step in the manufacturing process is to cut the "die". Until the late nineteenth century, this procedure was done exclusively by hand. The process entails creating an image that will appear on the coin. This image is then traced and a piece of steel is coated in transfer wax and the tracing is impressed into the wax. The image is etched into the steel (by hand or with the use of machinery) and after the die has hardened, the coin is ready for use. There is great variety among early American coins because the dies were made by hand and therefore, no two coins were alike. Furthermore, each engraver had their own individual die, which further emphasizes the differences between coins. The dies for coins were frequently patented, and the place and date of production can all be identified thorough the die of a coin (Yeoman 1986: 5).

FIELD METHODS

This section introduces the field methods routinely employed in the excavation of coins. When coins are located, they are individually bagged and labeled and a coin catalog card is completed. On the coin catalog card, archaeologists note the condition of the coin, the area or plot in which the coin was found, and the measurements of the coin including diameter and weight (Yeoman 1986: 11). Drawings and photographs of the obverse (head of the coin) and reverse (tail of the coin) are also taken for further analysis in the laboratory (Joukowsky 1980: 236-238).

Photographs are very important to the analysis of artifacts and are used to document information that cannot be moved to the laboratory for study, for example a picture of the stratigraphy in which the coin was found. When taking photographs, anthropologists use specific techniques, especially when photographing coins. The coin is placed in an area with sunlight and minimal shadowing as to achieve the greatest legibility. Great consideration is given to the angle of the shot because if the light is manipulated properly, a greater amount of detail will appear in the photograph. Pictures of both the obverse and reverse sides of the coin are taken and the images are appropriately labeled (Joukowsky 1980: 438).

ARTIFACTS FROM EXCAVATION

This section presents the precise location (specific lot number and test pit) of each coin artifact, a description of the object, and a brief discussion of the designs used before and after those found on site. Excavations at the First Baptist Church led to the collection of three coins. Two were in great condition and had maintained their original images. One coin was severely corroded and not positively identified. A lack of sufficient information unfortunately resulted in the incomplete analysis of this third item.

The first coin (hereafter referred to as Item 1) to be discussed is a dime from the year 1935 (see Fig. 7.1-7.4). The coin's design is called the Winged Head of Liberty or the Mercury type and was produced from 1916 to 1945. Item 1 was found on September 18, 2006 in Lot 1 (maximum depth of 10 cm) of the Northeast quadrant of test pit FBC A2T[1]. Distinguishing features of Item 1 are the image of Mercury on the obverse side and a tall column on the reverse. The designer's initials, A.W. (Adolph Weinman), are located to the right of Mercury's neck. The mintmark is located on the reverse side of the coin and is on the left side of the column (Yeoman 1987: 84-85).

The next coin or round disk (hereafter referred to as Item 2) was found on September 25, 2006 in Lot 2 (maximum depth of 20cm) of FBC B2. Item 2 is damaged beyond classification and therefore, additional information will not be discussed in this section (see Figs. 7.5-7.8).

The third coin (hereafter referred to as Item 3) was found on October 16, 2006 in Lot 3 (maximum depth of 30 cm) of FBC B4. Item 3, a Lincoln Head with Wheat Ears, dates to the year 1918 (see Figs. 7.9-7.10). On the reverse side of Item 3, there are two images of wheat stalks surrounding the text “One Cent” and “United States of America”. Item 3’s obverse is the same image currently used on the modern penny. Item 3 was part of the initiative by new President Theodore Roosevelt to create coins with more interesting designs. Coined in 1909, Item 3 was intended to commemorate the centenary of Lincoln’s birth. Designed by Victor D. Brenner, Item 3 replaced the Indian head 1 cent that had been in use since 1859 (Yeoman 1987: 196, 201). The design of Lincoln Head with Wheat Ears underwent several changes from its inception in 1909 and until its complete reproduction in 1959. When the coin was first struck, Victor D. Brenner’s initials, VDB, were engraved on the reverse side. The position of Brenner’s three initials (only the designer’s first and last initial were usually marked) resulted in several arguments and six months later, the initials were removed to conserve space. The V.D. B. was reinstated in 1918 and was printed below Lincoln’s shoulder. In 1959, the coin’s reverse was redesigned, and was replaced with an image of the Lincoln memorial (Raymond 1937: 19).

DISCUSSION

This section includes data collected from the lab and identifies how the coins were used in the past. Each coin was weighed, identified in R.S. Yeoman’s Handbook of United State Coins, and researched to gather additional information about the artifact. The examination of coins found at the First Baptist Church will begin with Item 1.

The mass of Item 1 was measured and identified as 2.4 grams. When compared to statistics from Hwww.coinfacts.com, Item 1 is under the typical weight of a Mercury Head Dime.

Item 1 should weigh 2.5 grams, and it can therefore be concluded that Item 1 was used prior to its burial, and as a result, decreased in mass ("Winged Head Dime" 2006). This information becomes more interesting when Item 1's location on the site is considered. Item 1 was found in the first lot of FBC A2, and therefore, was buried in the recent past. The additional discovery of contemporary trash found near it, for example the plastic top for a coffee cup, further supports this assumption.

The identification of Item 2 is unknown, but information collected in the lab has lead to several possibilities. Item 2 possesses the same diameter and thickness of a Jefferson Head nickel from 1982. This information is significant because this limits possible options to the nickel. The www.coinfacts.com website listed all recent nickels to have the approximate weight of 5 grams. Item 2 has a mass of 3.3 grams and although this number is dramatically under the typical weight of a nickel, it is possible that 1.7 grams were worn away due to corrosion.

Item 3 shows evidence of wear due to frequent use. The site www.coinfacts.com verifies the presence of wear on the coin because of a 0.11 gram decrease in weight ("1909-S V.D.B. One Cent" 2006). Item 3 was found at a maximum depth of 30 cm and was clearly deposited at an earlier time than Item 1. Item 3 also contains evidence of greater wear, perhaps due to prolonged circulation. Lloyd Laing's book, *Coins and Archaeology*, reports that coins found in fine condition were used for a maximum of twenty-five years (Laing 1969: 72-73). I would conclude that Item 3 was used for approximately two decades before it was deposited on the church grounds. If accurate, this accounts for the wear and decrease in mass, and its burial at a depth of 30 cm.

Coins are a great tool for dating because coins are printed with their year of production. In the case of the First Baptist Church, it is possible to assign an approximate time to the other items found in the same lot as our two identifiable coins. This period is not precise, because as was mention earlier in this chapter, coins can be in circulation for several decades. Furthermore, coins can be saved in a bank account or in a piggy jar, which can explain the presence of older coins amongst more modern objects. Either of these theories are a likely explanation for Item 1's interment in the first lot of FBC A2.

The pits studied in this report are all located near areas of high pedestrian traffic and therefore, it is likely that a pedestrian dropped the coin or coins accidentally, and over time, they became buried under the soil. Evidence of glass, ceramics, and charcoal in the same lots as the coins has lead to a second hypothesis. It is possible that all of afore mentioned debris was the result of a gathering, similar to a picnic or barbecue, and that the coins slipped out of a participant's pocket or purse. These are both assumptions and greater research would be required for a conclusion of greater accuracy.

CONCLUSIONS

The items found at the First Baptist Church are a great indicator of the state of the American people at the time of manufacture. It is interesting to note that changes in the design of coins often coincide with a desire for greater nationalism. The Lincoln Head design of Item 3 replaced the previous Indian Head pattern because the government wanted to encourage unity among all Americans. The Indian Head was a currency used before the Civil War and its continued use could have been viewed as an enforcement of Northern dominance rather than ideas of a cohesive state. With the creation of this new design, the country could attempt to move forward as one nation. The encouragement of nationalism can also be seen in the replacement of mythological and Native American figures with national heroes. For example, images of Mercury, a Roman god, on the dime were replaced with a representation of President Franklin D. Roosevelt. This information is very telling of the American population from the past, but similar concepts can be seen in our current lives. Recent modifications to the United State currency are an indicator of Americans' interest in high technology and our desire for newer and better items. I would also like to suggest that the American currency is a significant part of the American identity. When European countries elected to adopt a universal currency, many citizens disproved of this decision. They believed their money was an indication of their history and was represented a particular group of people. I believe this statement also rings true for Americans. By studying American coinage we are not only studying the past, but are also studying the people of the past.

FIGURES

Figure 7.1

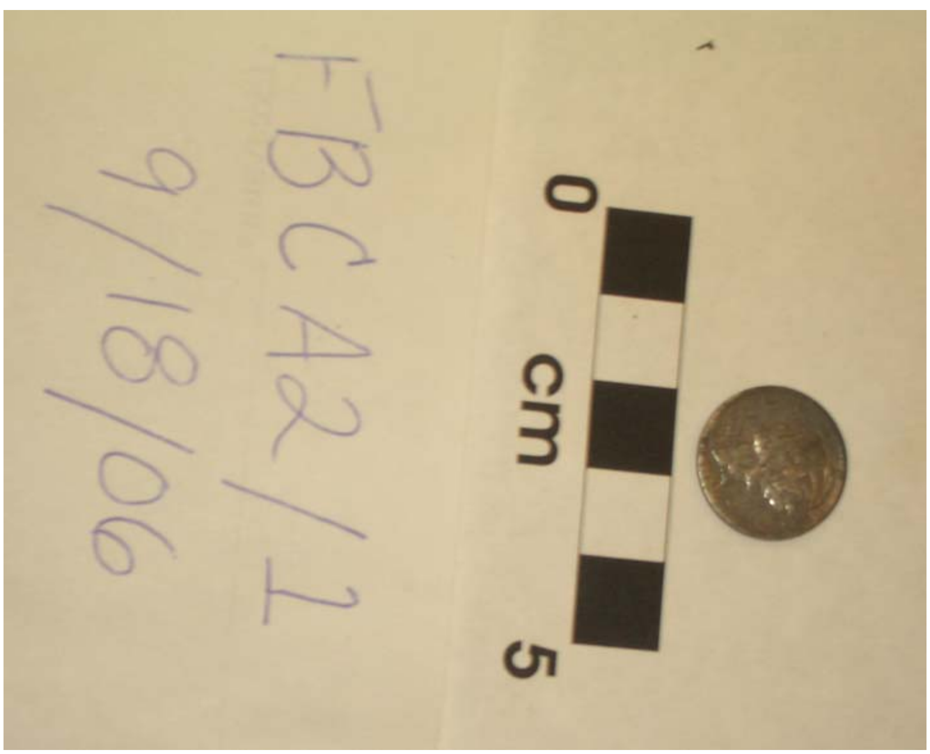

Figure 7.2

Figure 7.3

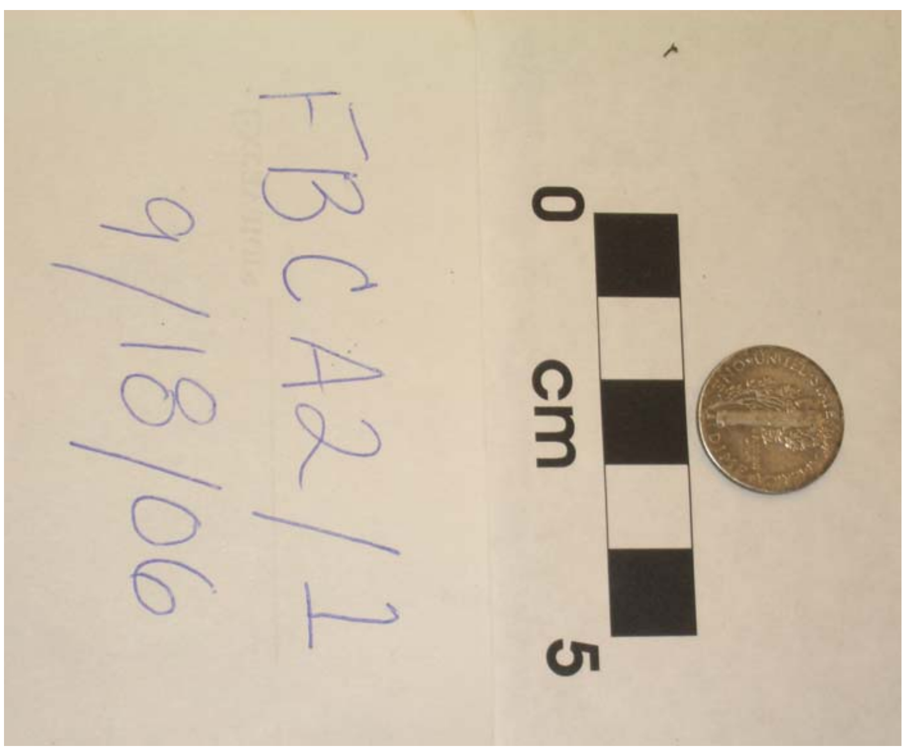

Figure 7.4

Figure 7.5

Figure 7.6

Figure 7.7

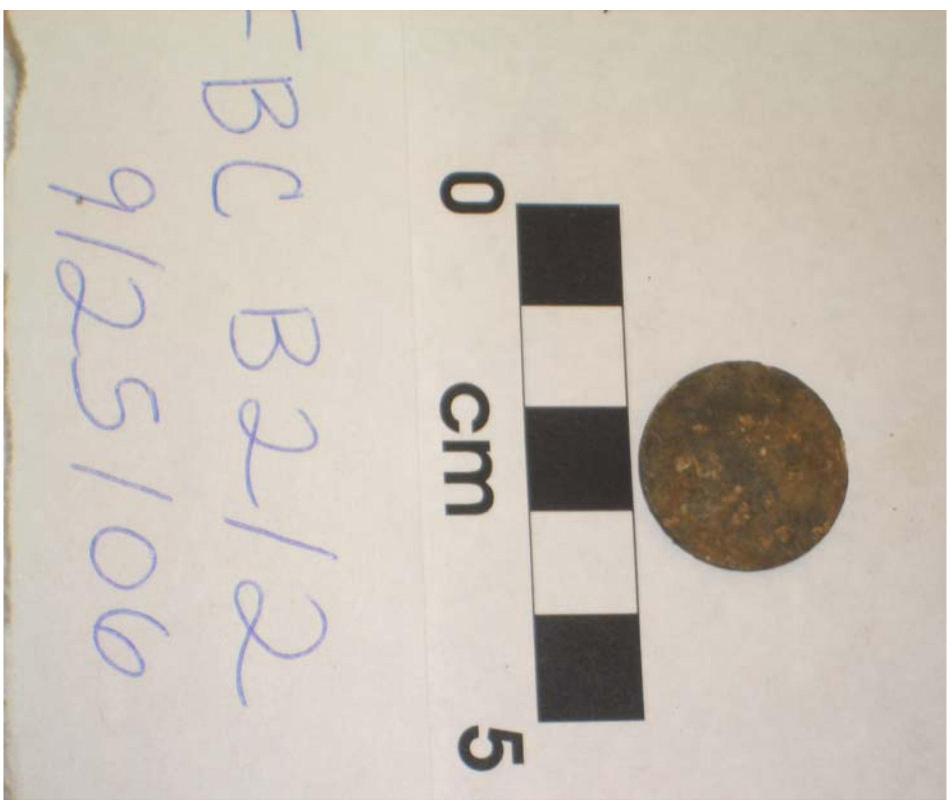

Figure 7.8

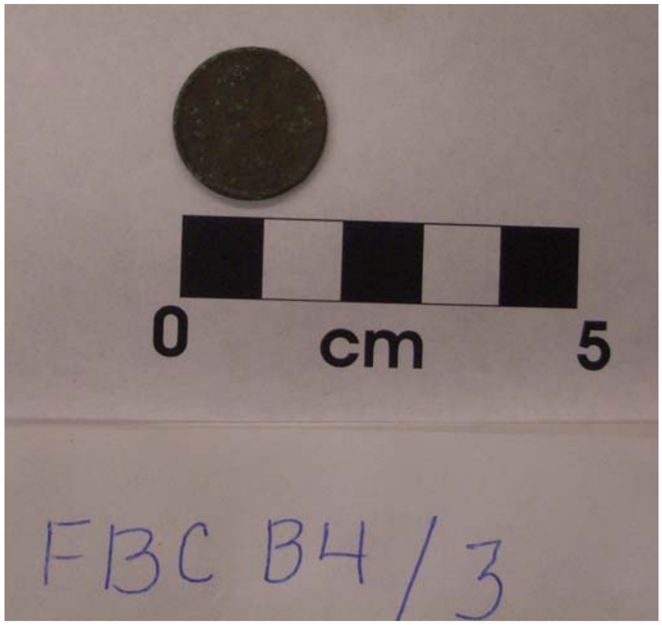

Figure 7.9

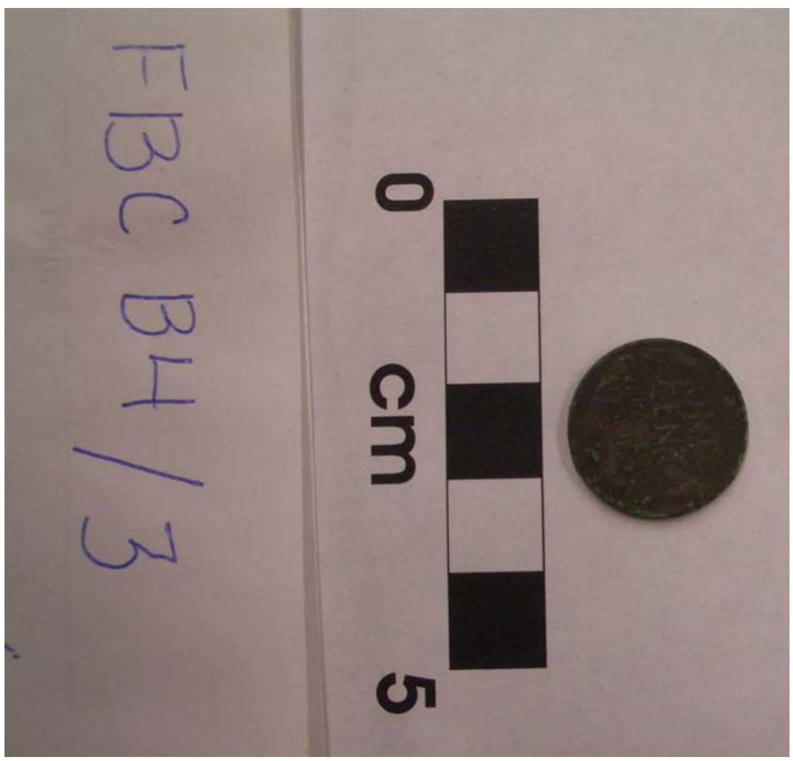

Figure 7.10

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[1] Please refer to the excavation map for the locations of all test pits.

Chapter 8

A General Introduction to New England Ceramics

Rodion Tadenev

New England ceramics from the seventeenth through the nineteenth centuries are marked by vast differences in style, mode of production, and origin. Pottery used from the mid-seventeenth and early eighteenth centuries was largely composed of earthenware, more specifically, slipware and delftware, which were manufactured both domestically and imported from Europe. The distinction between these pottery types originates in the mode of production.

Earthenware is fired at lower temperatures than other ceramics, approximately 1000 to 1150 Celsius, and is accordingly more porous and permeable to water (Smith 2006). To decrease porosity, as well as to increase the aesthetic appeal of this ceramic type, glaze is applied to the fired clay.

Slipware is a type of earthenware that is decorated with slip, a water-based suspension of clay and minerals such as quartz and mica (Smith 2006). Much of the body of the slipware was red in color, due to iron deposits in the soil, but coated with a white slip (Hume 1991, 104). British imported slipware often featured a clear lead glaze, which produced a yellow or light brown surface (Hume 1991, 104). Slipware of inferior quality to that of England was commonly produced in colonial America and thus the domestically produced wares were used for more ordinary purposes than those that were imported from England (Hume 1991, 99). Common forms were dishes, straight necked mugs with bulbous bodies, pitchers with ribbed necks, jugs, and candlesticks (Hume 1991, 99).

Also imported in the same time period was delftware, a type of earthenware covered with lead glaze containing tin that would result in an opaque white finish on the piece. Delftware was commonly painted with blue designs prior to firing (Smith 2006). Delftware, which originated in Holland and was used in England in the late seventeenth and early eighteenth centuries, was not manufactured in colonial New England but was an imported good (Hume 1991, 106). It was widely used in the production of plates that often featured bright patterns and cheerful inscriptions, but was later used to produce a variety of household items, from mugs, jugs, and flower vases to chamber pots, washbasins, and apothecaries' vessels (Hume 1991, 109).

Throughout the eighteenth and nineteenth centuries, more advanced modes of production and kilns that burned at higher temperatures enabled the production of stoneware and porcelain ceramics. Stoneware is produced from a blend of clays and fired to a vitreous state at a temperature of 1200 to 1315 degrees Celsius and is usually of a dark brown or grayish color (Smith 2006). Stoneware is salt-glazed by introducing sodium into the kiln during the firing process, which produces the gray color (Smith 2006). American brown stoneware was used in the mid-eighteenth century for mugs, bottles, pitchers, and bowls (Hume 1991, 100). Brown stoneware was also imported from England from 1690 to 1775 largely in the same forms as the local colonial ceramics (Hume 1991, 114). Blue and gray stonewares were produced using cobalt, and the American artifacts were primarily modeled on German forms (Hume 1991, 101). Items such as bottles, cream pans, storage crocks, pitchers, and cuspidors were all produced, but had considerably thicker walls than those of their German counterparts (Hume 1991, 101). In England, white salt glazed stoneware was produced and exported to the colonies as early as the 1720s (Hume 1991, 114). The regularity and uniformity of the white slip increased with time, and such wares were generally used as cups, mugs, and jugs, and later teapots and plates (Hume 1991, 115).

During the mid-eighteenth century, England exported a wide variety of "scratch blue" earthenware, white pottery that was decorated with thin blue cobalt lines (Hume 1991, 118). Variations such as black and white ware and "Littler's blue", which had respectively black and deep blue hues, were prevalent later in the eighteenth century (Hume 1991, 120). Other types of earthenware included creamware and later pearlware, which were cream colored, thin, and hard-fired, and were produced by mixing flints into the clay (Hume 1991, 124-128).

Porcelain was introduced into America in the late seventeenth century from China and increased in popularity until the end of the nineteenth century (Hume 1991, 258). It is produced from a combination of kaolin clay and finely ground feldpathic rock and fired from 1200 to 1400 degrees Celsius (Porcelain 2006). Porcelain is glazed naturally through the production process, and is impervious to liquids. It is decorated in underglaze blue, overglaze red, and sometimes gilding (Hume 1991, 258). Chinese porcelain has traditionally been produced using hard paste (kaolin, quartz, and feldspar), but early European imitations used a soft paste of kaolin mixed with glass or ground frit, which was soon phased out due to its tendency to warp in the kiln (Smith 2006). Another type of porcelain, bone china, was first produced in England in the mid-eighteenth century and incorporated bone ash into the manufacturing process (Porcelain 2006). The result was a highly translucent product that quickly became widespread in America during the mid-eighteenth and the nineteenth centuries. Porcelain was primarily used for teacups, plates, bowls, and teapots, and was the most expensive of the pottery types, characterized by partial translucency and fragile nature (Hume 1991, 258-262).

In archaeology, the most common cause for artifact damage in regards to ceramics is breakage (Deck 2006). Often, artifacts are fragmented upon excavation and care must be taken to ensure that further damage does not occur. Items must be handled with two hands, and the archaeologist should avoid holding artifacts by handles or spouts (Deck 2006). When stored or transported, ceramics must be sufficiently cushioned with felt, soft cloth, or polyester padding to avoid abrasion (Deck 2006). If two pieces are allowed to rub against one another, the glaze will often chip (Deck 2006). The cleaning of ceramics must be conducted with care so as to avoid permanently staining the artifacts (Deck 2006). Dilute cleaning solutions such as mild detergents, as well as a 1:1 solution of ethanol and water may be applied with a soft wash cloth (Deck 2006). The artifact should be examined for chipped glaze and other structural damage, and one should proceed by first testing the cleaning solution on a small area before proceeding to clean the entire surface (Deck 2006). When the item is clean, all excess solution should be gently rinsed off with distilled water, and the artifact should be allowed to air dry (Deck 2006).

Each type of ceramic requires a slightly different mode of repair, but a commonly used technique is piecing together the artifact using scotch tape, and then applying a strong bonding agent, like epoxy or B-72 to the cracks (Restoration 2006). Ideally, the glue will fuse the sherds together; the stronger epoxy will create a permanent bond, while

B-72 can be dissolved using solvents like acetone (Restoration 2006). Ceramics should be stored at 65 to 70 degrees Fahrenheit, and 40 percent humidity away from any direct sources of light (Restoration 2006). Fluctuations from ideal conditions should be kept to a minimum.

The ceramic artifacts that were recovered at the First Baptist Church site were numerous, but most consisted of redware, whiteware, pearlware, creamware, and porcelain. Sherds were fairly evenly distributed throughout the time period that was excavated (i.e. 1800 to the present) although some types, such as redware, pearlware, and creamware appear only beneath Lot 2 in each test pit (Table 8.1).

Domestically produced ceramics were far more common than imported types. This contrast is highlighted by comparison of the low quantity of delftware artifacts with the high quantity of coarse earthenware sherds recovered. Delftware (Figure 8.3) and English slipware (Figure 8.4) were only present in one lot each, while redware (Figure 8.8) was found in 12 separate lots. The most commonly imported type of ceramic was porcelain, which was found in 7 separate lots. One important distinction is that the majority of porcelain was imported directly from China, yet one sherd found in FBC B2 Lot 2 (Figure 8.9), a fragment of a plate, was manufactured in Europe, as evident by its polychrome design and the inferior quality of the porcelain. One of the fragments of Chinese porcelain was well preserved and has a vase with flowers painted on it (Figure 8.5).

Whiteware, creamware, and pearlware artifacts were all found in relative abundance, and were differentiated and classified by using a white background to compare each against. Whiteware appears white (Figure 8.2), creamware shows creamy beige hues, and pearlware contains traces of blue (Figure 8.7), particularly at cusps or corners, where the glaze seeped in during the firing process. Although most sherds are too small to determine the original use, some appear to be plate fragments. A gray stoneware sherd was also found, which served as an excellent representative of its type because of the grains of salt that appear on the surface of the fragment (Figure 8.1).

Three pieces of particular interest were found: a black glazed sherd of refined earthenware with a stamped or molded inscription impressed, a fragment of earthenware with three distinct glazes, and the knob of the lid of a sugar bowl. The black glazed piece (Figure 8.6) contains part of an engraved inscription, possibly the name of the owner of the artifact, but more probably that of the manufacturer. Its curvature suggests that the original artifact was of a substantial size, perhaps a large bowl. The earthenware fragment (Figure 8.10) appears to have been the lip of a vessel and has magenta, brown, and turquoise glaze on three separate surfaces. The artifact is likely of more recent origin, since such vibrant glazes do not appear before the 20th century. The most complete artifact that was uncovered was the knob of the lid of a sugar bowl (Figure 8.11). It is composed of refined earthenware, and decorated with blue and white motifs, similar to Dutch delftware. It was assembled from fragments found in FBC B2 at a depth of 15cm.

Thus the general assemblage of ceramics present at the First Baptist Church site presents a diverse cross-section of all the main types of pottery in use during the eras in question, from the early eighteenth century to the present.

Figure 8.1 Stoneware Fragment, A2 lot 3

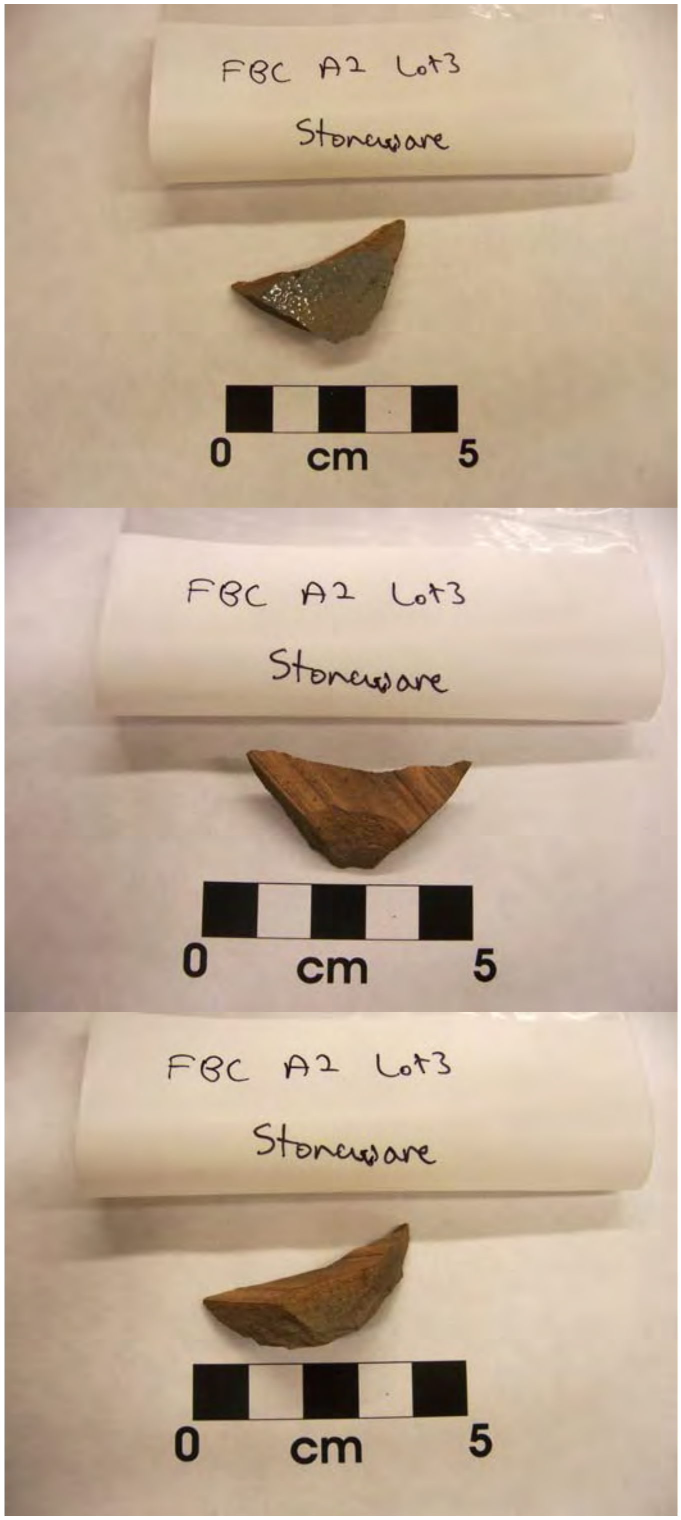


Figure 8.2 Whiteware Fragment B4 lot 3

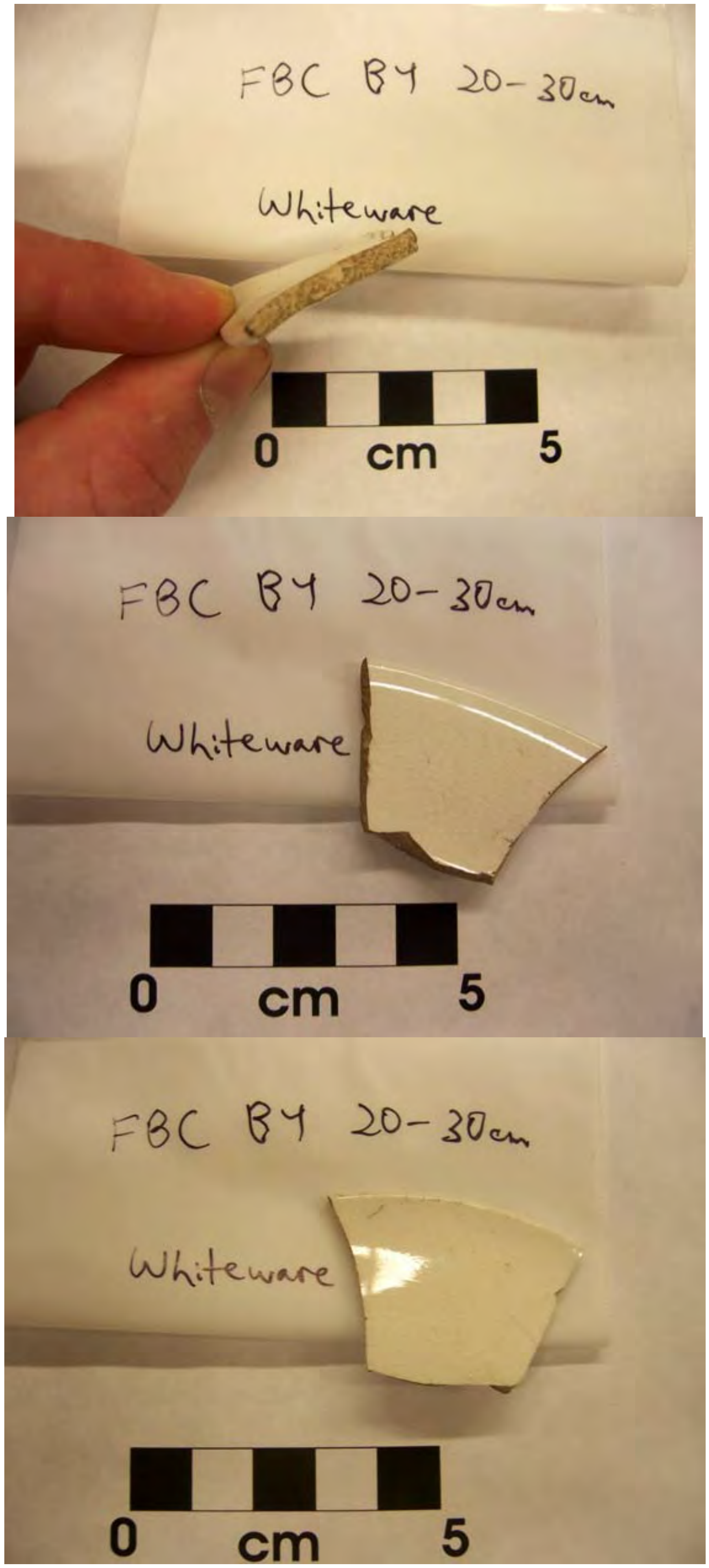
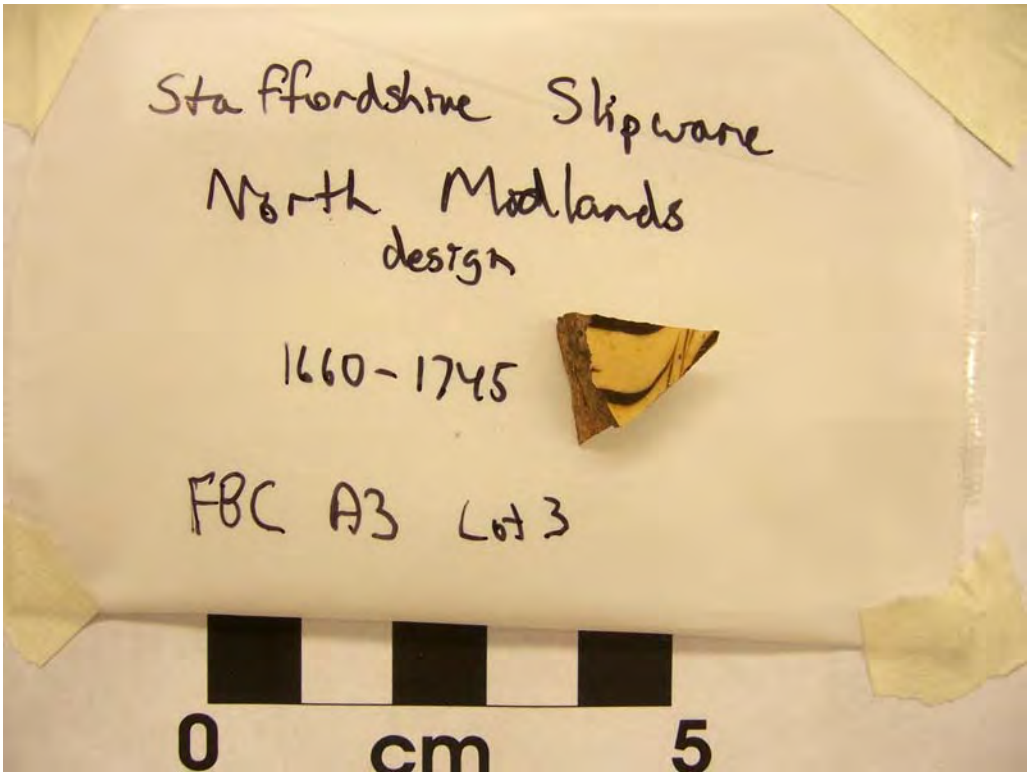


