Archival Research, Mapping, and Ground Penetrating Radar Survey at Elmwood/Pinewood Cemetery

Mecklenburg County, North Carolina

TIP #P-5002
WBS #51800.1.STR01T1A

NEW SOUTH ASSOCIATES
PROVIDING PERSPECTIVES ON THE PAST

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Report submitted to:

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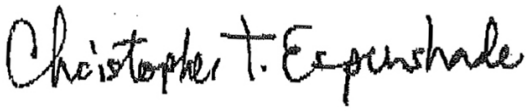

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ABSTRACT

New South Associates conducted archival research, detailed mapping, marker inventory, and ground penetrating radar survey of a portion of Elmwood/Pinewood Cemetery in Charlotte, North Carolina. The North Carolina Department of Transportation (NCDOT) is evaluating the feasibility of constructing a grade separation on the CSX Railroad, designated as project TIP# P-5002. A portion of the Norfolk Southern railroad abuts the northern boundary of Elmwood/Pinewood cemetery for an approximate distance of 2,434 feet (742 m). The study area was approximately 75 feet (23 m) south of the boundary fence for the entire length of the railroad along the cemetery boundary. The GPR survey included part of the cemetery that is within the railroad right-of-way and beyond. An agreement between the Norfolk Southern Railway and City of Charlotte (1966) indicates the cemetery has encroached upon railroad right-of-way.

The results of this study indicate the presence of 580 known graves as inferred from markers and the T Annex map, and 638 GPR anomalies consistent with expectations for historic graves. The total number of potential graves in the study area is 1,218. However, this estimate is conservative and represents only a minimum number. Because a significant portion of the study area is characterized as potters fields, the actual number of graves could be much higher.

New South Associates recommends that all GPR features consistent with expectations for human graves be treated accordingly. If NCDOT proceeds with this alternative, at least a certain amount of ground-truthing of GPR features may be necessary to evaluate the density of burial features, particularly in the potters field. This could be done through controlled sampling of selected areas through mechanical removal of topsoil. That phase would also indicate to what extent, if any, additional unmarked graves might be present.

ACKNOWLEDGMENTS

Multiple individuals contributed to the successful completion of this project. Paul Mohler, Staff Archaeologist at NCDOT, managed the contract, provided technical oversight, and met with New South Associates field staff on-site to discuss the project. At the Evergreen Cemetery Office, Mike Shroyer and Karen Kennady provided access to records and maps and shared their information of Elmwood/Pinewood Cemetery.

Shawn Patch and Sarah Lowry conducted the field mapping of cemetery features and the GPR survey. Mark Swanson conducted archival research at multiple repositories in the Charlotte area. Valerie Davis and Lain Graham were responsible for the grave marker inventory. Jennifer Wilson and David Diener assembled the report for production. Chris Espenshade and Joe Joseph provided a technical review.

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I. INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is evaluating the feasibility of constructing a grade separation on the CSX and Norfolk Southern mainline (rail lines) within the City of Charlotte, Mecklenburg County, North Carolina (Figure 1). The proposed project is designated as TIP# P-5002. It is proposed to separate these two grades, which would require the modification of the CSX line, leaving the Norfolk Southern line in its current position. As part of the design process, several alternatives are currently being considered and evaluated. One of the cultural properties that might be impacted by the alteration of these lines is the Elmwood/Pinewood Cemetery for an approximate distance of 2,434 feet (742 m) (Mattson, Alexander and Associates, Inc. 2009:1). The Elmwood/Pinewood cemetery has been recommended eligible for the National Register of Historic Places (NRHP) under criteria A, B, and C.

NCDOT contracted with New South Associates to perform multiple tasks within the study area. These included: additional background and archival research regarding the history and development of the cemetery, including chain-of-title; total station mapping of all grave markers and associated cemetery features; recording and inventory of individual markers; and ground penetrating radar (GPR) survey to identify the extent of both marked and unmarked graves.

The study area was defined by the maximum extent of potential impacts within approximately 100 feet south of the centerline of the CSX Railroad. The GPR survey included part of the cemetery that is within the railroad right-of-way and beyond. An agreement between the Norfolk Southern Railway and City of Charlotte (1966) indicates the cemetery has encroached upon railroad right-of-way.

Because of restrictions imposed by field conditions (e.g., topography, boundary fence, dense vegetation), the practical study area was defined as a corridor approximately 75 feet (23 m) south of the fence separating the CSX Railroad from Elmwood/Pinewood Cemetery. In certain cases, this area was clearly wider than 100 feet from the centerline because of a divergence between the railroad alignment and fence placement. It was not possible to use the railroad centerline as a fixed point in the field because of access and safety issues.

Figure 1.
Map Showing Location of Project Area in Charlotte, North Carolina

Elmwood/Pinewood Cemetery was created in the mid-1800s to serve the burial needs of both the white and African American inhabitants of Charlotte. Elmwood, for whites, and Pinewood, for African Americans, were originally separate but adjoining cemeteries, with Elmwood located south of Pinewood. Originally, Pinewood was the cemetery adjoining the railroad to the north, but due to the later westward expansion of Elmwood, both historic cemeteries will be impacted by the proposed changes to the railroad grade along the northern

margin of what is now one cemetery. As might be expected, white Elmwood has always received the lion's share of the attention in the local media and is known locally as the final resting place for prominent local figures and even state governors. Some people of national prominence are buried there, including Randolph Scott, the early Hollywood cowboy star (Crouch 2003). Much less is known about the occupants of Pinewood.

Results indicate the presence of 580 known graves inferred from markers and the T Annex map, and 638 potential unmarked graves that were identified with GPR. The total count identified by this survey is approximately 1,218 individual graves, although the actual number of graves could be significantly higher because of the presence of numerous potters fields. Previous archaeological research at such cemeteries has shown exceptionally high burial densities, higher than observed by the GPR for this project.

New South Associates recommends that each of the GPR anomalies consistent with expectations for historic graves be treated as such for planning purposes. The potential effects from this alternative are significant in terms of the NRHP, state law, and public interest.

The remainder of this report includes a discussion of the environmental setting (Chapter 2), historic context (Chapter 3), methods (Chapter 4), results (Chapter 5), and conclusions and recommendations (Chapter 6). Appendices are included for amplitude slice maps and selected profiles of the GPR data.

II. ENVIRONMENTAL CONTEXT

PHYSICAL DESCRIPTION

The combined Elmwood/Pinewood Cemetery is currently believed to cover approximately 72 acres, and this is the acreage figure that is most often provided in the more modern sources addressing this issue (Historic Charlotte, Inc. 2004). This acreage covers all the continuous areas of the cemetery, with Pinewood now included in what used to be the separate Elmwood Cemetery. This 72-acre tract is bounded today by the CSX and Norfolk Southern railroads to the north; Johnston Street and the old Charlotte and Atlanta Railroad (now Norfolk Southern) to the east; and Interstate 77 to the west. The south boundary is a little more irregular, being marked by 6th and 5th streets on the east side and North Cedar Street and others further west. Other older sources sometimes give the total acreage as 87 acres (Blythe and Brockman 1961:433) or even 100 acres, but much of the discrepancy is believed to come from the total acreage of the cemetery lands before the western extremity was cut off by the rights-of-way and roadways that eventually became Interstate 77 (I-77) in the 1960s. This western extremity, which will not be impacted by this proposed railroad grade change, would eventually become known as West Pinewood. It would have a different history from that of the rest of Elmwood/Pinewood, as will be explained in the sections that follow.

The entire Elmwood/Pinewood Cemetery area basically slopes from northeast to southwest (Figure 2). Cemetery land in the southeast corner dips down to a small un-named stream that originates near the center of historic Charlotte. This stream flows westward across the southeast entrance to the cemetery to eventually merge with Irwin Creek southwest of the cemetery. Irwin Creek, which flows from north to south, crosses the western extremity of the cemetery where I-77 is now. Irwin Creek is the main drainage on the west side of Charlotte, and is itself a tributary of Sugar Creek, located southwest of the city. Sugar Creek flows into the Catawba River, which drains all of western Mecklenburg County. These streams are mentioned here if only because they figure into some of the early deed records pertinent to the history of the cemetery.

SOILS

The project area is located in the Piedmont Physiographic Province of south-central North Carolina. Approximately 98 percent of the project area is characterized by Cecil sandy loam, 2-8 percent slopes, eroded (USDA Websoil Survey 2011). The far western edge of the

Figure 2.
Photographs Showing General Setting of the Elmwood/Pinewood Cemetery

A.
Elmwood Cemetery Area BB Facing Northwest

B.
Elmwood Cemetery Area T Facing Northwest

C.
Pinewood Cemetery Area K Facing East

D.
Pinewood Cemetery in the Potter's Field Area Facing Southeast

project area falls under Cecil sandy loam, 8-15 percent, eroded. Cecil sandy loam is found on interfluves and is well drained. Its parent material consists of saprolite derived from granite and gneiss and/or schist. A typical profile consists of sandy clay loam (0-6 in.), clay (6-40 in.), clay loam (40-55 in.), and sandy loam (55-80 in.). The remaining two percent of the project area is classified as Urban Land with impervious layers over human transported material.

III. HISTORIC CONTEXT

HISTORY OF CHARLOTTE TO 1900

Permanent European settlement began to move from Virginia into North Carolina as early as the 1650s, but this was in the extreme northeast coastal corner of the colony. Settlers did not move into the Piedmont area until the mid-1700s. Mecklenburg County was established in 1762. The community of Charlotte was established in 1766 and was incorporated two years later. Most of the local settlers during that time period were Scots-Irish, like Andrew Jackson, who was born and raised in the Waxhaws region along the border between North and South Carolina. Enslaved African Americans were also brought to the area, especially with the revival and spread of cotton cultivation in the late 1700s and early 1800s. During this period and throughout the American Revolution, the population of Charlotte was small: in 1786, the town contained 276 people, and almost half of that number were enslaved African Americans (Blythe and Brockman 1961:18-24; 110).