Figure 8.3 Delftware Fragment A4 lot 8

Figure 8.4 Stafforshire Slipware A3 lot 3



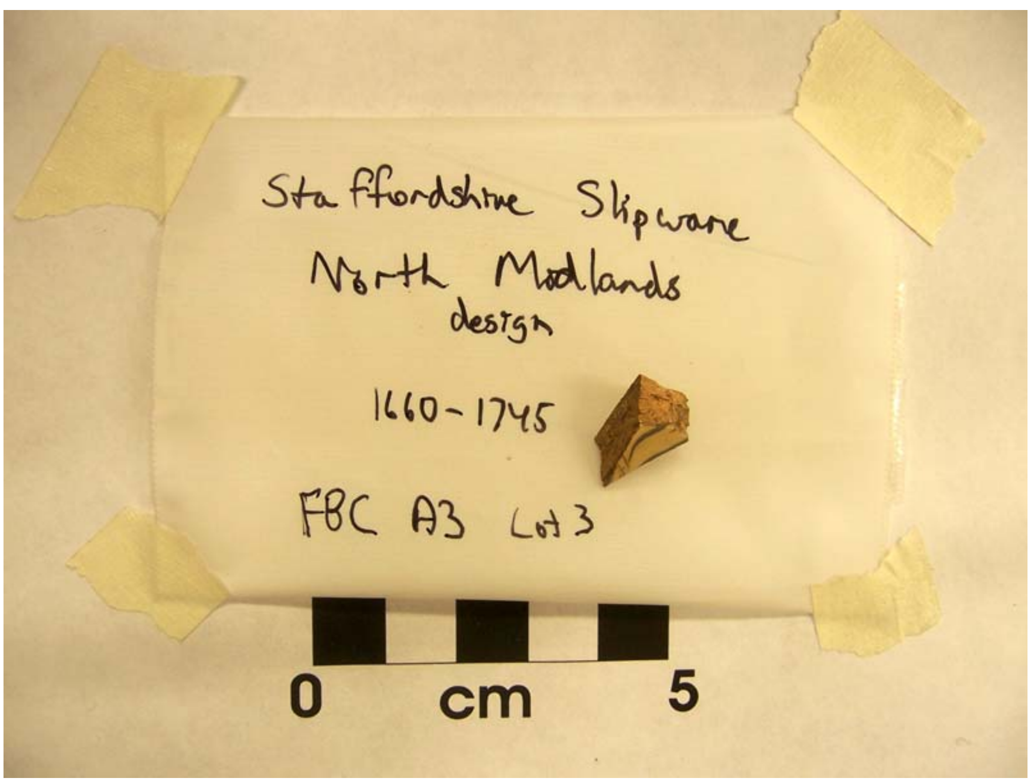


Figure 8.5 Porcelain Teacup Fragment B1 lot 4

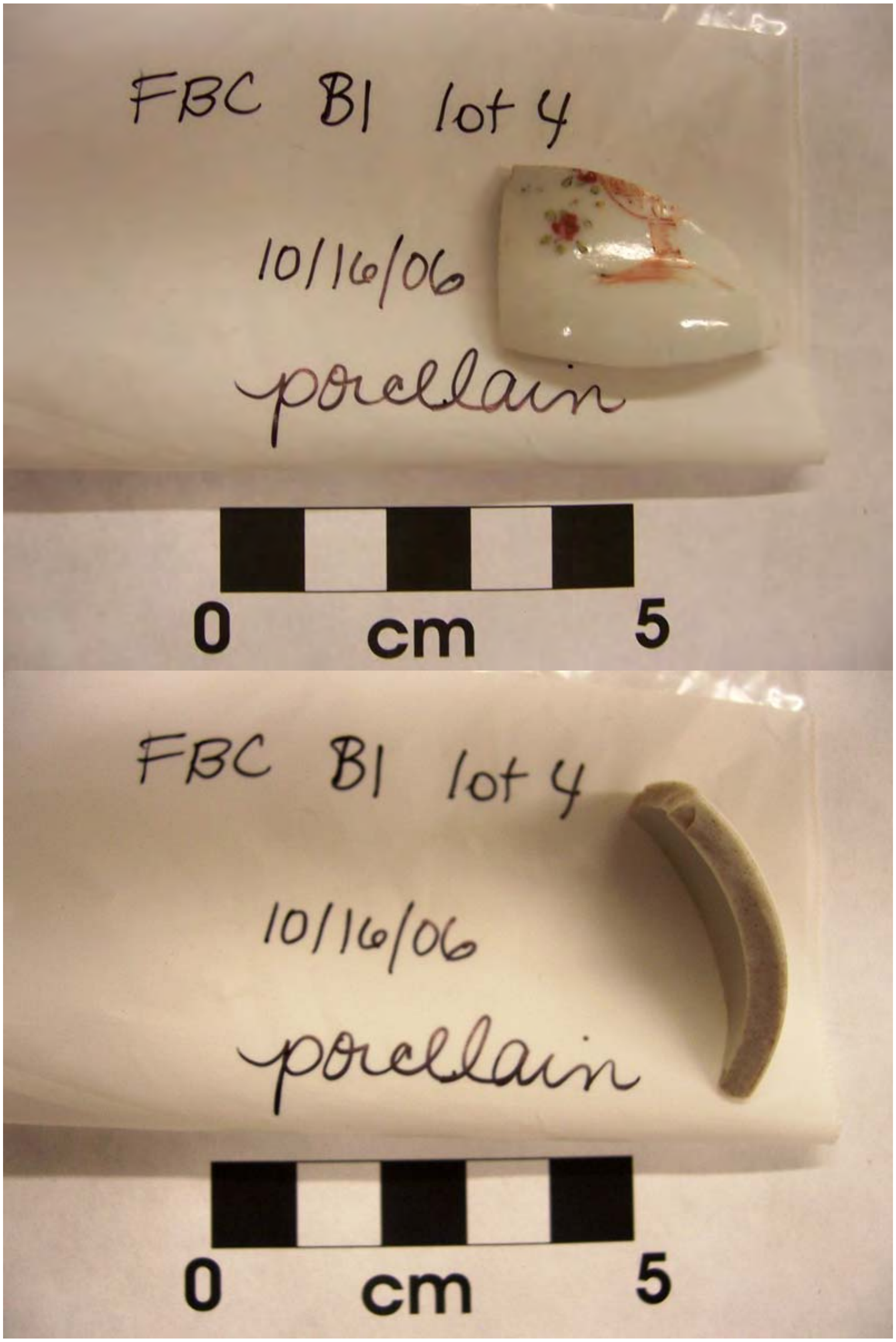


Figure 8.6 Impressed Earthenware Fragment, A3 lot 2

Figure 8.7 Pearlware Fragment, B2

Figure 8.8 Redware Fragment, A4 lot 4

Figure 8.9 Porcelain Fragment, B2 lot 2

Figure 8.10 Refined Earthenware Fragment, A1 lot 2

Figure 8.11 Reconstructed Knob, B2 lot 2

Table 8.1: Classes of Pottery Recovered by Test Pit and Level

FBC	**A1**	**A2**	**A3**	**A4**
Lot 1			Porcelain	
Lot 2	Refined Earthenware	Whiteware	Whiteware, Refined Earthenware	
Lot 3	Pearlware	Stoneware, Redware	Stoneware, Slipware	Creamware
Lot 4				Redware, Whiteware
Lot 5				Redware
Lot 6			Porcelain	
Lot 7				
Lot 8				Delftware
Lot 9		Redware		Redware
FBC	**B1**	**B2**	**B3**	**B4**
Lot 1				
Lot 2		Porcelain, Refined Earthenware		
Lot 3	Redware	Redware, Pearlware, Porcelain, European Porcelain	Creamware	Whiteware
Lot 4	Pearlware, Redware, Porcelain	Redware, Whiteware		Whiteware
Lot 5		Creamware		Redware, Porcelain
Lot 6	Refined Earthenware	Redware, Creamware, Pearlware, Porcelain		
Lot 7		Redware, Pearlware		

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Porcelain at the First Baptist Church, Providence, Rhode Island

Melissa Amaral

INTRODUCTION TO PORCELAIN

The study of ceramics is vital to archaeology because it provides evidence for a site's chronology, trade relations, and function. There are three main classes of ceramics distinguished by the types of clay used and the porosity of the ware after firing. These classes are earthenware, stoneware, and porcelain. Porcelain is the least porous ceramic and is fired at a higher temperature than earthenware and stoneware, between 1200 and 1500 degrees Celsius. Porcelain is used for dining (as plates, bowls, teacups, and mugs) and for decoration (as decorative plates and figurines). The primary distinction between porcelain and pottery is that porcelain is translucent. Porcelain is also known as China or Chinaware due to its origins in China.

There are two classes of porcelain, hard-paste (or natural) and soft-paste (or artificial). Paste refers to the mixture of clay and other materials that make up the body of the ware. The ceramic body is described as hard or soft depending on the temperature at which it is fired. Hard-paste porcelain is considered hard due to the high temperature firing which makes the ceramic less porous. Hard-paste porcelain is composed of a mixture of kaolin (an extremely pure aluminum silicate) and feldspar (a silicate of potassium and aluminum, also known as *petuntse)*. At high temperatures porcelain becomes a milky white glass. In hard-paste porcelain, it is nearly impossible to distinguish the boundary between the body and the glaze because the glaze is applied before firing and is incorporated into the body during the firing process. Soft-paste porcelain is the European attempt to replicate Chinese porcelain, often using large amounts of glass to imitate the translucency of natural porcelain and later adding calcined bone to the mixture for increased stability and whiteness.

Porcelain can be manipulated in many ways to form its shape; vessels can be wheel-made, formed in a mold, hand-molded, or carved into any shape conceivable. Because of its natural impermeability, porcelain does not need glaze. Unglazed porcelain is known as biscuit porcelain. Different kinds of glazes can be added before, during, or after the firing process. Blue and red are two colors available for use as underglazes, obtained from the oxides of cobalt and copper, respectively. Iron is the only other metallic oxide that can withstand the high temperatures at which porcelain is fired; however, because it produces a dull brown color iron was rarely used as an glaze base. Cobalt and copper glazes are painted directly on to the white porcelain body and covered with a transparent glaze before firing. Cobalt is used most frequently because it is more predictable than copper, which can diffuse and turn gray during firing. After the first firing, different color enamels can be painted onto the surface, and subsequent firings are needed for each additional color. These firings are done at a lower temperature, around 800-900 degrees Celsius. Blue obtained from cobalt is the only underglaze color in European porcelain; all other colors must be painted on the glaze after firing.

The material is a bad conductor of heat, making it especially practical for warm drinks such as tea, coffee, and hot chocolate, beverages that gained popularity in Europe during the seventeenth century. These beverages were restricted to the upper class due to their heavy import taxes as well as the value of porcelain. Porcelain rooms, in which porcelain wares and figurines were displayed, were fashionable among the elite in England, France, and Germany during the seventeenth and eighteenth centuries.

FROM EAST TO WEST: ORIENTAL EXPORT PORCELAIN

Beginning in the sixteenth century, Chinese porcelain was imported into Europe through the various East India companies and Chinese manufacturers were even commissioned to produce European designs. Many vessels were decorated with European heraldic emblems, Biblical stories, and genre scenes of daily life. While the Portuguese dominated the Chinese export porcelain trade in the sixteenth century, the Dutch captured the market in the early seventeenth century, shipping more than three million pieces of *Kraak* porcelain (named after the ships or carracks in which it was transported) during the first half of the century. The popularity of Chinese porcelain reached its height at the end of the seventeenth century.

Chinese porcelain from the Ming dynasty has been found in American contexts dating to before 1650 CE. Significant amounts of porcelain are not represented in colonial inventories until the second quarter of the eighteenth century. Porcelain became increasingly popular as it became more available due to the improved economic status of the American colonists. To facilitate the high demand for porcelain, the quality of the wares suffered, so that by the end of the century low-quality porcelain became a common ceramic type.

EUROPEAN PORCELAIN

Marco Polo, often credited with origins of the term porcelain, described a ceramic material resembling *porcellana* (a cowrie shell) during his thirteenth century expeditions to Asia. For centuries, Europeans tried to recreate the formula of porcelain. Francesco de' Medici of Florence is credited with making the first translucent white ware—the first European soft-paste porcelain—in 1575 CE. The first successful manufacture of hard-paste porcelain, which was made of a mixture of alabaster and kaolin discovered near Scheeberg, Saxony, took place in Meissen by the alchemist Johann Friedrich Böttger in the year 1708. The formula spread throughout Europe, and by the mid-eighteenth century, porcelain manufactories had been founded throughout the mainland and England.

The earliest European porcelain is of the baroque style, which remained popular until about 1740. The baroque style is an elaborately ornamented reaction against the somber rationality of Renaissance classicism. The style is symmetrical and uses strong colors. Floral designs became very popular towards the end of this period with the advancement in botanical studies. Originating in France in the 1720s as a reaction against the severe baroque style, rococo is a light, airy style based on lively, asymmetrical curving lines, encompassing rock, shell, water, and scrolling foliated motifs from nature. Rather than the darker colors and heavy scenes of battle and religious themes of the baroque style, the rococo style focused on carefree aristocratic, romantic, and outdoor nature scenes. Chinoiserie is a term that describes an eighteenth-century European decorative style based on Asian design. While Asian-inspired designs appear in the seventeenth century, this style reached the peak of its popularity during the height of the rococo period in the early to mid eighteenth century, replaced at the end of the century with a revival in classical style. The neoclassical style was popular from the 1760s to the early 1800s. Its severe and simple lines were a reaction to the excessive decoration of the rococo style. While most continental European styles found a market in England shortly after their foundations in France or Germany, the French Empire style of the early nineteenth century did not become nearly as popular there as it did in the United States. Floral designs are the predominant decorations on eighteenth century European porcelain.

ENGLISH PORCELAIN

English porcelain was made of white-firing ball clays instead of kaolin, and various other ingredients, especially those used in the manufacture of glass such as silica, calcined flint, alumina, and lead oxide in place of *petuntse*. This soft-paste porcelain was very difficult to control during firing. Bone-ash was added to the ingredients in order to stablize and strengthen the paste. The first English soft-paste porcelain manufactories were founded at Chelsea and Bow in the mid 1740s, followed by Derby, the Pomona factory, and Longton Hall before 1750. Bow was the pioneer of bone china, adding large amounts of bone ash to the body, which reduced kiln wastage at the expense of quality. The Worcester factory, founded in 1751, used soap-rock (a natural mixture of china clay and magnesium silicate) as a fusible rock, much like the Chinese, but the English soap-rock fused at a lower temperature. In general, these soft-paste porcelains fired at a temperature between 1100 and 1150 degrees Celsius. In 1768, William Cookworthy patented the use of china clay and feldspathic rock, the first English patent for hard-paste porcelain.

The invention of transfer-printing is credited to John Brooks, an Irish engraver working in Birmingham, England, around 1750. The process of transfer-printing involves engraving an image onto a copper plate that is then dipped in enamel (usually black or blue), transferred onto a piece of paper, and while wet, transferred from the paper to the ceramic ware. This technology significantly decreased the amount of time and skill necessary for the decorating of porcelain and other ceramics.

The importation of foreign ceramics was restricted many times over the course of British history. Edward IV passed legislation in 1464 prohibiting the importation of ‘painted

Earthenwares' to protect British potters from continental European competition. The act was not repealed until 1775. French styles of porcelain were very popular in England for some time, and were imitated by the British factories because of the restrictions on the importation of French ceramics. The embargo with France was lifted with the Commercial Treaty of 1786, which removed the restrictions on pottery and porcelain trade and reduced the import duty to twelve percent of the sale value. While there were no British embargoes on Asian ceramic imports during the eighteenth century, there was a tax levied on all legally imported china. This tax varied between twelve and one half percent at the beginning of the century to over one hundred percent of the sale value at the end of the century.

AMERICAN PORCELAIN

Most eighteenth-century porcelain was imported to America from England, along with inexpensive delftwares, salt-glazed stonewares, and cream-colored earthenware known as Queen's ware, but even the American colonists were experimenting with porcelain manufacturing by 1738. Natural resources needed for porcelain manufacture were found in several colonies, including Georgia, South Carolina, Virginia, and Delaware. Colonial porcelain manufacture began with the discovery of kaolin deposits near Savannah, Georgia, by Andrew Duché. Duché's porcelain teacup, the first recorded successful porcelain manufacture in America, was registered in 1738, six years before the first English porcelain was registered. The formula was patented in 1744. Early American porcelain imitated the English style at the time. Gousse Bonnin and George Anthony Morris opened the American China Manufactory, the first successful porcelain manufacturing plant in Philadelphia in 1770. Bonnin and Morris followed the British tradition of mixing kaolin with calcined bones and hired workers from England to reproduce Bow and Worcester soft-paste porcelains.

William Ellis Tucker began producing porcelain with distinctive American subject matter in his Philadelphia factory, founded in 1828. By the early nineteenth century, the popular taste had shifted to the French Empire style due to the anti-British sentiment following the War of 1812. Several other porcelain production plants were founded in the second quarter of the nineteenth century, most of which were located in Philadelphia and Jersey City, New Jersey.

In the mid-nineteenth century, porcelain production improved when factories began employing immigrants with the specialized knowledge of European porcelain. A rococo-revival style gained prominence at this time. Industrialization worsened the formal and decorative qualities of porcelain as the desire for mass production reduced the amount of time invested in each individual piece. Industrialization also lowered the cost of production due to improved transportation routes, which also expanded the markets. New manufactories were founded at this time in New York and New Jersey.

EXCAVATION AND CONSERVATION

Porcelain is a durable material that generally does not suffer from the types of deterioration most commonly seen in ceramics with more porous bodies. Glazed ceramics that are fired at high temperatures are more resistant to mechanical wear. Porous ceramics are more susceptible to problems such as cracking and flaking of the glaze, crumbling of the body, salt damage, and staining from metals or other associated materials.

The porcelain at the First Baptist Church site was identified during excavation using trowels or during the sifting in the ¼ inch screen. Fragments were stored in paper or plastic bags until transported to the laboratory where the porcelain was gently cleaned with soft-bristled brushes and water. Porcelain can be submerged in warm water, but water should be changed frequently because the dirt can become abrasive. After cleaning, the porcelain was allowed to dry on mesh-bottomed trays. The artifacts from each layer of each trench were kept separate and the trays were labeled with this information.

ANALYSIS

Ceramics are studied to attain information about chronology and trade relations. Ceramics can be dated in relation to artifacts associated with them, such as coins (which have absolute dates and provide a *terminus post quem*) or organic material (which can be dated by measuring its Carbon-14 content). If the manufacturer or factory is known, the artifact can be given a more precise range of dates for manufacturing. Decorations can provide a likely time period for when the artifact was manufactured, but caution should be taken because styles are often revived and can be misleading.

Ceramics also provide evidence for trade. Manufacturing centers produced wares for domestic use and export. China, for instance, exported millions of porcelain pieces to Europe during the sixteenth-nineteenth centuries. This indicates cultural contact between Europe and Asia and the technology to travel and transport goods between the two continents. Porcelain was also exported from Europe to the United States, particularly before American manufacturers were able to make porcelain economically themselves. The ingredients used to form the body can determine the origin of manufacture. However, the ingredients could also have been imported, such as kaolin imported to England from America. Decorations may reveal the origin of the ceramics, but styles could easily be copied, and often were, including the European endeavor to reproduce Asian designs.

Seven sherds of porcelain were excavated from the lawn of the First Baptist Church (Table 8.2, Figure 8.12) Most sherds are between ¼ and ½ centimeters in width and between one and two centimeters in diameter. The largest exception is a piece from a teacup that is four centimeters in width and two and one-half centimeters in height. Cumulatively, the porcelain weights 13.6 grams with individual weights ranging from 0.4 grams to 5.4 grams. Individual weights for each sherd are described in table 1. The sherds were exhumed from several points across the lawn; interestingly, the sherds were not discovered in the area behind the church and to the east of the driveway. All of the sherds were found in trenches to the south and west of the church, located near the boundary of the property. Three sherds came from trench A3 (Figures 8.12-8.20), which is located to the south of the church between the driveway and walkway, and each sherd came from a different level. Two were found in trench B2 (Figures 8.24-26), and trenches B1 (Figures 8.21-8.23, 8.30, 8.32) and B4 (Figures 8.27-8.29, 8.31, 8.33) had one sherd each.

There are several strategies for distinguishing between hard and soft-paste porcelain. First, if applicable, one should examine the fractured edges. Hard-paste is characterized by smooth and glassy edges, uniformity in appearance throughout the entire thickness of the ware, and no sharp distinction between the inner body and outer glaze. Fractured edges of soft-paste porcelain tend to be rougher in the middle with a granulated or flaky surface and a demarcation between the inner body and outer glaze. Soft-paste glaze is also more porous, therefore absorbing more moisture. Limitations of this method include the possibility that there are no fractures in the ware or that the paste is not extremely hard or soft but somewhere in between. Variation in color can help to distinguish between hard and soft-paste porcelain. Hard-paste porcelain tends to have a bluish tint while soft-paste has an ivory tint, a characteristic result of the use of bone ash and of lower temperature firing. This test may not be definitive due to discolorations or peculiarities of different clays. While I cannot definitively state that there is any hard-paste porcelain among the sherds found at the First Baptist Church, some sherds are certainly of harder paste than others. Sherds from B1 lot 4 and B2 lot 6 have the grainiest bodies and are therefore soft-paste porcelain. Sherds from A3 appear to be the hardest of the group, with the sherd from lot 6 being the hardest-bodied. These may represent bone china, which was manufactured in England in the nineteenth century, or hard-paste porcelain produced in China in the case of the blue-and-white porcelain.

There are two sherds of blue-and-white porcelain, which may be Chinese export porcelain or European imitations. If produced in China, they are most likely Canton porcelain, which was manufactured in Jingdezhen but decorated and then shipped from the port of Canton. This porcelain was most commonly manufactured between the late eighteenth century and the mid nineteenth century. These wares were mass-produced and the glaze has a poor quality that is textured and often contains pinholes. The underglaze color is usually a pale bluish or grayish white and the detailing ranges in shades of blue from a watery gray-blue to cobalt blue. The decoration is commonly of landscapes, particularly pagodas or fishing villages. The sherd from B4 lot 5 appears to be such a landscape scene. The decoration of sherd from A3 lot 6 is difficult to discern; it contains a circle, straight lines, and an area of cross-hatching and it may be part of a floral design. It has a finer quality, which may indicate that it is Ming (1364-1644) or more probably Ch’ing (1644-1912) ware.

The largest piece of porcelain comes from a teacup from B1 lot 4 and is decorated with a basket with red flowers falling over the side. Floral themes were popular throughout the history of European manufacture, but they were particularly common in the eighteenth century. The teacup may have been used in a social setting outside of the church building. With the exception of the teacup sherd, it is unclear what types of vessels are present. There are three other porcelain sherds with simple decorations and one with no decoration visible. The sherd from A3 lot 1 is white with a gold arch, which probably continues around the vessel. The sherd from A3 lot 2 or 3 is white with a design consisting of two red ovals outlined in brown. Finally, there is a sherd from B2 lot 6 with an orange stripe. All decorated porcelain was hand-painted; there is no evidence of transfer-printing among this group of ceramics.

CONCLUSION

The study of ceramics in archaeology is important because it is indicative of the technology of a site or of trade relations between sites. While ceramics can be fragile and break easily—porcelain especially so—they tend not to disintegrate over time and can be found in abundance on most archaeological sites. Porcelain is particularly significant because it is a specialized form of ceramic that requires knowledge of a particular paste that gives the ceramic its translucency, the availability of certain ingredients (specifically kaolin and *petuntse*), and specific firing technology (the ability to reach a firing temperature over 1200 degrees Celsius). Because porcelain requires much more specialization and time to manufacture, it is much more expensive and less common than earthenware and is generally restricted to the upper class.

It is unlikely that the church owned ceramics made of porcelain; rather, the porcelain probably belonged to parishioners who brought the porcelain to the property for social events such as picnics. Because the porcelain is isolated to the southern and western lawns, these are likely to be the outdoor areas where these social gatherings took place. Porcelain found at the First Baptist Church site is the result of trade, not local manufacture, because there were no porcelain manufactories in Providence. This porcelain may have originated in the United States, from factories in Vermont, New York, or New Jersey, to name a few. It may also have come from Europe or Asia.

List of Figures

Table 8.2: Porcelain sherds from the First Baptist Church

Provenience	Color	Pattern	Weight	Illustration
A3 lot 1	White	Gold arch	0.6 g	Figs. 1-3
A3 lot unclear (2 or 3)	White	Red ovals with brown outline	0.4 g	Figs. 4-6
A3 lot 6	Blue and white	Blue lines, possibly a floral design	1.1 g	Figs. 7-9
B1 lot 4	White	Orange-brown basket, red flowers, green leaves	5.4 g	Figs. 10-12, 19, 21
B2 lot 6	White	Orange strip	1.3 g	Figs. 13-15
B2 lot 2	White	None	1.1 g	None
B4 lot 5	Blue and white	Landscape in dark blue	3.7 g	Figs. 16-18, 20, 22

Figure 8.12 Porcelain sherd from A3 lot 1 front view

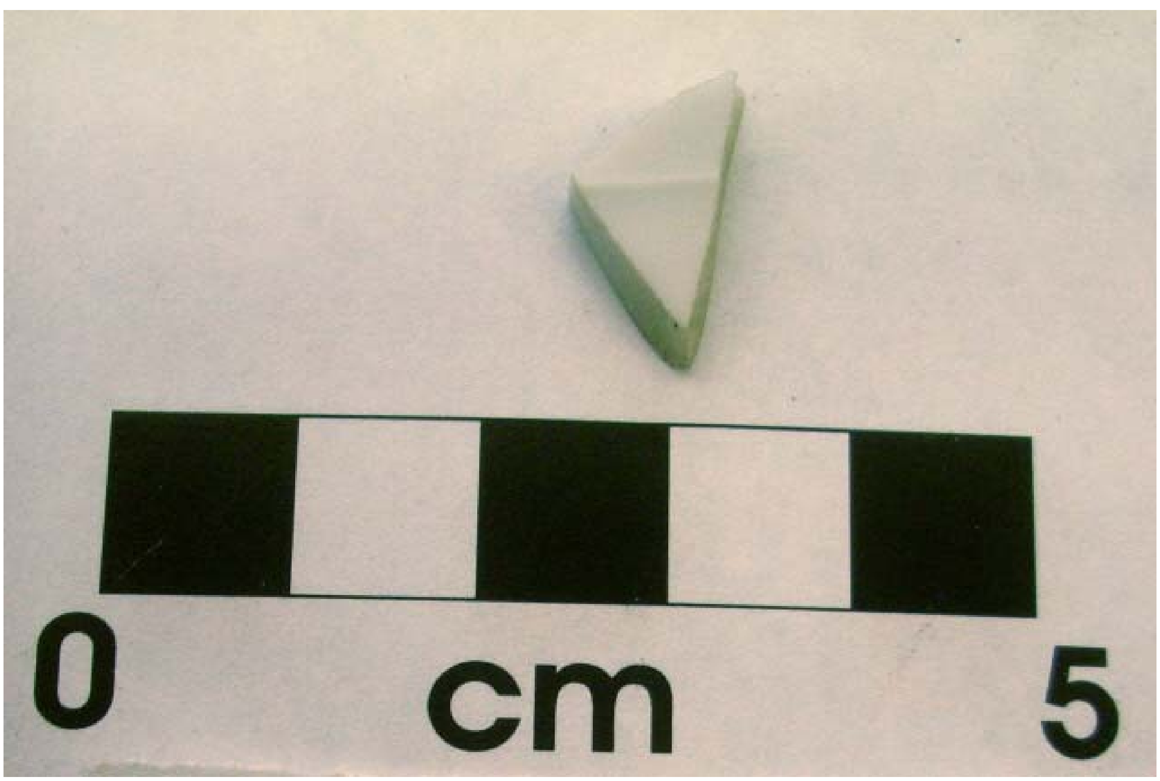

Figure 8.13 Porcelain sherd from A3 lot 1 back view

Figure 8.14 Porcelain sherd from A3 lot 1 side view

Figure 8.15 Porcelain sherd from A3 lot unclear (2 or 3) front view

Figure 8.16 Porcelain sherd from A3 lot unclear (2 or 3) back view

Figure 8.17 Porcelain sherd from A3 lot unclear (2 or 3) side view

Figure 8.18 Porcelain sherd from A3 lot 6 front view

Figure 8.19 Porcelain sherd from A3 lot 6 back view

Figure 8.20 Porcelain sherd from A3 lot 6 side view

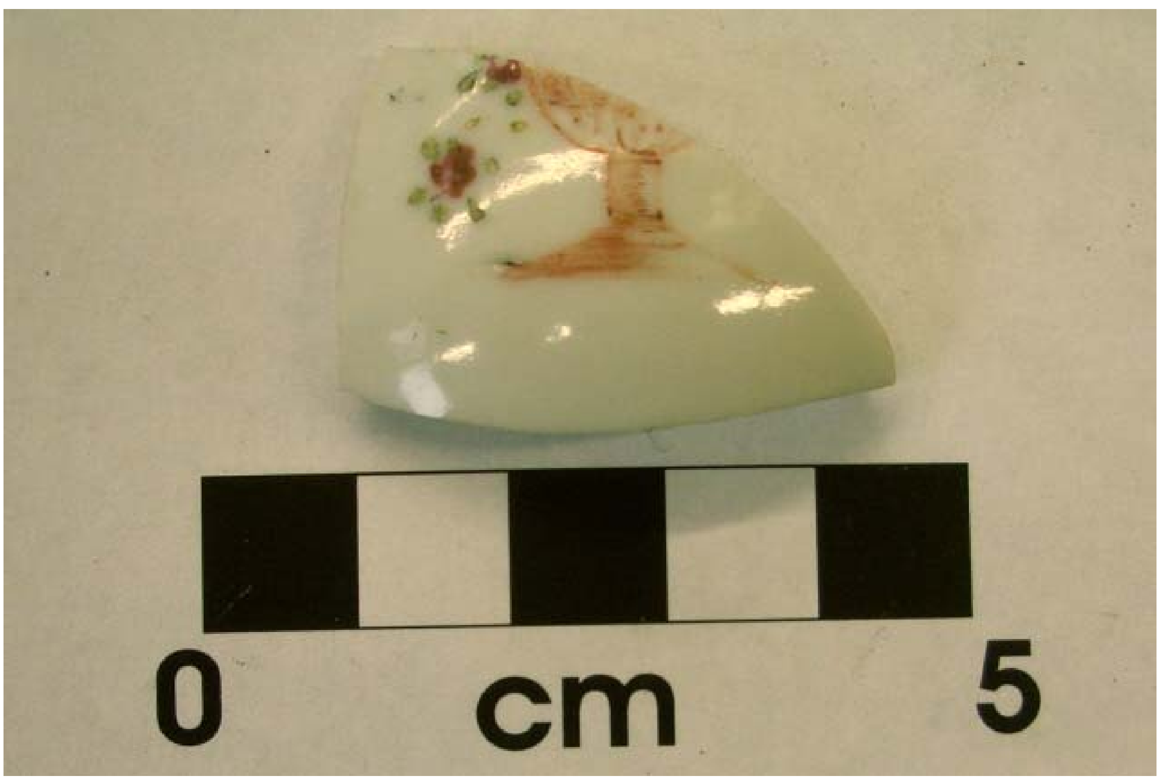

Figure 8.21 Porcelain sherd from B1 lot 4 front view

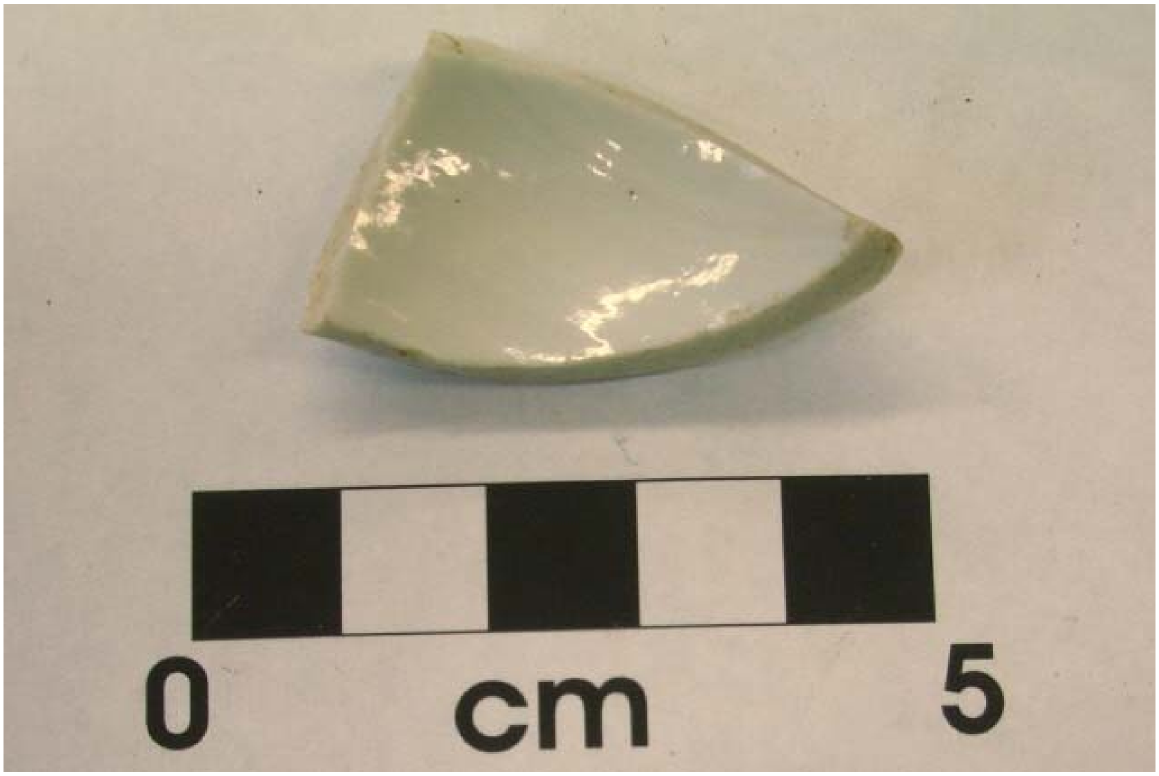

Figure 8.22 Porcelain sherd from B1 lot 4 back view

Figure 8.23 Porcelain sherd from B1 lot 4 side view

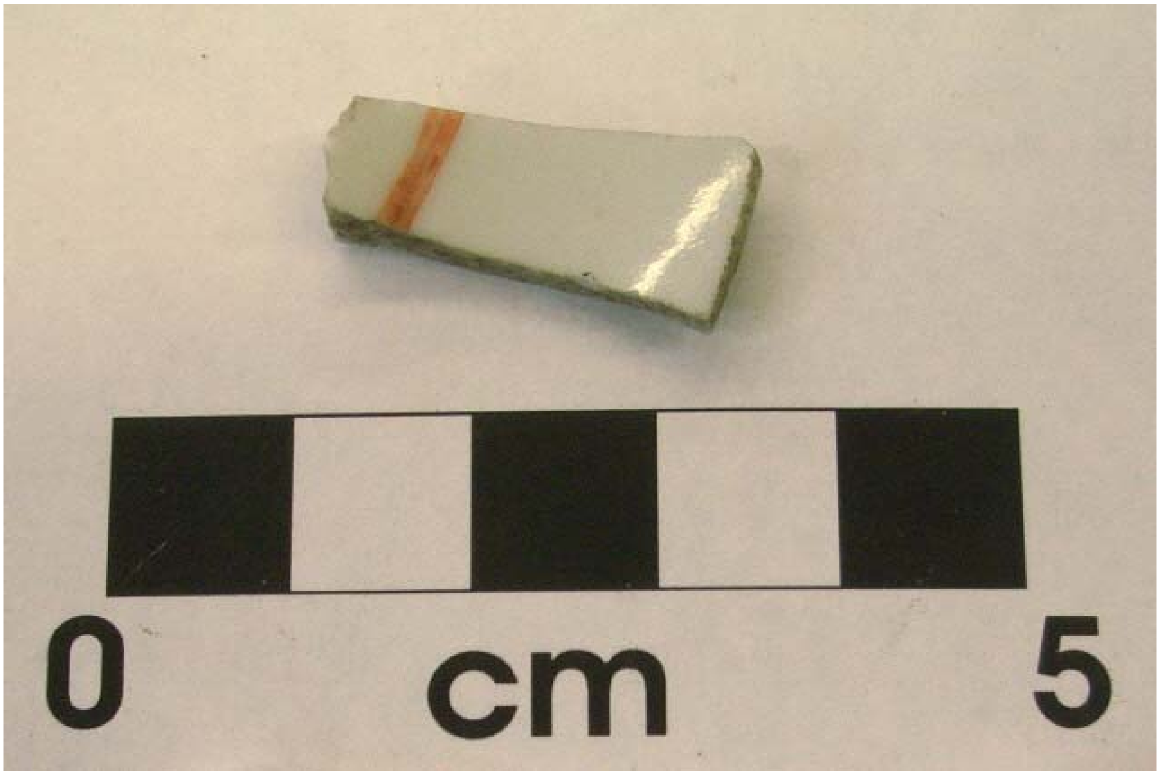

Figure 8.24 Porcelain sherd from B2 lot 6 front view

Figure 8.25 Porcelain sherd from B2 lot 6 back view

Figure 8.26 Porcelain sherd from B2 lot 6 side view

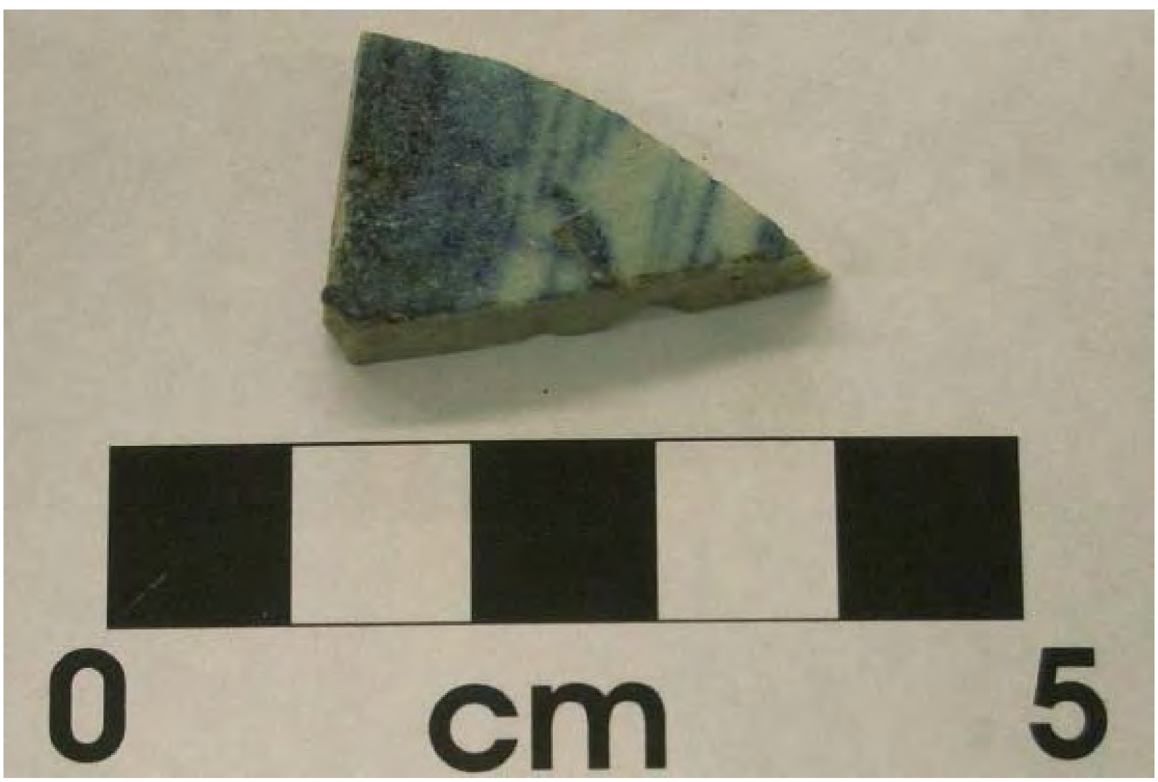

Figure 8.27 Porcelain sherd from B4 lot 5 front view

Figure 8.28 Porcelain sherd from B4 lot 5 back view

Figure 8.29 Porcelain sherd from B4 lot 5 side view

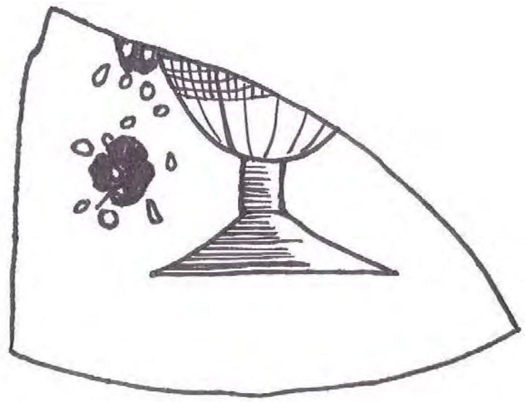

Figure 8.30 Porcelain sherd from B1 lot 4 black and white drawing, scale 2:1

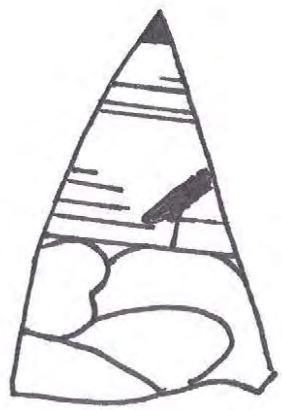

Figure 8.31 Porcelain sherd from B4 lot 5 black and white drawing, scale 2:1

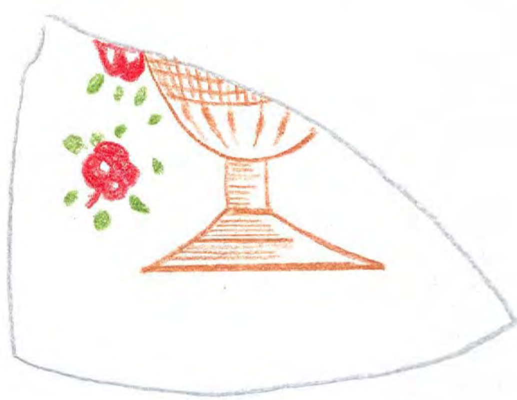

Figure 8.32 Porcelain sherd from B1 lot 4 color drawing, scale 2:1

Figure 8.33 Porcelain sherd from B4 lot 5 color drawing, scale 2:1

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Delftware Artifacts Discovered at the First Baptist Church

Adam Moss

Ceramics are inorganic, non-metallic objects that are formed by the use of heat, upon clays. In the context of archaeology, however, the term ceramics is specifically used to describe pottery, which refers to fired vessels and other useful items that are made from clay. There are three general classes of pottery, each having different properties and identifying features. Earthenware is soft and absorbs water, however, most earthenware vessels are generally made impermeable by a glaze. Stoneware is pottery that is hard and naturally impermeable to water. Stoneware does not have to be glazed, but most of the time it is for aesthetic and textural purposes. Finally, porcelain, a white ceramic that is made from kaolin, is identifiable by being glass-like and translucent. Porcelain, like stoneware, is also generally hard and not water absorbent.

Ceramics are one of the most vital artifact categories for archaeological research. Deposits of ceramics are generally extremely informative, providing the research team with a wealth of information that would remain otherwise unknown. While pottery vessels are delicate and easily broken, as a material ceramic is almost indestructible, remaining relatively well preserved over time. A pottery fragment, known as a sherd, can provide the archaeologist with many clues as to the vessel it came from. Sherds are highly resistant to both corrosion and discoloration, remaining almost unchanged from their original state. Because of this lack of susceptibility to disfiguration pottery is capable of maintaining much cultural information, including relative chronology based on changes in style. Ceramics are also extremely easy to make and because of this the of ceramics are relatively widespread across cultures, with most societies having their own forms. The raw material clay, from which ceramics are made, is easily attained and the process of shaping and baking something out of ceramic is simple. In addition, ceramics can take on an infinite number of forms and functions, making it an extremely practical and convenient method for creating useful items. Because ceramics have experienced such ubiquitous status throughout history and their resistance to corrosion, the study of ceramics has become a vital and major component of archaeology. Pottery allows the archaeologist to form a good picture of the daily lives of past cultures and what resources they utilized.

One of the most vital clues that pottery and ceramics provides the archaeologist with is what people consumed. Ceramics is generally used to create functional purpose specific objects. Because of this one can determine, from the type of ceramic found what it was possibly used for and in turn, gain more understanding of the historical role that it played. So a jar that is designed for a specific purpose, like baking beans, would tell you that the culture did things relating to the activity of baking beans. In addition, pottery encompasses a range of status levels, from plain, undecorated earthenware tools which are quick and easy to produce, to elaborate labor intensive hand painted porcelain vases made with expensive materials. By examining the fabric and quality of an assemblage of sherds recovered on a site one can form an idea of the socioeconomic structure of an area at a given time, and the social class of the people who inhabited it. While a poor area would tend to use less elaborate and decorative pottery, the rich would be able to afford fancier decorative pieces that were more aesthetically pleasing than functional. The origins of particular ceramic finds yield quite a bit of information as well. Pieces that have clearly been imported can provide the archaeologist with a picture of what foreign cultures the local group may have interacted with or to whom they were exposed. For example, a piece of German pottery found on a New England site would be indicative of some connection between that site and Germany. A German immigrant could have inhabited it, there could have been direct or indirect trade with Germany or it could have passed through a number of hands before arriving at the site. Ceramics allow the archaeologist to make inferences about and help verify documented patterns of trade, as well as the possible cultural and ethnic historical makeup of the particular site that is being excavated. Ceramic wares are full of information for the archaeologist, providing researchers with the ability to reasonably infer a great deal about the area where the artifacts are discovered and the culture of the people who inhabited it.

One significant type of pottery that has been discovered at numerous colonial sites in America is delftware. Delftware is a style of ceramic in which a smooth, dense lead glaze is mixed with a white tin oxide and applied to an earthenware piece (Stimmel 2003). Delftware includes all kinds of items that fit this description and is not limited to particularly shaped or designed items. The glaze that is used in delftware is thought to have been first used in the Middle East, around the 9th century. It was probably created to provide a neutral base to allow potters to decorate their wares with colorfully painted designs. This technique eventually spread into Europe, where in the 15th century, it became popularized in the Italian ceramic known as majolica. At this time, Dutch pottery was a relatively unrefined craft, limited to basic and rudimentary red clay earthenware. However, towards the end of the 15th century, many Italian majolica makers moved to the Netherlands, bringing their techniques and knowledge of pottery with them (Aronson 2001). At the beginning of the 17th century, many of the potters in the Netherlands began to inhabit the city of Delft, the same time as beer brewers, who could no longer use the water around Delft, as it had become polluted, moved out, vacating large factories in which ceramic makers could practice their trade (Aronson 2001). These potters started producing what is now referred to as Delftware, but at the time was a style of pottery known as faience, popularized in the Italian city of Faenza. Demand for the product soon skyrocketed around Europe as its popularity grew, leading to the height of what is known as the Dutch Golden Age, throughout the 17th century. At the peak of delftware production in the Netherlands, forty companies producing the item were located within the tiny city of Delft (Aronson 2001). Most of the Dutch Delftware was designed as an imitation of Chinese porcelain, featuring similar monochrome coloring and a white glaze that is similar to the natural color of porcelain. Throughout the 17th century, the Dutch East India Company brought massive quantities of Chinese porcelain into the Netherlands, creating a market for oriental ceramics, the styles of which quickly became popular throughout Europe (Locke 1970). As a result, Dutch potters contributed to this market, using Delftware to make copies and reproductions of traditional Chinese styles and designs.

Around the same time as the Dutch Golden Age one is also able to find evidence of delftware being produced in England. The earliest dated piece of English Delftware dates to 1600 and is located today in the London museum (Stimmel 2003). This early English Delftware was known as gallyware at the time, as it was not until the eighteenth century that this type of pottery produced in Delft became so popular that it took on the generic name delftware (Garner & Archer 1972). While Delftware was not an inexpensive pottery, made with relatively expensive materials, a heavy glaze and used for decorative purposes, it was the most common ceramic exported to America during the seventeenth and eighteenth centuries. Its popularity among many circles in Europe, coupled with its aesthetic appeal and clean, crisp designs made it extremely popular in America. Both English and Netherlands delftware was imported in a variety of forms, serving many practical and decorative functions. Delftware is valuable to archaeologists because it is relatively easy to date. Most of the Delftware that would be found was imported to America at the height of its popularity, during the seventeenth and eighteenth centuries. Towards the end of the eighteenth century, however, the popularity of delftware started to become overshadowed by more inexpensive creamwares and pearlwares (Deetz 1996). These pieces were just as decorative, however more utilitarian and cost effective because of the ease with which they could be mass-produced and the increasing tension in the trade relations between England and the colonies. Because the dates of both the origins and decline of delftware are known, it can be assumed that most of the colonial delftware found dates to either the seventeenth or eighteenth century, the time at which a household would have been most likely to be purchasing it and the height of its production in both Delft and England. Because delftware was so commonly and routinely imported to America, and experienced widespread popularity and usage, it is extremely valuable to the archaeologist and can be found on many colonial dig sites.

Colonial Americans used delftware for a variety of different purposes and in many different ways than their European counterparts would have used it. One clear-cut example of the differing uses of delftware between Europe and the colonies is the presence and function of plates. Around the middle of the seventeenth century, plates became a staple within English households, used for serving food. Because of this, Delftware producers increased plate production, selling them as sets intended for a functional purpose. However, in America, there have been few plates discovered on archaeological sites, the numbers of which increase towards the later end of the time period that Delftware was imported during. In addition, the plates that have been discovered in America are entirely different from their English counterparts, larger, more ornate and inherently less functional for serving food. This would suggest an entirely different purpose for plates in the colonies, serving as display pieces instead of having practical applications. This is supported by a number of plates that have been found with wear on the bottom edges, indicative of being stood up in display. In addition, plates have also been found with two holes in them, as if to support a wire upon which they could be suspended and displayed (Deetz 1996). From the evidence gathered, it becomes clear that Delftware plates in America were luxury items that were used as status symbols. The rarity of these plates indicates that few could afford them and the elaborate and ornate designs merely added to that expense. The lower classes would also not be able to afford things used only for display and because of this, it can be concluded that Delftware plates were confined to upper class colonial Americans. Delftware plates are an intriguing archaeological find because they are capable of providing the archaeologist with a better picture of the economic status of an area as well as showing distinct differences between how the same items are used in different places.

However, while Delftware plates may not have been functional, utilitarian pieces in the colonies, Delftware took on many other forms, some of which were used frequently. During the seventeenth century, small barrel shaped mugs, posset pots and wine bottles were all functional and popular forms of delftware (Garner & Archer 1972).

A posset pot is almost like a teapot, used for making a drink known as posset, a hot curdled milk drink used by the British for medicinal purposes. Most of the delftware posset pots were straight sided. The small barrel shaped mugs that were produced were used drinking vessels. However, during the middle of the 17^{th} century, these barrel shaped mugs were eclipsed by a globular form with a cylindrical neck, having the same purpose but with a more advanced and stylish design (Garner & Archer 1972). Throughout the seventeenth century, the popularity of different fashions and styles of delftware was far from static, however, most of the delftware produced had some functional purpose in addition to its aesthetic appeal. These changes in style also help establish a fine grained chronology for the pottery which in turn aids in dating items found with delftware.

At the First Baptist Church, located on Angell Street in Providence, Rhode Island, a large quantity of ceramic artifacts were uncovered during an excavation of the property that occurred between September and November of 2006. Out of the ceramic sherds that were found, only two can be identified as Delftware. Delftware is distinctly identifiable by two characteristics: its body - a yellowish-grey base that has a soft, almost chalky texture, and its glaze - of characteristically dull, white appearance that could become discolored if fired at too low a temperature. Both of the sherds that were found are missing a great deal of glaze, as the glazes on delftware tend to chip incredibly easily, leaving archaeologists with very little of the original design elements or texture of the artifact. This wear takes its toll over time, making it difficult to find pieces of delftware with their glaze still fully intact. This is a result of the tin that is used in the glaze, which poorly bonds to the body of the ceramic even more-so than similar glazes on majolica or faience would. However, from the small amount of glaze that was found on the sherds, in conjunction with the yellowish, soft chalky body of the pottery, one is able to conclude that these two sherds are, in fact, delftware. In Figures 8.35 a,b, and c, and 8.36 a,b, and c, one is able to see both the glaze and body of each sherd and how they could be identified as delftware.

The larger sherd, which will be referred to as sherd 1, when laid flat measures 1.5cm by 1.1 cm. (Figure 8.35). One edge of the sherd is .35 cm thick, while the other edge is approximately .12cm thick. The thinner edge is rounded and smooth, indicating that it was the edge of the vessel, as it was not broken off on this end. The roundedness of the edge also indicates that it constituted part of the lip of a vessel at one time. It was found in lot 8 of pit FBC A4, the rectangular pit located on the east side of the property. The sherd also possesses a unique glaze for delftware, with almost a bluish tint to it instead of the normal off-white or white color. The smaller sherd, referred to as sherd 2, was found between twenty and sixty centimeters deep in lot FBC B2. (Figure 8.36) This lot was located on the opposite side of the property from FBC A4, almost directly across from each other when looked at on an aerial map. When laid flat, sherd 2 measured approximately 1.53cm x .9 cm. Sherd 2 also possessed a rounded edge that measured approximately .12 cm thick, however, unlike sherd 1, it did not get much thicker towards the other edge, expanding only a couple of millimeters. Both sherds are extremely thin and the edge of a vessel, however, the distance that they were found from each other, coupled with the different variation in thickness between them indicate that they are most likely not from the same vessel. In addition, the glaze on sherd number 2 is whiter than the glaze on sherd 1, which has a blue tint. Sherd 1 was also more than twice as heavy as sherd number 2, weighting 1 gram while sherd 2 weight approximately .4 grams. These differences can be accounted for by the difference in thickness and size between the two sherds, rather than a difference in density.

In order to date delftware sherds that are discovered, one must first be able to identify the form of the vessel that it was once a piece of. Because certain forms and styles go in and out of fashion, their popularity rising and falling, one is able to place a certain type of delftware vessel within certain time periods. Delftware itself was mostly produced in the 17th and 18th centuries, reaching the height of its popularity during the 1700's. Because of this, one is able to assume that most of the delftware found during an excavation came from this time period. However, within the overall dates of delftware production, one is able to further pinpoint what styles of decoration were popular at certain times in addition to what style of vessels were popular at certain times. Because so little of the glaze is intact on the sherds that were discovered, it is extremely difficult to ascertain any information about the date of production from this glaze or design. The plain glaze that can be seen is extremely utilitarian and was produced through a good portion of the span of delftware production. The plain glaze was first used around 1640, as the demand for delftware increased, so that potters were able to produce large quantities of the ceramic in relatively little time. This production went on until 1800. Because of this, it can be concluded that the Delftware found during excavation dates between 1640 to 1800 (Florida Museum of Natural History).

In order to further narrow down the time period in which the delftware artifacts came from, it is necessary to identify the type of vessel the sherd was originally a part of. This is extremely difficult with the two tiny pieces that were found, however, the lip on one edge and the change in thickness of Sherd 1 is extremely characteristic of the edge of a plate. In addition, one side of sherd one is rounder than the other, which is almost a flat surface. This would also be characteristic of being part of a plate, as plates have a flat surface on the top, with a more curved bottom. In addition, small delftware vessels, such as teacups tended to lose all the glaze off of their lips and edges. These sherds still have glaze on the lips, visible in figures 1c and 2 c, making it highly unlikely that they are pieces of a teacup or another small, fragile vessel. Because of this, something sturdier, such as a plate, would be a more logical conclusion as to what style of pottery the sherds are from. If the sherds are from a plate, then they most likely were produced and used in America around the latter half of the 18th century. This can be concluded because plates, although becoming a staple at the dinner table in England around the mid-16th century, were not used in America for functional purposes until much later. Originally, plates in America were used merely for decorative purposes, however, the plain, utilitarian glaze on the sherds does not lend itself to this function, and would have come from a plate that was used for serving food. It is extremely likely that the sherds that were found on the First Baptist Church property were used for serving meals, during the later period of delftware production that would range from the middle to the end of the 1700's. One of the aspects of delftware that cannot be revealed from a basic analysis of the sherds is where it was produced. Delftware is a term that refers to this style of pottery from either the Netherlands or England, and the place of production would be interesting to know. Each country had different artistic styles and manufacturers that if identified can help determine where the pottery came from. However, the plain glazed delftware was produced in both countries so that without a mark that indicates the factory it came from or any chemical analysis of the clay, the country of origin cannot be determined.

These artifacts would have been used in a picnic or church setting on the First Baptist Church property as plates on which food would have been served. It is possible that they were brought to the site for a picnic or church gathering and were left behind because they were roughly handled and broke. The lack of detail and fragile nature of the ceramic sherds that were found indicates that the vessels that they once were a part of were most likely relatively inexpensive pieces, prone to breaking and shattering. Their disposal on the site indicates that they were left behind, as pieces of litter would be following a picnic. While they have not been found during excavation, it is likely that there are other sherds, located close to the test pits that were being excavated, that would make up the remainder of the plates. Residue analysis could be performed to see if any of the food that may have been on the plate could be identified, however, because the artifacts were already thoroughly cleaned, it is likely that the residue has been removed.

The Delftware that was discovered at the First Baptist Church in Providence, Rhode Island, provides archaeologists with an insightful view of the type of pottery used in colonial New England and the functions that these artifacts fulfilled. While there was not a great quantity of delftware found at the site, enough information and data can be obtained from the sherds that were found to provide researchers with not only insights into colonial pottery use, but the use of the land it was found on as well. By combining the delftware with other pottery that was discovered, such as sherds from a teacup and porcelain plate sherds, it becomes clear that the First Baptist Church site was commonly used for picnics and other events involving food consumption. Excavation and analysis of delftware, as well any other artifacts that can be found is capable of providing the archaeologist with critical information about local settings and the events that occurred within them.

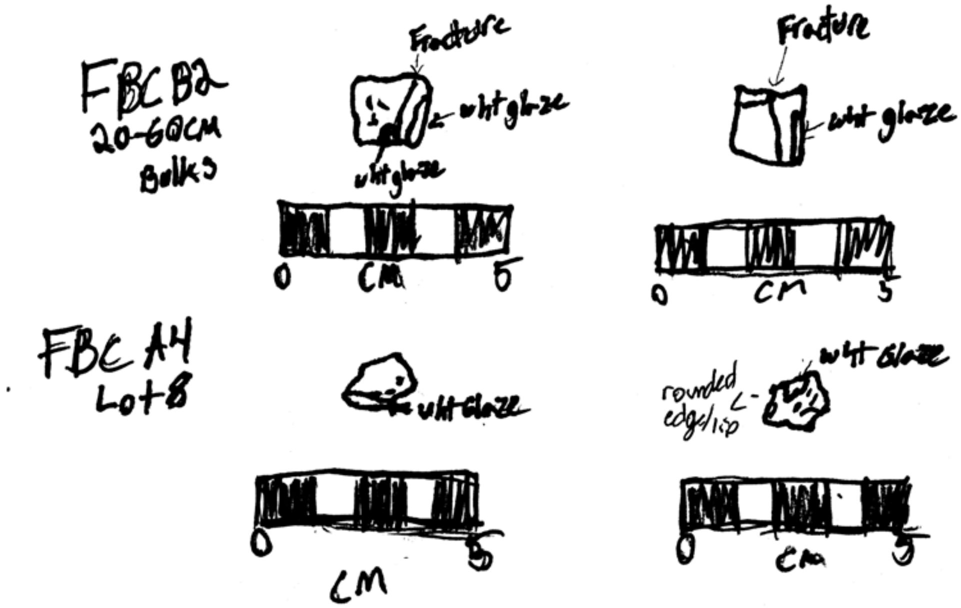

Figure 8.34 Scale Drawings of Sherd 1, B2 bulk and Sherd 2, A4 lot 8.

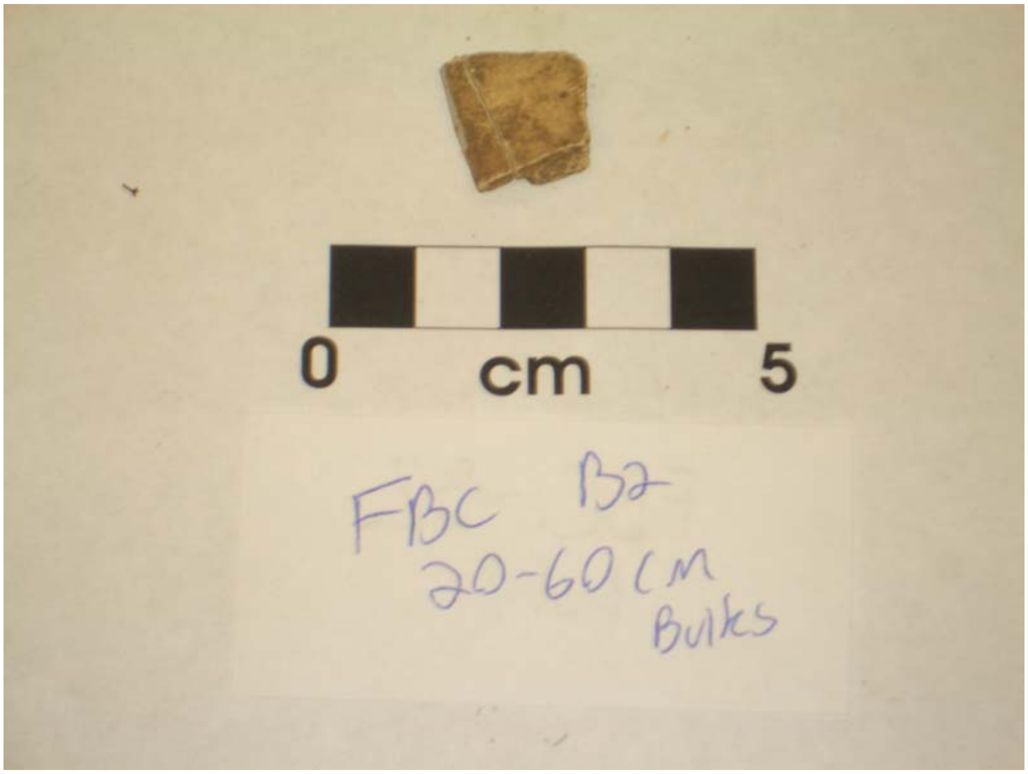

Figure 8.35a: Sherd 1, B2 bulks. Note the fracture left of center.

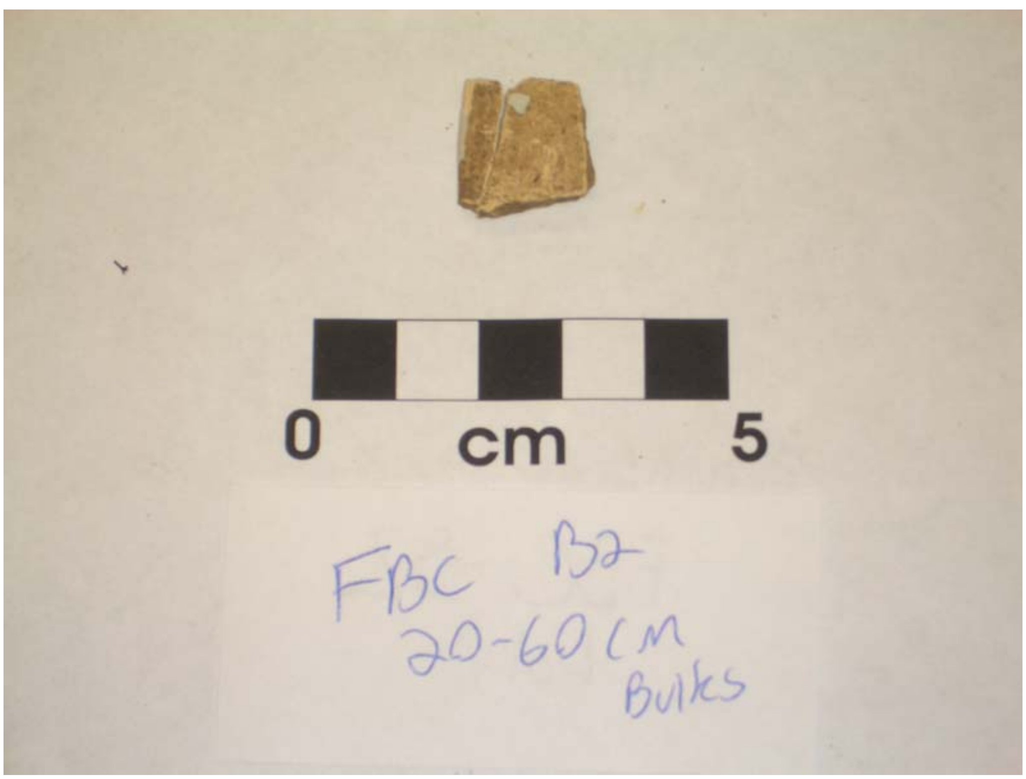

Figure 8.35b: Reverse of Sherd 1, B2 bulks.

Figure 8.35c: Lip of Sherd 1, B2 bulks. Note the rounded edge with glaze still intact.

Figure 8.36a: Sherd 2, A4 lot 8

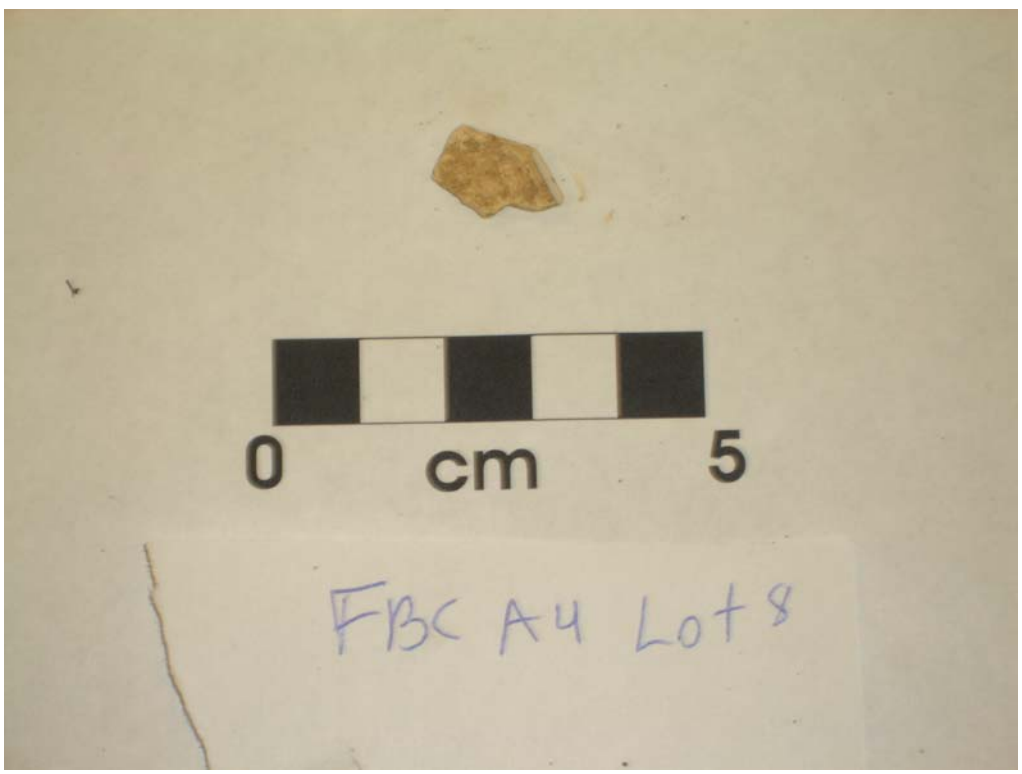

Figure 8.36b: Reverse Side of Sherd 2, A4 lot 8

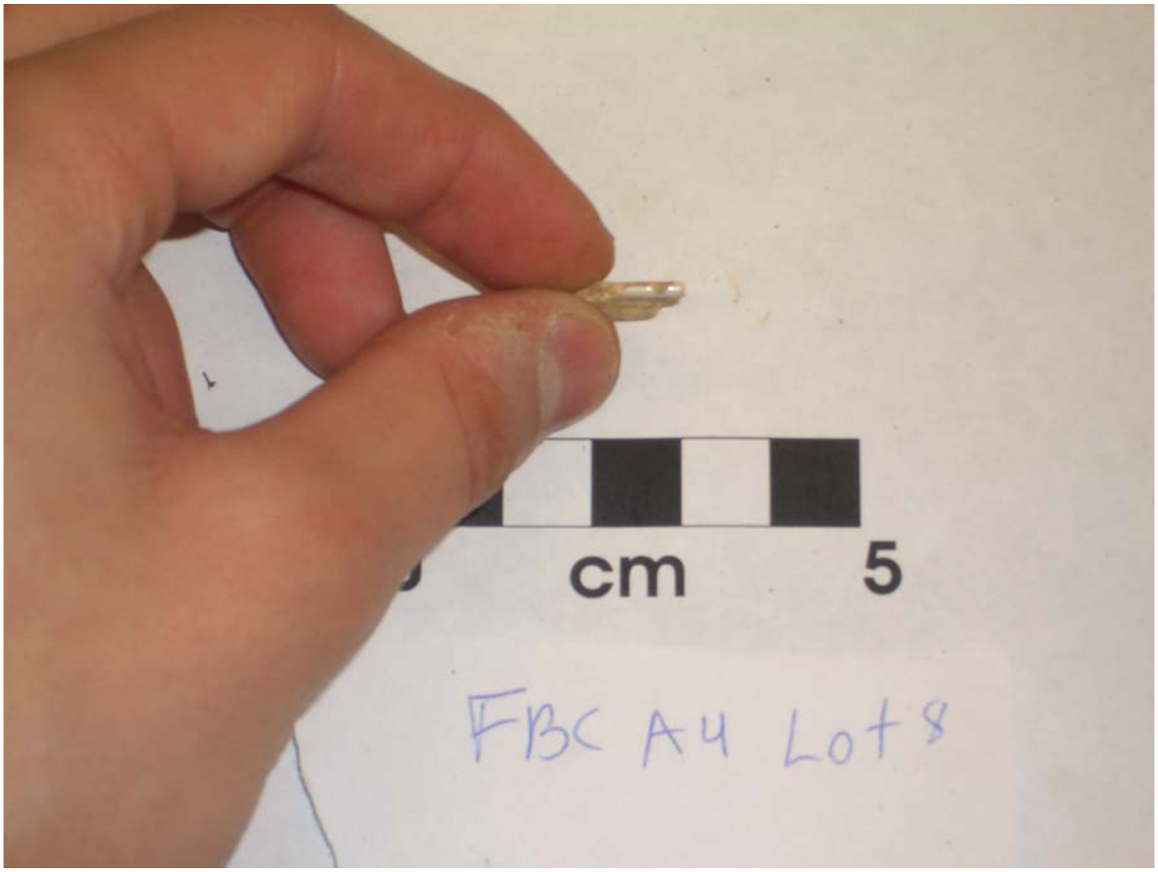

Figure 8.36c: Lip of Sherd 2, A4 lot 8. Note intact glaze on edge.

Table 8.3: Locations of Delftware on the Property

Sherd	Findspot
FBC A4	Lot8
FBC B2	20-60 cm bulks

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Chapter 9

Message in a Bottle: Glass Vessels and Objects in Historical Archaeology

Christian Piñon

Glass has been produced since very early times, first as a glaze on objects, then later in the form of vessels in Mesopotamia around 1500 BCE (Frank 1982). Because it is non-porous, the material has been often used for containers that can hold liquids such as bottles and drinking vessels. Its translucence also creates to a pleasing aesthetic which has made glass very popular. The material can be worked at high temperatures, and remains hard when cooled.

In North America, beginning in colonial times glass has had a long history of production and use. According to Ivor Noel Hume, "the majority (of glass bottles) found on colonial sites are of English manufacture (Hume 1991)." American glass manufacture began at Jamestown, Virginia, in 1608, but was not successful. Some enterprises did meet success during colonial times, but the American glass industry first took firm hold in the 19th century when a better knowledge of chemistry enabled the reliable production of better glass.

Glass is "composed of silica, usually in the form of sand, and alkalies such as potash, calcium oxide (lime), and sodium carbonate" (Baugher-Perlin 1982, 261). The most common form both today and in the past has been the combination of silica, soda and lime. This combination is primarily used for everyday objects such as bottles and window glass. The second major type from silica, potash and lead is usually made into fine tableware and cut crystal glass. The combination of silica and alkalie affects the general characteristics of the glass such as durability and hardness. Glass color comes from impurities, either present in the sand or artificially added, as well as the conditions of the object's heating. Until the mid 1800's, glass was produced in natural colors: green to amber. In the next half of the century, clear glass was in demand for the new food preservation industry. Decolorizing agents were added to glass to make it clear. From 1880 to 1915 manganese was the preferred inclusion. Germany had been main supplier of manganese, so with the beginning of the First World War, selenium took its place. After 1930, arsenic became the standard decolorizing agent.

ARTIFACT CONSERVATION

Removing glass from a stable soil or underwater environment will begin a decomposition process, though depending on the composition, some glasses are more stable than others. The deterioration process is accelerated by the "hydrolysis of glass modifiers and stabilizers" (Rodgers 2004, 147). The silica in the glass is charged negatively, while the modifiers are positively charged. If calcium or magnesium either leach out or are not present, the alkaline substances will also leach out. These ions

> "combine with carbon dioxide from the atmosphere to form sodium and potassium carbonates. As more moisture gathers on the glass, the free positively charged hydrogen ions from the water migrate into the glass structure… hydrating the glass… This is called "glass disease" (Rodgers 2004, 147).

Glass that is diseased appears multicolored and iridescent, and will flake and devitirify.

Dry recovered glass should be rinsed when removed to clear surface salts. Metallic salt stains can be removed with a 10% citric acid soak. Devitrifying glass can be encased in a paste of 10% citric acid and talcum powder, and should not be allowed to dry until a desalination rinse. All glass can have salts removed by soaking in distilled water for two months (Rodgers 2004).

The most important part of the conservation of glass recovered from a dry environment is controlling the storage environment. Glass should be kept in a sealed environment with low humidity, and temperature extremes should be avoided (Frank 1982).

The main types of objects found at the First Baptist Church were bottles and an overview of bottle types is thus necessary. Bottles had many types of functions, and in the 18th century, each function had a standardized vessel form associated with it.

Beer bottles appear in the 1870's because pasteurization and the invention of the Lightning Stopper made it practical to bottle beer without fear of spoiling. Amber was the most common color, though they were manufactured in aqua, blue, clear, and yellow glass. Beer bottles were embossed until 1920, and after Prohibition they were labeled with paper.

Food bottles came in a variety of shapes and colors, depending on the product and were common in the 19th century. Foods that would not spoil quickly were sold in bottles such as oil, vinegar, syrup, peppersauce and mustard. Bottles for household products contained "shoe polishes, glues, bleaches, and insect killers (Baugher-Perlin 1982, 272).

Glass inkwell began to be produced in the early 1800s, with two forms that were most common. The umbrella form was made from the 1820s until the 1880s. The conical shape first appeared in 1858 and was popular until the early 1900's (Baugher-Perlin: 1982, 272).

Though not all non-prescription medicines were patented, the term for bottles that contained them is “patent medicine bottle.” From the 1800s until after their decline with the Food and Drug Act of 1906, bottles were produced in cylindrical or rectangular forms. Aqua and light green were common colors.

Prior to the 1880s, milk was distributed in cans and crocks, round glass bottles came into use around 1880. The glass was usually clear and had embossed lettering.

Preserving jars came into use in 1810; they were sealed with wax and cork. In 1858, Mason developed and patented the zinc screw cap. Both the square and round form of these preserving jars carry the name “Mason Jar.”

As early as the 1760’s, mineral water, both carbonated and not, was being bottled and by 1830, carbonated water with flavoring was being bottled. Bottles were usually cylindrical and came in clear, aqua, amber, green, or blue.

Wine bottles were free blown, were made in dip molds in the 18th century and mold blown in the19th century. After 1880, they were made in turn molds until 1910 when they were machine produced.

In the early 1800’s pictorial flasks were popular. Plain and embossed flasks replaced them in the 1860s. Cylindrical fifth bottles and oval and rectangular pint and half pint flasks were standard by 1880.

Other glass objects of importance include table glass, decanters, stemware and tumblers, lanterns and lamps (Northend: 1926).

Prior to the 20th century, two methods of glass bottle manufacture were used in both Britain and America. Free blown glass was produced by blowing glass on a rod without the use of a mold. Mold blown glass was produced using a dip mold or one several variations of piece mold. Through the 19^{th} century, mold blown glass gained prominence in response to the growing demand for bottles of "wine, beer, liquors (mostly whiskey), bitters, patent medicine, ink, food, milk, household items, and mineral and soda water" (Baugher-Perlin 1982, 262). Molds made the process of production faster, and helped standardize identifiable shapes.

The eight kinds of mold technology used left identifiable seam marks on the vessels created that can provide useful data about the vessel, especially in regards to dating bottles based on the period of prominence of the technology by which it was produced. The categories described here are based on Sherene Baugher-Perlin's typology (Baugher-Perlin 1982). Dip molds were used from the late 17^{th} through the mid 19^{th} century. Most of the body was produced in a mold, but the shoulder, neck and lip of the bottle had to be free blown, so a seam is usually not visible on the vessels they produced. When a seam is visible, it will be around the widest diameter of the bottle near the shoulder. Hinged bottom molds were two part molds used from about 1750 to 1880, and their use can be identified by a single seam cutting across the bottom of the bottle. Three part molds with a dip body first appeared in 1821 and were used through the 1860's though a few were used later. A horizontal seam follows the widest diameter of the bottle, and two vertical seams go extend up the neck. Three part molds with three body-mold leaves were used from 1820 through the rest of the 19^{th} century. They can be identified by three vertical seams extending up the body of a vessel from the bass to the lip. Post-bottom molds could be used with any poly part mold, and left a circular seam on the bottom of the base.