From the beginning, Charlotte was laid out in a grid pattern. Thomas Polk set up the first grid in the 1760s. Based on the crossroads that formed the town, Trade and Tryon, this grid was expanded over the years until it reached its current limits by the mid-1800s. By that time, the town was divided into four wards, separated by Trade and Tryon streets. Even though individual lots were initially one-half acre each, the four wards were laid out long before they were filled (Blythe and Brockman 1961:18-24). The original four-ward plan contained almost all of Charlotte until the end of the 1800s (Hanchett 1993, vol. 2:284).

Charlotte began to grow in the early 1800s with the discovery of gold in the region. In 1836, this development led to the establishment of a local U.S. Mint, located on West Trade Street (Blythe and Brockman 1961:104-105). Another factor that spurred growth was the arrival of the first railroads. At least four were constructed into Charlotte before the outbreak of the Civil War. These were the Charlotte and South Carolina Railroad from Columbia (1852); the North Carolina Railroad from Goldsboro (1854); the Atlantic, Tennessee, and Ohio Railroad between Charlotte and Statesville (1860); and the Wilmington, Charlotte and Rutherford Railroad between Charlotte and Lincolnton (1861). In the years right after the war, two more railroads were constructed: the Atlanta and Charlotte Airline between Charlotte and Gastonia, in 1872; and the Carolina Central Railroad, which was completed between Charlotte and Wilmington in 1874. Most of these railroads were later consolidated into two large systems: the Southern Railway system and the Seaboard Airline (Mattson, Alexander and Associates, Inc. 2009:15).

During the Civil War, Charlotte's good rail connections brought the Confederate Naval Ordnance operation to town after the fall of Norfolk, Virginia, to Federal forces in early 1862. Naval Ordnance set up shop on East Trade Street, close to the town's center, and operated there until it was burned in a fire on January 7, 1864. Aside from this incident, Charlotte survived the war largely intact and grew quickly both during and after the war. From a population that was only 1,366 in 1860, Charlotte's population expanded to 18,091 by 1900 (Blythe and Brockman 1961:122, 127).

Charlotte's post-bellum growth in population and industry was fueled by two inter-connected developments: the expansion of local railroads and the rise of cotton mills. By the 1880s and 1890s, most railroading in Charlotte was controlled by the Southern Railway and the Seaboard Airline. The Southern Railway in particular was the largest railroad conglomerate in the South. Created by J. Pierpont Morgan, it controlled the best lines between Washington, D.C. and New Orleans, with Charlotte serving as one of its hubs. The Southern Railway controlled four of the six tracks that entered the city. These connections fed into the rise of the first large cotton mills which began to mushroom across the North and South Carolina Piedmont, with Charlotte serving as a regional hub (Hanchett 1993, vol. 2:191-193). By 1900, the Carolina Piedmont was a clear rival to established cotton mills in New England; within another 20 years, it would dominate the industry (Blythe and Brockman 1961:111-118).

During most of this period, Charlotte was contained within its original four wards, which marked the boundaries of what was considered a walk-able town. Wealthier citizens lived near the town center, with cotton mills and workers relegated to the margins. This all began to change with the first streetcars. Horse-drawn streetcars were introduced in 1887, followed by electric streetcars four years later. As streetcar systems expanded in the years that followed, not to mention automobiles even later, Charlotte began to grow outwards into new suburbs that were no longer bound by the original grid.

This was the local history that formed the beginnings and early development of Elmwood and Pinewood cemeteries. Both were municipal cemeteries created in the mid-1800s on what was then the western edge of town, just west of Ward 4. They were created to serve the city's mortuary needs after Charlotte's first municipal cemetery, usually referred to as Old Settlers' Cemetery, was declared full and closed to future interments. As will be seen, both Elmwood and Pinewood were integral parts of a city that was coming to grips with its development as a New South industrial community in the wake of the Civil War.

CREATION OF ELMWOOD AND PINEWOOD CEMETERIES, 1853-1864

Charlotte provided a municipal graveyard for its citizens very early in its history. The first cemetery, referred to now as Old Settlers' Cemetery, was created in 1776 on land that was donated to Mecklenburg County for a courthouse and jail but was quickly converted to a cemetery instead (Deem 1995:17). At least one source has noted that the northwest corner of the cemetery was set aside for the black "servants" of various white lot owners (Blythe and Brockman 1961:433). Old Settlers' Cemetery, which only occupied a city block within the original town grid, was filled to capacity by the middle of the 1800s, prompting town officials to find additional land for burials.

The year 1853 is traditionally given as the opening date for the new cemetery established to take the overflow from Settlers' Cemetery. Almost all modern sources give this as the date for the opening of what was soon called Elmwood Cemetery (Blythe and Brockman 1961:432; Deem 1995:17; Historic Charlotte, Inc. 2004). Records on file at Evergreen Cemetery, which is now the headquarters for the City Municipal Cemeteries of Charlotte, indicate that Elmwood was opened shortly after Settlers' was closed, around 1853. Furthermore, published sources state that the first recorded burial on file in Elmwood is dated to 1854.

While there is no reason to doubt the 1853 date, the earliest deed transaction that appears to give Elmwood Cemetery lands to the town of Charlotte, found in the course of research for this project, dates to 1864. There could well be another transaction covering a smaller parcel of adjacent land that dates to 1853, but unfortunately such a deed was not recovered in this research. It is certainly possible that Elmwood Cemetery was started with burials on private land that was later bought by the city, but this is a supposition. At present, the discrepancy in dates cannot be resolved.

The first suggestion of a later date for Elmwood Cemetery came with the discovery of a short article from the *Charlotte Chronicle*, dated to March 8, 1891, recovered from the vertical file for "Elmwood Cemetery" in the Charlotte Mecklenburg Library, Robinson-Spangler Carolina Room. Entitled "Elmwood Cemetery: Some Facts About It Which the Public is Probably Not Aware of," the article briefly discussed the origins of Elmwood. It mentioned that the original 22 acres that formed Elmwood (and Pinewood) had been purchased by the city from a Col. Jones during the Civil War and that the first interment was a child of Mr. William Beattie. The article went on to state that the city purchased another 55-acre tract just three years earlier from James Irwin at around $100 per acre. By the time of the article (1891), it was stated that 1.5 acres of this new land had already been laid out for burials (*Charlotte Chronicle* 1891). At the time this article was first encountered, it was assumed that the article was incorrect on the date of the first acquisition, and that it was probably 1853 instead, several years before the Civil War.

At that point, it was decided to make a search for any property that might have been deeded by a "Col. Jones" or any Jones to any official entity representing the community, whether it was the city of Charlotte, the town of Charlotte, the Commissioners of Charlotte, etc. After an examination of the grantee index copy available in the Charlotte Mecklenburg Library, the only possible transaction that fit this bill was not from 1853, but rather from 1864, listed in Mecklenburg County Deed Book 4, page 776. The library's microfilm copy of this particular deed was virtually illegible, so a visit was made to the Mecklenburg County Register of Deeds to view the original. The results are presented below.

The property that probably formed the original core of Elmwood and Pinewood cemeteries, was subject to an:

> Indenture made and entered into this twenty fifth day of June A.D. 1864 by and between Edward P. Jones of the County of Sunflower and State of Mississippi of the first part, and Sam'l A. Harris (Mayor), Wm. R. Myers, Jonas Rudisill, Thos. H. Brem [?], J. L. Brown, Arthur Taylor, Jno. M. Springs, M. D. Johnston, and H. M. Phelps, Commissioners of the Town of Charlotte, County of Mecklenburg and State of North Carolina, of the second part,… in consideration of the sum of Ten Thousand Dollars (the receipt hereby acknowledged), the said party of the first part… doth grant…to the party of the second part and their successors in office, all that tract or parcel of land situated in said County of Mecklenburg and in and adjoining said Town of Charlotte, bounded as follows, to wit, southwardly by the lands or lot Dr. H. M. Pritchard, westwardly by the lands of Jas. P. Irwin, northwardly by the Wilmington C. [Charlotte] & Rutherfordton Rail Road track, and eastwardly by the lands of Wm. Johnston, and estate of J. P. Smith, deceased, and by the track of the rail road leading from Charlotte to Statesville until it reaches the first mentioned line of the said H. M. Pritchard, the same being all the land conveyed to him [Jones] (lying on the southern side of said Wilmington C. & Rutherfordton Rail Road) by the deed of W. P. Greene of Connecticut (which is on record in the Registers Office of said County of Mecklenburg in Book No. 3, page 866) and estimated to contain twenty acres, more or less (Mecklenburg County Deed Book 4:776).

This deed was not filed and recorded until December 9, 1865, several months after the end of the war. The huge sum of money paid for the property, $10,000, was presumably paid in Confederate money, which was subject to severe inflation by 1864.

To round out this issue, it was decided to attempt to create a chain of title for this 20-acre tract, especially since the previous owner was already identified. As expected, the deed that conveyed this land to Edward P. Jones from William P. Greene was found in Mecklenburg County Deed Book 3, page 866. This deed is recapped below:

> This indenture made this eleventh day of September… 1854 [written out in deed] by and between William Greene of Norwich in the County of New London, State of Connecticut, on the first part, and Edward P. Jones of the County of Mecklenburg and State of North Carolina of the second part…. William P. Greene for and in consideration of the sum of $1,150… paid by… Edward P. Jones… grant and convey… to the said Edward P. Jones… all that tract or parcel of land lying in the County of Mecklenburg, situate in said county adjoining the lands of John Irwin, William Johnston, W. W. Elms, and others, the same being the lands bought by J. Humphrey Bissell from William Patterson and Adam Cooper, and by said Bissell conveyed to the said Greene and which tract of land is butted and bounded described as follows, to wit, beginning at a hickory tree east of the main road leading from Charlotte towards the Town of Lincolnton [various measurements, not repeated here], said tract of land containing 33 acres, more or less, and reference may be had to Adam Cooper deed to J. H. Bissell, dated Jan'y 29th 1829, recorded in the Record of Deeds for said County of Mecklenburg, Book 23, page 264, and William Hutchison deed to J. H. Bissell dated Feb'y 11th 1829 and recorded in said Record of deeds, in said Book 23 [no page given], and to a certain survey of the same by James Parker Esq., county surveyor Mecklenburg County in April 1853, and which survey is here unto annexed and marked A for more particular description of said premises (Mecklenburg County Deed Book 3:866).