Cup bottom molds are the common type used in machine-manufacturing bottles; the seam on the vessels they produce is a circle around the point where the heel of the bottle meets the body. Turn molds were used mostly for wine bottles from 1870, possibly until the 1920s. The mold allowed the bottle to be turned within it, eliminating seams, but leaving horizontal marks along the body. Blown back molds are full height molds that are used to make wide mouth bottles with screw threads. These vessels are commonly known as Mason jars.

Embossing is another feature that can be used to both date the technology of manufacture, and identify the bottle. As early as 1750, companies could emboss their bottles, but were limited in this endeavor by the expense of purchasing an entire mold. By 1860, embossing was made more widely available by the development of plate molds so that a company would only have to purchase an embossing plate.

At the beginning of the 20th century, the bottle industry dramatically changed with the invention of the automatic bottle-making machine, patented by Michael J. Owens in 1903. These bottles have several distinguishing marks. Suction machine cut off scars are "irregular, often feathered circular marks found on the bottoms of bottles made only in the Owens machines" (Baugher-Perlin 1982). The marks are made when the glass is severed from the mold. A machine made valve mark is on the base of wide mouthed containers from the valve that pushed the bottles from the mold. Ghost seams are faint seams near a bottle's normal seam that resulted from the process of having a bottle "blown in a 'blank' mold and then transferred to a 'finishing' mold" (Baugher-Perlin 1982).

Other features besides seam marks that can be used to identify bottles are pontil marks and lip shape. Pontil rods were used to hold the bottle during the manufacturing process of free blown and mold blown bottles. In the 1700's and 1800's, a pontil dipped in molten glass held the bottle and left a "solid circular scar" on the bottom of the bottle. During the same time period, the glass tipped pontil could be dipped in sand, preventing it from adhering too closely to the bottle, sometimes leaving sand on the base. Blowpipe pontils left a ring shaped scar and can be dated to the 18^{th} and 19^{th} centuries. Bare iron pontils (1845-1880) used no glass and left a smooth mark of oxidized iron. The snap case was invented around 1857 and was used until the development of the automatic bottle machine, and did not leave a basal scar.

Lips could be formed as a sheared lip on wide mouth containers. Most bottles after 1840, had applied lips, also known as the laid on ring. The ring could be worked to form a flared lip, a sheared lip, or an infolded lip. By the 1870's techniques were developed that could make the laid on ring appear to be a part of the original bottle.

When analyzing a glass assemblage one must ask several primary questions. Artifacts in a glass assemblage can be sorted by vessel form, diagnostic fragments, such as lip or base shards, embossing and color. Important information to determine include the chronology of the assemblage, and frequency of object types in it. Embossed bottles may also reveal the company or place of manufacture. Use of the artifacts at the site can be interpreted by comparison with the rest of the assemblage and within the context of the site. Secondary use of objects and lag time between manufacture and deposition should also be considered (Hill 1982).

In the First Baptist Church excavation all glass artifacts were washed and dried on screens. Glass artifacts were then separated into two categories: Glass vessels and objects, and flat glass. Artifacts were separated out from the flat glass in this analysis either by a diagnostic feature, or by a discernable curvature that separated them from the category of flat glass. Each unit and level or lot number had its own bag of artifacts. All artifacts were catalogued in a Microsoft Excel spreadsheet; unit, level or lot number, date excavated, color and diagnostic features were recorded (Table 9.1). For each level bag, weight in grams was recorded (Table 9.2).

A total of 290 artifacts are in the vessel and object glass assemblage weighing 476.5 grams. Most of the glass found is extremely fragmentary and there are few pieces of glass with truly diagnostic characteristics. The majority of glass (n= 172) is clear. Four additional pieces of clear glass have taken on an amethyst color because of exposure to the sun (Jones, 1989). Amber colored glass (n=50) is mostly found within the unit B-3, but appears to be from a single vessel because of the embossed dotted surface. Dark olive green (n=5), green (n=9), light olive green (n=14), olive green (n=2), pink (n=1) and opaque white (n=6) colored glass was also found. The opaque white glass or "milk glass" was mostly used in cosmetic bottles and did not reach popularity until around 1890. The material on the whole is in good condition, with only two of the artifacts showing signs of glass disease.

One base was identified as a machine made bottle because of the suction mark on the bottom (Figures 9.1 and 9.2). Two bottles were identified based on the finish, which includes the bore, lip and string rim. One is a Davis type bottle finish (Figures 9.3 and 9.4) which was a "common two part finish found primarily on late 19^{th} and early 20^{th}

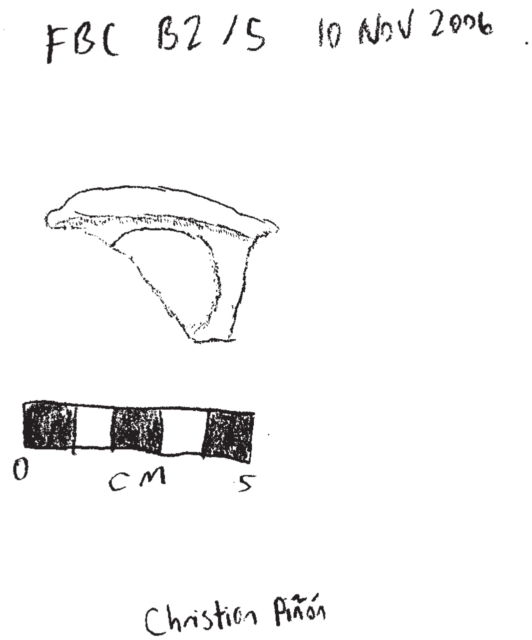
century patent and proprietary medicine bottles and occasionally on druggists' ware, toiletries, and extract bottles" (Jones 1989). The other is a medicine bottle with a prescription lip (Fig. 9.5), which was also common in the late 19th and early 20th centuries (Jones 1989).

Embossed lettering was present on eight shards, and printed lettering is on one (Figure 9.6). Because of the fragmentary nature of the shards, no identifications of bottles were made based on lettering.

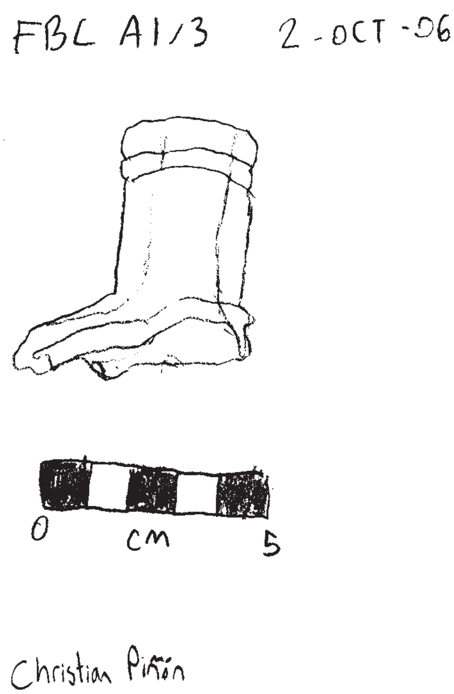
A few shards could be identified as tablewares because of the method of production on the lip. Eight pieces of glass have lips that seem to be fire polished, a method that was very commonly used on tablewares.

Evidence of glass for electrical uses is also present in the FBC assemblage. A wire insulator (Figure 9.7) and part of a light bulb (Figure 9.8) are two examples of this use of the material.

All of the glass that can be dated based on characteristics dates to the late 19th to early 20th century. Identified uses include medicine bottles, tableware, and electrical glass. Much of the non-diagnostic glass is most likely from beverage containers. The objects could have been deposited during use on or near the grounds of the First Baptist Church, and offer a glimpse of life in Providence in the 19th and 20th centuries.



Figures 9.1 and 9.2: Drawing and picture of machine-made bottle



Figures 9.3 and 9.4: Drawing and photograph of a Davis type bottle

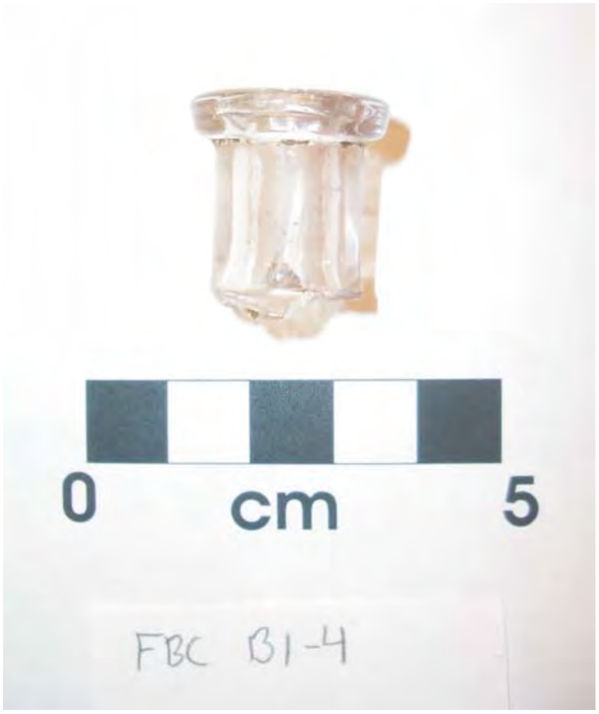


Figure 9.5: Medicine bottle top

Figure 9.6: Printed lettering on shard

Figure 9.7: Wire insulator

Figure 9.8: Lightbulb base

Table 9.1: Curved glass artifacts

Square	Lot	Date Excav	Color	Body
FBC A1	Lot 1	09/18	amber	
FBC A1	2	09/25	clear/amethyst	body
FBC A1	Lot 3	10/30	aqua	body and heel, cylindrical body shape
FBC A1	Lot 1	09/18	aqua	
FBC A1	3		aqua	
FBC A1	3		clear	body - round with flat sides
FBC A1	2	09/25	clear	body with fluting
FBC A1	3	10/02	clear	complete neck and lip with partial shoulder - Perry Davis type finish (late 19th-early 20th century) roughly cylindrical neck
FBC A1	Lot 1	09/18	clear	cylindrical body form, vertical seam
FBC A1	Lot 2		clear	embossed "R"
FBC A1	Lot 3	10/30	clear	embossed lettering "[?] T"
FBC A1	Lot 3	10/30	clear	flat side to rounded square corner
FBC A1	Lot 3	10/30	clear	flat side, probably of octagonal bottle
FBC A1	Lot 3	10/30	clear	lip - fire polished - tablewear
FBC A1	Lot 3	10/30	clear	lip - stopper finish, flattened side lip
FBC A1	Lot 1	09/18	clear	possibly finish with string rim
FBC A1	Level 5	10/23	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	Lot 3	10/30	clear	
FBC A1	3	10/02	clear	

Square	Lot	Date Excav	Color	Body
FBC A1	3	10/02	clear	
FBC A1	3	10/02	clear	
FBC A1	3	10/02	clear	
FBC A1	Level 4 Lot 7		clear	
FBC A1	Level 4 Lot 7		clear	
FBC A1	Level 4 Lot 7		clear	
FBC A1	Level 4 Lot 7		clear	
FBC A1	Lot 1	09/18	clear	
FBC A1	Lot 1	09/18	clear	
FBC A1	Lot 1	09/18	clear	
FBC A1	Lot 1	09/18	clear	
FBC A1	8		clear	
FBC A1	3		clear	
FBC A1	3		clear	
FBC A1	3		clear	
FBC A1	3		clear	
FBC A1	3		clear	
FBC A1	3		clear	
FBC A1	Level 5	10/23	Dark Olive Green	
FBC A1	4		Dark Olive Green	
FBC A1	Lot 3	10/30	green	partial molded lettering
FBC A1	2	09/25	green	
FBC A1	Lot 1	09/18	light olive green	
FBC A1	Lot 3	10/30	opaque white	
FBC A1	Lot 3	10/30	opaque white	
FBC A1	2	09/25	opaque white	
FBC A1	2	09/25	opaque white	
FBC A2	1		amber	
FBC A2	3		aqua	corner where 2 flat sides of body meet (octagonal?)
FBC A2	3		aqua	finish? Possible string rim

Square	Lot	Date Excav	Color	Body
FBC A2	Lot 5	10/16	aqua	
FBC A2	3		aqua	
FBC A2	3		aqua	
FBC A2	3		aqua	
FBC A2	2		aqua	
FBC A2	Lot 5	10/16	clear	
FBC A2	3		clear	
FBC A2	3		clear	
FBC A2	3		clear	
FBC A2	3		clear	
FBC A2	3		clear	
FBC A2	3		clear	
FBC A2	3		clear	
FBC A2	2		clear	
FBC A2	2		clear	
FBC A2	2		clear	
FBC A2	3		clear	
FBC A2	3		Dark Olive Green	
FBC A2	3		green	
FBC A2	3		green	
FBC A2	2		green	
FBC A2	3		light olive green	
FBC A2	1	09/18	white plastic	"ASTEN TA" (probably "Fasten Tab")
FBC A2	1	09/18	white plastic	"Tab"
FBC A2	1	09/18	white plastic	plastic, "Dart ® 12 FTL Pat Pend"
FBC A2	1	09/18	white plastic	
FBC A3	Lot 1	09/18	amber	
FBC A3	3		amber	
FBC A3	1		amber	
FBC A3	3		clear/amethyst	

Square	Lot	Date Excav	Color	Body
FBC A3	3		clear	lip - fire polished - tablewear
FBC A3	Lot 1	09/18	clear	white painted exterior surface
FBC A3	Lot 2	10/02	clear	
FBC A3	Lot 2	10/02	clear	
FBC A3	Lot 2	10/02	clear	
FBC A3	Lot 1	09/18	clear	
FBC A3	3		clear	
FBC A3	3		clear	
FBC A3	2		clear	
FBC A3	2		clear	
FBC A3	2		clear	
FBC A3	2		clear	
FBC A3	1		clear	
FBC A3	1		clear	
FBC A3	2		clear	
FBC A3	2		clear	
FBC A3	1		green	
FBC A3	3		light olive green	
FBC A4	6		amber	
FBC A4	3		aqua	
FBC A4	3		clear	embossed label "N"
FBC A4	L2		clear	
FBC A4	L2		clear	
FBC A4	L2		clear	
FBC A4	3		clear	
FBC A4	3		clear	
FBC A4	8a		clear	
FBC A4	8a		clear	
FBC A4	Baulk Lvls 1-6		green	
FBC A4	4		olive green	

Square	Lot	Date Excav	Color	Body
FBC A4	5		opaque white	
FBC A4	4		aqua	body and heel, 2 mold seams - horizontal and vertical
FBC B1	Lot 1	09/18	amber	embossed label "[?]F"
FBC B1	Lot 1	09/18	amber	embossed label "S [?]"
FBC B1	Lot 1	09/18	amber	embossed label "SALE"
FBC B1	Lot 1	09/18	amber	
FBC B1	Lot 1	09/18	amber	
FBC B1	Lot 1	09/18	amber	
FBC B1	Lot 1	09/18	amber	
FBC B1	Lot 1	09/18	amber	
FBC B1	Lot 1	09/18	amber	
FBC B1	Lot 1	09/18	amber	
FBC B1	2		amber	
FBC B1	2		amber	
FBC B1	2		amber	
FBC B1	3		amber	
FBC B1	7		clear/amethyst	lip - fire polished - tablewear
FBC B1	Lot 4	10/16	aqua	Electrical insulator - embossed lettering, only "0" visible
FBC B1	7		aqua	
FBC B1	7		aqua	
FBC B1	3		aqua	
FBC B1	2		clear	fluted
FBC B1	Lot 4	10/16	clear	lip - fire polished - tablewear
FBC B1	L7		clear	lip - fire polished - tablewear
FBC B1	Lot 4	10/16	clear	seam line
FBC B1	3		clear	side and corners, octagonal
FBC B1	Lot 4	10/16	clear	
FBC B1	Lot 4	10/16	clear	
FBC B1	Lot 4	10/16	clear	

Square	Lot	Date Excav	Color	Body
FBC B1	L7		clear	
FBC B1	L7		clear	
FBC B1	Lot 1	09/18	clear	
FBC B1	Lot 1	09/18	clear	
FBC B1	Level 3	10/02	clear	
FBC B1	Level 3	10/02	clear	
FBC B1	2		clear	
FBC B1	2		clear	
FBC B1	2		clear	
FBC B1	2		clear	
FBC B1	2		clear	
FBC B1	2		clear	
FBC B1	2		clear	
FBC B1	2		clear	
FBC B1	7		clear	
FBC B1	7		clear	
FBC B1	7		clear	
FBC B1	7		clear	
FBC B1	6		clear	
FBC B1	6		clear	
FBC B1	6		clear	
FBC B1	6		clear	
FBC B1	6		clear	
FBC B1	6		clear	
FBC B1	4		clear	
FBC B1	3		clear	
FBC B1	3		clear	
FBC B1	3		clear	
FBC B1	4		clear/amethyst	cylindrical neck, prescription lip
FBC B1	2		Dark Olive Green	

Square	Lot	Date Excav	Color	Body
FBC B1	6		green	
FBC B1	6		light olive green	
FBC B2	4		amber	
FBC B2	3		amber	
FBC B2	5	11/10	amber	
FBC B2	4	11/10	amber	
FBC B2	2		amber	
FBC B2	6'		aqua	
FBC B2	2		clear	(bag is labeled "plastic")
FBC B2	2		clear	base
FBC B2	5	11/10	clear	base, mold seam and suction cutoff scar
FBC B2	4		clear	bead
FBC B2	4	11/10	clear	embossed "M" or "W"
FBC B2	4		clear	lip - fire polished - tablewear
FBC B2	6"		clear	lip - fire polished - tablewear
FBC B2	Lot 1	09/18	clear	ovoid body shape
FBC B2	Lot 1	09/18	clear	ovoid body shape
FBC B2	Lot 2	09/25	clear	red lettering printed - "W" and 2 horizontal lines
FBC B2	Lot 1	09/18	clear	ribbing
FBC B2	4	11/10	clear	seam
FBC B2	4	11/10	clear	seam
FBC B2	3		clear	
FBC B2	3		clear	
FBC B2	7"		clear	
FBC B2	4		clear	
FBC B2	3		clear	
FBC B2	3		clear	
FBC B2	3		clear	
FBC B2	5	11/10	clear	
FBC B2	5	11/10	clear	

Square	Lot	Date Excav	Color	Body
FBC B2	5	11/10	clear	
FBC B2	Lot 1	09/18	clear	
FBC B2	Lot 1	09/18	clear	
FBC B2	Lot 1	09/18	clear	
FBC B2	Lot 1	09/18	clear	
FBC B2	Lot 1	09/18	clear	
FBC B2	4	11/10	clear	
FBC B2	4	11/10	clear	
FBC B2	4	11/10	clear	
FBC B2	4	11/10	clear	
FBC B2	4	11/10	clear	
FBC B2	4	11/10	clear	
FBC B2	4	11/10	clear	
FBC B2	4	11/10	clear	
FBC B2	5	11/06	clear	
FBC B2	2		clear	
FBC B2	2		clear	
FBC B2	2		clear	
FBC B2	2		clear	
FBC B2	2		clear	
FBC B2	2		clear	
FBC B2	2		clear	
FBC B2	4		Dark Olive Green	
FBC B2	2		green	
FBC B2	6"		light olive green	sand inclusion
FBC B2	3		light olive green	
FBC B2	7"		light olive green	
FBC B2	4		light olive green	
FBC B2	5	11/10	light olive green	
FBC B2	6"		light olive green	

Square	Lot	Date Excav	Color	Body
FBC B2	4	11/10	light olive green	
FBC B2	4	11/10	light olive green	
FBC B2	7"		light olive green with patination	
FBC B2	4	11/10	opaque white	
FBC B2	4			lightbulb base
FBC B2	4			lightbulb base, with metal
FBC B3	1		amber	embossed dot surface
FBC B3	1		amber	embossed dot surface
FBC B3	1		amber	embossed dot surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	2	11/06	amber	small embosssed dots over surface
FBC B3	3	11/11	amber	
FBC B3	4		clear	lip - fire polished - tablewear
FBC B3	1		clear	plastic
FBC B3	1		clear	plastic
FBC B3	1		clear	plastic
FBC B3	1		clear	plastic
FBC B3	1		clear	plastic

Square	Lot	Date Excav	Color	Body
FBC B3	1		clear	plastic
FBC B3	2	11/06	clear	
FBC B3	3	11/11	clear	
FBC B3	3	11/11	clear	
FBC B3	3	11/11	clear	
FBC B3	4		light olive green	
FBC B3	2	11/06	pink	
FBC B4	Lot 1 Level 2	09/25	amber	base, embossed "58"
FBC B4	1		amber	
FBC B4	Lot 1 Level 2	09/25	amber	
FBC B4	Lot 1 Level 2	09/25	amber	
FBC B4	Lot 1 Level 2	09/25	amber	
FBC B4	Lot 1 Level 2	09/25	amber	
FBC B4	Lot 1 Level 2	09/25	amber	
FBC B4	3		aqua	mold seam
FBC B4	4		aqua	
FBC B4	Lot 1 Level 2	09/25	aqua	
FBC B4	3		clear	embossed label "[?] IC [?]"
FBC B4	4		clear	
FBC B4	3		clear	
FBC B4	Lot 1 Level 2	09/25	clear	
FBC B4	Lot 1 Level 2	09/25	clear	
FBC B4	Lot 1 Level 2	09/25	clear	
FBC B4	3		olive green	

Table 9.2 Curved glass weights

Square	Lot	Weight
FBC A1	2	23.9
FBC A1	3	55.1
FBC A1	3	5.6
FBC A1	4	6.6
FBC A1	8	0.1
FBC A1	Level 4, Lot 7	1.3
FBC A1	Level 5	4.8
FBC A1	Lot 1	21.6
FBC A1	Lot 2	0.4
FBC A1	Lot 3	52.8
FBC A2	1	1.7
FBC A2	1	0.6
FBC A2	1	0.3
FBC A2	2	8.6
FBC A2	3	7.3
FBC A2	3	4.9
FBC A2	Lot 5	1.6
FBC A2	Lot 5	0.1
FBC A3	1	2.2
FBC A3	2	2.1
FBC A3	2	0.5
FBC A3	3	6.6
FBC A3	Lot 1	1.3
FBC A3	Lot 2	1.8
FBC A4	2	0.8
FBC A4	3	5.7
FBC A4	4	13
FBC A4	5	3.8

Square	Lot	Weight
FBC A4	6	0.7
FBC A4	8a	0.5
FBC A4	Baulk Lvls 1-6	1.1
FBC B1	2	10.7
FBC B1	3	7
FBC B1	4	10.3
FBC B1	6	2.9
FBC B1	7	2.2
FBC B1	7	5.5
FBC B1	Level 3	0.8
FBC B1	Lot 1	12.7
FBC B1	Lot 4	19.5
FBC B2	2	1
FBC B2	2	16.5
FBC B2	3	2.4
FBC B2	3	5.5
FBC B2	4	23.9
FBC B2	4	7.6
FBC B2	4	10.3
FBC B2	5	0.3
FBC B2	4 (lightbulb)	4.7
FBC B2	6'	0.2
FBC B2	6"	2.6
FBC B2	7"	1.4
FBC B2	Lot 1	27.7
FBC B2	Lot 2	10.1
FBC B3	1	2.1
FBC B3	2	7.4

Square	Lot	Weight
FBC B3	3	8.9
FBC B3	4	2.9
FBC B3	1 (plastic)	0.6
FBC B4	1	0.1
FBC B4	3	14
FBC B4	3	0.6

Square	Lot	Weight
FBC B4	4	1.7
FBC B4	Lot 1 Level2	6
	Total weight =	467.5g

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Understanding New England's Historical Past: An Examination of Flat Glass at the First Baptist Church site, in Providence Rhode Island

Carissa Racca

Although were large numbers of objects recovered in the excavations at the First Baptist Church, one object category in particular provoked further interest was flat glass.

The main focus of this chapter will be the archaeological and historical importance of flat glass at the First Baptist Church site. There has been an extensive amount of information produced about early flat glass production in the United States. Throughout the history of its production, flat glass or what we know today as "window glass" is a product whose manufacturing process can be described as both widespread and complex. In order to present a logical and concise description of flat glass at the site, it is necessary to focus on more localized production in the 17^{th} and 18^{th} centuries. Hopefully, the examination of flat glass at the site will not only enable people to gain a further understanding of the history of the church but also more generally what we can learn from the archaeological process and the historical past.

Today we see flat glass as an important architectural feature, something that is proudly displayed in many domestic spheres. Flat glass production, like many other industries, was brought to the New World with the colonists. It is a process that is rich in tradition and is a deeply rooted part of America's history. Because there are few exclusive studies on early American flat glass the assemblage at the First Baptist Church presents a rare and important opportunity to gain insight into the topic.

The term "window glass" has assumed a certain level of vagueness. This has often lead both writers and audiences to assume that sheets of colorless transparent glass were readily available in America, much earlier than first recorded. It is also assumed that early window glass was smooth and did not have a pattern or rough texture, which is not always the case although occasionally it resembles the window glass that we see in our homes today. When discussing the early history of flat glass, many sources have called the material "window glass." Here it will be referred to as flat glass in order to make a clear distinction between the rough, often colored glass used for windows in early America, and the glass we know today as window glass.

The development of the American glass industry was not attested until the late 17th and middle 18th centuries. The earliest known uses of flat glass in American tend to appear in religious, rather than domestic contexts (Isham 1928). Many of these earlier examples of glass do not resemble the flat glass that we are accustomed to using today. Before the production of large glass sheets was perfected, little pieces of glass were inserted into church windows. Commonly in the shape of small triangles, they were often used in the construction of stained glass windows. The only local evidence we have of these small glass panes *in situ* comes from historic houses, like the Eleazar Arnold House in Lincoln, Rhode Island. The house was built in the 17th century and is a prime example of how early flat glass techniques were displayed in the domestic sphere.

It is evident from looking at some of the flat glass objects recovered at the First Baptist Church that earlier forms of glass were extremely opaque and most were highly colored. However, most of the glass that was recovered through the excavation was extremely clear, a characteristic which I feel points to a more modern origin. Glassmakers, especially those who first came to American to pursue their craft, could not control certain impurities in the material used to produce flat glass. There were many instances where the glass was highly discolored and flawed. This variability in raw materials also had a drastic effect on early glass production. The process was often deemed unpredictable and in an effort to gain control over it glass makers conducted further experimentation.

In this investigation very limited evidence has come to light about local production. The flat glass industry in New England underwent a growth phase between the periods of 1780 and

1800 but little is known beyond that. When discussing local flat glass production, there is no conclusive evidence to suggest that there was even a flat glass manufacturing company in Providence. It is postulated that some of the glass that appear on the site was produced in Boston, Massachusetts, although there is little evidence to support this claim. There is no other evidence to suggest that the flat glass found on the site was used before 1775, which is when the First Baptist Church was erected. It is theorized that the glass came from Boston because the architects who designed the structure, Joseph Brown and Jonathan Hammon, went to Boston for inspiration from churches there. These ideas and possibly materials from the area were later incorporated into the First Baptist Church.   A majority of the flat glass found at the site did not come from glass production in the area, but probably originated from somewhere else, possibly from the demolition of the Gorham Manufacturing Company which was located at North Main and Steeple Streets, highly industrialized areas in the 18th and 19th centuries, or other modern windows from buildings in the area. The bulk of the shards are not only modern looking, but most of them were found in some of the top levels, suggesting that the glass is relatively modern. Though the flat glass recovered was spread throughout the eight test-pits, the majority were recovered in test-pits B1, B2, B3, and B4 (Table 9.3).

Although most flat glass shards recovered resembled the glass used in modern windows, some flat glass shards found on the site were unusual. Some were clear in appearance with a pale blue tint. Their coloring is probably due to the presence of ferrous iron (Fe^{2+}), a common constituent in the raw materials of glass making which causes a blue-green color. One opaque glass shard (1 ½ cm) found in level six of test unit A3 was green (Figure 9.9). This color is probably caused by the ferric form of iron, (Fe^{3+}) which is a common component of the raw materials of glass and causes a green-yellow color. The fact that these pieces were found in lower levels and that no decolorizing agent was used in their production points to an older date for them. Because the shard was found in the deepest layer, it is theorized that the date of the shard is from (1638-1774 AD). Future archaeological analysis of the area, and cross dating with associated pottery, is needed to make a firmer guess as to its date. Investigation of historical documents, obtained through the courtesy of the Rhode Island Historical Society, suggest that these particular glass shards may represent the types of flat glass which were used in the construction of an early domestic structure or the earlier Meeting House, which stood on the site (Isham 1925). However, due to the fact that this there was only one opaque green shard recovered, it is possible that it may be a foreign piece which found its way onto the site.

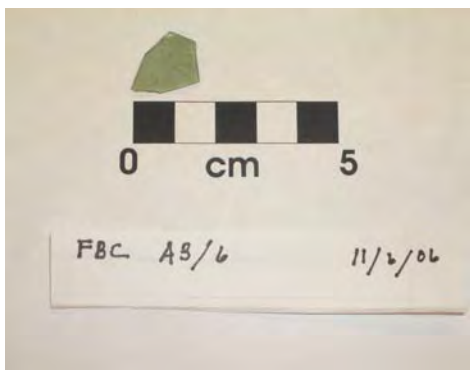

Figure 9.9 Opaque greenish shard found in test-pit A3 (level 6).

Another fairly large shard (7cm) that was found in test-pit B2 (level 7) tells a great deal about the flat glass manufacturing process (fig 9.10).

Figure 9.10. Large clear shard resembles that made by the crown glass method found in test-pit B2 (level 7).

The shard may have been made using one of the first glass blowing techniques and was commonly called “crown glass,” or “bullseye glass,” which was usually employed in the side and transom lights of the doorways of colonial New England. Blowing glass may be unfamiliar to people who have not witnessed it. The process usually consisted in gathering a large globule of molten glass on the end of a metal blowpipe, which was then blown into a hollow sphere. Next a punty or iron rod tipped with molten glass, was applied to the opposite side of the sphere and the blowpipe was detached, thus leaving a hole (Fowle 1924). The globe attached to the punty was then reheated and the punty spun, which caused the glass to flash outwardly into the form of a disc, adhering to the punty by the boss in the center. The disc was then removed from the punty, annealed in an oven and cut into small sheets.

This method of flat glass making was considered to be extremely expensive and wasteful. As flat glass became more popular, the demand for the product grew. During the industrial revolution flat glass manufacturers improved the technology and methods of production and moved the sites of fabrication from small workshops to large factories.

Thus the flat glass at the First Baptist Church presents a puzzle to the archaeologist. It is extremely hard to assign the flat glass found at the site a solid date, since the pieces themselves provide few visible signs which relate them to specific periods. The best clues come from the coins and pottery found with the glass and which are much more easily dated. The source of the glass is equally unclear and more historical information on Steeple and North Main streets must be analyzed before firmer answers can be formulated. However, from the evidence at hand, it appears that the majority of the glass at the site dates between 1890-1900 AD and comes from local buildings which were demolished, rather than the early colonial buildings in the area or from the windows of the Church itself.

Table 9.3: Inventory of Flat Glass Shards from First Baptist Church Excavation

Test Pit	Level	# Items	Weight	Description/ Color
A1	2	7	7.3g	clear to opaque
A1	3	1	0.2g	clear
A1	3	16	13.0g	clear w/ blue tint
A1	8	1	0.3g	clear
A2	1	1	4.2g	light blue
A2	2	1	5.2g	clear and opaque
A2	3	4	3.4g	clear and opaque
A2	3	6	3.0g	clear w/ blue tint
A3	1	2	5.4g	clear w/ blue tint
A3	2	2	0.8g	extremely clear
A3	3	2	2.9g	clear w/ blue tint
A3	4	2	1.4g	clear w/ blue tint
A3	6	2	1.8g	blue to opaque green
A4	3	1	0.3g	clear
A4	4	1	1.1g	clear
A4	4	1	0.4g	clear
A4	4/B	1	0.8g	extremely clear
A4	6	1	0.4g	blue w/ green tint
A4	6 and 7	1	2.2g	clear blue and green tint
B1	1	1	2.2g	clear
B1	2	5	2.2g	clear w/ blue tint
B1	3	3	1.9g	clear some thicker shards
B1	3	2	0.7g	clear w/ blue tint
B1	4	2	1.2g	clear

Test Pit	Level	# Items	Weight	Description/ Color
B1	4	6	1.8g	clear/ blue opaque
B1	6	9	2.5g	clear w/ blue tint
B1	7	7	1.7g	clear w/ blue tint
B1	7	6	5.2g	clear/opaque
B2	2	2	0.3g	clear w/ blue tint
B2	2	1	0.2g	clear w/ blue tint
B2	3	1	0.7g	clear
B2	4	1	0.9g	clear
B2	4	3	0.1g	clear w/ blue tint
B2	4	7	13.2g	clear 1 piece shattered
B2	5	4	1.4g	clear w/ blue tint
B2	5	1	5.2g	opaque
B2	5	1	0.6g	clear extremely rectangular
B2	5	5	3.0g	clear w/ blue tint
B2	6	2	3.9g	clear extremely rectangular
B2	6	1	0.2g	clear
B2	6	7	4.5g	clear w/ blue tint
B2	7	2	7.1g	clear w/ blue tint
B3	2	4	6.0g	clear w/ blue tint
B3	3	6	1.0g	clear 1 piece shattered
B3	4	2	0	clear w/ blue tint
B3	5	2	2.0g	clear w/ blue tint
B4	1	2	2.0g	clear w/ blue tint
B4	1	2	1.0g	clear w/ blue tint
B4	4	2	2.0g	clear w/ blue 1 piece shattered
B4	4	2	0	clear 1 piece shattered
B4	4	2	0	clear
B4	4 and 5	6	1g	clear w/ blue tint

Total number of items 162

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Chapter 10

Faunal Bone at the First Baptist Church

Aaron Eisman

Excavations at the First Baptist Church (FBC) produced 220 pieces of faunal bone. Of these, 219 came from the single test pit B2 (of eight total test pits) and consist of predominantly small fragments. Comparative analysis to a collection of known faunal bones at the Rhode Island School of Design Museum of Natural history led to the identification of two of the bones as belonging to two different species: *B. Taurus* (cattle) and *Ovis Aries* (sheep). This chapter reviews bone as a living organ and as an artifact. This leads into methods for curating bone and the specific findings at the FBC. Faunal bone is a unique category of artifacts that archaeologists find and analyze because it used to be alive. Even though the canonical view of bones inspires thoughts of death; while part of a living organism, bone exists as a dynamic living tissue essential for the support of life.

BONE

Living bone has three main categories of components (Davis 1987; O'Conner 2000). The first is protein scaffolding that makes up the overall structure of the bone. Other organic materials make up half of the total bone composition by weight. Ninety-five percent of these are the structural protein collagen, which is characteristically rich in the amino acids glycine and hydroxyproline. Collagen fibers are mostly linear molecules with very few side chains allowing for regular alignment lengthwise throughout the bone.

Macromolecules formed from series of these fibers are responsible for the enormous tensile strength and mildly flexible nature of bone. The third major component of bone is the protein scaffolding stiffening mineral hydroxyapatite. Hydroxyapatite is largely composed of calcium and gives bone its characteristic hardness. Many of the atoms that make up hydroxyapatite are substituted with other atoms after bone has been deposited in the ground. For this reason, chemical analysis of the mineral composition of bone is problematic in bone that has been deposited for extended periods of time, as findings are not necessarily indicative of the state of the bone while it was alive.

Bone structure can be characterized by its properties. The secretion of hydoxyapatite from osteoblasts produces mineralized bone. Osteoblasts are found within collagen fibrils along the axis that defines the strong tensile strength of bone in most mammals and birds. Acellular bone only has osteoblasts on the surface (Davis 1987). Few mammal and bird bone have this characteristic, while it is the predominant feature of bones in fish.

Compact bone is the principle component in the shafts of limbs of both mammals and birds. It is assembled as concentric circles around a longitudinal axis that defines the tensile strength of the bone (O'Conner 2000). Osteocytes are distributed in pockets called lacunae throughout compact bone and contain the machinery necessary to modify bone while it is alive. Small channels called canaliculi network lacunae. Canaliculi and consequently lacunae are linked to the circulatory system via perdiodic connections to blood vessels. These series of connections are bone's link to the rest of the body and source of nutrients. All of these various connections are responsible for the extremely porous nature of bone (Luff 1984). While they induce structural instability they are also essential for life support.

Bone that makes up the limbs of animals is comprised of a tube of compact bone capped at each end by a trabeculae designed to reduce the stress of impact (Davis 1987). This is achieved by a microstructure of protein scaffolding in the shape of thousands of small arches and buttresses. The extraordinarily porous nature of this bone is responsible for a cross sectional appearance similar to a sponge. Consequently, this bone known as cancellous bone; it is also commonly referred to as spongy bone. Both the ribs and shoulder blades are constructed of a cancellous bone core encased in a compact bone shell.

THE VERTEBRATE SKELETON

Vertebrates have a series of bone along the anterior-posterior axis that serve to protect the central and peripheral nervous systems. These bones known as vertebrae structurally support and protect the vital organs, and to act as points of adhesion for muscle that can in turn induce movement (Davis 1987). Complex vertebrates such as mammals have bones that extend from this central axis. Form follows the function described above and most bones of the vertebrate skeleton can be categorized into backbone, skull, teeth, and joints.

Backbone is composed of a series of smaller bones called vertebrae which all articulate along the midline. The form of articulation provides limited motion in a compromise between mobility and protection of the vital organs. The central structure of each vertebra is called the centrum. The neural arch is attached to the dorsal part of the centrum and has articulation points for adjoining neighboring vertebrae. Cartilage between successive centrums prevents contact. Every vertebra is bilaterally symmetrical. The backbone begins just below the skull, extending posterior and can be sectioned into three categories. Cervical vertebrae are the first few below the skull, and more particularly, the first seven in mammals form the neck. The atlas is the first cervical vertebra and is specifically adapted to support the head. The second vertebra is the axis, which has a peg that allows pivoting of atlas and ultimate rotation of the head around the spinal axis. Thoracic vertebrae make up the next section of backbone. Articulation points for the ribs define these. Mammals have 12-15 thoracic vertebrae. Lumbar vertebrae make up the lower back. Processes that are dorsally transverse to the spine characterize them. These vertebrae have no articulation points for ribs. Near the end, a specialized form of lumbar vertebrae called the sacrum in mammals and the lumbro-sacrale in birds supports attachment for hind limbs. Beyond the sacrum further vertebrae form a tail, the length of which is highly species dependent (Davis 1987).