The main difference between this parcel and the one mentioned in 1864 is the acreage amount, reduced from 33 to 20 acres. Presumably the amount was reduced when the Wilmington, Charlotte and Rutherfordton Railroad came through and cut the parcel in two shortly after the 1854 deed. Another interesting feature of the 1854 deed is the name of one of the surrounding landowners: W. W. Elms [Authors note: I think this is the correct spelling of the name; the original deed is faint and in cursive script]. Elms is not mentioned in 1864. Perhaps his property, presumably a small tract, became the very first parcel that was bought or otherwise acquired for the creation of "Elmwood Cemetery." He might have provided the name of the cemetery. At present, the source of the name is not known. This possibility of a connection between W. W. Elms and Elmwood Cemetery would certainly be worth pursuing in future research.

The earlier transactions referenced in the 1854 deed were generally found as mentioned, but it was quickly found to be more difficult to follow the land back in time. The acreage amounts became much bigger and the neighbors were not listed as in the 1854 and 1864 deeds. Most disappointing of all, the survey by James Parker that dated to April 1853 and was marked "A," could not be relocated. Personnel at the Mecklenburg Register of Deeds maintained that a survey from that period should have been filed immediately adjacent to the deed in question, and if that was not the case, then it probably no longer existed.

As for the rest of the chain of title, it is provided below in a more abbreviated manner than was the case with the two deeds discussed above. Some leads provided in the 1854 deed did not prove fruitful or were clearly secondary. This was the case with William Patterson, and appears to have been the case with Adam Cooper, who was only dealing with 13.5 acres (see Mecklenburg County Deed Book 21(23), p. 100/new page number 334; p. 264/new 498; p. 381/new 615—these pages have two numbering systems, the original hand-written number and a later mechanical stamp; both are given for reference).

The main line of the chain appears to have been William Hutcheson, who obtained at least two state grants on the waters of Sugar Creek in the late 1700s and early 1800s, and later sold 33.5 acres to John H. Bissell in 1829. There were two "J. H. Bissells" during this period, James H. Bissell and J. Humphreys Bissell. Both amassed large property holdings and often could not be distinguished from each other. Presumably, they were related. James H. Bissell and, later, J. Humphrey Bissell appear to have owned the project area during the years from 1829 to 1836, when J. Humphrey Bissell sold the land to William P. Greene. The main outline of these events, and the proposed chain of title, is provided below:

- NC state grant to William Hutcheson, 1779, 60 ac. on Sugar Creek, Grant 55 (Bk 10:538).

- NC state grant to William Hutcheson, 1802, 30 ac. on Sugar Creek, Grant 1673 (Bk 17:32).

- Wm. Hutcheson to John H. Bissell, 33.5 ac. for $700, Feb. 11, 1829 (Bk 21(23):283/new 517).

- J. Humphrey Bissell, Wm. S. Miller, & Wm. Hendrick to Wm. P. Greene, 66 ac. [2 tracts, each 33 ac.] for $1,500, Apr. 24, 1836 (Bk 24(26):296/new 276).

- Wm. P. Greene to Edw. P. Jones, 33 ac. for $1,150, Sept. 11, 1854 (for details, see discussion above).

- Edw. P. Jones to Commissioners of Charlotte, 20 ac. for $10,000, June 24, 1864 (for details, see discussion above).

This chain covers most of the estimated 22-acre tract that formed the original core of Elmwood Cemetery. There is the possibility, even a likelihood, that a much smaller tract of land was the very first acreage belonging to the new cemetery, and that this dated back to 1853 and might be affiliated with W. W. Elms.

EXPANSION OF ELMWOOD CEMETERY, 1887-1888

The balance of what is now Elmwood Cemetery was acquired in 1887 from James Irwin, just as it was stated in the 1891 article in the *Charlotte Chronicle*. The details of this deed transaction are presented below:

> This deed, made this 13th day of October 1887 by Jas. P. Irwin and wife H. M. Irwin of Mecklenburg County, North Carolina, to the City of Charlotte, state aforesaid, witnesseth that the said Jas. P. Irwin and H. M. Irwin, for and in consideration of the sum of $5,555.62 [written out in the deed], have bargained, sold, released and conveyed… to the City of Charlotte all that tract of land in said county, adjoining Elmwood Cemetery and bounded as follows- Beginning at a post or stake the north corner of Pinewood Cemetery near the Carolina Central Railroad and runs with the lines of Pinewood and Elmwood cemeteries… to a stake in the cemetery line… [specific measurements not repeated here]… to a stake in the center of the creek [Irwin Creek], thence with the creek… to the railroad culvert, thence with the railroad to the beginning, containing 55 acres, 2 roods, and 9 poles (Mecklenburg County Deed Book 163:239).

Even though this deed was transacted in 1887, it was not filed with the county until November 19, 1901. This explains why it was found in a relatively late deed book.

This was a huge expansion of the cemetery grounds, taking the property all the way to Irwin Creek and beyond. It would be many years before most of this area was actually used for burial purposes, even though some trails and roads were laid out at least as far as the creek shortly after acquisition. In 1891, it was recorded that "at the extreme end of the cemetery, in a beautiful retired spot close to the creek, a bathing pool has been fixed. The pool is 150 feet long, 80 feet wide, through which the creek flows, keeping it pure and healthy." This pool was located in the lower part of the grounds, "which will not be needed for burial purposes for some time to come" (*Charlotte Chronicle* 1891).

The far western end of this new tract, beyond Irwin Creek, was never really incorporated into the main body of the cemetery before it was effectively cut off from the rest by a railroad right-of-way, followed by a highway and finally I-77. This western portion of the tract would later become West Pinewood, a predominantly black cemetery with ties to the predominantly African American community that soon developed on the west side of Irwin Creek. This development will be explored in more detail later in this report.

The large 1887 acquisition was followed by a much smaller one in 1888. In a deed made May 7, 1888, James P. and Harriet M. Irwin sold to the City of Charlotte a small tract of land adjoining the lands of Harriet M. Irwin, Cecil, and others, for the price of $10. The acreage was not given, but from the legal description, the tract was not large and was located off of Cedar Street. The grantee index identified this property as the "Cedar Street Extension" (Mecklenburg County Deed Book 59:490).

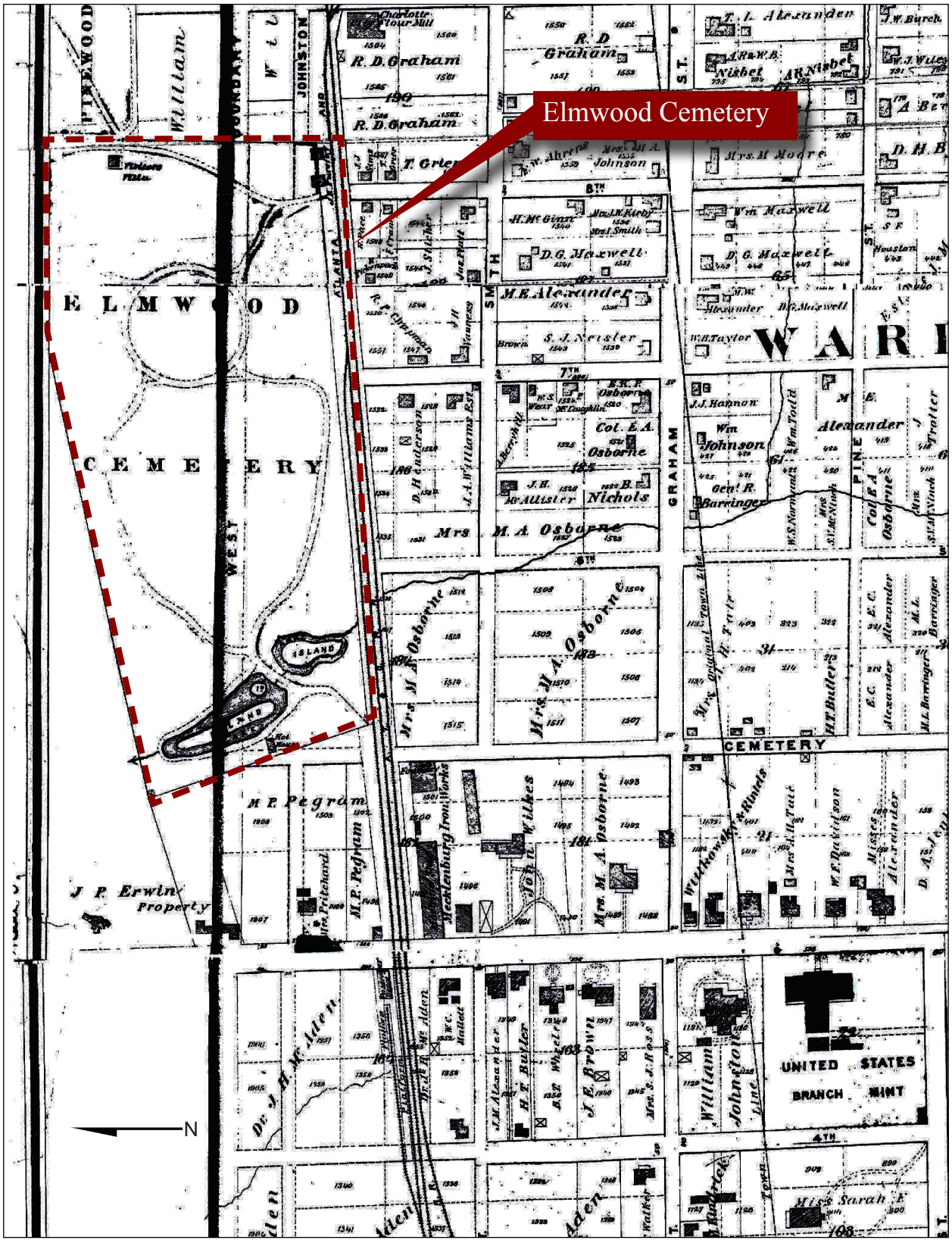
IMPROVEMENTS TO ELMWOOD CEMETERY, 1880s

During the balance of the 1800s, burials at both Elmwood and Pinewood cemeteries were largely restricted to the eastern portion of the grounds. There are in fact no known maps of the whole cemetery itself before the early years of the twentieth century. During the late 1800s, Elmwood and Pinewood were at the western edge of town and were barely shown by either city maps or Sanborn fire insurance maps.

Even so, there was a huge interest in the grounds and the improvements to Elmwood in particular, especially during the 1880s. The grounds were altered considerably during this period, and it is these changes that we want to examine in this section of the report.

The earliest map of Charlotte on file at the Charlotte Mecklenburg Library dates to 1877 (Figure 3). Both Elmwood and Pinewood cemeteries are shown on the edge of town, but even these maps indicate the basic improvements that had already been made to the grounds. Two small lakes or ponds had been created in the un-named tributary of Irwin Creek that flowed across the southeast corner of Elmwood. This would appear to have been the main entrance to Elmwood, which was off "Cemetery Avenue." There was another entrance to the cemetery off 8th Street. Within the cemetery grounds, there were at least two circular drives. The map shows a hot house near the lakes, and a visitor's rest facility at the northern edge of Elmwood, adjacent to Pinewood Cemetery. The hot house is almost surely related to the gardens and grounds located around the entrance, which basically doubled as a park, while the rest facility provided a place to sit down at the far north end of Elmwood Cemetery. Less is known about Pinewood Cemetery, but it too appears to have had drives, according to the map. The entrance to Pinewood was off 9th Street.

Figure 3.
1877 Map of Charlotte Showing Elmwood Cemetery



Source: Beers 1877

O. W. Gray and Son prepared the next city map in 1882, and it depicts both Elmwood and Pinewood cemeteries (Figure 4). The cemeteries were south of what was then the Carolina Central Railroad and west of the Charlotte and Atlanta Railroad. The southern border of Elmwood, and the main entrance, was off of Cemetery Avenue, which would later be 5th Street. By this time, there was only one lake shown, not two.

Elmwood Cemetery changed a great deal during the 1880s, only part of which was captured on the early city maps. At least three articles in the *Charlotte Observer* and the *Charlotte Daily News* covered these transformations. The two lakes, which were probably put in shortly after the cemetery was first opened, were removed during this period, and the entire entrance area was reworked into a series of terraces and gardens. Finally, the location of the main entrance was changed. The director of the cemetery, identified simply as "Dr. Scarr", oversaw all of this work.

The first of the three articles, dated to October 1883, stated that the upper lake or pond, which had been emptied "some time ago," was recently filled up and converted to a flower garden. The lower pond had been drained just the previous summer and it too had just been transformed into a garden (*Charlotte Observer* 1883).

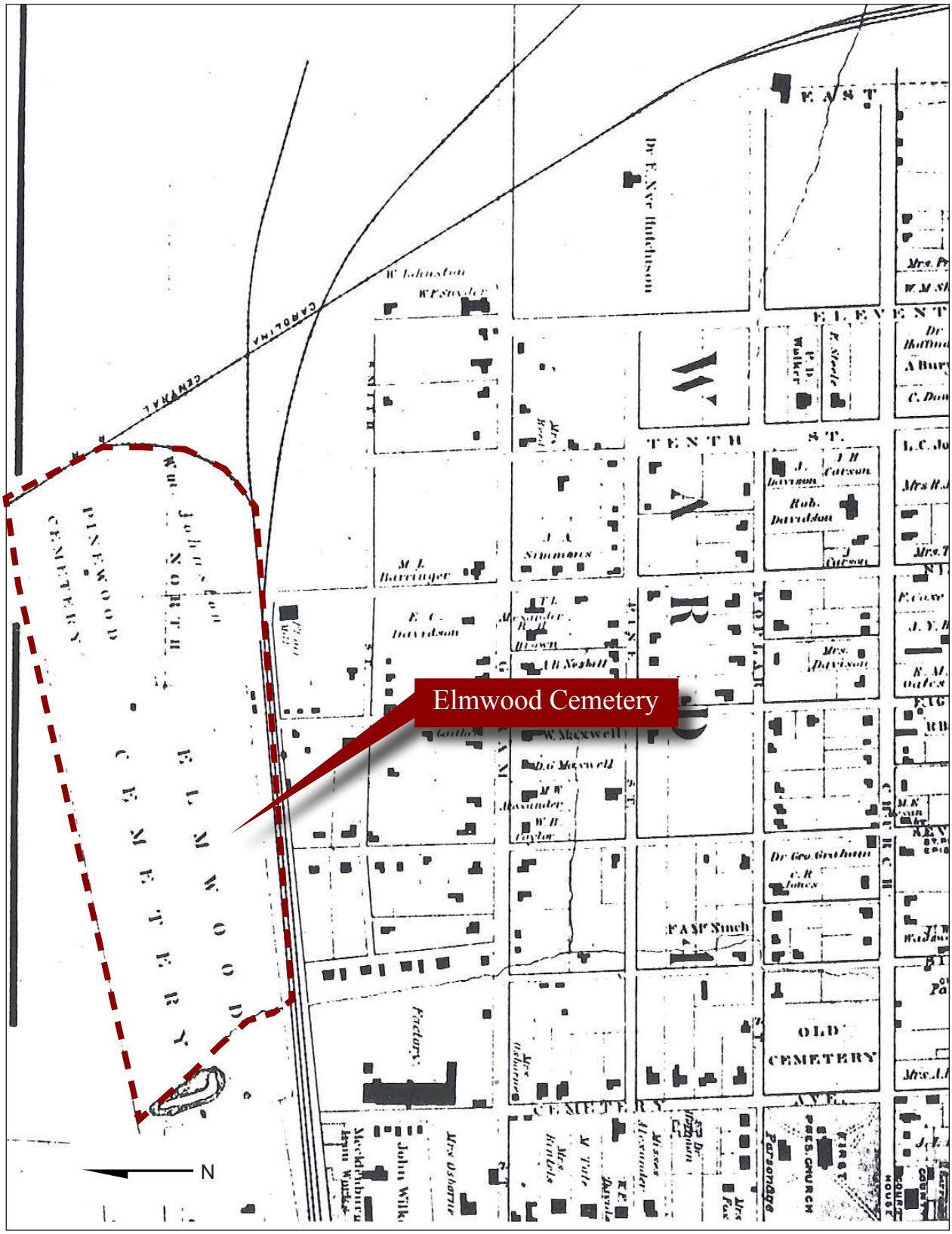
An article two years later stated that Dr. Scarr had been at work on the cemetery grounds for the previous three years, beginning around 1882, and had drained the two ponds near the entrance and had converted them to a park, with flowers, grass, and two bronze fountains. Steps and terraces were also added, going down to the stream (*Charlotte Observer* 1885).

By 1889, even more changes were documented. A new main gate was added at 7th Street, and it was stated that old carriage entrances at both 5th and 8th streets were now closed. Josiah Asbury designed the new gate, and the article that described it included a small outline drawing. The article also recapped the changes that had already occurred at the cemetery under the direction of Dr. Scarr. The two small lakes were drained and filled with flowers. The stream itself was now channelized. There were now terracing, fountains, and graveled walks, and a greenhouse (*Charlotte Daily News* 1889). This greenhouse might have been the same as the "hot house" mentioned earlier, but that is not certain.

This article also mentioned the new 55-acre addition to the cemetery that had been added just two years previous:

> Next came the splendid addition to the cemetery, through the wisdom and liberality of the present Board of Aldermen, by which its bounds are almost doubled and a very desirable piece of property secured that two or three years hence could not have been

Figure 4.
1882 Map of Charlotte Showing Elmwood Cemetery



Source: D. W. Gray and Son 1882

> purchased for twice the price paid for it. This new territory has already been laid off into lots; beautiful drives and walks have been surveyed and laid out… a part of it being well-wooded (*Charlotte Daily News* 1889).

Even years later, in 1908, it was often remarked that the cemetery was well tended. In that year, an article in the *Charlotte Observer* mentioned a Mr. Moses Thomas, who had worked at the cemetery for 41 years, since around 1867 (*Charlotte Observer* 1908). During this period, it was not at all unusual for strolling families to visit the cemetery on Sunday afternoons to admire the ponds, fountains, and flower gardens (McEwen 1987:54-55).

COMMEMORATIVE MONUMENTS

In the late 1800s and early 1900s, cemeteries often doubled as municipal parks, providing green areas where people could spend time away from the soot and grime usually associated with factories and mills, which were becoming increasingly common in Charlotte during this period. Cemeteries were also areas of special commemoration for city employees and, in the South at least, commemoration of the Civil War dead. With the end of Reconstruction and the solidification of whites-only government across the South in the late 1870s and 1880s, the public act of honoring the Confederate war dead became an increasingly popular annual observance in almost every major Southern city and town.