The bones of the skull can be subdivided into the neurocranium and the viscerocranium. The neurocranium consists of bones that are plate-like and designed to protect the brain. The bones that belong to this category in higher mammals are the frontal, parietal, occipital, and temporal bones as well as the sphenoid and ethnoid processes. The names of these bones correspond in large part to the area of the brain that they protect. Viscerocranial bones carry the sensory organs and the mouth. They provide a mounting place for the eyes as well as organs used for smell and taste. In particular, they include the zygomatic, maxilla, premaxilla, nasal and lachrymal. The premaxilla and maxilla support the upper teeth while the mandible holds the lower teeth (Davis 1987).

In life, teeth are used for cutting, grinding, and crushing food and are often specialized for only one of these three tasks. Mammalian teeth are the most complex of all classes of animals in the phylum of vertebrates. Every tooth has both a crown that exists above the gums as the surface for food contact and a root that exists below the gums to fasten the tooth to the mandible or maxilla (Hilson 1986). Enamel covers the tooth crowns as a strong surface to protect teeth against wear. Teeth are distributed symmetrically about the midline; however, the top and bottom teeth do not perfectly line up. Mammals have a varying number of the following tooth categories that appear in this order from the center to the back: incisors, canines, premolars, and molars. The maximum number of teeth in any quarter of mammalian mouth is 2 incisors, 1 canine, 4 premolars, and 3 molars. For reference, humans normally possess 2 incisors, 1 canine, 2 premolars, and 3 molars (Davis 1987). Many mammals possess two sets of teeth as an adaptation for the two distinct phases of feeding in the life course of the mammal. The first set is named deciduous and are used during mother's milk feeding phase of life. These include incisors, canines, and premolars. While the teeth can be technically broken down into these categories, they are less distinctive than in the second set of permanent teeth. Permanent teeth are used after weaning and intended to last for the remainder of the animals' life course.

The final category of bone can be described as joints and the bones that articulate with them. The two main sets of joints in the vertebrate skeleton are the pectoral and the pelvic girdles (Davis 1987). The pectoral girdle supports the forward appendages with junction of the scapula, coracoid, and the clavicle. The scapula is very flat and lies parallel to the backbone on the dorsal side. Coracoid runs lateral and parallel to the backbone and tilts dorsal towards its posterior end. Every animal has at least two of these bones, each of which is a mirror image of the other. The joining of the scapula and coracoid creates the socket for front leg articulation. The clavicle lies perpendicular to the spine and is symmetrical about the midline. Birds possess a pectoral girdle that is not analogous to this description (they have wings) and will not be discussed in this paper as it does not appear that any bird bones have been found at the First Baptist Church site to date. The pelvic girdle in mammals contains the illium, sacrum, ischium, and pubis bones. The ilium is flat and fuses with the sacrum during development. Parts of the ilium, ischium and pubis articulate to for a "Y" shape called the acetabulum.

Leg bones articulate at the joints created in the pectoral and pelvic girdles. They attach as a ball in the socket of these girdles. Vertebrates are pentadactylous, meaning that at the distal end of leg bones are a maximum of five appendages. Many vertebrates have lost some of these over the course of millions of years. This adaptation has provided orders of animals that are expert runners at the expense of dexterity and the ability to climb. Leg bone can be classified into three zones. The first, stylopodium, is the most proximal bone of the legs. It is one bone that articulates with a ball on its proximal end and has a more complex articulation at the distal end. The front leg bone in this zone is called the humerus and runs from the shoulder to the elbow. In mammals, the distal articulation shape is trochlear (like a pully) and forms a hinge joint with more distal bones (Davis 1987; O'Conner 2000). The analogous bone for the hind legs is called the femur and it has similar morphology.

The zygopodium is after the stylopodum and consists of two parallel bones. In the front leg they are called the radius and the ulna. The radius is concave and articulates proximal with the trochlear distal end of the humorus. Its distal articulation is complicated with wrist bones. In mammals the radius is larger than the ulna, which has knob at its proximal tip called the olecranon process. In humans this process is more commonly known as the elbow. It is functionally used as an adhesion point for muscles to lever the arm straight at the elbow joint (Davis 1987). Other mammals have analogous mechanisms. The hind leg bones that correlate to the radius and ulna are the tibia and fibula. The tibia has two round protrusions at the proximal end at which it articulates with the femur. It participates in concave articulation at the distal end. In mammals, the fibula is the smaller of the two bones

The autopodium make up the "wrist, hands, and fingers" of the front legs and the feet and toes of the hind legs. The carpals (front leg) and tarsals (hind leg) provide flexibility at the junction of the autopodium with the zygopodium. This cancellous bone absorbs shock upon impact when walking or running. These bones allow up to five digits to be attached even though there are only two bones classified as carpals or tarsals. Metapodials articulate with the carpals and tarsals in humans to create the palm of the hand and the arch of the foot (all mammals have an analogous form). The metapodials of the front leg are known as metacarpals and the ones in the hind leg are referred to as metatarsals. Phalanges are the most distal bone on the appendages. These stubby, tubular structures make up the digits in mammals and can vary in number depending on species. Humans have one digit on each appendage that consists of two phalanges and four digits that are composed of three while hoofed mammals possess terminal phalanges in the shape of a hoof. In the case and cattle or deer, the hoof can be described as crescent shape while horses have flat hoofs (Davis 1987).

ANALYSIS

Now that the overall schema for the skeleton has been discussed in full, it is important to consider the techniques for identification and analysis of the partial remains recovered during excavation. The first procedure necessary before analysis takes place is to wash all of the animal bone found while retaining information about the test pit and lot number in which the every piece of bone was excavated. Washing should occur in water with gentle application of pressure to remove dirt with fingers. If necessary, a non-abrasive brush may be used to lightly remove surface dirt. It is more important to prevent fracture than insure complete removal of dirt and therefore the bones should not be cleaned aggressively (Nelson 2006). The bone should be allowed to dry on a screen before further analysis takes place – in particular, the bone should be completely dry before weight analysis is performed.

Analysis of the excavated bone can proceed in several different ways, all with the same goals: to determine the species of animal(s) excavated and then infer based on identified bone fragments information about the minimum number of animals in the sample, how and why the animal might have died (human induced or natural death), and when the bones were deposited. The simplest way to identify and count the number of animals and species within the sample of bone excavated is to compare diagnostic fragments of bone with either a catalogue of bone pictures from various species or a library of actual bone fragments from various species. When determining animal species search should be focused on indigenous animals to the geography where they were found. In New England these include, but are not limited, to deer, cows, sheep, small rodents and horses. While considering indigenous populations it is important to note historical distribution of animal populations as the bone may date back to a time where local fauna was different; humans have a history of altering the local faunal distribution around them. Diagnostic bone fragments should fit into one of the several categories of bone discussed in the discussion of the vertebrate skeleton. While the shape and size of these elements vary greatly across species, they are similar enough that they should be identifiable even before the species is known. Once the type of bone is identified or narrowed down a few likely choices, it is possible to access the database of known parts with direction rather than haphazardly comparing a bone fragment to hundreds or thousands of other pieces until a match is found.

In order to estimate the minimum number of animals of a given species represented in the finding, it is important to consider the frequency of each bone in the full skeleton. The logic goes that if three left femurs are identified, then there must be at least three animals represented. If left and right are not possible to distinguish, then three femurs indicates at least 2 animals as two of the femurs could belong to the same animal however, the same animal cannot account for the third. This is done with limited success, as most of the bone that was originally deposited has probably not been collected (Davis 1987). This begs the question how it is might be possible to produce a better estimation of the number of animals deposited originally. This method uses statistical techniques, which predict that the same number of bones from each side of the body should be found, as there is an equal chance of loosing one side over the other. Statistics thus predict that the bigger the disparity of paired elements that have survived, the larger the original population must have been in order to make that outcome more likely. This method was first proposed by Kranz in 1968 and is as follows: $N = (R^2 + L^2)/(2P)$ where L equals the number of lone left side specimens, R equals the number of lone right side specimens, P is the number of apparent pairs and N is the estimated original population (Davis 1987). This formula makes intrinsic sense as increased right or left contributions without them being paired is less likely and therefore must be compensated by a larger number of individuals that must have belonged to the original population.

Additional information can be gleaned from the animal bone, which can lead conclusions about the animals in life. In particular, bone measurement can give insights into the size of the animal, its gender, as well as its age at death. These can also act as crosschecks as to the species of the animal when compared to known values and standard deviations. In order to compare measured data with published data and to make the measurements useful for further comparison in future analysis it is imperative that measurements are taken accurately and of standard components (Driesch 1976). For size estimates, long limb bones yield the best estimate. Another useful bone measurement is weighing. Skeleton weight is a good indicator of and is directly correlated with animal size. One possible conclusion from these data is that relative weight of bones found across species can be a good indicator of the proportion of food consumed of each animal by weight in a population (Davis 1987). This deduction requires the assertion that the animal bone excavated came from an animal killed for human consumption. In the context of the bone excavated at the First Baptist Church, other cultural artifacts such as brick and pottery surrounded the bone. Close proximity of these finds suggests that the animal was killed for food rather than dying from natural causes. Other possible ways to come to the same conclusion would be to find a projectile point or bullet in with the bones indicating the cause of death. In the absence of bullet or projectile point, bone clearly fractured by these means could also suffice as reason to assert a human-related death.

As of the termination of the 2006 season of excavation at the FBC a total of 220 bones have been found. Of these, 219 were found in the test pit B2. The focus of analysis was on these bones as their close proximity suggests that they were deposited together. Within unit B2, animal bone was located in lots four through nine. Lots 4 and 5 contained only seven total pieces of bone, all of which were fragments and were not photographed. Lot six contained 106 pieces of bone. Many of the bones found in this lot measure several centimeters in length. Spongy and compact bone from this lot have both been identified and photographed (see Figures 10.1, 10.4-6, description and notes in Table 10.1). Lot number seven contained 94 pieces of bone. Included in these are a very large tooth, a large knuckle, and a rib. In addition, many pieces of spongy and compact bone larger than 4 cm in length were excavated. These include bones that resemble the trebeculae from the ends of long bone (see Figures 10.2, 10.3, 10.7-9, description and notes in Table 10.1). All of the excavated bones were brought to the Rhode Island School of Design Museum of Natural History for comparison to known samples.

In part due to the large amount of fragmentation and to the limited samples available for comparison, only two bones were positively identified. The first was a tarsal that is believed to have come from a sheep (see Figure 10.1). Figure 10.1.A is a drawing of the tarsal. Figure 10.1.B shows the excavated tarsal (3) compared to two known sheep tarsals (1 and 2). From these images it is clear that the sheep tarsal excavated at FBC is smaller than the pair identified from the museum. It is clear from inspection that the excavated tarsal is from the same side of the body as number 2 and is from the opposite side as number 1 because they are mirror images. Precise sides of the body were not able to be determined because the sides were not identified in the comparative collection. Photographs of all sides of the excavated tarsal are provided in Figure 10.1.C with a scale reference. The tarsal's dimensions are approximately 3 x 2 x 1.5 cm.

The second bone that was possible to identify using the Rhode Island School of Design Natural History Museum's comparative sample was the large tooth. Hand drawings of the tooth are pictured in Figure 10.2.A from all sides. Figure 10.2.B shows the excavated tooth (2) compared to the very similar known *B. Taurus* tooth. The two teeth appear to be mirror images of one another and are therefore from opposite sides of the mouth, however information about side was not available for the known tooth. In reference to the classes of mammal teeth described in the Vertebrate Skeleton section of this report, the tooth appears to be a molar. It measures a little more than 5 cm in length from root to crown. Photographs of the tooth from all sides with a scale reference are pictured in Figure 10.2.C.

Another interesting bone excavated is what appears to be the carpal joint of a *B. Taurus* excavated from FBC B2/7''. This is postulated based on inspection of a small diagram of a *B. Taurus* skeleton and therefore is not conclusive. In order to be more confident, comparison to a larger sample of faunal bone would be necessary. A hand drawing of the supposed joint as well as photographs appear in Figure 10.3.A. In addition to the joint, what appears to be a small rib was found in FBC B2/7''. The rib seems too small to belong to a *B. Taurus* and therefore, the best guess is that it is sheep based on the identification of the sheep tarsal from the same proximity. Drawings and photographs of the rib appear in Figure 10.3.B.

No in depth weight or minimum number analysis was performed due to the small number of identified bones. From this analysis it is clear that the bones belonged to at least two different animals based on the two species identified. Better estimates of numbers will require both the further identification of bone already excavated, as well as further excavation immediately proximate to FBC B2. In particular, directly south and/or east of the test pit should yield the highest concentration of bones based on the locations the current ones were found.

After analysis, all the bones will be stored in a dry place. They should not be stored for long periods of time in plastic bags that retain moisture but rather in paper ones that absorb moisture. The bag should be changed often if they get damp from the bone inside. Additionally, the fragile nature of bone means that it should be stored in such a way that they will not be crushed. This includes a sturdy container and not in the presence of large/heavy artifacts such as bricks. In addition, smaller more brittle bone should be protected from larger pieces of bone to avoid fracture.

In the context of the analysis performed thus far, it is both clear that a lot of information can still be extrapolated from artifacts already excavated. Likewise, there remains a lot more information to be found by continued excavation of the First Baptist Church.

Figure 10.1
The hand drawing of a sheep tarsal (1.A) found in FBC B/6'. The excavated tarsal (1.B.2) is compared to two known sheep tarsals (1.B). Photographs of all sides of the excavated tarsal are pictured with a size reference (1.C).

Figure 10.2
A B. Taurus molar is hand drawn (2.A). The excavated tooth (2.B.2) is compared to a known tooth (2.B.1). Photographs of all sides of the excavated tooth are pictured with a size reference (2.C).

Figure 10.3
A hand drawing of what is believed to be a carpal joint from a B. Taurus as well as photographs from all sides (3.A). A hand drawing of a rib as well as photographs from two sides (3.B).

Figure 10.4
Bones recovered from FBC B2/6 (A and B picture different sides of each bone).

Figure 10.5
Bones recovered from FBC B2/6' (A and B picture different sides of each bone).

Figure 10.6
Bones recovered from FBC B2/6'' (A and B picture different sides of each bone).

Figure 10.7
Bones recovered from FBC B2/7 (A and B picture different sides of each bone).

Figure 10.8
Bones recovered from FBC B2/7'' (A and B picture different sides of each bone).

Figure 10.9
Bones recovered from FBC B2/7'' (A and B picture different sides of each bone).

Figure 10.10
Bones recovered from FBC B2/9 (A and B picture different sides of each bone).

Table 10.1
Inventory of all bones sorted by lot and separated into the bags in which they are stored. The table also contains notes about the contents of each bag as well as whether or not the bones were photographed or drawn. All large groups of bone photographs are included in the photograph appendix as Figures 10.1-10. Only the most diagnostic single bones are included in photos.

Figure 10.1

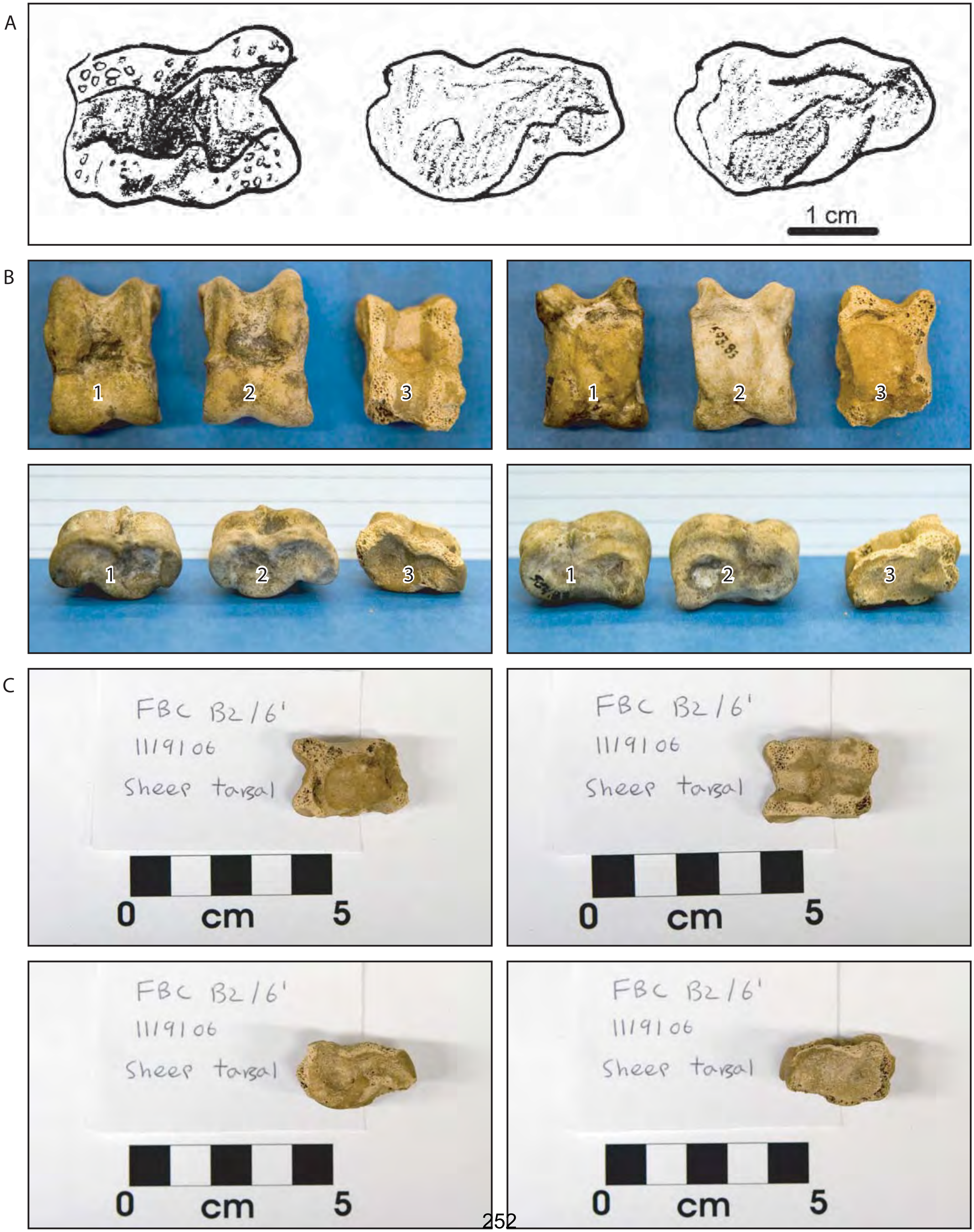


Figure 10.2

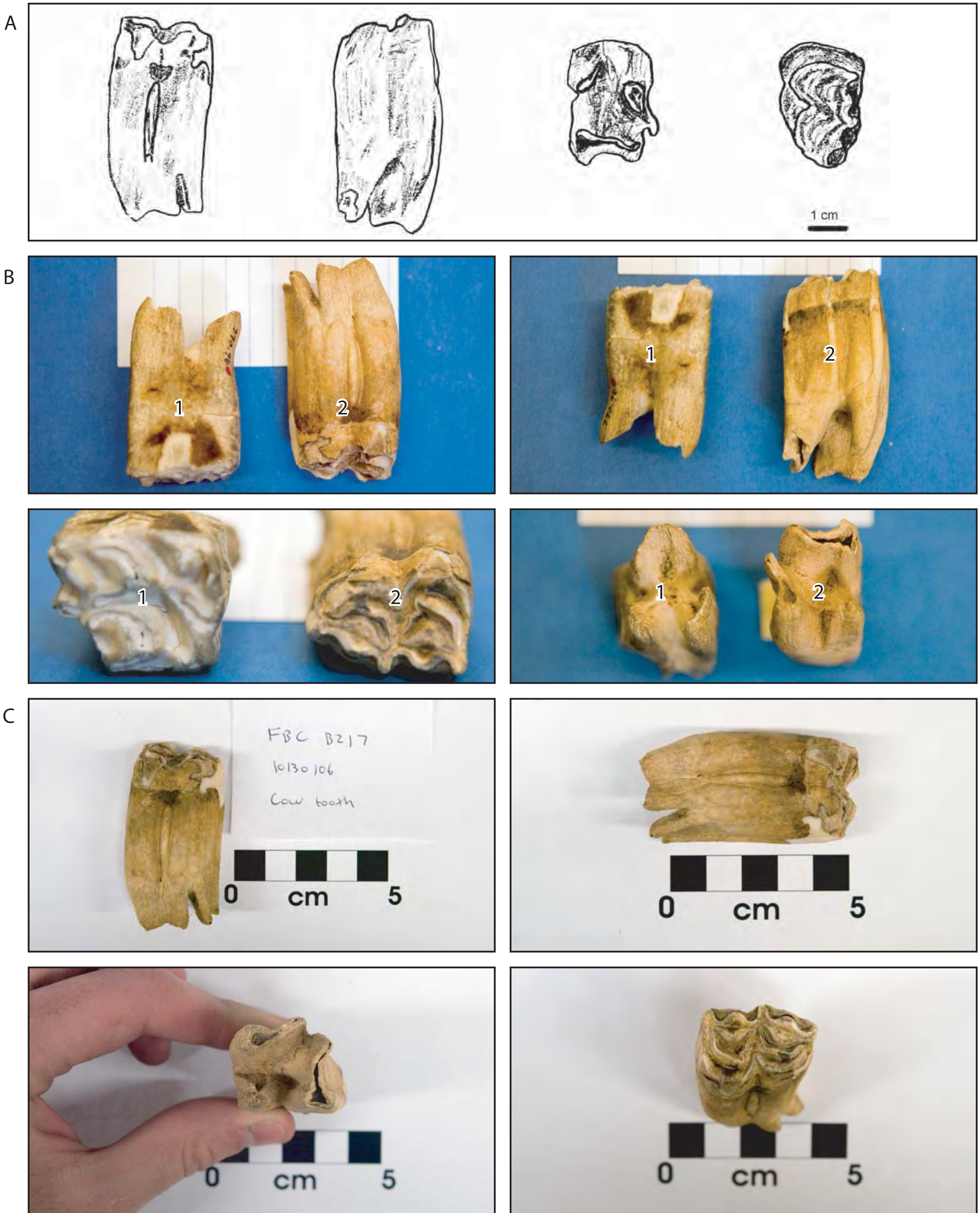
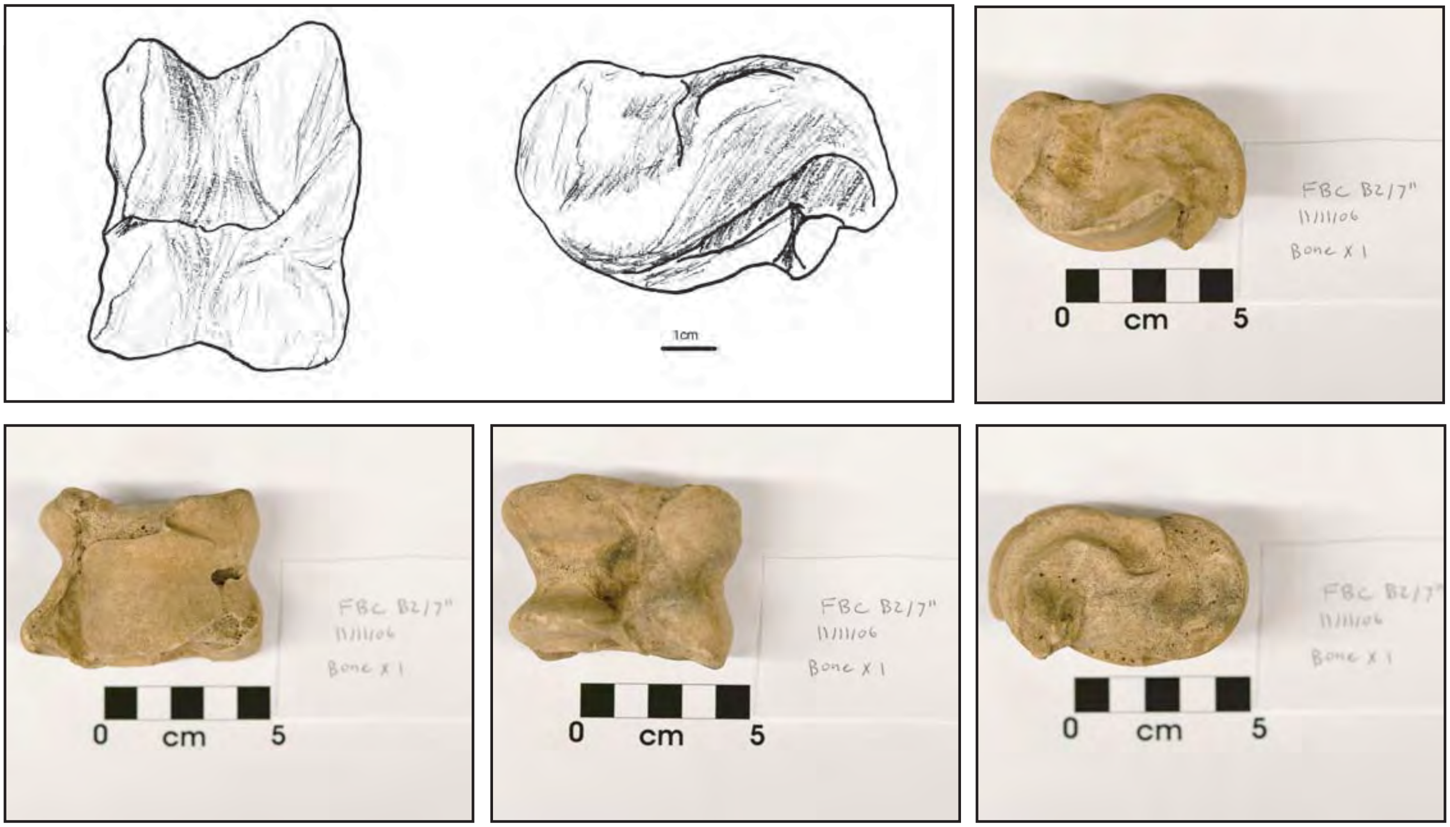


Figure 10.3

A



B

Figure 10.4

A

B

Figure 10.5

A

B

Figure 10.6

A

B

Figure 10.7

A

B

Figure 10.8

A

B

Figure 10.9

A

B

Figure 10.10

A

B

Table 10.1: Animal Bone Inventory.

Location	Test Pit	Lot	Prime	# of Bones	Notes
FBC	B2	4	0	1	Fragment, not photographed
FBC	B2	4	1	4	Fragments, not photographed
FBC	B2	5	2	2	Fragments, not photographed
FBC	B2	6	0	10	Many small pieces of bone, a relatively large flat piece of bone, and two pieces of spongy bone, the rest is very hard, photographed
FBC	B2	6	1	30	Fragments, not photographed
FBC	B2	6	1	1	Sheep tarsal, photographed, drawn, identified with RISD natural history museum comparative collection
FBC	B2	6	1	18	A potential tooth (unidentified), several spongy pieces of bone that are potentiial ends to longbone, one looks like socket portion of a joint, photographed
FBC	B2	6	2	32	Fragments, not photographed
FBC	B2	6	2	1	Fragment, not photographed
FBC	B2	6	2	14	End of a long bone, ball end from a ball and socket joint, several other small pieces of bone, photographed
FBC	B2	7	0	1	Fragment, not photographed
FBC	B2	7	0	1	Cow tooth, photographed, drawn, identified with RISD natural history museum comparative collection
FBC	B2	7	0	14	Two large flat pieces of bone and many smaller pieces, photographed
FBC	B2	7	2	7	Fragments, not photographed
FBC	B2	7	2	20	Fragments, not photographed
FBC	B2	7	2	32	Fragments, not photographed
FBC	B2	7	2	1	Large knuckle, photographed and drawn

Location	Test Pit	Lot	Prime	# of Bones	Notes
FBC	B2	7	2	12	Several pieces of spongy bone that appear to have come from long bone, photographed
FBC	B2	7	2	5	Two pieces of spongy bone, two pieces of hard thin bone and one end of a hindge joint bone, photographed
FBC	B2	7	2	1	Looks like a rib, but could not identify species, photographed and drawn
FBC	B2	9	0	11	Two large pieces, look like ends of long bone, two possible teeth, unidentified, photographed
FBC	B2	7-9	0	1	Curvey lines, joint-like, photographed
FBC	B4	3	0	1	Isolated find, not photographed
Total Quantity				220	

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First Baptist Church Excavation: Shell deposits

Jennifer Caraberis

Shells have a great cultural importance in many of the world's societies, including the New England coastal area. The movement of shell across the landscape indicates a conduit for the movement of ideas, flora, and fauna, even pathogens. Shell is also an important artifact in dietary reconstruction. Shells important to archaeologists because humans move them across the landscape and they can be traced to their original body of water. Sourcing shells to a body of water offers important information for unraveling contacts between groups. Topics of subsistence and diet are frequently addressed with faunal assemblages, including shell deposits. The term subsistence is used to refer to a general life-style, including the collection, processing, and consumption of food items.

Oysters and clams are the primary mollusks consumed in New England. Oysters (Fig. 10.11) are well known archaeologically, and are still a common food item today. Clamshell is the most common shell type found in the New England area (Fig. 10.12, 10.13). There are two main types of clamshell, the hard shell clam and the soft shell clam. The hard clam (*Mercenaria mercenaria*) is also known as a quahog and is the Rhode Island state shell. Rhode Island has supplied a quarter of the United States' total annual catch of quahogs. The second type of clamshell is the soft shell (*Mya arenaria*) clam also known as a steamer.

HUMAN UTILIZATION

Native Americans in the New England area commonly used mollusks. They would eat the clam and then use the shell as a form of currency and as jewelry. However, after European colonization, A.D. 1700-1900, clams were used almost exclusively as food. Clams can be eaten raw, steamed, fried, or in clam chowder. Steamed clams are the integral part of a clambake, the type of preparation that will be discussed in this paper. Native Americans originated the clambake. They learned how to cook clams in testpits dug on the beach, using hot rocks for heat and seaweed for steam (Neustadt 1992: 15). Since then clambakes have become a well-known tradition of New Englanders and have been passed down from generation to generation. Clambakes are usually held annually and on festive occasions. Clambakes involve the whole community; about three hundred people can be at one single clambake. The New England clambake consists of all local resources, foodstuffs from the land and the sea. The two important things to a clambake are the fire and the food. The fire consists of wood, rock, and rockweed. The primary foodstuff is the clams and the fish. The secondary category includes vegetables and sausage (Neustadt 1992: 105-122).

It takes a lot of wood to feed a clambake. Clambakes for three hundred people requires six feet of wood stacked four by four by eight feet. It also takes a lot of rocks. After a couple of hours the rocks will drop through the burning wood. You clear away the ashes and leave the rocks as the only source of heat for cooking the food. The next important resource is the rockweed. The rockweed is the source of water and moisture for the bake. The rockweed is placed on top of the hot stones and then the food is placed on top of the rockweed. The food is the other major complex of the clambake's material culture. The clams used in the bake are soft shell clams, not quahogs. Quahogs are mostly used in chowder. Another central part of the menu is the fish (haddock or mackerel), which is cut into pieces, seasoned with salt and pepper and steamed in brown paper bags. Other foodstuffs included in the bake are onions, potatoes, carrots, and sausage. You can layer rockweed and food up to the top of the wood frame. Finally, the whole thing is covered to allow to food to be cooked/steamed.

SHELL MIDDENS

A dense accumulation of shell is called a shell-bearing site, a shell matrix site, or a shell midden. It is preferable to use the term shell midden, which implies a pile of food refuse shell. There are four classes of deposits. One type of deposit is a shell midden site, which is secondarily deposited shell from food consumption with no other activities evident at the site. The second type of deposit is a shell midden that is a distinct lens or deposit of shell only. The third type of deposit is a shell-bearing midden site, a site composed of secondary refuse of many kinds of remains, including shell, generated by a wide range of activities. The last type of deposit is a shell-bearing habitation site, primarily shell debris in site matrix but used for architectural needs, the shell may or may not have originated as food debris (Claaseen 1998: 11-12). These kinds of classifications acknowledge that shell may be present in a specific locale for some reason other than as food debris.

LOCAL RESOURCE

Most of the clamshells found in Providence, Rhode Island are from Narragansett Bay. Providence is located at the head of Narragansett Bay, with the Providence River running into the bay through the center of the city. Narragansett Bay consists of a number of connected embayments and passages with a total area of about 250 km^2. The depth of the bay is rather shallow with an overall mean depth of only about 10m. Quahogs are most common in shallow bays and coves in water up to 18m deep. Although sometimes are seen in the region of the low-tide line, quahogs are considered an inhabitant of shallow sub-tidal waters. They are more abundant in mud containing sand, shell, and small rocks than in mud without these constituents. In comparison to the quahog, the soft-shell clam can tolerate substantial environmental fluctuations and has a tolerance that may in part account for its persistence as important food source (Bernstein 1993:58-59). Soft shell clams live in burrows most commonly dug in muddy substrates, although they also do well in gravel and sand.

GENERAL CHRONOLOGY

As stated before, Native Americans used clams as a natural resource. William Ritchie's excavations on Martha's Vineyard indicate that shellfish exploitation goes back at least four thousand years. During the Early Horticultural Period (1000 B.C.- A.D. 70) a drop in water temperature caused a decrease in the population of a number of shellfish varieties. However, during that time there was an absolute increase in the abundance of soft clams. This switch to abundance of soft clam serves as the point of origin for a regional dietary habit.

What is unclear about the chronology of clam baking and using clams as a resource in general, is how the English colonists decided to do what the Native Americans did. There appears to be a general resistance by the English to foreign foodstuffs and technologies and a subsequent re-embracing of their own customary foodways, all within a climate that became increasingly inhospitable to cultural exchange of any kind with the Native Americans. Since the first stages of colonization, the leaders exhibited a negative attitude toward leisure and play, a major context in a clambake feast. However, as the struggle for basic survival began to ease, the colonists were able to return to the pastimes and pleasures of their English background. At the same time a merging of politics with public dining occurred during the period surrounding the American Revolution, which developed an array of new symbols and devices, all things with a nationalistic identity as Americans. The search to establish an indigenous American cultural identity entailed recontextualizing political, historical, and religious symbols, as well as inventing traditions. A growing passion for patriotic feasting served as a backdrop against which the clambake and other forms of outdoor eating became of considerable historical significance and value. It can be argued that the New England clambake began with the 1769 founding of the Old Colony Club at Plymouth (Neustadt 1992: 30). The Old Colony Club was a group of men who wanted to memorialize the first landing of their ancestors. The group's initiation of a Forefathers' Day celebration that first year had at its center, a feast, which was not exactly a clambake, but established clam-eating in a symbolic context. The "Corn and Clams" at the 1769 Forefathers' meal represented a positive cultural balance between the merging of indigenous Native American foodstuffs with the technical and culinary skills of the ancestors to produce simple but nourishing food.

In 1798, the Forefathers' Day meal was called the "Feast of Shells." From then, shells were being incorporated regularly in physical as well as symbolic form in

American commemorative celebrations by the end of the eighteenth century. Then, around the 1840s, there became a developing taste in consuming the land's bounty. Listed under the heading "Cookery for Sportsmen" the clambake is presented as a rugged, steaming, juicy, and aboriginal cuisine. Clambakes are hard to trace because they are "partly invented, partly evolved in private groups (where the process is less likely to be bureaucratically recorded), or informally over a period of time" (Neustadt 1992: 42). However, some documentation does exist. For example, according to a newspaper inquiry in 1975, the Horbine Church in Rhode Island was celebrating the 150th anniversary of its clambake, making its founding year in 1825. Other written documentation includes, July 4th 1840 as the official date of the first large clambake held in Rhode Island. It was a grand political mass meeting in favor of General Harrison. Nearly 10,000 people assembled in Rhode Island and a clambake and chowder were prepared. It was the first clambake of such grand proportions and it established a precedent for mass partisan clambakes in the state of Rhode Island. As historical consciousness and collective self-consciousness became an increasingly central aspect of American culture in the nineteenth century, more and more Americans organize themselves into local groups and staged their own "historic" commemorative events on the model of the Colonial Club and the Pilgrim Society. By 1899, the number of bakes appearing in print had increase exponentially. During this time clambakes represented leisure rather than a commemorative event. There would be two bakes in one weekend, as well as even midweek bakes. With more people attending the clambakes, commercial pavilions became the location of these publicized clambakes. But the hurricane of 1938 destroyed most of the clambake establishments along the New England coast. As the clambake receded in physical form, its symbolic imagery also underwent a discernible transformation, and by 1947 the clambake had become the ancient New England rite. However, with more than a century's worth of romantic, sentimentalized, and nostalgic notions surround the clambake have enabled it to continue as a powerful, multi-faceted symbol into the present day.

From prehistoric clam baking of native Americans to clambake pavilions filled with hungry voters, from pictures in old family albums of church bakes to glossy ad photos, the images of the clambake have communicated a wide range of messages about time and place and the role of community.

ARTIFACT DATA

A total of 405 pieces of shell were found in five different testpits, ranging in species and sizes. The shell artifacts were first categorized by origin (Fig. 10.14, 10.15). Shell was found in a total of five different testpits and across lots 2 thru 9, with a deepest depth of 90cm. The testpits that contained shell artifacts were A1, A3, B1, B2, and B3.

The pit FBC-B2 contained the most number of shell pieces, a total of 384 artifacts. The first piece of shell was found in lot 3, about 20-30cm deep. From the first recovery of shell in lot 3, shells were continually found through to lot 9, about 80-90cm deep. Lot 6 and lot 7 collected the most pieces of shell. In lot 6, 133 pieces of shell were found and in lot 7, 227 pieces of shell were found. Field notes recorded on days October 30^{th} and November 6^{th}, 9^{th}, and 11^{th}, indicate that excavators found other faunal remains, including large pieces of bone. Other objects found in FBC-B2 were brick, glass, and pottery, with a soil consistency rather dry with large rocks. Carbonized dirt was found around the bone in lot 6, suggesting a fire.

Pits A1, A3, B1, and B3 contained shell remains as well. However, the number of shell artifacts was minimum. Out of these four testpits, B1 contained the most, with a total of 10 shell artifacts, throughout lots 2 thru 7. Testpits A1, A3, and B3 contained the least amount of shell collected, with a total of 9 pieces of shell together.