Charlotte's volunteer fire-fighters had a special memorial erected in Elmwood Cemetery in 1883 (Whitacre 1993), but the monument that really captured the imagination during this period was the mass Confederate grave site, located in a 95x95-foot square in the middle of Section "H" in Elmwood Cemetery (Karen Kennady, Personal Communication, Nov. 1, 2011). In the years after the war, re-interment of 156 local Confederate dead, gathered from plots around Charlotte's war hospitals, took on a special significance. At least 105 such burials were relocated to this portion of Elmwood, which was donated for this purpose by the city of Charlotte. At that time, wooden crosses probably marked the locations of the re-interred graves. The area was then dedicated on May 10, 1870, the date of the very first Confederate Memorial Day (DePriest n.d.). The date gained its significance from the death of Stonewall Jackson on May 10, 1863, mortally wounded in the battle of Chancellorsville.

Around 1880, the Ladies Memorial Association of Charlotte erected a 40-foot monument to Elmwood's Confederate dead, situated in the center of this 95x95-foot square. By the turn of the century, another 13 Confederate veterans were buried there in unmarked graves, choosing to be buried in anonymity with the rest of their comrades. By this time, Confederate Memorial Day had become a major event in Charlotte, particularly since the city was the home of Stonewall Jackson's widow. In the early 1900s, it was common for Mrs. Jackson to lead the parade of old

veterans and other citizens groups that wound its way through town to Elmwood on Confederate Memorial Day (*Charlotte Observer* 1948; McEwen 1987:54-55). After she died in 1915, she was buried beside Stonewall Jackson in Virginia. By that time, it was commonly stated that Elmwood was the second-largest Confederate burial ground in the state of North Carolina (Crouch 2003).

Compared to Elmwood, which was mentioned frequently in print and declared to be the showplace of the city, Pinewood Cemetery, set aside for African Americans, was at best a poor relation, limited to the northeastern corner of the enlarged cemetery. Even though just as old as Elmwood, there was little discussion of Pinewood's upkeep or improvements. No mention of monuments was found in the archival research. Early record keeping was poor. Today, the oldest recorded burial in Pinewood is dated to 1894, at least 30 years after the cemetery was first opened.

INTERNAL DEVELOPMENT OF ELMWOOD AND PINEWOOD, EARLY 1900s

It was not until 1913 that Elmwood Cemetery was first surveyed internally, and the map that resulted from this was revised up until 1928 (Figure 5). By this time, most of the current cemetery sections were established and laid out, at least on paper. This map, done by Leigh Colyer, is still a component of the cemetery's basic record keeping. It is displayed on the wall as a working map at the Evergreen Cemetery Office, which serves as headquarters for all cemetery activities performed by the city of Charlotte. It is still used to identify the locations of cemetery sections and plots in Elmwood Cemetery. Pinewood Cemetery is not shown on this map.

Leigh Colyer, who prepared the 1928 map, was not only a prominent landscape architect in Charlotte, he is believed to have been the very first one. Born in England, he was still a child when he immigrated to the United States with his parents. The family eventually settled in Asheville, North Carolina, and it was there in the 1890s that Colyer obtained a gardening position at the Vanderbilt family's new Biltmore Estate. There, he was greatly influenced by the revolutionary landscaping and forestry practices that were implemented. By 1897, he had relocated to Charlotte, where he first worked on the grounds of Elizabeth College. His circle soon broadened to include the industrial and commercial elite of the city and the region. His major landscaping projects included work for the Efird Department Store family in Charlotte, the Lineberger textile family in Gastonia, the mill villages of Lincolnton, North Carolina, the Belvedere suburb outside Shelby, and the Paul Chatham's "Chatham Estates" in Charlotte. As suggested by the 1928 Elmwood map, "eventually his commissions would include an extension of Elmwood Cemetery" (Hanchett 1993, vol. 2, p. 354).

Figure 5.
1928 Map Showing Elmwood Cemetery

Source: Colyer 1928

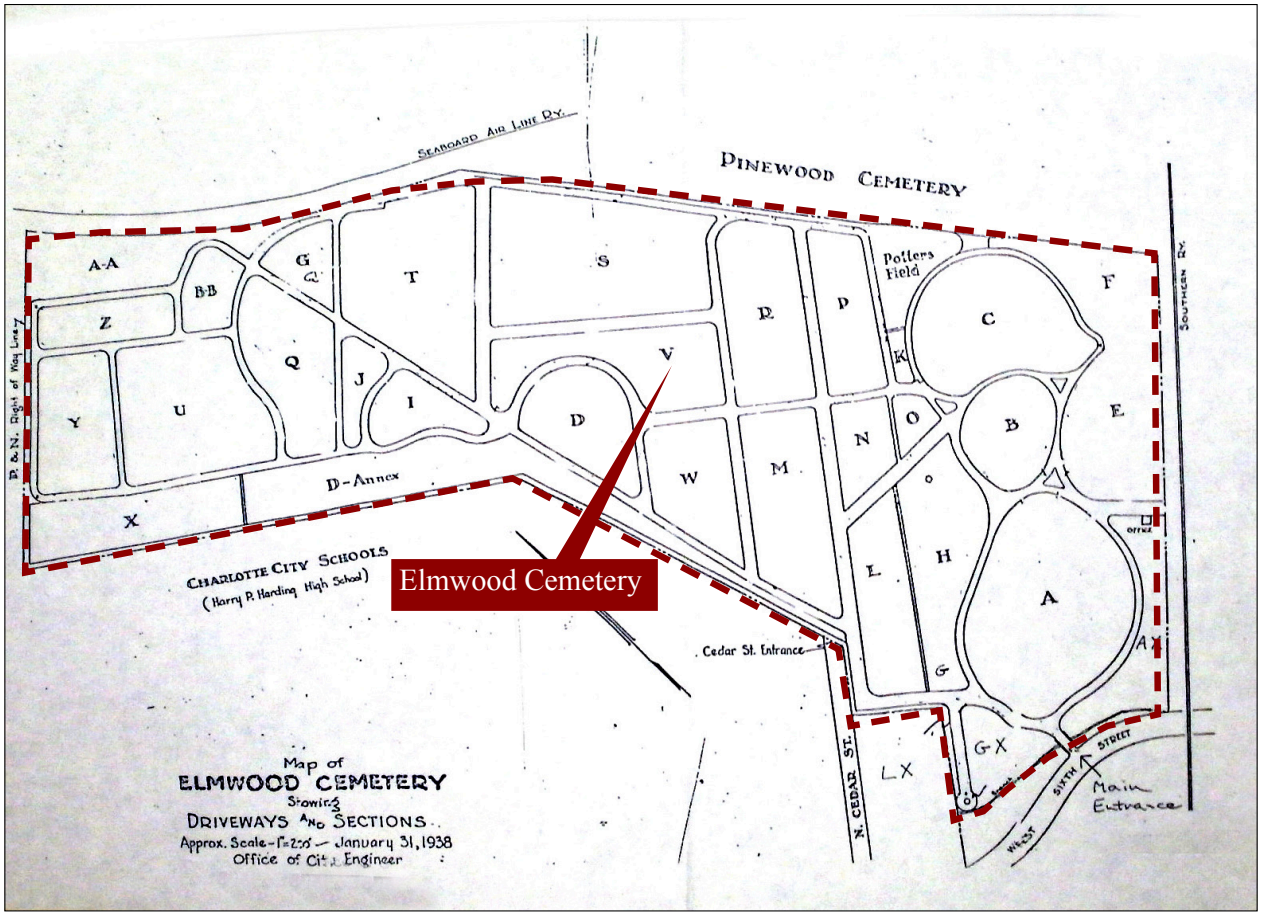
The Colyer Map not only depicts the various sections of Elmwood Cemetery, it also indicates how the cemetery expanded. Not unreasonably, the first section to be laid out was labeled "A," with each subsequent section opened and labeled alphabetically. The earliest sections were located on the east side, with later sections encroaching westward (Karen Kennady, Personal Communication, Nov. 1, 2011). This progression is also shown on a smaller 1938 map on file at the cemetery office (Figure 6). By this time, it is clear that the cemetery's main entrance had shifted back to 6th Street.

There appears to have been a sizable expansion of the cemetery sections and plots, beginning in the 1910s and continuing right up till the 1940s. Certainly most of the cemetery was laid out by 1928. Probably as a result of World War I and the many deaths that resulted from the outbreak of Spanish influenza in 1918, the *Charlotte Observer* reported that the laid out portion of Elmwood was expanding "another 300 feet to the west" to provide for an additional thousand new lots (*Charlotte Observer* 1919). In the years that followed, Section "U" was laid out (1928), followed by Sections X, Y, Z, AA, and BB (1937) (Figure 7). By 1937, it is clear from the section maps that the western portion of the 55-acre tract, acquired in 1887 – the section that would become West Pinewood – was already cut off from the rest of the cemetery, first by a railroad right-of-way, and finally by roadways.

Section AA, located near the northwest corner of Elmwood, has a special significance. Called "Babyland," Section AA has been referred to as "the saddest place of all." This area was dedicated to infants of people too poor to pay for either plots or markers, and it is reported that children lie here in 17 rows, 60 small graves to a row, "all overlapped by a seamless carpet of grass" (Vaughan 1990). These burials are believed to have begun during the influenza epidemic of 1918 (Purvis 1995).

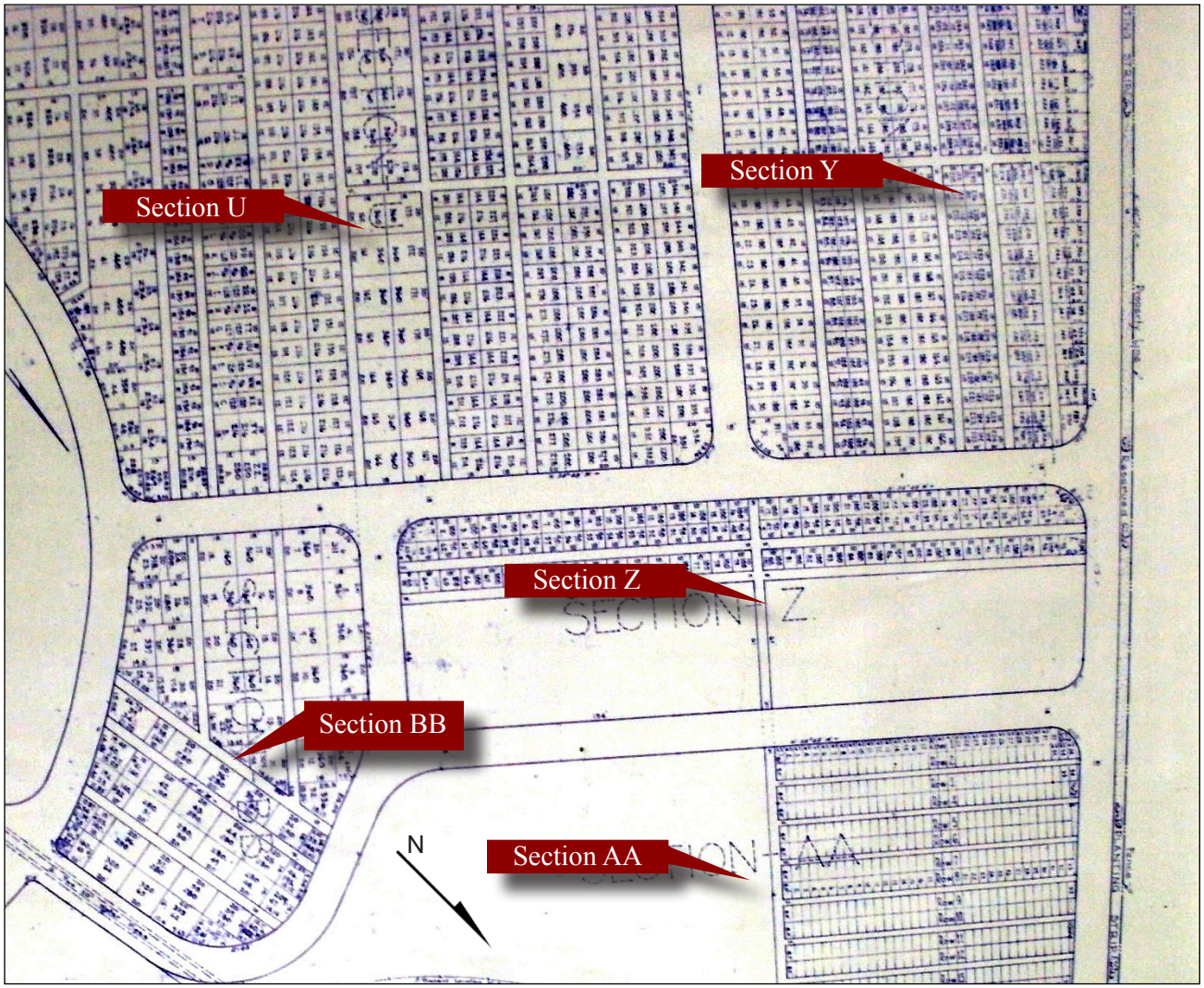
The Flu Epidemic contributed to other "potters fields" as well, most of which are generally on the north edge of the cemetery, adjacent to the railroad. There are at least three recognized potters fields in Elmwood: the first against the border with Pinewood, between Sections C and P; the second against the railroad, between Sections BB and Q (a.k.a. "QX" or Q-Annex, also called City Ground); and the third is Babyland (Figure 6). All of these contain charity burials. Burial information in these cases is minimal at best (Karen Kennady, Personal Communication, Nov. 1, 2011). There is no master list of individuals who are interred in these sections. However, burial location may be indicated on the original record cards maintained at Evergreen cemetery.

Figure 6.
1938 Map Showing Elmwood Cemetery



Source: Elmwood Cemetery 1938

Figure 7.
1937 Map Showing Sections U, X, Y, AA, and BB



Source: Sections U, X, Y, AA, and BB 1937

As regular sections filled up, marginal lands along the edges of older sections were drafted for mortuary purposes. These were the "annexes" (Figure 6). D-Annex was laid out as early as 1928-1931 (Elmwood Cemetery, Portion of D-Annex, 1932). G-Annex, beside the cemetery entrance off West 6th Street, was set up in 1939 (Section G-Annex 1939). A-Annex (Section A-a, to distinguish it from Section AA), also located on the far east side, was laid out in the 1940s (Section A-a 1942), as was Section L-Annex (Section L-Annex 1945).

Of much greater interest to our project is Section T-Annex (Figure 6). This is a long line of burials situated on a narrow strip of land between the northern-most road in Section T and the railroad along the northern boundary of the cemetery. The burials in this annex have been mapped and were laid down in the years between 1922 and 1932 (T-Annex n.d.). This annex contains both adult and child burials. The adult burials began at the east end and were continued to the west, while the child burials were begun at the west end and worked eastward, toward the adult burials. Even though the long linear map of T-Annex contains the names of the known burials, the locations of most of these are no longer marked on the ground.

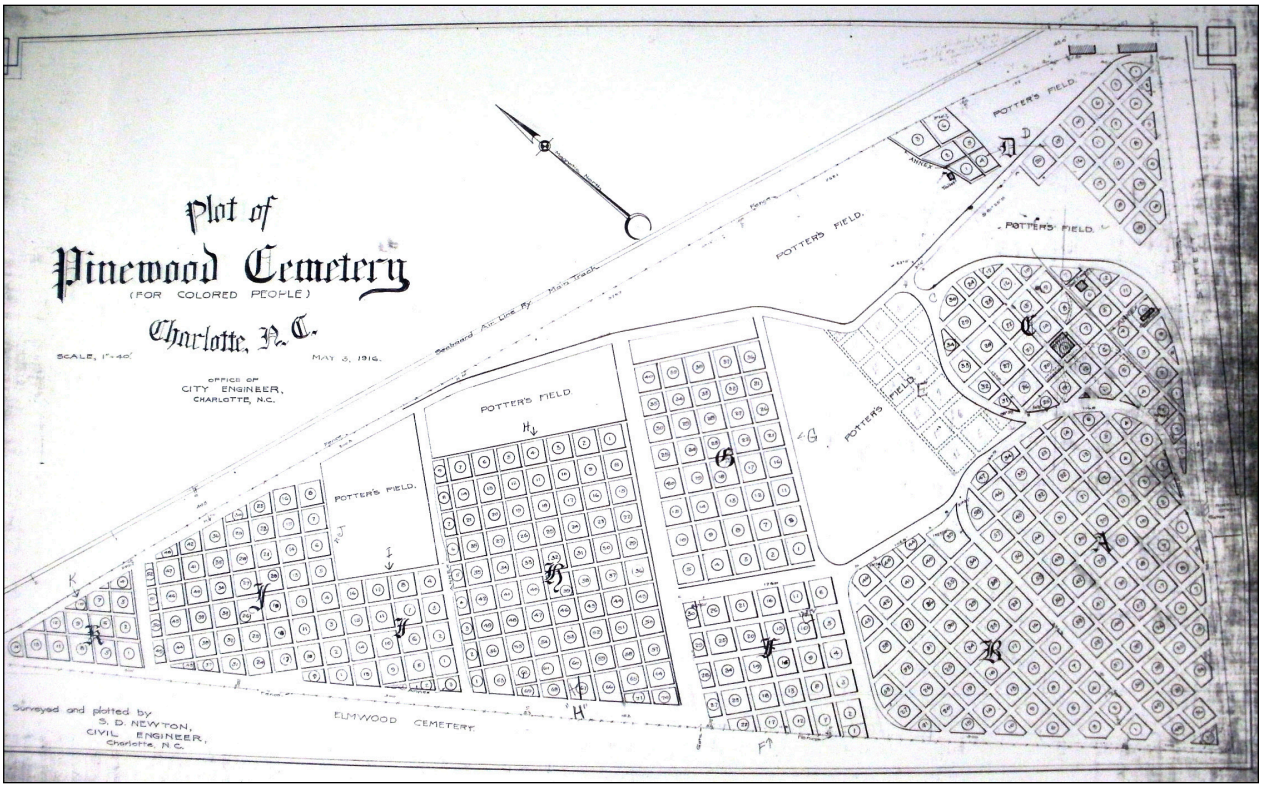
Unlike Elmwood, much less is known about the development of Pinewood Cemetery, the burial ground set aside for African Americans. According to a 1916 map, there are a total of 11 sections in Pinewood, labeled A through K. Section A was laid out first, with the others following to the north and west. This 1916 map is still today the main one used to identify the Pinewood Cemetery sections and plots (Figure 8). In addition to these established sections, there is also a series of potters fields at Pinewood, along the north side, adjacent to what was the Seaboard Airline Railroad in 1916 (Karen Kennady, Personal Communication, Nov. 1, 2011).

Pinewood did not have the space to have the number of annexes found in Elmwood, but additional property was acquired around 1920. Known as the Johnston Annex, this new property was undoubtedly named for the previous landowner, William Johnston (Hutchins 1920). Lots in the Johnston Annex were established by 1931, according to a map still in use for the cemetery (Figure 9).