Next the shell artifacts categorized by types of shell. The shells were split into three categories: clam, oyster, and unidentifiable (Fig. 10.16). Out of 405 pieces of shell found, 110 were clam, 170 were oyster, and 125 were unidentifiable. The unidentifiable category consists of those shells that were too small to identify. The other two categories are easy to identify one from the other. The main characteristics that differ in the clam and the oyster are shape and texture. The oyster has a unique shape, the point or apex or fossa is to the side rather than in the middle like the clam. If the apex is toward the right, then the rest of the body of the oyster turns towards the left (Fig. 10.11). The shape of the oyster is also more elongated compared to the clam, which is more short and squat (Fig. 10.12). The texture of the two species is also very different. The oyster has a highly calcified surface, which makes the texture extremely rough. While the clam is rather smooth compared to the oyster. Also, another feature that adds to the texture are the growth rings. The growth rings on the clam are straight and parallel, while the growth rings on the oyster are rough, wavy, and not uniform.

A difficulty lies in distinguishing between a quahog shell and a soft-shell clam. The first problem to arise was the fact that a soft-shell clam has a very thin shell. The thin shell allows it to be easily destroyed and break apart. Because of this no complete soft-shell clam was recovered. However, the unidentifiable small fragments could be from soft-shell clams. The second problem to arise was the dilemma of not having any complete soft-shell clam artifact. This fact creates a problem because the only way to really distinguish a quahog shell from a soft-shell clam is the shape. The quahog is round and the soft-shell clam is oval. Therefore, the small fragments that were found could not be distinguished from a quahog or a soft-shell clam.

Lastly the shells were categorized by measurement. Each shell was measured by width and height (Fig. 10.13 and 10.17). Shell height is measured from its hinge to the shell edge. Width is across the wide portion of the shell. Some fragments were too small to identify. In fact, there were 276 widths that were 2cm or less and 284 heights that were 2cm or less. The next size range is between 2 and 4cm. There were 109 fragments of shell that had a width of 2 to 4cm. As well as, 105 fragments of shell that had a height of 2 to 4cm. Even though most of the pieces of shell were smaller than 4cm, there were 5 shells big enough to analyze fully. These shells were almost fully intact. Three of the shells were classified as clam and two were classified as oyster.

CONCLUSION

What can be told about shells as an artifact on the property of The First Baptist Church? First, we know that people ate shellfish. The most prominent shellfish that were consumed were clams and oysters. Second, we know that they were a local product, coming from the shores of the Narragansett Bay. Third, we know that the people living from 1700 to 1900 would consume the meat of the shellfish and discard the remaining shell. Fourth, in areas where we find a few hundred shells can be regarded as a shell deposit.

One possibility for multiple shell artifacts in one area is that it contains the remnants from a clambake. Clambakes are an important festival to many New Englanders. We know that clambakes were held in Rhode Island and we know that churches even held clambakes. A large quantity of shells were found in association with animal bones, providing indirect evidence of community feasting at the First Baptist Church.

FIGURES

Figure 10.11. Oyster Shell. Artifact from FBC-B2, Lot 7

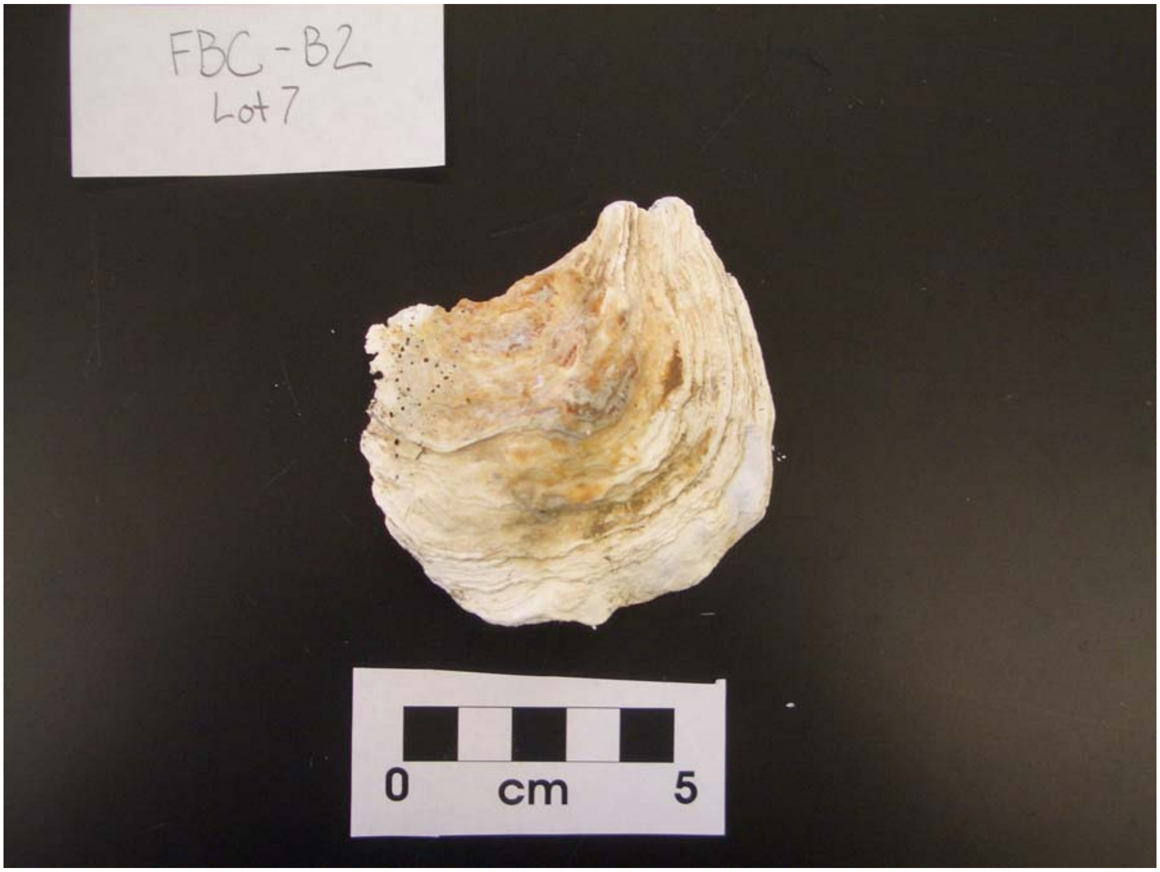


Figure 10.12. Clam Shell. Artifact from FBC-B2, Lot 7

Figure 10.13. Measuring the Height and Width of a shell

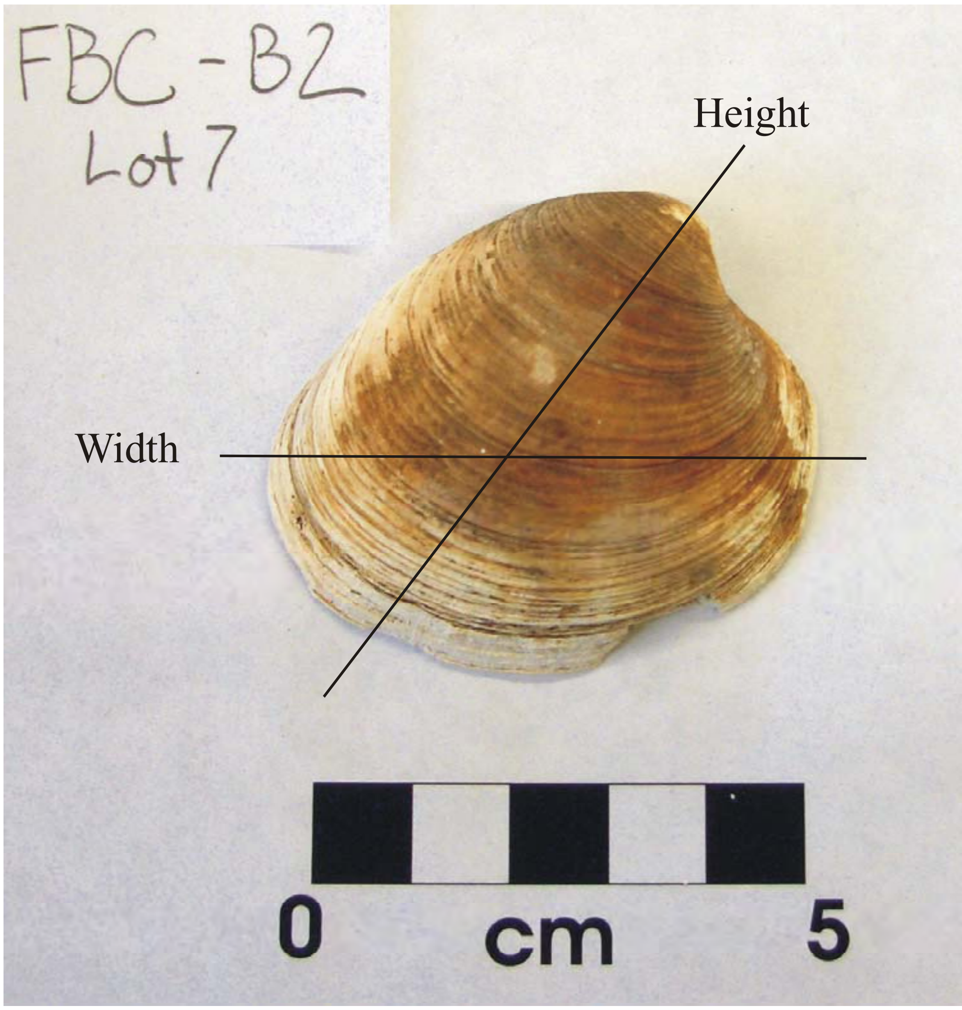


Figure 10.14. Where shell was found at FBC, by pit and lot

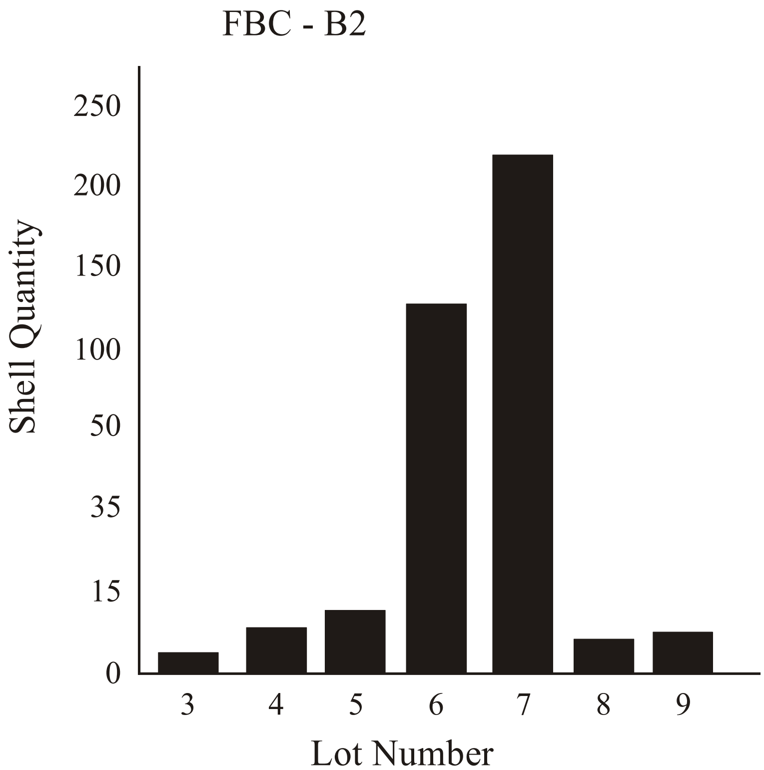


Figure 10.15. Where shell was found at FBC, by pit and lot. Four different testpits.

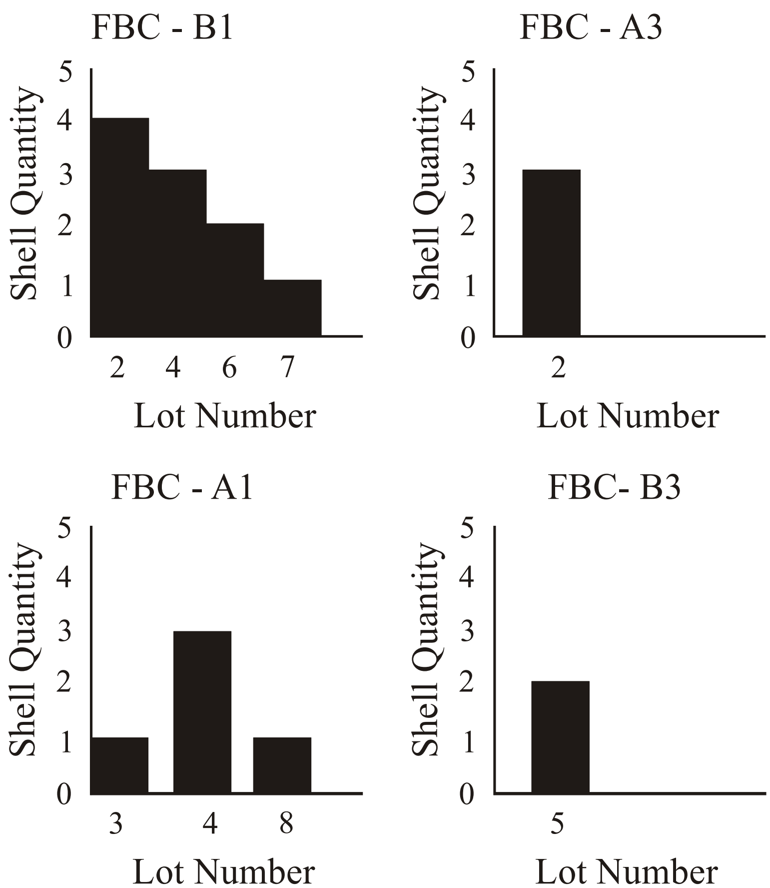


Figure 10.16. Types of shell found at FBC, by species.

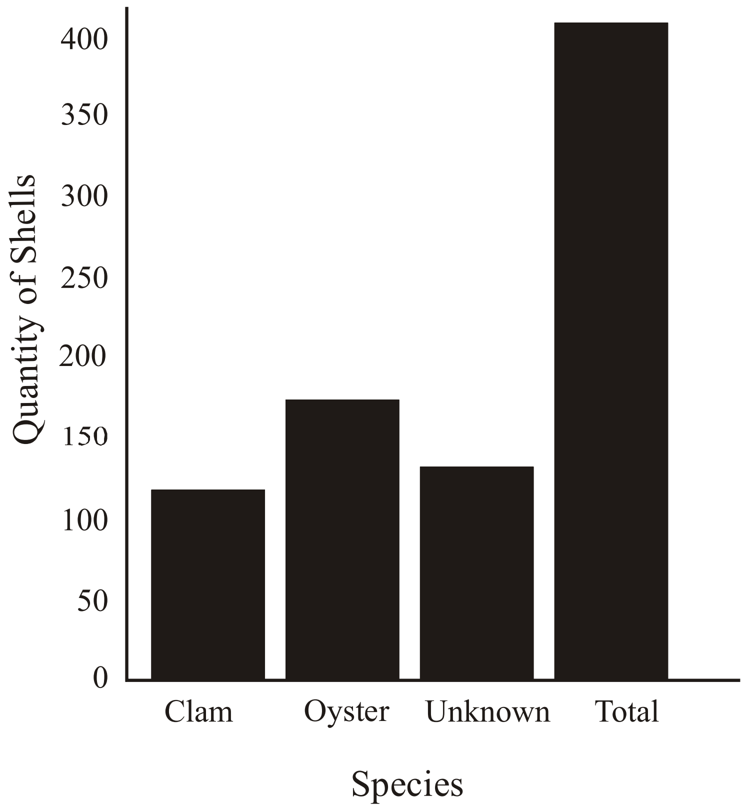
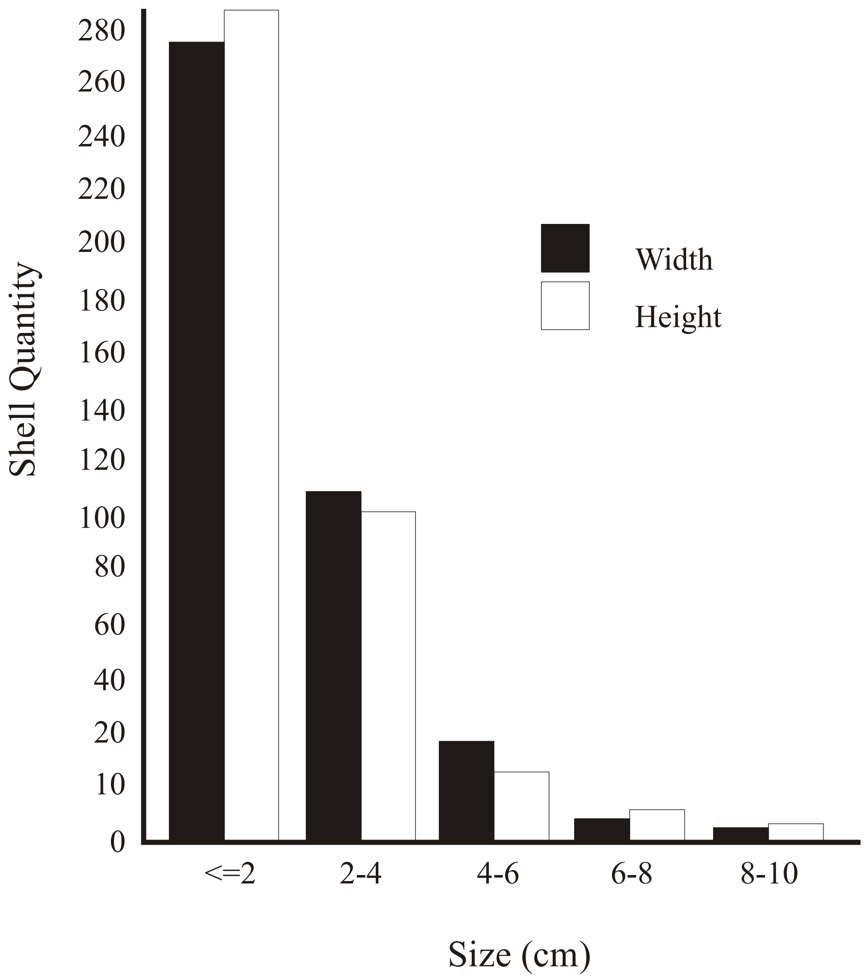


Figure 10.17. Shell Measurements by width and height.



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Chapter 11

Metal Objects

Valerie Gallagher

Metal objects- useful, durable, and reusable- were a part of the human repertoire long before the New World was 'discovered' by Europeans. From the humblest eight penny nail to the most elaborate decorative wrought iron work, metal objects have the capacity to shed much light on the economic, social, and environmental conditions in the colonial Northeast. When looking at a rusted hunk of iron, vaguely nail shaped yet deteriorated almost beyond recognition, it hardly seems that such an amorphous mass of iron oxide has any significance at all- would not an advertisement or catalog of various nails and metal fittings give us much more- and much more significant- knowledge about metal usage in colonial New England? Perhaps so, but as James Deetz would say,

> "material culture may be the most objective source of information we have concerning America's past. When an archaeologist carefully removes the earth from the jumbled artifacts at the bottom of a trash pit, he or she is the first person to confront those objects since they were placed there centuries before. If we bring to this world, so reflective of the past, a sensitivity to the meaning of the patterns we see in it, the artifact becomes a primary source of great objectivity and subtlety."[1]

Even the most deteriorated object has an important story to tell.

> "It is terribly important that 'small things forgotten' be remembered. For in the seemingly little and insignificant things that accumulate to create a lifetime, the essence of out existence is captured. We must remember these bits and pieces, and we must use them in new and imaginative ways so that a different appreciation for what life is today, and was in the past, can be achieved. Don't read what we have written, look at what we have done."[2]

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[1] Deetz, James, In Small Things Forgotten (New York: Anchor Books, 1977), 259
[2] Ibid 259-260

Seen in this light, that hunk of iron oxide has its own story to tell, if we only would but listen carefully enough for it. The level of soil in which it was found may give important information about the approximate date of the artifacts manufacture, and from that entry point, a whole world of association can then be made. What was happening economically at that time? Was the area a prosperous one, perhaps in a growing urban center, with a burgeoning manufacturing base, or was it a backwater, making do with the what could be made (or reworked) locally? How about the political situation in the area? Thinking on a larger scale, what was happening with relations between the colonies and Mother England? Expanding yet one step further, what was the nature of relations between England and the rest of the world? That humble hunk of rusted iron (or is it steel? that question alone gives rise to a whole host of new questions, and potential new answers) can, when viewed with the proper lens, become a doorway into our past. One might even say it is the key that unlocks the secrets of the past.

What would a world without metal objects be like? Such a concept is very nearly unthinkable for the modern human being. So much of our society is based upon the use of metal, in its many and various forms. The wires that electrify the keyboard that this is being written on, the larger wires that in turn electrify the homes in which we live, the steel cables that support the poles upon which the wire is strung- all metal objects, and all quite necessary for modern life. Metal was no less important to the early colonizers of North America, it was just put to use in a different way.

A myriad of metal objects were used in everyday life by the colonizers, and metal was arguably even more important to them than it is to us today in the age of plastic. Metal of various types was used in the manufacture of instruments essential to survival in an often hostile new environment. Metal objects were common amongst the artifacts found on the First Baptist Church dig, and they were found throughout all of the test pits (Table 11.1).

Table 11.1: Metal Object Location (by test pit and lot number).

Unit	LOT 1	LOT 2	LOT 3	LOT 4	LOT 5	LOT 6	LOT 7	LOT 8	LOT 9
A1	0	4	19	0	0	0	8	17	0
A2	4	2	10	5	0	1	3	2	7
A3	3	1	7	1	0	6	0	0	0
A4	0	0	4	9	2	3	0	0	1
B1	1	4	11	11	0	15	19	0	0
B2	2	0	2	2	10	22	4	0	9
B3	0	1	1	8	3	0	0	0	0
B4	1	0	2	1	0	0	0	0	0

The colonists had to supply themselves with food and shelter, and metal played a direct role in these endeavors. Iron axe heads were used to clear the fields in which subsistence crops were grown, and the trees thus felled both constituted the raw material for the homes in which they lived and the means of heating those homes. Although used sparingly in the earliest settlements, here we first make the acquaintance of the humble nail, used to hold together the flooring of these homes, and some of the furniture found within. An idea of the importance of nails can be gotten from the following quote. "At this time my farm gave me and my family a good living on the produce of it; and left me one year with another one hundred and fifty silver dollars, for I never spent more than ten dollars a year, which was for salt, nails, and the like."[3] Salt is an essential part of the diet,

[3] Shammas, Carole, "How Self-Sufficient Was Early America?," Journal of Interdisciplinary History 13, no. 2 (Autumn 1982): 247

and nails were an equally essential ingredient for survival in colonial America. The data collected from the First Baptist Church dig reinforce the importance of the humble nail. A full seventy percent of metal artifacts recovered were nails, by far the largest sub category (Table 11.2).

Table 11.2: Metal Object Weight

Test Pit	Weight of metal artifacts found	Total number of metal artifacts found	Nails found
A1	187 grams	48	35 (73%)
A2	131 grams	34	12 (35%)
A3	82 grams	18	9 (50%)
A4	94 grams	19	12 (63%)
B1	227 grams	61	46 (75%)
B2	333 grams	92	77 (84%)
B3	66 grams	13	10 (77%)
B4	43 grams	11	7 (64%)
Total	1163 grams	296	208 (70%)

But what is the history of metal production, and iron production in particular, in the American colonies? Knowing this history gives us a starting point from which to explore that rusty nail in a meaningful way. Earliest settlers exploited shallow deposits of so-called bog iron. These deposits were smallish and easily exhausted, however, and the iron produced tended towards the brittle. Typical of slightly later and larger scale iron production was the iron plantation, a self-sufficient unit of perhaps five to ten thousand acres. Fifty or so men (and their families and draft animals) resided here. The sites were chosen carefully for the proximity of both accessible iron ore and a forest to supply fuel for smelting the ore mined. The process of metal production was inexact and tedious- ore was layered with charcoal and lime (oyster shells in the East) in a thirty foot brickwork stack, and water powered bellows provided the air needed for combustion. The product of these plantations, know as pig iron (for the resemblance of the sand molds lined up ready to receive the molten ore to piglets lined up at their mother's teats) was produced at an average rate of one thousand tons of pig iron per year. Even after such a labor-intensive process, this type of iron still needed to be further processed, and impurities drawn out, before it could earn the title of wrought iron. The iron was melted down again, and stirred (or 'puddled') by hand. Lime was used to draw the impurities, in the form of slag, to the top, where it was then skimmed off by hand. This refining technique was none too exact, and the results were often, for no apparent reason, totally unpredictable. Some batches were perfect, and others, made in the exact same manner, were completely unusable. The technique resembled "a cook tasting as she stirs, to make sure there is enough seasoning."[4] This was a serviceable, albeit potentially inefficient technique, to be sure, but one that served well enough to supply some of the need for raw iron of the growing colonies, and to thus free them from total dependence on Mother England. Manufactured products and fine finished goods, such as compasses, thimbles, hammers, gimlets, wire, knitting needles, shovels, skates, pokers, locks, dustpans, chains and anvils, were, however, another story, although as early as 1646, a patent was granted to Joseph Jenkins for a mill to make scythes, and Jenkins also invented "divers other engines for making diver sorts of edge tools."[5] This type of local manufacture, while forward-looking and innovative in its own right, was not nearly enough to supply the growing needs of the growing colonies.

Iron was good enough for most uses, but for more demanding applications, such as the soon-to-be-developed nail cutting machine tools, steel was needed. Steel was more precisely machinable, and, most importantly, much harder, and therefore more durable,

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[4] Hawke, David, Nuts and Bolts of the Past (New York: Harper and Rowe, 1988) 211-212
[5] Lord, Eleanor, Industrial Experiments in the British Colonies of North America (Baltimore: Johns Hopkins Press, 1898) 113

than wrought iron. The most famous producer of such high-grade steel was the Sheffield Company, back in Mother England. (Although a treatise on crucible steel manufacture was produced in America in 1814 by Professor Thomas Cooper of Dickinson College in Pennsylvania.) Attempts were made, starting in the 1820s, to produce crucible steel, but problems with obtaining a consistent enough quality of raw iron, and finding clay that could withstand a high enough temperature to be made into acceptable crucibles retarded the process. Also, little was known at this time about the metallurgical theory behind the production of steel, and the amount of carbon added was entirely dependent upon the nature of the raw materials used. In any event, this carbon to iron ratio (not empirically determined until the 1860s) could not have been measured in any meaningful way, even if the proper ratios had been known. Naturally, the valuable secret recipes for Sheffield steel production were kept tightly under wraps, though the erstwhile colonies soon developed their own graphite crucible technology, and began to take over the local markets.

Like the production of raw materials, the processes for the manufacture of metal objects improved over time. Nails in particular can be dated according to the production process used in their manufacture, and are fairly easy to distinguish. Here economics and political concerns enter the picture. In 1789, the newly independent colonies passed a law imposing a duty on the import of manufactured nails. The aim of this law was threefold: to discourage dependence on foreign manufacture, to increase the supplies of nails, and by so increasing the supply, to decrease the cost. Nails were critical indeed- critical enough to require passing of legislation- never an easy task in any era. One year later, in 1790, the Patent Act was passed, giving protection to those who invented new manufacturing processes, and these two factors combined to cause an explosive growth in machine tool technology in the following few decades.[6] Clearly, that humble hunk of iron oxide we find buried underground today has far more significance than can be discerned at first glance.

As a result of these ever-evolving technologies, the physical form of nails changed continually, and these distinctive shapes can be used as guide to dating the structures or archaeological strata in which they are found. Hand-operated nail cutting machines were the first on the scene. In 1780 Ezekiel Reed, of Abington and Bridgewater Connecticut (Connecticut conveniently having a good supply of iron ore in the northwest part of the state) invented just such an early hand operated nail cutting machine. The operation of it was described in this way. "The mode (of cutting nails) was much improved by movable dies, placed in an iron frame, in the shape of an ox bow, the two ends, in which were placed the dies, being brought together by a lever pressed by the foot. This was a great improvement… and the inventor was entitled to a patent He made some attempt to conceal the operation, but the process was so simple and so easily applied that others soon got it, and it came to general use."[7] In cross section, the shanks of these early nails tapered in on two sides, and were parallel on the other two sides, although they were more likely to be a slightly unique parallelogram in cross section, rather than a perfect rectangle. The shanks of these machine cut nails were still hand headed, in a two- stage process, at this point. Heads could be either the tradition rose type, like earlier wrought nails, or of the T- type, with a round head flattened by ninety degrees so that they lay parallel with the shank. Simple ninety degree folds of the shank

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[6] Phillips, Maureen, "'Mechanic Geniuses and Duckies' a Revision of New England's Cut Nail Chronology Before 1820," APT Bulletin 25 no. 3/4 (1993): 5
[7] Ibid 5

were also used, in this case making a brad rather than a nail proper. The ends of these nails or brads were usually rounded from sitting against the nail plate of the machine whilst being cut. Machine cutting also left telltale burrs on the diagonal opposite sides of the shank. In later nails, developments in machine cutting technology led to the formation of burrs on the same side of the shank.[8]

The real quest was for a machine that could both cut and head the nail mechanically, in one fell swoop, and in 1798, Connecticut was at the forefront of machine nail technology. Nathaniel Reed invested in the Salem Iron Works, and soon began producing completely machine cut and headed nails. These nails may be distinguished from later types by the characteristic narrow neck found on the shank, just below the head. This neck was formed by the clamp that held the nails whilst they were being headed. Later machine headed nails lack this distinctive feature. Nails cut by machine differed from those cut by hand in another important way- the hand-made nails were cut with the grain of the metal, while in the machine cut type, the grain runs across the shank. This was due to the greater ease of cutting across the grain of metals when using a machine. The rounded end caused by the nail plate was also eliminated by further refinements in the manufacturing machinery, and this stage marked the pinnacle of machine cutting and heading technology.[9]

Using all of this information, a chronology of early nails may be created, and particular types of nails can be associated with the various building phases at the First Baptist Church. This dating is rather precise, as examples have been drawn (either

[8] Ibid 9
[9] Ibid 10

literally or via x-ray examination) from houses that have known dates regarding their times of construction.[10]

First Baptist Church Construction Timeline

1774-5	Meetinghouse constructed
1792	Crystal chandelier installed
1832	Old pews and pulpit removed. Aisles reconfigured.
1833-4	Construction of rooms for infant class and adult bible study constructed on lower level.
1846	Palladian window plastered over
1848	Gas lights and chandeliers added.
1857	Lower level excavation completed.
1884	New baptistery added, organ rebuilt, décor of auditorium updated.
1914	Chandeliers electrified
1981-2	Steeple renovated.
1998	Handicapped access provided.[11]

Hand-wrought nails, used from the seventeenth century through the early nineteenth century, had the following characteristics. The shank was, in cross section, an irregular rectangle, tapering on all sides, with a grain direction parallel to the length of the shank and no cutting burrs. The heads were hammered by hand, and had two to six facets, four facets (rose headed) and two facets (T headed) the most common. The end

[10] Hart, David, "X-ray analysis of the Narbonne House" Bulletin of the Association for Preservation and Technology 6 no. 1 (1974): 80
[11] Lemons, Stanley, The First Baptist Church in America (Providence, 2001), 22, 33, 46, 74, 96

might be either pointed or flat, depending on intended usage. [12] It is this type of hand wrought nail that would have been used in the original 1774-5 construction of the church.

Early machine cut nails, used after 1790 through approximately 1820, had these characteristics. While the very earliest cut nails were, as mentioned above, parallelogram shaped in cross section, slightly later ones were perfectly rectangular in cross section. Here we see the grain direction change from parallel to the shank to across the shank. The shank itself tapers on two sides, and two sides are parallel, and burrs are found on diagonally opposite sides. The distinctive pinched neck is found in this time period, if the heads are machine made, and the head itself was often irregular or with jagged edges and often set off center to the shank.. The heads are still being mostly made by hand at this stage, however, in either the rose, T, or brad type patterns. The ends of all these, machine headed or not, are rounded due to pressure against the machines' nail plate during the cutting process.[13]

Transitional machine cut nails, used from after 1810 through 1840 have the following characteristics. The shank is now a regular rectangle in cross section, with the typical cross grain and two tapering/two parallel sides of the machine cut. As would be expected, burrs are found on the diagonal opposite sides of the shank. The beveled neck under the head may be, in this type, as far as one quarter of the way down the shank. Heads are made by machine in a single operation, and the process has been refined so that the head is thicker, more regular, and less jagged around the edges (not to mention safer!) than in earlier types. They are also perfectly centered on the shank. Rounded end

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[12] Phillips, Maureen,, "'Mechanic Geniuses and Duckies' a Revision of New England's Cut Nail Chronology Before 1820." APT Bulletin 25, no. 3/3: 9
[13] Ibid

remains the same.[14] These traditional machine cut nails would be associated with the renovations of the 1830s, including replacement of the original pews and pulpit, and the reconfiguration of the aisles.[15]

Modern machine cut nails, used from 1835 through 1890 (when wire cut nails took over) have the typical rectangular cross section, two tapering and two parallel sides, and bevel underneath the neck. One difference in this period is the location of the shank burrs: they are now on the same side, rather than on diagonally opposite sides. The heads are now uniform and thick, with convex surfaces on both sides, and the shape of the shank may in some cases show through, due to the strength of the force used to machine form the heads. The end is different, too- it is now neatly clipped off into a square shape. [16] The construction of the baptistery in 1838 falls right on the border between traditional and modern machine cut nails, and likely both types would be associated with this phase of construction.[17]

This does not put an end to the development of nail technology, however. A new and efficient process for forming nails out of round wire stock was soon to make a splash in the world of machine manufacturing. The wire nail technology originated in France, but like any potentially profitable technological innovation, its use quickly spread across the globe. 1851 is often given as the date for the first use of the wire nail in America, but most early American examples were small and used mainly for cigar boxes and other likewise delicate applications. By 1883, however, the natural reluctance regarding

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[14]Ibid 9
[15] Lemons, Stanley The First Baptist Church in America, (Rhode Island, 2001), 46
[16] Ibid 9
[17] Lemons, Stanley, The First Baptist Church in America, (Providence, 2001), 46

technological change had been overcome, and wire nails were recommended for use where strength was a main concern.

> "The advantages of these over common nails are many. For the same amount of metal they are much stronger; they can be driven into very thin boards without splitting them, and can be removed without leaving so unsightly a hole as is usually made by common nails. Besides this, on account of their superior stiffness, they can be driven into very hard wood, where much caution in necessary if common nails are to be used. They are also more easily produced, and are handled with less labor."[18]

Thus, any round wire nail may be confidently dated as originating no earlier than 1851, and more likely (unless very small and found in finer work) date from the 1880s at earliest. The construction of the new baptistery in 1884 would likely involve some of these new wire nails, although only one out of the two hundred and eight nails found was of this type.

So, that nail shaped chunk of rust, if not too badly decayed, can tell us much regarding the dates of manufacture, and the economic, political and technological state of the nation at the time of manufacture. Even better, a relatively intact sample may be used fairly conclusively to date the structure, if still standing, and by extension through cross-dating, any other artifacts found buried along with nails in the same strata. Unfortunately, there is little hope for the fully oxidized specimen: the corrosion has simply replaced the original metal, and little if any detail (and it is in the details of burrs, graining, and head shape that the most valuable dating information lays) remains to be examined. There are some conservation techniques for the middling-decayed artifact, though no technique can reclaim the information once encoded in the intact nail.

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[18] Priess, Peter, "Wire Nails in North America." Bulletin of the Association for Preservation Technology 5, no. 4 (1973): 88-89

As most of us know, water plus iron plus oxygen equals rust. So, to best preserve the slightly corroded iron artifact, experiments have found that ideal storage conditions involve either a very low humidity (less than 20%) or an oxygen free environment. Washing with an alkaline sulphate treatment has been found to reduce concentrations of chloride ions, a product of the oxidation process, but this treatment must be done at high temperatures and in a sealed environment, and so is not practical. Preservation in either a low humidity or an oxygen free environment (via use of an inert gas in the storage case), seem at present to be the best and most viable options, since corrosion requires both moisture and oxygen to proceed. Prevention is much more possible than cure when it comes to archaeological artifacts made of metal.[19]

So it seems that rusty nail has quite a story to tell, if only we are aware of the language of burrs, grain direction, and head shape that it uses to speak to us. For steel artifacts, further information about the composition of the metal and its likely place of raw material origin may be discerned by cutting across a sample and using a microscope to analyze the distribution of carbon throughout the iron. The history of the rusty nail is our very own history- economic struggles, technological innovation, political actions and all. And if you use your imagination, they may transport you back to an age when even the simplest implements were made with skill and care. To quote Ma Joad from The Grapes of Wrath as she is sorting her things before departing on the long road to California, "How will we know it's us without the past?"

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[19] Turgosee,S, "Post Excavation Changes in Iron Antiques," Studies in Conservation 27, no. 3 (Aug 1982):98-101

Figure 11.1. Metal Nail example

Figure 11.2. Metal Temple from glasses

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Chapter 12

Bricks

Asa Berkley

Providence is a city built from bricks. Bricks are prominent in most early 19th and 20th century structures in the city and were frequently discovered in the test pits placed on the grounds of the First Baptist Church, hereafter, FBC. Historical bricks can be examined for vitrification, color, hardness and the manufacturer's print. Brick is a relatively durable artifact but care should still be taken in its collection, especially in an effort to not damage other artifacts \transported with the brick. Brick can be readily washed and cleaned which facilitates effective identification of a manufacturer's print. The FBC dig yielded two whole bricks, from pits B1 and B2.

The majority of bricks found in the FBC units were below 40 grams in weight (Table 12.1). This is too small to merit detailed analysis, and so only the substantial and complete bricks were analyzed. Neither of the two bricks featured any remaining or recognizable manufacturer's print, making it difficult to determine their origin. Both bricks diverge significantly from the colonial period standard size of 8 inches in length, 4 inches in width, and 2 ¼ inches thick and the 20th century standard dimensions of 8 ¼ inches in length, 4 inches in width and 2 ¼ inches. Brick B2 differed significantly in shape and weight from B1, featuring a more defined square shape to B2's rectangle.