INTERNAL ORGANIZATION

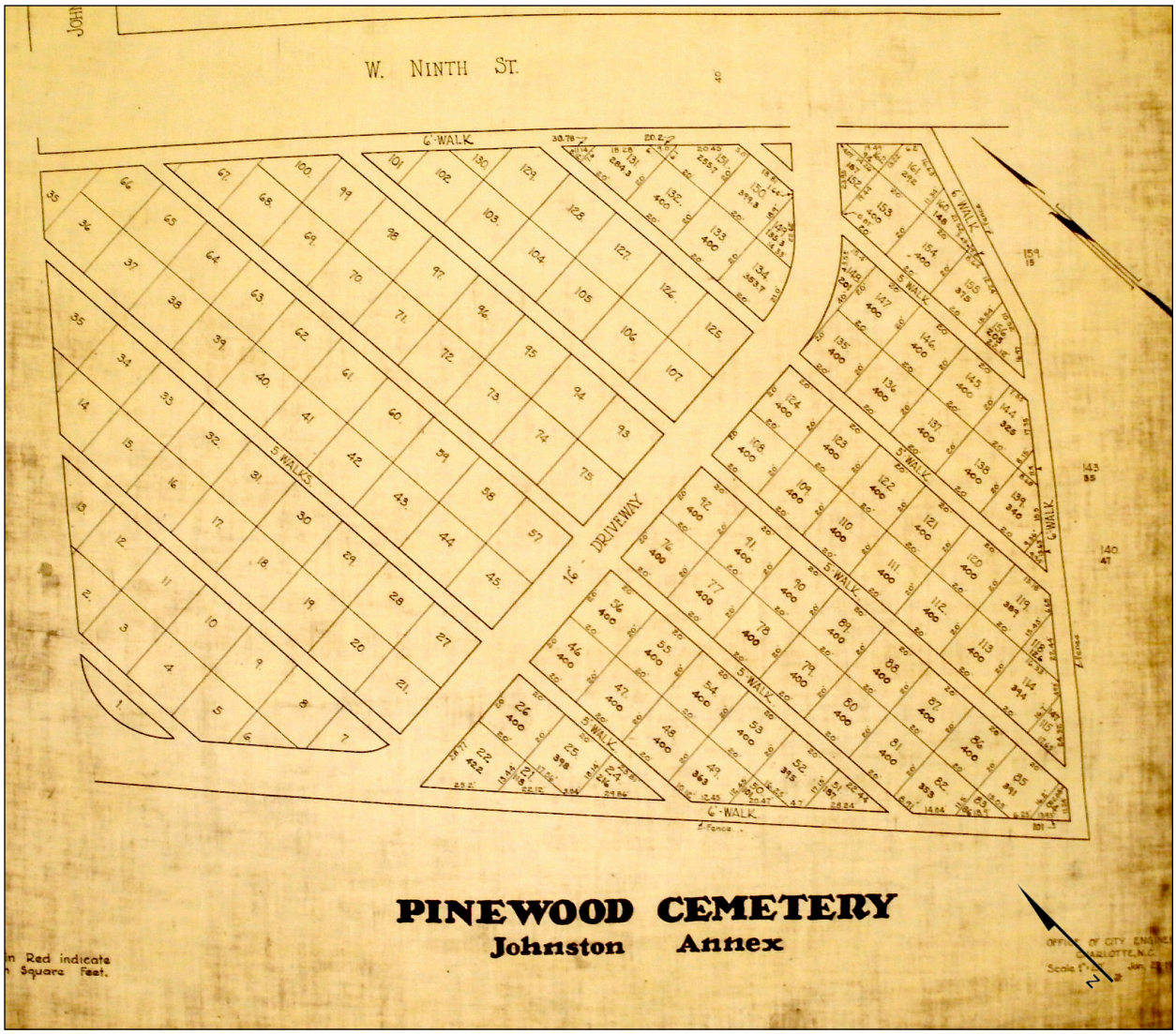
Just as the Elmwood and Pinewood cemeteries are divided into sections, each section is divided into plots. Plots are the units that are sold to individuals or to families. Most plots, except for the fractional ones along the edges of sections, come in two sizes: 24x24 feet or 20x20 feet. In Pinewood, for example, most plots measure 20x20 feet. The larger measurement is more common in Elmwood. In each plot there might be as many as 10 graves, with each individual grave measuring 4x10 feet (Figure 8).

Figure 8.
1916 Map Showing the Pinewood Cemetery



Source: Newton 1916

Figure 9.
1931 Map Showing the Pinewood Cemetery Showing Johnston Annex



Source: Pinewood Cemetery, Johnston Annex 1931

In the case of burials at Elmwood, a filing card was kept for each plot, identifying the owner. The cost of a plot, at least by the years of the early 1900s, was around $25. The graves in each plot were then drawn on a small inset on each card, providing the location of individual graves, as well as a list of all buried in the plot. For Elmwood, these records are believed to go back to 1854. In the case of Pinewood, the first recorded burial was dated to 1894 (Survey 1971). Overall, and in keeping with the poorer level of service that was usually accorded African Americans during the era of Jim Crow, the permanent records for Pinewood are not as thorough as those for Elmwood (Karen Kennady, Personal Communication, November 1, 2011).

Burial plots in Pinewood were sold out by the early 1930s (Blythe and Brockman 1961:433). Even as late as 1936, it was recorded that there were still 610 plots still available for sale in Elmwood (Annual Report 1936-1937). World War II took care of that surplus and by 1947 Elmwood too was sold out. By 1961, it was noted that there were at least 18,915 burials recorded within Elmwood Cemetery (Blythe and Brockman 1961:433). Even so, not all plots in either cemetery have been filled. Even today, there is room in Elmwood/Pinewood for new burials within plots that have long been sold (Karen Kennady, Personal Communication, November 1, 2011).

In addition to keeping records, keeping the grounds was very important, and a great deal of attention was given to this issue. Landscaping seems to have been a major concern in the 1800s, and was mentioned by almost all nineteenth-century commentators. There were at least two major reasons for this. The first is that the cemetery was still in the process of selling plots that had to look attractive to the buying public. The second is the dual function of a nineteenth century cemetery, which served not only as a burial place but also as a municipal park. In an era when most people had to walk to get around town, the cemetery was accessible green space.

Cemetery personnel were well aware of this park-like function and they worked hard to preserve its integrity. There are at least two photographs that show the grounds-keeping staff at Elmwood Cemetery, both believed to date to around 1945. They show the white supervisory staff and the largely African American grounds staff, with their motorized reel-mowers (Figure 10).

DEVELOPMENT OF WEST PINEWOOD

The extreme west end of Pinewood Cemetery, shown as an empty area on the west side of the 1928 Colyer Map, was never really integrated into the main portion of the cemetery. Based on a 1967 blueprint map, it is believed that this area was part of the acreage purchased from James Irwin in 1887. It is certainly possible that this area was acquired through

Figure 10.
Staff Photographs from 1945

Source: Evergreen Cemetery Office, Charlotte, NC

another land deed not yet recovered; this has certainly been suggested by one source (Blythe and Brockman 1961:433). Either way, this area was soon cut off from the rest of the cemetery by a series of railroad and road rights-of-way adjacent to Irwin Creek. This separation was completed in the 1960s when I-77 was put through this same area (Moore 1967). By 1935, at the time of the first burials in this area, it was accessed off of North Summit Drive on the far side of the 55-acre tract. By this time, the area was considered a separate cemetery, called "West Pinewood" (Blythe and Brockman 1961:433).

It should be noted that West Pinewood will not be impacted by any work associated with this project, but the story of West Pinewood plays into the larger development of the first suburbs around Charlotte's first four wards. This development, the story of the expansion of the city around Elmwood/Pinewood Cemetery, is presented in the following section.

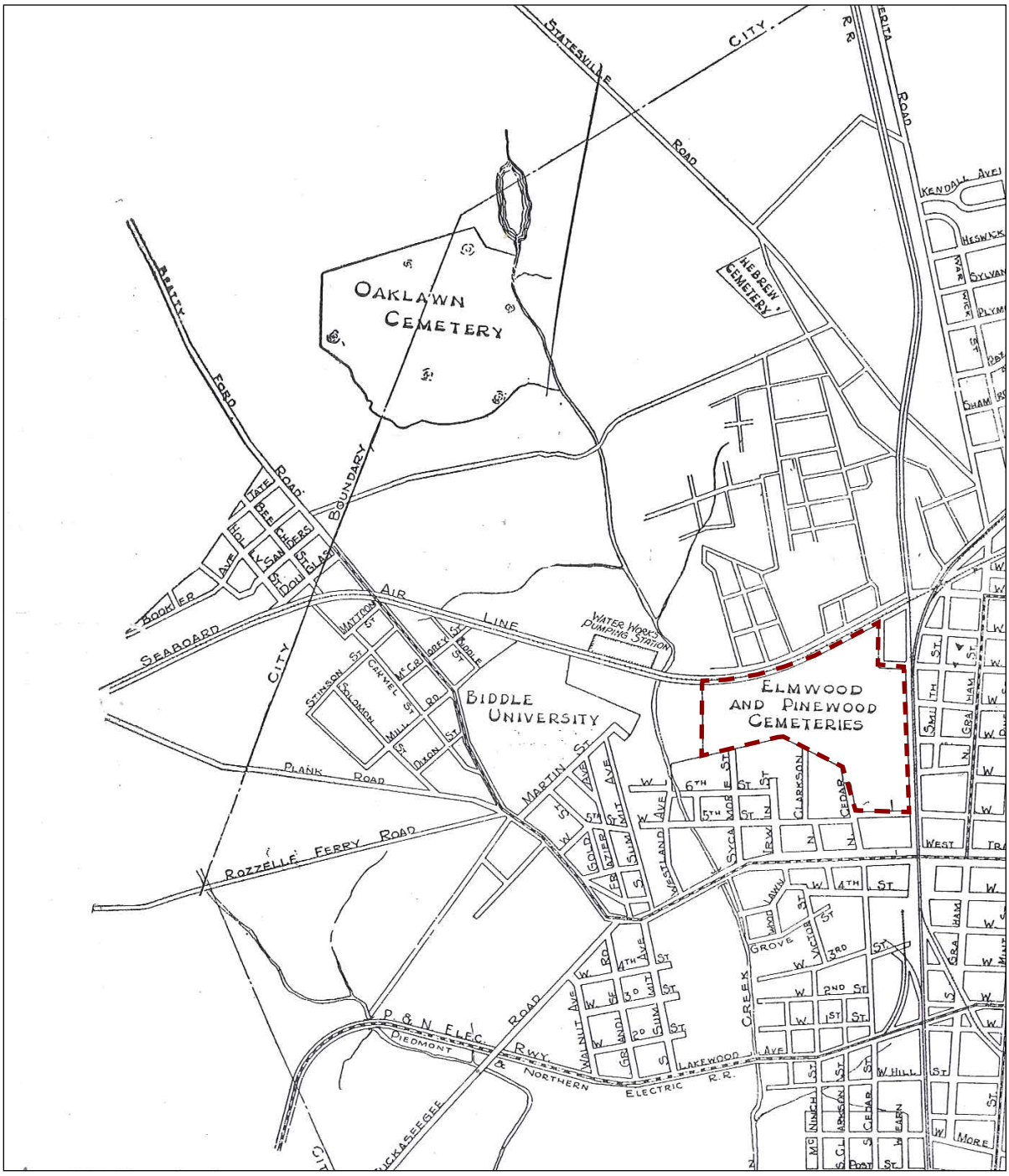
CITY EXPANSION AROUND ELMWOOD AND PINEWOOD CEMETERIES, 1900s

Elmwood and Pinewood cemeteries, located along the extreme western edge of the city in the mid-nineteenth century, were still located on the periphery of the city until at least the early 1890s. This is certainly implied by the early Sanborn fire insurance maps that show the larger industrial and commercial establishments of the city, beginning in 1885. These early maps, which appeared in 1885, 1890, 1900, 1905, and 1911, basically show Elmwood and Pinewood as an area bounded by two railroads: the Seaboard Airline Railroad to the north, and the Southern Railroad to the east (Sanborn Maps 1900; 1905). Established neighborhoods, particularly to the south and west of the cemetery, do not appear to be well defined until the early years of the twentieth century.