THE MANUFACTURING PROCESS

The raw material used in bricks underwent a straightforward manufacturing process. The chief ingredient of bricks is clay. There are two kinds of clay, primary and secondary. Primary clay is formed undersea within the earth's crust when parent rock is changed by movements of hot gases and water. The power of these forces gives the rock plasticity, turning it into clay. However, often fragments of unaltered parent rock are also pushed into the clay, reducing its plasticity and making it unsuitable for brickmaking. Hence primary clay is not ideal for brick production. Over time, primary clay is freed from the earth's crust by erosion. Additional weathering helps the clay move into bodies of water. As the clay travels through water, heavier particles of unaltered parent rock separate out of the clay, leaving a purer, finer grained clay in its wake. This is called secondary clay, and forms the beds of sediment/clay that is harvested for brick-making.

Brick-making consists of five steps:

- Mining-often referred to as "winning"
- Preparation
- Molding
- Drying
- Firing/Burning

BRICK MINING

There are four methods of acquiring the necessary secondary clay: Surface/open-pit mining, underground mining, hydraulic mining and dredging. Mining was a seasonal affair and often occurred in the winter in order to expose the clay to frost and snow. This helped in the important preparatory task of weathering.

Surface-digging by hand was the most common practice in the United States in the 19th century. Either surface-digging or underground digging was employed depended on the amount of overburden covering the clay. Overburden removal was of major importance in surface digging, because should overburden enter into the clay, then the resulting brick would probably be defective. One method was digging in so-called "spits" of 1 foot long, 4 feet wide and 16 feet deep. A single spit could yield as many 1,000 bricks (Gurcke 1987). Another method was the glory-hole method. This consisted in digging a large conical pit and extracting the clay from there.

Underground digging was an expensive affair, involving the building of ventilated subterranean tunnels and rooms, the employment of a large workforce and purchase of specialized equipment.

However the lucrative brick business often justified this method of clay acquisition. The clay that was the target of underground digging was called fire clay, i.e., clay that formed bricks highly resistant to burning. This clay proved inaccessible by the more inexpensive surface digging method and so underground digging was the only practical option. Standard clay was never sufficient motivation for the expense of underground digging. It would also have been wasteful due to the ample supply available through surface digging. Typically only a few large firms would undertake the overall expense.

Hydraulic mining and dredging were the other two methods used. Hydraulic mining was a creative use of technology in mining. A high-pressure stream of water would be used to cut through the base of a clay bed, thus freeing the clay and carrying it to another location to be processed. Dredging employed a steam shovel to literally dredge up clay deposits.

PREPARATION

Clay taken fresh from the ground is seldom ready for brick firing. The first step in preparation is weathering. The brick is moved to a level area and piled up, then left through the winter months to be purified by the elements. Winter frosts break up the harder pieces of clay leaving purer clay with more plasticity remaining. In addition, workers periodically flip, cut, and break up the clay in order to expose as much clay as possible to the natural process of weathering.

Next, the clay is tempered through the addition of new materials. These materials are added in order to bring the clay to the right level of plasticity, to endow it with the desired color, and to make it burn properly. The most traditional tempering process is laying out the clay, adding water and engaging in an exercise rather like wine-pressing: several workers repeatedly step over the clay with their feet, improving its pliability; while feeling out and removing any hard pieces of stone still remaining. Later mechanical devices, called pug mills, gained in popularity and become a staple of brick preparation. It consisted of a tub with a center shaft with blades attached in a screw-like manner. Clay and additives would be poured through the tub and the blades rotated, thus effectively mixing the two homogeneously.

MOLDING

The third step is forming the clay into the desired shape, something close to the final product. However firing is known to slightly alter the shape. There are three methods of molding brick. They are soft-mud, stiff-mud and dry-pressed. The methods differ in the percentage of water content in the brick. Soft-mud holds the most water at 20-30%, Stiff-mud less at 12-15% and dry the least at below 10%. Methods for the making the brick are also three fold: 1.) Molding brick by hand is the age-old tradition reaching back thousands of years. 2.) Patting the clay into shape using wooden tools is the second method. 3.) Clay is spread over the ground and cut into brick shapes using a spade.

The crew of people involved in shaping the bricks consisted of a moulder, an off-bearer and a wheeler. The moulder was essentially the leader of the group. His task was to evaluate the quality of the clay and ensure the proper supply of additives and materials were present for the day, and to form the clay bricks to be burned. The wheeler would bring in the large amounts of clay to be molded by the moulder. The off-bearer, usually a young person, would carry the molded bricks away from drying and preparation.

DRYING

Bricks would then be taken outdoors to evaporate excess water content. This was an essential and tricky part of the process, and too much or too little water being evaporated would result in a defective brick. Normally 2-3 weeks would be the allotted for drying. Inclement weather presented a constant risk during the drying process, and sudden rainstorms were known to have destroyed as much as 15% of the output of brickyards on an annual basis (Gurcke 1987). Even with building sheds and covering the bricks, the moisture in the air from heavy rain would nonetheless slow the drying process considerably. With the later advent of indoor drying, a series of flues would be used to heat the ground and facilitate the drying process.

BURNING

Burning the dried brick is the final step, and the culmination of all the effort until that point. Before large kiln construction became commonplace, many brickyards would fire their bricks simply by lighting the entire heap on fire. However, kilns made it possible to evenly burn as many as 20,000 bricks in a single day (McGrath 1979).

BARRINGTON, THE BUILDING OF A BRICK EMPIRE

Rhode Island was known to have informal brickyards in many cities, and also to have imported brick from across the state border from Attleborough, Massachusetts. However the most important brickyards in Rhode Island were found in the city of Barrington. European colonists purchased what would become Barrington from Native Americans in 1653. Clay was first discovered on the west bank of the Warren River, and brick-making is thought to have begun as early as 1673. It began as the work of small independent brick-makers. The first standardized brick dimensions stipulated by colonial law were 8 inches long, 4 inches wide and 2 ¼ inches thick, and were sold for 20 shillings a piece.

Brick-making as a major industry began in the city in the 1720s through the efforts of Matthew Wilson and his hand-produced bricks. Wilson was an Irish expatriate whose family fled the country's Catholic persecution in 1712. He learned the brick-making trade from friends during young adulthood, and trained his skills further under Rhode Island brick-maker John Reed. Wilson's eventual estate in Rhode Island encompassed most of what would become the city of Barrington. However the industry experienced a decline in 1803 after his death. It wasn't until the formation of the Nayatt Brick Company, and some other small companies in the 1850s that the brick industry was rejuvenated and became an economic force once again. Brick demand in Providence especially drove the revival, and new brick producing apparati were purchased and installed to meet the rising demand from the capital city. Between 1857 and 1861 brick production rose steadily from approximately 6,500,000 to 10,000,000 to 15,000,000 bricks (Gizzarelli 1981). Most of the bricks produced by Nayatt in Barrington were delivered to construction projects in Providence.

Barrington was in a particularly advantageous position to invest in the brick-making industry thanks to the presence of many natural clay deposits. One was found between Barrington and the Nayatt deltas. This area became an artificial body of water called Brickyard Pond. This is the negative environmental impact of clay mining. The artificial ponds that form as a result are scars upon the earth. The local creek, Mouscochouk Creek was once a salt-water stream used by Native Americans for food gathering, fishing, clamming and hunting. In 1846 it was converted by the Nayatt Company into a canal to aid in the transportation of brick from Barrington to the Providence River.

In 1864 the Nayatt Brick Company was reincorporated, absorbing the Narragansett Brick Company. This acquisition turned Nayatt into the largest brick-making operation in the northeastern United States. The bricks produced by the company are found all over the country, and constitute much of the paving and sewer systems of some towns as far as Delaware. Notable buildings in the state that are made from Barrington brick include the Brown University Library, Butler Exchange, Rhode Island Hospital, Biltmore Hotel, and the Bank of Commerce.

In 1890 the company was bought out by rival New England Steam Brick Company who would go on to dominate the industry in Barrington from there on. By the early 1900s however, the clay deposits in the area were mostly depleted, and the flooding of mining pits caused a decline in the industry that resulted in many brickyard landholdings being sold off throughout the new century. In 1916 a fire, thought to have begun by spontaneous combustion, ravaged a brick factory of Nayatt and destroyed the expensive factory engine within. (The machinery was more expensive than the building that was housing it.) The fire was fanned by strong winds, and eventually the entire frame of the building was destroyed. The total cost of the affair is disputed, by estimates range from $12,000 to

$50,000 (Gizzarelli 1981). The fire was a powerful blow to a company already reeling from the decline in clay quantity recovered by mining. By the 1930s the Great Depression, combined with the depletion of natural clay deposits, had all but destroyed the brick industry in Barrington. In 1940 the brickyards were purchased by the town and summarily demolished.

There was some minor brick production to be found in the capital of Providence. On Weybosset Hill for example, clay deposits were discovered in the early 1720s (Chase 1986). This discovery resulted in the leveling of the hill to take advantage of this resource for brick-making. After this discovery brick began to replace the wooden style of some homes, though it never penetrated as much as it did in other states, such as Pennsylvania and Massachusetts, during the period.

Brick tended to be a costly commodity, and only the wealthiest of the capital's residents were able to afford the luxury. Later with the 1800s birth of Barrington's Nayatt Brick Company, which supplied brick in greater quantities than ever before, and improvements in construction technology more houses used brick in construction. However they remained the exception for the most part. By the 1850s however, while it had not managed to defeat the popularity of wood frame, it had successfully surpassed, and brought stone construction to the brink of extinction. The growing availability of brick resulted in a spate of brick mills being constructed across the state, but especially in Woonsocket and Barrington.

FIRST BAPTIST CHURCH

The under-structure of the First Baptist Church is constructed of bricks. It is not known if the bricks found in the excavations across the land were fragments of these bricks or pieces that were discarded or moved from other construction projects. The sheer quantity of brick remains uncovered, bear mute evidence to the use of this building material in College Hill.

Figure 12.1 Brick fragment from A3/6, Side

Figure 12.2 Brick fragment from A3/6, End

Figure 12.3 Brick fragment from A3/6, Side

Table 12.1 Brick measurements and quantities

Whole bricks	Length	Height	Width	Weight	Surfaces	Color	Hardness	Print
B1 Brick	9mm	3mm	6mm	283g	6	7.5YR 5/8	3	None
B2 Brick	8mm	4mm	7mm	531g	6	7.5 YR 5/6	3	None

Pit B1	Lot 2	Lot 4	Lot 6	Lot 7
200G+				1
100-200G				
50-99G		1		1
40-49G				1
30-39G				
20-29G				
10-19G				1
Under 10G	2	8	5	16

Pit B2	Lot 1	Lot 2	Lot 5	Lot 6	Lot 7	Unknown
200G+					1	
100-200G				1	2	
50-99G				1		
40-49G						
30-39G				1	2	
20-29G			1	2	2	
10-19G		2		7	1	1
Under 10G	6	12	77	171	149	20

Pit A2	Lot 2	Lot 3	Lot 6	Lot 7	Lot 8	Lot 9
200G+						
100-200G						
50-99G						
40-49G						1
30-39G						
20-29G						
10-19G		2				
Under 10G	1	15	1	2	1	

Pit A3	Lot 2	Lot 3A	Lot 3C	Lot 4	Lot 6	Unknown
200G+						
100-200G		1			1	
50-99G						
40-49G						
30-39G						
20-29G						
10-19G		1				1
Under 10G	3	6	1	3	7	26

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Chapter 13

Coal: Definition and Major Types

Kirin Peagler

This chapter presents the usage and archaeological importance of coal as an artifact. It focuses specifically on the manufacture and use of coal in the Rhode Island area as well as a history of the coal beds and mining operations within the state. A brief analysis of the different types of coal and their properties will also be given.

Coal is defined as a "fossil fuel extracted from the ground through underground mining or surface-mining" (http://en.wikipedia.org/wiki/Coal). It is a highly combustible sedimentary rock composed primarily of carbon but includes hydrogen, oxygen, and nitrogen. It is of vegetable origin and was formed in swamp-like ecosystems located in lowland sedimentary basins. These areas are often called "coal forests" due to their massive production of coal. These coal forests are a result of the transformation of wood and other vegetable materials through the elimination of oxygen and hydrogen in larger amounts than the elimination of carbon. This transformation results from extreme pressures and temperatures, which separate the organic matter into carbon, hydrogen, and oxygen. The variation in the degree of change from organic material to hard coal is a result of time, depth and disturbances of the coal beds, and the introduction of foreign matter. However, the most important factor in the evolution of coal is the presence (or absence) of disturbance within the crust of the earth's surface in or near a coalfield during the period of transformation. Disturbances can affect the amount of foreign and incombustible matter found in coal and determine to which category the coal belongs (Ashley 1915)T[1].

Coal is categorized based upon internal differences at different states of transformation. These changes are noted by a decrease in moisture, volatile matter, oxygen and an increase in fixed carbon, sulfur, or ash. There are six ranks of coal that are currently recognized by the United States Geological Survey: Lignite, Sub-Bituminous, Bituminous, Semi-Bituminous, Semi-Anthracite, and Anthracite. Table 13.1 shows these ranks according to the amount of fixed carbon, volatile matter, and moisture content.

Table 13.1: Chemical Compositions of the Recognized Coal Ranks*

RANK	Fixed Carbon %	Volatile Matter %	Moisture Content %	Calorific Value Btu/lb
Lignite	37.80	18.80	43.40	7,400
Sub-Bituminous	42.4	34.2	23.4	9,720
Low-Rank Bituminous	47.00	41.40	11.60	12,880
Medium-Rank Bituminous	54.2	40.80	5.00	13,880
High-Rank Bituminous	64.60	32.20	3.20	15,160
Low-Rank Semi-Bituminous	75.00	22.00	3.00	15,480
High-Rank Semi-Bituminous	83.40	11.60	5.00	15,360
Semi-Anthracite	83.80	10.20	6.00	14,880
Anthracite	95.60	1.20	3.20	14,440

*From http://energyconcepts.tripod.com/energyconcepts/classificton_of_us_coals.htm.

Lignite forms during the early stages of vegetable matter's transformation from peat[2] (Fig. 13.1) to bituminous coal. It is brown and has a very wood-like appearance. Due to its high moisture content (30-45%) it disintegrates faster than other types of coal. Because of its rapid rate of disintegration, Lignite (Fig. 13.2) must be stored very carefully to avoid spontaneous combustion. It has been used in gas production and can be burned in bed combustion furnaces.

Sub-Bituminous coals are often called “black lignites” due to their black color and similar tendency to spontaneous combust. Sub-Bituminous coal is most often used in the areas where it is mined and can be used as a clean domestic fuel.

Bituminous coal (Fig. 13.3) is representative of the largest division of classified coals. It is also the widest in range in terms of chemical composition. The Bituminous rank encompasses gas coals, cannel coal, and local groups of coal known as “block” and “splint” coals.

Semi-Bituminous coal has a very high ratio of fixed carbon, which allows for nearly smokeless combustion. It also has a higher calorific value than coals within any other rank. Semi-Bituminous coal was burned for the generation of steam and electricity prior to the invention of pulverized coal combustion. It is typically found in the Eastern coalfields although some has been found in Western areas.

Semi-Anthracite is a hard coal that overlaps the Semi-Bituminous coal description. It is a very rare form of coal to find in the United States and has little importance in terms of commercial purposes.

Anthracite (Fig. 13.4) is a hard coal that is primarily mined in eastern Pennsylvania. It is believed that the concentration of anthracite in Pennsylvania is a result of the intense transformations that affected the area. It was originally used as a domestic fuel or wherever smokeless combustion was required.

Figure 13.1: Peat

Figure 13.2: Lignite

Figure 13.3: Bituminous

Figure 13.4: Anthracite

COAL IN RHODE ISLAND

The coal found in Rhode Island is extremely variable and ranges from anthracite to graphite[3]. It generally contains a moderate to high amount of ash and a high percentage of moisture when it is first mined. Due to these conditions it must be carefully handled when mined to ensure that it can be used for fuel. The coal beds in Rhode Island originally had a medium thickness but pressure forced them to fold and compress, thus pushing the coal into large pockets if not squeezed out all together. As a result, the coalfield itself became broken and compressed and eventually mixed with large quantities of rock impurities, such as quartz. Past mining ventures in the Rhode Island area failed to be profitable mainly as a result of three causes: improper and careless preparation of the coal at the mining site, attempted use of coal in furnaces built to handle other specific coal types, and the low duty obtainable from the coal in comparison with other competing coals (Ashley 1915: 8).

People have known about the presence of coal in Rhode Island for quite some time. The coal bed located in Portsmouth (bordering Narragansett Bay) appears to have been known as early as 1760. In February of 1768 a patent was granted to individuals who wished to “dig after pit coal or sea coal” (Ashley 1915: 7) that was located on a hill in the back of Providence. It has also been said that during the Revolutionary War British soldiers located in Newport used local coal for heating purposes. In June of 1887 former Rhode Island Governer Lippett stated that his grandfather had attempted to mine Rhode Island coal prior to 1787 (Ashley 1915: 7). This statement leads one to believe that the knowledge of local coal beds was known very early on in the settlement of the state. In 1808 two mines opened, one in Portsmouth and one on the East side of Providence, and a coal bed was discovered a little to the north of Pawtucket.

One year later the Rhode Island Coal Company and the Aquidneck Coal Company were founded. According to early reports these companies failed to prepare the coal properly and, therefore, lost a considerable amount of money. In 1835 a group called J. Alexander and Seth Mason & Bros. became interested in the Pawtucket coal bed, and in 1836 they founded the New England Coal Mining Co. However, the coal garnered from this mine did not become popular and the company eventually failed. Around the same time the other coal mining ventures in the Rhode Island area came to a standstill as well. Other coal mining ventures were set up, but none became very successful.

The coal beds found in Cranston appear to have been the most successful when large companies such as the New York Carbon Co. took interest and invested time and equipment into the mining operation. Eventually Cranston developed its own mining company called the Cranston Coal Co., which stayed in business until the early 1900’s. The Portsmouth coal beds stayed active into the early 1900’s although they passed through several companies. After many years of producing un-profitable coal and periods of inactivity, the Compressed Coal Co. of Boston took hold of the beds and created a briquetting[4] plant. This plant turned out to be profitable and it was eventually taken over by the Rhode Island Coal Co. in 1909.

The coal mined in Rhode Island was generally used for household and industrial use. However, the types of coal mined within the state were extremely hard to burn and prone to producing extreme amounts of smoke so it is very likely that much of the coal burned for household use was imported from out of state. According to George Ashley in *Rhode Island Coal*, "90 per cent of the people living in the neighborhood [the Rhode Island area] preferred to burn Pennsylvania anthracite" (Ashley 1915: 39). It has been shown that Rhode Island coal has only 70-80% of the heating power of other anthracite coals, and only 60-70% of the heating power of bituminous coals that were shipped to New England. Rhode Island coal also has only 40% heating efficiency when compared to other coals. These facts combined with its inability to ignite and high percentage of ash lead insight into why Rhode Island coal was never very successful.

COAL IN AN ARCHAEOLOGICAL CONTEXT

When coal is discovered within an archaeological context it can tell us several things. Most importantly, it gives the archaeologist a means of dating the site. Coal was first produced in the United States in 1748 in the Mankin, Virginia area. In light of this, if coal is found within an archaeological site it is safe to say that the site is post-1748. By determining the type of coal that is found, the archaeologist can also attempt to date the site more precisely as the different types of coal were first mined at slightly different times. The type of coal found within a site is also helpful in determining how people traded during the given time. Different types of coal are specific to different locations around the country, so by determining the type of coal the archaeologist is able to shed some light on where and how people were trading. The coal mined in Rhode Island is extremely hard to burn and is prone to exploding once it is ignited. As a result, most coal found in archaeological sites in Rhode Island was probably imported from another mining location. Coal is generally as heat source, as well as for cooking. Finding coal within an excavation can give evidence as to what type of stoves and furnaces people were using and perhaps what they were using them for.

The coal found in Rhode Island is typically Anthracite, which is the hardest of all the coal types (excluding graphite). In light of this, it is not necessary to spend extra time bagging and preparing it in the field as it is extremely durable. However, special attention should be paid to the depth and exact location of the coal within the excavation unit, as well as documentation of the exact amount found. This information is important because it can give the archaeologist insight into what the coal was being used for and how it came to be in its present location.

COAL AT THE FIRST BAPTIST CHURCH

Coal was first used as fuel in the First Baptist Church when coal stoves were installed in the auditorium of the meeting house in 1826. Coal continued to be the main source of fuel for the Church well into the 20th century until the coal stoves were replaced with oil burners and eventually gas furnaces. During the excavation of the First Baptist Church property we uncovered quite a bit of coal (bituminous and anthracite). Table 13.2 shows the amount of coal found, the test pit location, and the depth at which it was uncovered.

Table 13.2: Amount of coal found within each test pit.

Test Pit Number and Lot Number	Bituminous Coal	Anthracite Coal
FBCA1		
Lot 2 (10-20cm)	1g	41g
Lot 3 (20-30cm)	.3g	35.1g
Lot 8 (70-80cm)	7g	-
Lot 9 (80-90cm)	.3g	-
FBCA2		
Lot 2 (10-20cm)	3g	-
Lot 3 (20-30cm)	4g	2g
FBCA3		
Lot 1 (0-10cm)	3g	2g
Lot 2 (10-20cm)	6g	3g
Lot 3 (20-30cm)	-	1g
FBCA4		
Lot 3 (20-30cm)	-	1g
Lot 4 (30-40cm)	36.6g	-
FBCB1		
Lot 2 (10-20cm)	5.2g	-
Lot 4 (30-40cm)	-	1g
Lot 6 (50-60cm)	-	5.2g
Lot 7 (60-70cm)	8g	-
FBCB2		
Lot 2 (10-20cm)	48g	3g
Lot 3 (20-30cm)	54g	5g
Lot 4 (30-40cm)	43g	21g
Lot 5 (40-50cm)	-	1 piece less than a gram
FBCB3		
Lot 2 (10-20cm)	3g	3g
Lot 3 (20-30cm)	6.4g	-
Lot 4 (30-40cm)	-	.2g
Lot 5 (40-50cm)	30g	-
FBCB4		
Lot 4 (30-40cm)	-	.3g
Lot 5 (40-50cm)	.9g	-
Lot 3 (20-30cm)	-	1 piece less than a gram

PHOTOGRAPHS OF EXCAVATED COAL FROM THE FBC PROPERTY

Figure 13.5

Figure 13.6

Figure 13.7

Figures 13.5, 13.6, 13.7: Anthracite from FBCA1 Lot 2

Figure 13.8

Figure 13.9

Figure 13.10

Figures 13.8, 13.9, 13.10: Bituminous coal from FBCA4 Lot 4

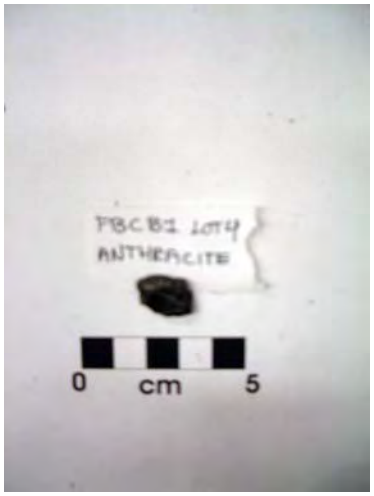

Figure 13.11

Figure 13.12

Figure 13.13

Figures 13.11, 13.12, 13.13: Anthracite from FBCB1 Lot 4

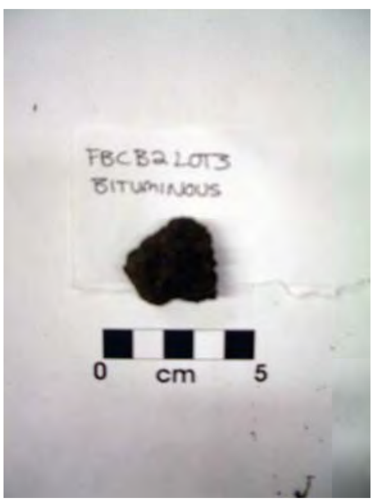

Figure 13.14

Figure 13.15

Figure 13.16

Figures 13.14, 13.15, 13.16: Bituminous coal from FBCB2 Lot 3

ACKNOWLEDGMENTS

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[1] All subsequent material involving context and origins of coal summarized from Ashley (1915) and http://energyconcepts.tripod.com/energyconcepts/classification_of_us_coals.htm
[2] Peat is an accumulation of partially decayed organic matter which, under the right conditions, can become the earliest stage in the formation of coal.
[3] Graphite is considered to be the highest grade of coal but it is not normally used as fuel since it is difficult to ignite.
[4] Briquettes are dried and compressed lignites that are formed into hard rocks which can be used as a means of combustion.

Section III: Man's use of God's Grounds

Chapter 14

Man's Use of God's Grounds

Zachary Nelson

The grounds of the First Baptist Church in America were investigated by archaeological means from September-November 2006 as part of a Brown University class on archaeological field methods. Most classes are not hands on. Students sit passively while the professor dispenses knowledge from the front of the class. This class was utterly different. Students mapped, excavated, sifted, shoveled, troweled, bagged, washed, dried, sorted, analyzed, and wrote. In four months of effort, an entire archaeological dig took place.

The results of this investigation are before you. Their presentation has been from the perspective of "Picnic Archaeology" or the remains of communal feasting behavior exemplified by the myriad of small shells, bones, and serving dishes discovered in eight test pits. Admittedly, picnics hardly covers the range of activities that take place on the grounds, and that took place there. Yet, the diversity of artifacts are consistent with such activities. Glassware bottles, ceramic cups and saucers, serving dishes, bones and shell, and pipe fragments all can be included in picnics.

The grounds were used for more than picnics. They are extensions of the Church. On at least two occasions, people asked the excavators religious questions. Hence, the title for this conclusion. How has mankind made use of God's ground in this section of Rhode Island? These excavations reveal a casual use of the grounds. Missing buttons, brick fragments, and nails make an odd argument for a totality of mankind's activities. Truly ephemeral visits to God's grounds are untouchable by archaeological trowels. Soul searching visits to the Church can not be excavated by our techniques.

Our excavations reveal the material side of church activity and communal property. I find it interesting to note how many fine ceramic fragments were found on site. Each of these were brought to the church, probably by congregation members, for picnics, and potlucks. Many are high-end items that broke hearts as they fractured and were discarded. People brought their best to church. This is the heritage of the excavation. The realization that each artifact had been, in its own way, consecrated to God and used in His service.

Appendix: Artifact Catalog and Descriptions

Vanessa Van Doren

DESCRIPTIONS OF SPECIAL FIND CERAMICS

A2 - 3

These 11 sherds of pearlware are composed of white to light cream colored, thin, hard, refined earthenware paste with a clear lead glaze. Three of these sherds display blue transfer print, which is distinctive from hand-painted designs in that it is composed of tiny dots, and one has a scalloped, shell-edged rim. These sherds date to the 1830s from England and were part of a bowl, plate, or platter.

Figure A.1: A2 – 3 Pearlware with blue transfer print

A2 - 3

This sherd of Rockinghamware is a body fragment composed of thick, hard, compact, yellow paste. The body is covered in a clear lead glaze, fired, and covered with an additional brown manganese glaze. The combinations of these two glazes result in a mottled look with the melting of the two glazes. This sherd could have been part of a crock, jar, pitcher, or pot and was produced between 1845 and 1900 in the United States.

Figure A.2: A2 – 3 Rockinghamware

A3 – 1

This sherd is a body fragment composed of white, hard-paste, vitreous porcelain. It is hand-painted with a gold arch that probably continues around the vessel. However, the sherd is too small to ascertain a reliable date.

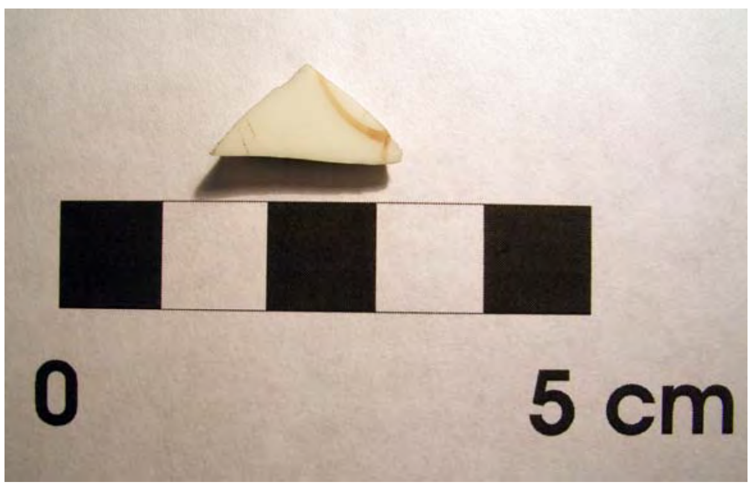

Figure A.3: A3 – 1 Porcelain

A3 – 3

This sherd of Staffordshire slipware is a flat body fragment composed of a thin, buff-bodied earthenware coated with white and dark slips and decorated with trailed, combed designs. A clear lead glaze gives this sherd a yellowish background color. The sherd is only decorated on one side. These qualities are consistent with Staffordshire slipware of the North Midlands design, which was produced between 1660 and 1745 in England and made into a variety of objects including bowls, chamber pots, cups, mugs, pitchers, plates, platters, and posset cups.

Figure A.4: A3 – 3 Staffordshire Slipware

A3 – 6

This sherd of Canton porcelain is a base fragment composed of grayish-white, glass-like vitreous porcelain with a poor-quality, textured surface. The design is hand-painted in blue and consists of a circle, straight lines, and some cross-hatching which seems to be part of a larger floral design or garden scene. These qualities are consistent with Canton porcelain, manufactured from 1790 to 1835 in China, and this sherd could have come from a bowl, plate, or platter. Canton ware was mass-produced at Canton after the American Revolution as an export ware to America. It is sometimes referred to as "Ballast ware" for the low cost and huge amounts of this porcelain that were shipped.

Figure A.5: A3 – 6 Canton Porcelain

A3 - ? (2 or 3)

This sherd is a body fragment composed of white, hard-paste Chinese porcelain. It is smooth, translucent, and highly vitreous, and it bears a small red overglaze enamel design of two ovals outlined in dark brown. This description fits that of Ch'ing polychrome overglaze, which was manufactured between 1700 and 1750. Ch'ing polychrome overglaze is usually decorated in red floral motifs and lacks a blue underglaze, which is consistent with this sherd. Additionally, the small red decoration on this sherd appears very similar to the one found in the Florida Museum of Natural History's catalog sample of Ch'ing polychrome overglaze. Ch'ing polychrome overglaze porcelain was used to make bowls, cups, plates, and saucers. However, as this sherd is too small to make such a specific identification, it should be placed in the broader category of Ch'ing porcelain, which was produced from 1644 to 1912 in China.

Figure A.6: A3 – 2/3 Ch'ing Porcelain

B1 – 4

These four sherds are green pearlware that was part of a bowl, plate, or platter. One particularly diagnostic rim fragment displays the shelled-edged scallop rim design with impressed straight lines, which was manufactured between 1809 and 1831 in England.

Figure A.7: B1 – 4 Green Pearlware

B1 – 4

One of these sherds is a body fragment of pearlware composed of white, thin, hard, compact refined earthenware paste. This sherd was hand-painted with blue underglaze with a cross-hatching pattern and was manufactured in England between 1775 and 1815. Hand-painted designs were eclipsed by transfer print around 1812-1815. This sherd was part of a bowl, cup, plate, or platter.

The other sherd is a body fragment of whiteware composed of an off-white, thin, hard, compact paste and a clear lead glaze with a pure paper-white background. This sherd is decorated with black transfer print and was manufactured in England between 1830 and 1850.

Figure A.8: B1 – 4 Pearlware and Whiteware

B1 – 4

This sherd is a polychrome, curved body fragment composed of white, soft-paste, hand-painted European porcelain manufactured between 1800 and 1850. It is decorated with a red and green painting of a basket with flowers falling over the side. Based on the curve of the sherd, it once belonged to a teacup.

Figure A.9: B1 – 4 European Porcelain

B1 – 6

The first diagnostic sherd is a whiteware body fragment with red transfer print on both sides. This sherd was manufactured in England between 1829 and 1839 and belonged to a bowl, plate, or platter.

Figure A.10: B1 – 6 Whiteware

The second diagnostic sherd is a body fragment of blue pearlware, with a hand-painted blue anular underglaze. This sherd was produced in England between 1775 and 1830 as part of a bowl, cup, plate, or platter.

B2 – 15cm

These seven sherds cross-mend to form a sugarbowl top made of molded pearlware decorated with blue transfer print that dates from between 1807 and 1840 and was manufactured in England. The sherds are composed of cream-colored, thin, hard, refined earthenware paste and covered with a white lead glaze. Stippling is evident in the transfer print, a practice that originated in 1807.

Figure A.11: B2 – 15cm Pearlware Sugarbowl Top

B2 – 2

This sherd is an unidentified polychrome rim fragment composed of white European porcelain that was hand-painted with a red, green, blue, yellow, and purple design.

Figure A.12: B2 – 2 European Porcelain

B2 – 6

This sherd is a curved body fragment composed of white, soft-paste, vitreous porcelain that is hand-painted with an orange stripe. However, the sherd is too small to be diagnostic.

Figure A.13: B2 – 6 Porcelain

B3 – 5

The first sherd is a body fragment composed of light cream colored, thin, hard, compact paste. The background glaze is cream colored on one side, and the other side is decorated with mottled and spattered designs in brown and green. This description is characteristic of Whieldonware, which is also known as cloudedware and is the first of the refined earthenwares that was produced between 1740 and 1770 in England. This sherd was from a plate, platter, or teapot. Similar plates are found at the Pendleton House in Providence.

The second sherd is a body fragment of whiteware that was hand-painted with a blue glaze. This type of whiteware was manufactured in England from 1830 to the present in the form of bowls, cups, jars, pitchers, plates, platters, tea pots, and tureens.

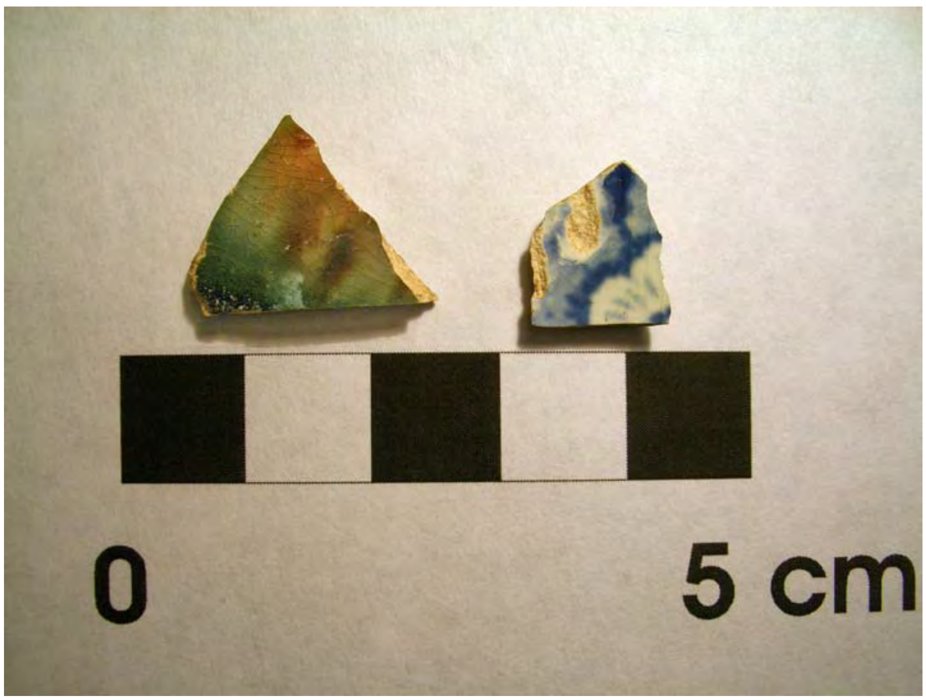

Figure A.14: B3 – 5 Whiteware and Whieldonware

B4 – 1

This sherd is a body fragment of whiteware with a brown transfer print on one side, which was manufactured in England from 1829 to 1839.

Figure A.15: B4 – 1 Whiteware

B4 – 5

This sherd is a body fragment composed of grayish-white, glass-like vitreous Chinese porcelain with a poor-quality, textured surface. The design is hand-painted in blue and seems to represent a garden scene. These qualities are consistent with Canton porcelain, manufactured from 1790 to 1835 in China, and this sherd could have come from a bowl, plate, or platter. Canton ware was mass-produced at Canton after the American Revolution as an export ware to America. It is sometimes referred to as "Ballast ware" for the low cost and huge amounts of this porcelain that were shipped.

Figure A.16: B4 – 5 Canton Porcelain

Table A.1. This inventory was prepared after the preceding chapters were written. It is intended as a further guide to the materials excavated at the First Baptist Church.

Square	Lot	Material	Description	Count	Date	Comments
B2	4	Bone	Unidentified	1		
B2	4	Bone	Unidentified	4	11/6/2006	4'
B2	5	Bone	Unidentified	2	11/10/2006	5"
B2	5	Bone	1 Bone Fragment	1	11/9/2006	20-60 cm
B2	6	Bone	Unidentified Fragments	15	10/30/2006	
B2	6	Bone	Femur Fragment and Other Unidentified Fragments	16	11/9/2006	6'
B2	6	Bone	Femur Fragment and Other Unidentified Fragments	13	11/10/2006	6'
B2	6	Bone	Sheep Tarsal	1	11/9/2006	6'
B2	6	Bone	Calcined, Unidentified Fragment	1		6"
B2	6	Bone	Unidentified Fragments	32	11/10/2006	6"
B2	6	Bone	Unidentified Fragments	30	11/9/2006	6'
B2	7	Bone	Cow Tooth	1	10/30/2006	
B2	7	Bone	Sternum/Rib Fragment and Other Unidentified Fragments	14	10/30/2006	
B2	7	Bone	Unidentified	1	10/30/2006	
B2	7	Bone	Unidentified Fragments	12	11/11/2006	7"
B2	7	Bone	Calcined, Unidentified Fragments	7		7"
B2	7	Bone	Rib Fragment, Tarsal, Unidentified Fragments	20	11/11/2006	7"
B2	7	Bone	Cow Patella	1	11/11/2006	7"
B2	7	Bone	Large (Cow?) Rib	1	11/11/2006	7"

Square	Lot	Material	Description	Count	Date	Comments
B2	7	Bone	Unidentified Fragments	4	11/11/2006	7"
B2	7	Bone	Unidentified Fragments	32	11/11/2006	7"
B2	9	Bone	Femur Fragments, Tooth, and Other Unidentified Fragments	11	11/6/2006	
B2	7 to 9	Bone	Unidentified Joint Fragment	1	11/9/2006	
B4	3	Bone	Unidentified	1	10/2/2006	
A1	2	Brick		3		
A1	4	Brick		2		
A1	7	Brick		1		
A1	8	Brick		5		
A1	8	Brick		24		
A1	9	Brick		1		
A2	2	Brick		1		
A2	3	Brick		17		
A2	6	Brick		1		
A2	7	Brick		2		
A2	8	Brick		1		
A2	9	Brick		1		
A3	2	Brick		3		
A3	3	Brick		6		
A3	4	Brick		3		
A3	5	Brick		1		

Square	Lot	Material	Description	Count	Date	Comments
A3	6	Brick		1		
A3	6	Brick		7		
A3	3a	Brick		2		
A3	3c	Brick		1		
A3		Brick		1		
A3		Brick		26		
A4	3	Brick		3		
A4	3	Brick		23		
A4	3	Brick		3		
A4	4	Brick		9		
A4	4	Brick		2		
A4	5	Brick		2		
A4	5	Brick		3		
A4		Brick		2		Level 4-B
B1	2	Brick		2		
B1	4	Brick		1		
B1	4	Brick		6		
B1	6	Brick		4		
B1	7	Brick	Whole	1		
B1	7	Brick		1		
B1	7	Brick		3		

Square	Lot	Material	Description	Count	Date	Comments
B1	7	Brick		14		
B2	1	Brick		4		
B2	2	Brick		5		
B2	3	Brick		2		
B2	3	Brick		6		
B2	4	Brick		19		
B2	4	Brick		26		
B2	4	Brick		3		
B2	5	Brick		1		
B2	5	Brick		9		
B2	5	Brick		24		
B2	5	Brick		39	10/30/2006	
B2	6	Brick		50		
B2	6	Brick		2		
B2	6	Brick		33		
B2	6	Brick		1		
B2	6	Brick		41		
B2	6	Brick		48		
B2	7	Brick	Large Fragments	3		
B2	7	Brick		138		
B2	7	Brick		2		

Square	Lot	Material	Description	Count	Date	Comments
B2	7	Brick		7		
B2	9	Brick		1		
B3	3	Brick		6		
B3	4	Brick		12		
B3	5	Brick		11		
B3	5	Brick		10		
B4	3	Brick		3		
B4	5	Brick		2		
A4	4	Ceramic	2 Redware with Black Glaze, 2 Creamware	4		
A4	5	Ceramic	1 Redware with Black Glaze, 1 Creamware, 1 Unidentified	3		
A4	9	Ceramic		1		
B2	4	Ceramic	Fragment with White Glaze	1		20-60 cm Baulks
B2	6	Ceramic	Yelloware, Buff, 1840-1900; Stoneware, Salt Glaze Interior, Base, 1860; Creamware	39	11/9/2006	
A2	3	Ceramic - Coarse Earthenware	Redware with Red/Orange Glaze	1		
A2	3	Ceramic - Coarse Earthenware	Redware	1		
A2	9	Ceramic - Coarse Earthenware	Redware with Brown Glaze	1	10/30/2006	
A3	3	Ceramic - Coarse Earthenware	Redware with Brown Glaze, Molded-Rim, Blue-Glazed Pearlware, 1775-1830	2		
A3	3	Ceramic - Coarse Earthenware	Staffordshire Slipware North Modlands Design 1660-1745, Yellow and Brown	1		

Square	Lot	Material	Description	Count	Date	Comments
A3		Ceramic - Coarse Earthenware	1 Redware	1		
A4	3	Ceramic - Coarse Earthenware	2 Redware	2		
A4	3	Ceramic - Coarse Earthenware	1 Redware	1		
A4	4	Ceramic - Coarse Earthenware	Black-Molded, Lead-Glazed Redware	1		
A4	5	Ceramic - Coarse Earthenware	2 Redware with Orange Glaze	2		
A4	5	Ceramic - Coarse Earthenware	Redware	1		
A4	8	Ceramic - Coarse Earthenware	Tin-Glazed Delftware, 1620-1800	4		
A4	9	Ceramic - Coarse Earthenware	Redware with Black Glaze	2		
A4		Ceramic - Coarse Earthenware	2 Redware	2		Level 4-B
B1	2	Ceramic - Coarse Earthenware	1 Redware	1		
B1	3	Ceramic - Coarse Earthenware	Redware with Black Glaze	1		
B1	4	Ceramic - Coarse Earthenware	2 Redware	2		
B1	4	Ceramic - Coarse Earthenware	Redware	4		

Square	Lot	Material	Description	Count	Date	Comments
B1	6	Ceramic - Coarse Earthenware	1 Redware	1		
B1	6	Ceramic - Coarse Earthenware	Redware with Brown Glaze	1		
B2	1	Ceramic - Coarse Earthenware	2 Redware	2		
B2	2	Ceramic - Coarse Earthenware	Delftware? Blue and White Glaze	7		15 cm
B2	3	Ceramic - Coarse Earthenware	2 Redware	2		
B2	3	Ceramic - Coarse Earthenware	Redware and Ceramic with Bluish White Glaze	2	10/2/2006	
B2	4	Ceramic - Coarse Earthenware	2 Redware	2		
B2	4	Ceramic - Coarse Earthenware	Redware	1		
B2	4	Ceramic - Coarse Earthenware	Redware with Black Glaze	1		
B2	4	Ceramic - Coarse Earthenware	Redware with Light Brown Glaze	4		
B2	5	Ceramic - Coarse Earthenware	6 Redware	6	10/30/2006	
B2	5	Ceramic - Coarse Earthenware	Redware with Black Glaze	1		
B2	5	Ceramic - Coarse Earthenware	Redware with Orange/Red Glaze	1		5"

Square	Lot	Material	Description	Count	Date	Comments
B2	6	Ceramic - Coarse Earthenware	5 Redware	5		
B2	6	Ceramic - Coarse Earthenware	3 Redware, 1 Redware with Red Glaze	4		
B2	6	Ceramic - Coarse Earthenware	4 Redware	4		
B2	6	Ceramic - Coarse Earthenware	Yellow/Orange Glaze	2		
B2	6	Ceramic - Coarse Earthenware	Redware with Brown Glaze	5		
B2	6	Ceramic - Coarse Earthenware	Redware with Brown Glaze	1		
B2	6	Ceramic - Coarse Earthenware	Redware with Red Glaze	2		
B2	6	Ceramic - Coarse Earthenware	8 Redware with Brown and Orange Glaze	8		
B2	7	Ceramic - Coarse Earthenware	7 Redware, 5 Redware with Red/Brown Glaze	12		
B2	7	Ceramic - Coarse Earthenware	1 Redware with Brown Paint, 1 Redware with Yellow/Orange Glaze	2		
B2	7	Ceramic - Coarse Earthenware	2 Redware	2		
B2	7	Ceramic - Coarse Earthenware	Redware	1		
B2	7	Ceramic - Coarse Earthenware	Redware with Brown Glaze	3		

Square	Lot	Material	Description	Count	Date	Comments
B2	7	Ceramic - Coarse Earthenware	Redware with Brown Glaze	1		
B2	7	Ceramic - Coarse Earthenware	Redware with Brown/Red Glaze	5		7"
B2	9	Ceramic - Coarse Earthenware	Redware with Orange/Red Glaze	1		
B4	4	Ceramic - Coarse Earthenware	Redware	1		
B4	5	Ceramic - Coarse Earthenware	3 Redware	3		
B4	5	Ceramic - Coarse Earthenware	Redware	1		
A3	1	Ceramic - Porcelain	Gold Decoration	1		
A3	6	Ceramic - Porcelain	Chinese, Blue, 1660-1800	1	11/6/2006	
B1	4	Ceramic - Porcelain	Hand-Painted European, Red Design, 1800-1850	1	10/16/2006	
B2	2	Ceramic - Porcelain	European, English, Red, Green, Blue, Yellow, and Purple Design, Late 19th/20th Century	1		
B2	2	Ceramic - Porcelain		1		
B2	6	Ceramic - Porcelain	Porcelain, Hand Painted, Red, 1795-1820	1		
B4	5	Ceramic - Porcelain	Burnt, Blue Decoration	1		
A3	2 or 3	Ceramic - Porcelain?	Whiteware Transfer, 1820 + (1875)	1	10/16/2006	
A1	2	Ceramic - Refined Earthenware	1 Ceramic with Blue, Purple, and Brown Decoration, 1 Creamware	2		
A1	3	Ceramic - Refined Earthenware	Pearlware	1		

Square	Lot	Material	Description	Count	Date	Comments
A2	1	Ceramic - Refined Earthenware	Pearlware	1		
A2	2	Ceramic - Refined Earthenware	Whiteware with Blue Design	2		
A2	3	Ceramic - Refined Earthenware	4 Whiteware, 1 Creamware	5		
A2	3	Ceramic - Refined Earthenware	Pearlware, Flow-Blue?, Transfer 1840-1849	2		
A2	3	Ceramic - Refined Earthenware	Pearlware, Shell-Edged, Blue, 1830's; Pearlware, Transfer, 1820-1830	11		
A2	3	Ceramic - Refined Earthenware	Rockingham 1845-1900	1		
A2	3	Ceramic - Refined Earthenware	Whiteware, Anular, 1840-1900	1		
A3	2	Ceramic - Refined Earthenware	Black Glaze with Impressed Letters	1		
A3	2	Ceramic - Refined Earthenware	Mottledware?, Buff Earthenware, Leadglazed, Brown, 1800?	3		
A3	4	Ceramic - Refined Earthenware	Creamware	1		
A3	?	Ceramic - Refined Earthenware	Creamware	1		
A3	?	Ceramic - Refined Earthenware	Creamware, Whiteware, Unidentified with Green Design	3		
A4	3	Ceramic - Refined Earthenware	1 Creamware, 1 Whiteware	2		

Square	Lot	Material	Description	Count	Date	Comments
A4	4	Ceramic - Refined Earthenware	Creamware?	1		
A4	6	Ceramic - Refined Earthenware	Unidentified, Blue and Gray Decoration	1		
B1	2	Ceramic - Refined Earthenware	Pearlware Blue Transfer, 1820-1830	1		
B1	3	Ceramic - Refined Earthenware	Creamware	1		
B1	4	Ceramic - Refined Earthenware	Black Transfer, Whiteware, 1830-1850; Pearlware, Hand-Paint Blue Underglaze, 1775-1830	2		
B1	4	Ceramic - Refined Earthenware	Shell-Edged, Green Pearlware, Scallop Rim, 1809-1831	4		
B1	4	Ceramic - Refined Earthenware	Unidentified, Blue and Green Decoration	4		
B1	6	Ceramic - Refined Earthenware	Creamware	1		
B1	6	Ceramic - Refined Earthenware	Whiteware, DS Transfer Red Print: 1829-1839; Blue Pearlware, Hand Pained Anular, Underglazed, 1775-1830; Creamware 1762-1820	14		
B1	7	Ceramic - Refined Earthenware	2 Creamware 2 Whiteware	4		
B2	3	Ceramic - Refined Earthenware	Creamware?	1		
B2	3	Ceramic - Refined Earthenware	Burnt Creamware	1		
B2	4	Ceramic - Refined Earthenware	Anular, Pearlware, Moca, 1840-1900	3		

Square	Lot	Material	Description	Count	Date	Comments
B2	4	Ceramic - Refined Earthenware	3 Creamware, 1 Whiteware, 2 Unidentified	6		4"
B2	5	Ceramic - Refined Earthenware	Creamware	2		
B2	5	Ceramic - Refined Earthenware	Pearlware	2		
B2	6	Ceramic - Refined Earthenware	Sugarbowl Top, Pearlware, Transfer Print 1780-1830, Molded	9		
B2	6	Ceramic - Refined Earthenware	White Pearlware, Poly, Leaf, 1795-1820	1		
B2	7	Ceramic - Refined Earthenware	Hand-Painted Pearlware, Polychrome, 1795-1820	1		
B2	7	Ceramic - Refined Earthenware	Pearlware with Green Design	16		7"
B3	3	Ceramic - Refined Earthenware	Creamware	2		
B3	4	Ceramic - Refined Earthenware	Blueish-White Glaze	1		
B3	5	Ceramic - Refined Earthenware	1 Whieldonware, 1740-1770; 1 whiteware hand-painted blue glaze; 1 unidentified	3		
B4	1	Ceramic - Refined Earthenware	Brown Transfer, Whiteware, 1829-1839	5		
B4	3	Ceramic - Refined Earthenware	Whiteware	1		20-30 cm
B4	4	Ceramic - Refined Earthenware	Creamware	2		
A2	3	Ceramic - Stoneware	Burnt	1		

Square	Lot	Material	Description	Count	Date	Comments
A3	3b	Ceramic - Stoneware	Gray Salt-Glazed, 1860	1		
B1	6	Ceramic - Stoneware	Buff, Yellow/Brown Glaze	1		
B2	5	Ceramic - Stoneware	English, Salt Glaze, 1850's	1		
A1	3	Ceramic - White Clay	Pipe Stem Fragment, circumference of hole 5/64" 1710-1750	1	10/2/2006	
B1	2	Ceramic - White Clay	Pipe Bowl Fragment	1		
B1	4	Ceramic - White Clay	Pipe Fragment with Black Glaze	1		NE Corner
B2	5	Ceramic - White Clay	Pipe Fragments, Circumference of Stem Fragment 4/64", 1750-1800	4	11/10/2006	5"
B2	6	Ceramic - White Clay	1 White Clay Fragment	1		
B2	6	Ceramic - White Clay	Pipe Stem Fragments, Circumference of 1 hole 4/64", 1750-1800; Circumference of 2 Other Holes, 6/64" 1680-1710	3	10/30/2006	
B2	6	Ceramic - White Clay	Pipe Fragment, circumference of hole 4/64" 1750-1800	1	11/10/2006	6"
B2	6	Ceramic - White Clay	Pipe Stem, 5/64" circumference of hole, 1710-1750	1	11/9/2006	6'
B2	7	Ceramic - White Clay	Pipe Stem Fragment, circumference of hole 5/64" 1710-1750	1	10/30/2006	
B2	7	Ceramic - White Clay	Pipe Fragment with Design	1	11/11/2006	7"
B2	7	Ceramic - White Clay	Pipe Stem Fragments, Circumference of hole 4/64", 1750-1800	3	11/11/2006	7"
B2	9	Ceramic - White Clay	Pipe Stem and Bowl Fragments, Circumference of Hole 5/64" 1710-1750	2	11/6/2006	
B4	4	Ceramic - White Clay	Pipe Bowl Fragment	1	10/30/2006	
A1	1	Chalk		2	9/18/2006	
A1	2	Chalk		4	9/25/2006	
A1	3	Chalk		10	10/2/2006	

Square	Lot	Material	Description	Count	Date	Comments
A1	3	Chalk		3	9/25/2006	
A1	7	Chalk		2	10/23/2006	Level 4
A1	2	Coal		8		
A1	3	Coal		2		
A1	8	Coal		2		
A1	9	Coal		1	11/6/2006	
A2	2	Coal		1		
A2	3	Coal		5		
A3	1	Coal		10		
A3	2	Coal		18		
A3	3	Coal		1		
A4	3	Coal		2		
A4	4	Coal		2		
B1	2	Coal		1		
B1	4	Coal		2		
B1	6	Coal		4		
B1	7	Coal		4		
B2	2	Coal		17		
B2	3	Coal		11		
B2	4	Coal		29		
B2	5	Coal		1		

Square	Lot	Material	Description	Count	Date	Comments
B3	2	Coal		8		
B3	3	Coal		1		
B3	4	Coal		1		
B3	5	Coal		1		
B4	3	Coal		1		
B4	4	Coal		1		
B4	5	Coal		1		
A2	1	Coin	1935 Dime	1	9/18/2006	
B2	2	Coin	Unidentified	1	9/25/2006	
B4	3	Coin	1918 Penny	1	10/16/2006	
A1	2	Glass	Untyped, Flat, Clear and Aqua Fragments	7		
A1	3	Glass	Untyped, Flat, Clear Fragment	1	10/2/2006	
A1	8	Glass	Untyped, Flat, Aqua Fragment	1		
A1		Glass	Untyped, Flat, Clear Fragment and Untyped, Curved, Dark Green Fragment	2	10/23/2006	Level 5
A2	1	Glass	Untyped, Flat, Aqua Fragment	1		
A2	2	Glass	Untyped, Flat, Light Blue Fragment	1		
A2	3	Glass	Untyped, Curved, 3 Clear, 2 Olive Fragments	5		
A2	3	Glass	Untyped, Flat, Clear and Aqua Fragments	6		
A2	3	Glass	Untyped, Flat, Clear and Aqua Fragments	5		
A2	5	Glass	Untyped, Flat, Aqua Fragment	1	10/16/2006	
A3	1	Glass	Untyped, Flat, Aqua Fragments	2		

Square	Lot	Material	Description	Count	Date	Comments
A3	1	Glass	Untyped, Flat, Clear Fragment with White Glaze, Untyped, Curved, Clear Fragment, Untyped, Curved, Amber Fragment	3	9/18/2006	
A3	2	Glass	Untyped, Flat, Clear Fragments	2		
A3	3	Glass	Untyped, Flat Aqua and Clear Fragments	2		
A3	4	Glass	Untyped, Flat, Aqua Fragments	2		
A3	6	Glass	Untyped, Flat, Aqua and Green Fragments	2	11/6/2006	
A3		Glass	2 Glass, 3 Unidentified	5	10/16/2006	
A4	3	Glass	Untyped, Flat, Light Blue Fragment	1		
A4	4	Glass	Untyped, Flat, Clear Fragment	1		
A4	4	Glass	Untyped, Flat, Clear Fragment	1		
A4	6	Glass	Untyped, Flat, Aqua Fragment	1		
A4	7	Glass	Untyped, Flat, Dark Aqua Fragments	1		Level 60-70
A4	4B	Glass	Untyped, Flat, Clear Fragment	1		
A4		Glass	Untyped, Flat, Clear and Aqua Fragments	12	10/16/2006	
B1	1	Glass	Untyped, Flat, Clear Fragment	1		
B1	2	Glass	Untyped, Flat, Aqua Fragments	5	9/28/2006	
B1	3	Glass	Untyped, Flat, Aqua Fragments	2	10/2/2006	Level 3
B1	4	Glass	Mouth of Vessel and Body Fragment, Clear	2		
B1	4	Glass	Untyped, Flat, Aqua Fragments	2		
B1	4	Glass	Untyped, Flat, Aqua Fragments	5	10/16/2006	
B1	4	Glass	9 Glass, 7 Unidentified	16		
B1	6	Glass	Untyped, Flat, Aqua Fragments	12		

Square	Lot	Material	Description	Count	Date	Comments
B1	7	Glass	Untyped, Flat, Aqua and Clear Fragments	7	10/29/2006	
B1	7	Glass	Untyped, Flat, Aqua Fragments	9		
B2	2	Glass	Untyped, Flat, Aqua Fragment	1	11/7/2006	
B2	2	Glass	Untyped, Flat, Clear (Cloudy) Fragments	2		
B2	2	Glass	Untyped, Flat, Clear and Aqua Fragments	3		
B2	2	Glass	Vessel, Clear with Red Print	1	9/25/2006	
B2	3	Glass	Untyped, Flat, Aqua and Clear Fragments	3		
B2	4	Glass	Untyped, Flat, Aqua and Clear Fragments	8	11/10/2006	
B2	4	Glass	Untyped, Flat, Aqua Fragments	5	11/6/2006	
B2	5	Glass	Untyped, Flat, Aqua Fragments	4	11/10/2006	
B2	5	Glass	Untyped, Flat, Aqua Fragments	5	11/6/2006	
B2	5	Glass	Untyped, Flat, Clear Fragment	1	10/3/2006	
B2	5	Glass	Untyped, Flat, Clear Fragment	1	11/10/2006	5"
B2	6	Glass	Untyped, Flat, Aqua Fragments	1		
B2	6	Glass	Untyped, Flat, Aqua Fragments	7		6'
B2	6	Glass	Untyped, Flat, Aqua Fragments	2		6"
B2	7	Glass	Untyped, Flat, Aqua Fragments	2	11/11/2006	
B3	2	Glass	Untyped, Flat, Light Blue and Clear Fragments	4	11/6/2006	
B3	3	Glass	Untyped, Flat, Aqua and Clear Fragments	6	11/11/2006	
B3	4	Glass	Untyped, Flat, Aqua Fragment	1		
B3	5	Glass	Untyped, Flat, Clear and Aqua Fragments	2		

Square	Lot	Material	Description	Count	Date	Comments
B4	1	Glass	Untyped, Flat, Aqua and Clear Fragments	2	9/25/2006	
B4	3	Glass	Untyped, Flat, Aqua and Clear Fragments	2		
B4	4	Glass	Untyped, Flat, Aqua Fragments	2		
B4	4	Glass	Untyped, Flat, Aqua Fragments	2	10/30/2006	
B4	5	Glass	Untyped, Flat, Clear and Aqua Fragments	6	11/6/2006	
A1	1	Glass - Vessel	Untyped, Curved, 6 Clear, 1 Green, 1 Orange, 1 Aqua	9	9/18/2006	
A1	2	Glass - Vessel	1 Curved, Olive Fragment, 2 Curved Milk Glass Fragments (1890s), 1 Clear Curved Fragment, 1 Curved Amethyst Rim Fragment	5		
A1	2	Glass - Vessel	1 Untyped, Curved, Clear Fragment with "R" Printed	1		
A1	3	Glass - Vessel	2 Milk Glass (1890s), 10 Curved Clear Fragments, 1 Curved Aqua Fragment, 3 Curved Clear Rim/Base Fragments, 1 Curved Green Fragment	16	10/30/2006	
A1	3	Glass - Vessel	3 Untyped, Curved, Clear Fragments, 1 Clear Medicine Bottle Mouth	4	10/2/2006	
A1	3	Glass - Vessel	5 Flat, Clear Fragments, 1 Clear Base Fragment, 1 Curved, Clear Fragment, 1 Flat, Aqua Fragment	8		
A1	4	Glass - Vessel	1 Curved, Untyped Dark Olive (Wine Bottle) Fragment	1	10/16/2006	
A1	8	Glass - Vessel	Untyped, Curved, Clear Fragment	1		
A2	1	Glass - Vessel	Untyped, Flat, Brown Fragment	1		
A2	2	Glass - Vessel	Untyped, Curved, 3 Clear, 1 Aqua, and 1 Green (with bubble) Fragment	5		
A2	3	Glass - Vessel	Untyped, Curved, 2 Olive, 5 Aqua, 3 Clear Fragments	10		
A2	3	Glass - Vessel	Untyped, Curved, Clear Fragment	1		

Square	Lot	Material	Description	Count	Date	Comments
A2	5	Glass - Vessel	Untyped, Curved, Clear Fragment	1	10/16/2006	
A3	1	Glass - Vessel	Untyped, Curved, 2 Clear, 1 Green, 1 Brown Fragments	4		
A3	2	Glass - Vessel	Untyped, Curved, 2 Clear Fragments	2		
A3	2	Glass - Vessel	Untyped, Curved, 4 Clear Fragments	4		
A3	2	Glass - Vessel	Untyped, Curved, Clear Fragments	3	10/2/2006	
A3	3	Glass - Vessel	Untyped, Curved, 3 Clear, 1 Amethyst, 1 Orange, 1 Green	6		
A4	2	Glass - Vessel	3 Untyped, Curved, Clear Fragments	3	9/25/2006	
A4	3	Glass - Vessel	1 Untyped, Curved, Aqua Fragment, 3 Curved, Clear Fragments with "N" Printed	4		
A4	4	Glass - Vessel	1 Olive Base Fragment, Wine/Rum Bottle	1		
A4	4	Glass - Vessel	Untyped, Curved, Aqua Fragment	1		
A4	5	Glass - Vessel	1 Curved Milk Glass Fragment (1890s)	1		
A4	6	Glass - Vessel	Untyped, Curved, 1 Amber Fragment	1		
A4	8a	Glass - Vessel	Untyped, Curved, Clear Fragments	2		
A4		Glass - Vessel	Untyped, Curved, Green Fragment	1		Baulk Levels 1-6
B1	1	Glass - Vessel	10 Curved, Brown Fragments (Beer Bottle) with "SALE" Printed, 2 Untyped, Curved, Clear Fragments	12	9/18/2006	
B1	2	Glass - Vessel	Untyped, Curved, 4 Brown, 9 Clear Fragments	13		
B1	3	Glass - Vessel	1 Flat, Dark Olive Fragment, 5 Curved, Clear Fragments (1 With Seam), 1 Flat, Aqua Fragment	7		
B1	3	Glass - Vessel	Untyped, Curved, 2 Clear Fragments	2	10/2/2006	Level 3
B1	4	Glass - Vessel	1 Aqua Electrical Insulator, 6 Untyped, Curved, Clear Fragments	7	10/16/2006	

Square	Lot	Material	Description	Count	Date	Comments
B1	4	Glass - Vessel	1 Curved, Olive Fragment, 2 Curved, Clear Fragments, 1 Curved, Clear Rim Fragment, 1 Curved Amber Fragment with Leaf Design	5		
B1	6	Glass - Vessel	Untyped, Curved, 5 Clear, 2 Olive Fragments	7		
B1	7	Glass - Vessel	1 Untyped, Curved, Amethyst, 4 Untyped, Curved, Clear, 2 Curved Aqua (1 with Unidentified Rim)	7		
B1	7	Glass - Vessel	Untyped, Curved, 1 Clear, 2 Aqua Fragments	3		
B2	1	Glass - Vessel	12 Curved, Clear Fragments (1 Base)	12	9/18/2006	
B2	2	Glass - Vessel	4 Untyped, Curved, Clear Fragments, 1 Amber Fragment, 1 Flat, Green Fragment, 1 Flat, Clear Fragment, 1 Clear Base Fragment, 2 Clear Rim Fragments, 1 Lightbulb Fragment	11		
B2	3	Glass - Vessel	1 Flat, Olive Fragment, 2 Curved, Clear Rim/Base Fragments	3		
B2	3	Glass - Vessel	Untyped, Curved, 1 Brown, 3 Clear Fragments	4		
B2	4	Glass - Vessel	1 Curved Dark Olive Fragment	1		
B2	4	Glass - Vessel	1 Curved Milk Glass Fragment (1890s), 2 Olive Fragments, 8 Curved Clear Fragments with "M" or "W" Printed, 2 Curved Clear Rim/Base Fragments, 1 Curved Amber Fragment	14	11/10/2006	
B2	5	Glass - Vessel	1 Clear Base Fragment, 1 Curved, Dark Olive (Wine) Bottle Fragment, 1 Untyped, Curved, Olive Fragment, 1 Untyped, Curved Aqua Fragment, 2 Untyped, Curved, Clear Fragments	3	11/10/2006	
B2	5	Glass - Vessel	Untyped, Curved, 1 Clear Fragment	1	11/6/2006	
B2	6	Glass - Vessel	Untyped, Curved, 2 Green, 1 Clear Fragments	3		6"
B2	6	Glass - Vessel	Untyped, Curved, Aqua Fragment	1		6'
B2	6	Glass - Vessel	Untyped, Curved, Clear Fragment	1	10/30/2006	

Square	Lot	Material	Description	Count	Date	Comments
B2	7	Glass - Vessel	1 Curved, Clear Fragment, 1 Curved, Olive Fragment, 1 Flat, Aqua Fragment	3		7"
B3	1	Glass - Vessel	3 Flat, Amber Fragments (Beer Bottle)	3		
B3	2	Glass - Vessel	13 Curved, Amber Fragments (Beer Bottle), 1 Curved, Clear Fragment, 1 Curved, Bright Pink Fragment	15	11/6/2006	
B3	3	Glass - Vessel	3 Curved, Clear Fragments, 1 Curved, Amber Fragment	4	11/11/2003	
B3	4	Glass - Vessel	Untyped, Curved, 1 Clear, 1 Olive Fragments	2		
B4	1	Glass - Vessel	1 Flat, Clear Fragment, 1 Curved, Clear Fragment, 1 Clear Rim Fragment, 1 Curved Aqua Fragment, 6 Amber Fragments with "8S" Printed	10	9/25/2006	Level 2
B4	1	Glass - Vessel	Untyped, Curved, Amber Fragment	1		
B4	3	Glass - Vessel	1 Curved, Aqua Fragment, 2 Curved, Clear Fragments with "SIC" Printed	3	10/2/2006	
B4	3	Glass - Vessel	Untyped, Curved, Olive Fragment	1		
B4	4	Glass - Vessel	Untyped, Curved, 1 Clear, 1 Aqua Fragments	2		
B2	4	Lightbulb	2 Lightbulb Fragments	2	11/10/2006	
B4	3	Lipstick Holder?		1		
B3	5	Lithic	Rocks	3		
B3	5	Lithic	Chert?	1		
B1	4	Marbles	Green Glass Marble, White and Red Wood Marble	2	10/2/2006	
A1	1	Metal	Unknown	1		
A1	2	Metal	Copper Wire	3		
A1	2	Metal	Nail Fragment	1		

Square	Lot	Material	Description	Count	Date	Comments
A1	2	Metal	Unidentified	2		
A1	3	Metal	15 Square Nail Fragments, 1 Washer, 1 Unidentified	17	10/2/2006	
A1	7	Metal	Assorted Nail Fragments	9		Level 4
A1	8	Metal	Assorted Nail Fragments	23	11/6/2006	
A1	8	Metal	Slag and Unknown	3		
A1		Metal	Square Nail	1	9/25/2006	Level 3
A2	1	Metal	3 Screws, 1 Nail Fragment	4		
A2	2	Metal	1 Square Nail Fragment, 1 Screw	2		20-30 cm
A2	3	Metal	1 Square Nail Fragment, 1 Sheet Metal Fragment	2		
A2	3	Metal	3 Square Nail Fragments, 4 Sheet Metal Fragments	7		
A2	3	Metal	Nodule	1		
A2	3	Metal	Square Nail	1		
A2	4	Metal	Square Nail Fragments	5	10/16/2006	
A2	6	Metal	Nail Fragment	1		
A2	7	Metal	Assorted Nail Fragments	3	10/16/2006	
A2	8	Metal	Nail Fragment	1		
A2	8	Metal	Square Nail	1		
A2	9	Metal	Square Nails	6	10/30/2006	
A2	10	Metal	Square Nail	1	10/30/2006	
A3	1	Metal	2 Square Nail Fragments, 1 Slag	3		
A3	2	Metal	Nail	1		

Square	Lot	Material	Description	Count	Date	Comments
A3	2	Metal	Nodule	1		
A3	3	Metal	3 Square Nails, 1 Lead Tube, 1 Unidentified	5		
A3	4	Metal	Square Nail	1	10/30/2006	
A3	6	Metal	Assorted Nail Fragments	7		
A3	3c	Metal	Square Nails	2	10/2/2006	
A4	3	Metal	1 Screw, 1 Nail, 1 Unidentified	3	10/1/2006	
A4	3	Metal	Nodule	1		
A4	3	Metal	Screw	1		
A4	4	Metal	Assorted Nail Fragments	9		
A4	5	Metal	Square Nails	2		
A4	6	Metal	Nails	2		50-60 cm
A4	6	Metal	Unidentified	1		
A4	8	Metal	Button	1		Level 70-80
A4	9	Metal	Bottle Cap	1		
A4		Metal	Square Nail	1		Level 4
B1	1	Metal	Washer	1		
B1	2	Metal	1 Square Nail Fragment, 2 Slag	3		
B1	2	Metal	Nail	1		Level 2
B1	3	Metal	1 Screw, 1 Washer, 2 Unidentified	4		
B1	3	Metal	Assorted Nail Fragments	5	10/16/2006	
B1	3	Metal	Bullet Casing	2		

Square	Lot	Material	Description	Count	Date	Comments
B1	4	Metal	Square Nail Fragments	12		
B1	4	Metal	Metal Button	1	10/2/2006	
B1	4	Metal	Bullet Casing	1	10/2/2006	
B1	6	Metal	14 Square Nails, 1 Sheet Metal	15		
B1	7	Metal	Assorted Nail Fragments	7		
B1	7	Metal	Hardware- Screw and Bolt	1		
B1	7	Metal	Nail Fragment	1		
B1	7	Metal	Square Nails	12		
B2	1	Metal	1 Bottle Cap Fragment, 1 Unidentified	2	9/18/2006	
B2	2	Metal	Foil Gum Wrapper	1		
B2	2	Metal	Nodules	2		
B2	3	Metal	Nodules	2		
B2	3	Metal	Square Nail	1		
B2	3	Metal	Square Nail	1		
B2	4	Metal	Copper Ring	1		
B2	4	Metal	Nodule	1		
B2	4	Metal	Square Nail	1		
B2	4	Metal	Bullet Casing/ Metal Lipstick Fragment?	1	11/6/2006	4'
B2	5	Metal	2 Nail Fragments, 2 Unidentified	4		
B2	5	Metal	Assorted Nail Fragments	7		
B2	5	Metal	Nodules	2		

Square	Lot	Material	Description	Count	Date	Comments
B2	5	Metal	Square Nail	1		
B2	5	Metal	Square Nail	1		
B2	5	Metal	Nail Fragments	2	11/9/2006	20-60 cm
B2	6	Metal	21 Square Nails, 5 Unidentified	26	10/30/2006	
B2	6	Metal	6 Square Nail Fragments, 1 Unidentified	7		6"
B2	6	Metal	Square Nails	11		6'
B2	7	Metal	Square Nails	4	10/30/2006	
B2	7	Metal	19 Square Nails, 1 Sheet Metal Fragment	20	11/11/2006	7"
B2	9	Metal	6 Square Nails, 2 Screws, 1 Unidentified	9		
B2		Metal	Nail Fragments	2		(18?) Written on Bag
B3	2	Metal	Screw	1		
B3	3	Metal	Button	1		
B3	3	Metal	Unidentified	1		
B3	4	Metal	Assorted Nails	9	11/11/2006	
B3	4	Metal	Button	1	11/11/2006	
B3	5	Metal	Assorted Nail Fragments	2		
B4	1	Metal	Square Nail Fragment	1		
B4	3	Metal	5 Nail Fragments, 1 Bullet Casing, 1 Unidentified	7	10/16/2006	20-30cm
B4	4	Metal	Square Nail Fragment	1	10/30/2006	
B4	5	Metal	Square Nails	2		
A2	1	Modern Materials	Plastic Drink Top Fragments	3	9/18/2006	

Square	Lot	Material	Description	Count	Date	Comments
B1	2	Mortar		2		
B1	4	Mortar		4		
B2	5	Mortar		9		
B3	4	Mortar		3		
A1	8	Organic	Charcoal	5		
A2	1	Organic	Charcoal	3		
A2	2	Organic	Charcoal	14		
A2	3	Organic	Charcoal	1		
A2	3	Organic	Charcoal	10		
A2	3	Organic	Charcoal	1		
A2	5	Organic	Charcoal	6		
A2	7	Organic	Charcoal	2		
A3	2	Organic	Charcoal	2		
A3	4	Organic	Wood	2		
A4	3	Organic	Carbonized Wood	1		
A4	3	Organic	Charcoal	1		
A4	4	Organic	Charcoal	16		
A4	4	Organic	Charcoal	2		
A4	5	Organic	Charcoal	6		
A4	6	Organic	Charcoal	14		
A4	9	Organic	Charcoal	6		

Square	Lot	Material	Description	Count	Date	Comments
A4	8a	Organic	Charcoal	1		
B1	1	Organic	Charcoal	1		
B1	3	Organic	Charcoal	5		
B1	7	Organic	Charcoal	1		
B2		Organic	Burnt Bone/Shell	4		
B3	3	Organic	Charcoal	1		
B3	4	Organic	Charcoal	2		
B3	5	Organic	Charcoal	1		
B4	1	Organic	Charcoal	2	9/25/2006	Level 2
A1	3	Pencil Top	1 Pencil Top Eraser	1	9/25/2006	
A3	2b	Plastic	Brown Comb Fragment	1		
A3	3d	Plastic	White Button	1	10/2/2006	
A3		Plastic	Pipe Handle	1	10/16/2006	NE Corner
B2	4	Plastic	Black Button	1		
B3	1	Plastic	Clear	7		
B4	1	Plastic	White Button	1	9/25/2006	Level 2
A1	8	Shell	Quahog Fragment	1	11/6/2006	
A1	7?4?	Shell	Fragments	3	10/23/2006	
A2	3	Shell	Quahog Fragment	1		
A3	2	Shell	Fragments	3	10/2/2006	
B1	2	Shell	Fragments	4	9/25/2006	Level 2

Square	Lot	Material	Description	Count	Date	Comments
B1	4	Shell	Quahog and Oyster Fragments	2		
B1	4	Shell	Fragments	2		
B1	6	Shell	Quahog Fragments	2	10/30/2006	
B1	7	Shell	Quahog Fragment	1	10/29/2006	
B2	3	Shell	Quahog Fragment	1		
B2	3	Shell	Fragment	1		20-30 cm
B2	4	Shell	Fragment	1		
B2	4	Shell	Quahog Fragment	1	10/16/2006	
B2	4	Shell	Fragments	5		4"
B2	5	Shell	Fragment	1		
B2	5	Shell	Quahog Fragment	1	11/6/2006	
B2	5	Shell	Quahog Fragments	7	10/30/2006	
B2	5	Shell	Quahog Fragments	2	11/9/2006	20-60 cm
B2	6	Shell	Oyster Fragments	17	11/9/2006	
B2	6	Shell	Quahog Fragments	24		
B2	6	Shell	Quahog and Oyster Fragments	44	11/11/2006	6"
B2	6	Shell	Quahog and Oyster Fragments	51		6'
B2	7	Shell	Fragments	11		
B2	7	Shell	Quahog Fragment	2		
B2	7	Shell	2 Whole Quahogs, 6 Quahog Fragments, 4 Oyster Fragments	12		7"
B2	7	Shell	Quahog and Oyster Fragments	186		7"

Square	Lot	Material	Description	Count	Date	Comments
B2	9	Shell	Oyster Fragments	4	11/6/2006	
B3	5	Shell	Fragments	2		