The first of the three Charlotte Chamber of Commerce maps on file at the Charlotte Mecklenburg Library (Charlotte Chamber of Commerce 1925; 1935; 1945) shows urban and suburban development on virtually all sides of the cemetery, with Biddle University located to the west, adjacent to what would be West Pinewood. Other cemeteries are also shown in this general area: Oaklawn to the northwest and Hebrew Cemetery to the north (Figure 11). This same basic situation is shown again in 1935 and 1945, except now the area to the west is called Biddleville, which is one of the first historically African American neighborhoods in the area outside the original four wards of the city (Figure 12).

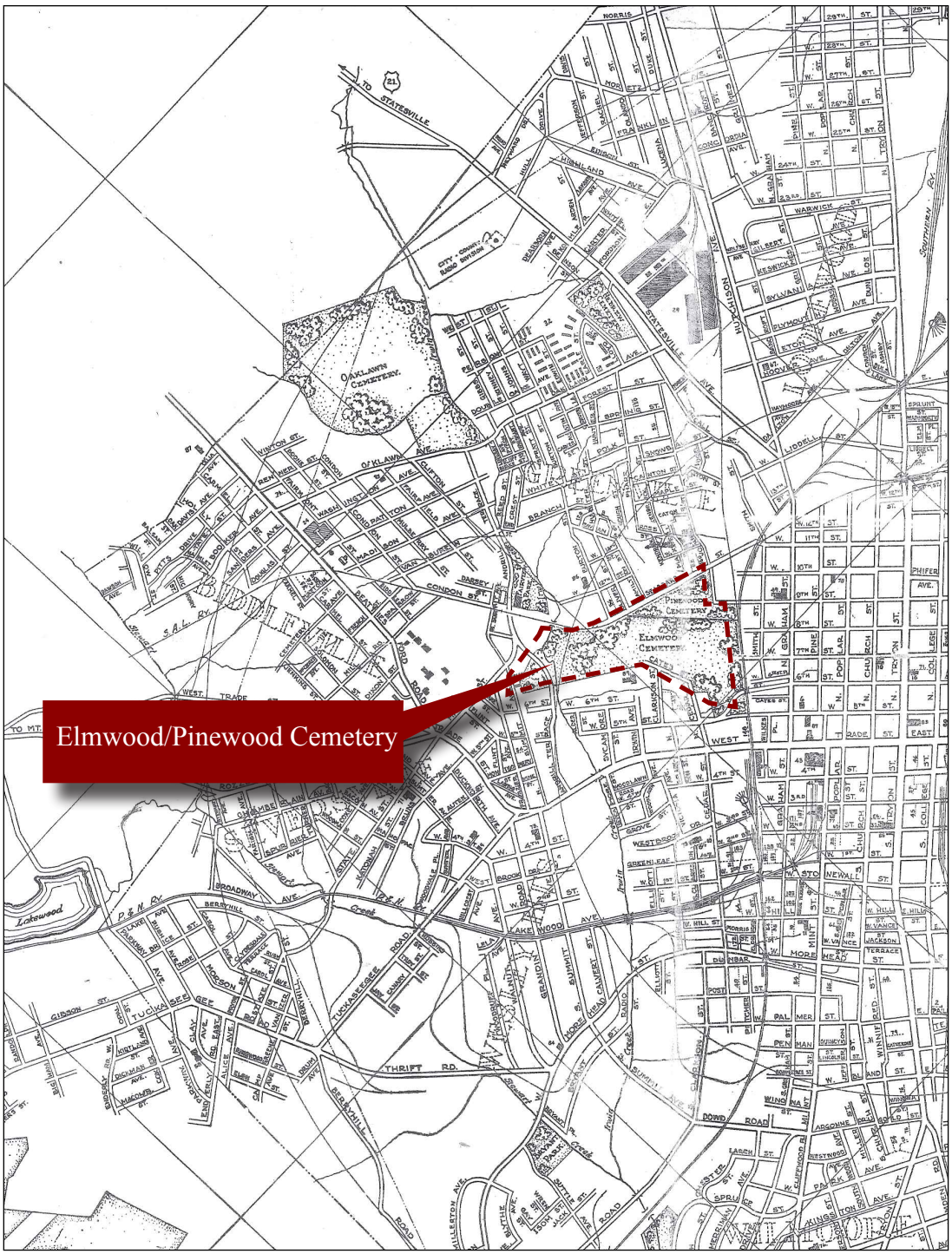
Biddleville was a predominantly African American neighborhood that coalesced around the Biddle Memorial Institute, a school dedicated to the education of recently freed African Americans in the years after the Civil War. Established in 1867, the school moved to its current location in 1869, when it was built on a hill west of Charlotte with lumber salvaged from the Confederate Naval Yard. This permanent location began with a donation of eight acres by

Figure 11.
1925 Map Showing Other Cemeteries in the Area



Source: Charlotte Chamber of Commerce, 1925

Figure 12.
1945 Map Showing the Area Around Elmwood/Pinewood Cemetery



Source: Charlotte Chamber of Commerce, 1945

Colonel W. R. Myers, followed by the purchase of other lands. The first president of the school was Dr. Stephen Mattoon, who served in that capacity from 1870 to 1884. Later, Mattoon and his wife, both white, were buried in Elmwood. Before the end of the 1800s, the institution was designated Biddle University, and was finally renamed Johnson C. Smith University in 1923, in honor of a prominent benefactor (Blythe and Brockman 1961:234-235; Hanchett 1993, vol. 2, p. 286-287). The tower of the school, built in the 1880s, can still be seen from the western side of the Elmwood/Pinewood Cemetery.

Biddleville grew up around the Biddle Memorial Institute, but there were other African American neighborhoods adjacent to the cemetery as well. Both "Greenville" and "Irwinville" developed northwest of the Fourth Ward, near the modern-day juncture of I-77 and the north end of I-277. Both probably began as railroad worker communities. As might be suspected from the name, Irwinville developed out of a large farm owned by the Irwin family (Hanchett 1993, vol. 2, p. 284-286).

It is almost certainly the case that Biddleville and the other African American communities adjacent to it played a key role in the development of West Pinewood as a predominantly African American cemetery west of I-77. One source has claimed that West Pinewood burials began in 1935 (Blythe and Brockman 1961:433), but another source gives that date as January 1945 (Survey 1971). North Pinewood, another adjacent black cemetery was opened up two years later (Survey 1971). Both are accessed from North Summit Street (Karen Kennady, Personal Communication, November 1, 2011).

At present, the city of Charlotte owns five cemeteries, from Old Settlers and Elmwood/Pinewood, to the most recent: Oaklawn and Evergreen (Deem 1995:1). Oaklawn was first established in the 1930s under private auspices; it was taken over by the city in the 1950s (Blythe and Brockman 1961:433; Karen Kennady, Mike Shroyer, Personal Communication, November 1, 2011). Evergreen Cemetery was formed out of a 200-acre tract purchased in 1944, with the first burial recorded three years later, in 1947 (Blythe and Brockman 1961:433). This was the same year that Elmwood Cemetery sold the last of its plots to either individuals or families.

RECENT CHANGES, LATE 1900s AND EARLY 2000s

The years since 1947 have seen a number of changes to Elmwood and Pinewood cemeteries and the area around them. The 1960s were perhaps the most momentous period, beginning with the development of the Northwest Expressway around 1961, followed by the construction of I-77 later in the same decade (Lorraine Ramsey, Personal Communication, November 1, 2011). Other events that occurred in that same decade include the lease agreement between the city and the Seaboard Air Line Railroad, and the final merging of Elmwood and Pinewood cemeteries into one unit, now known as the Elmwood/Pinewood Cemetery.

In 1966, the city of Charlotte reached an agreement with the Seaboard Air Line Railroad about the disposition of any burials within the railroad right-of-way along the north boundary of the Elmwood and Pinewood cemeteries. In this agreement, it was reiterated that the railroad has a right-of-way 200 feet wide, 100 feet on each side of the center line of the main track, as established by a Special Act of the North Carolina legislature, dated February 3, 1855, the act that first incorporated Seaboard's precursor, the Wilmington and Charlotte Railroad Company. Over time, the cemetery has encroached on this right-of-way, until, by the 1960s, this had become a problem that required a solution. As part of this agreement, it was determined that the railroad would lease out the land that the cemetery had encroached upon, while the city promised to cease all burial activities within the established right-of-way. It was further stipulated that the city would remove any burials within this affected area upon the termination of the lease (Agreement 1966). This agreement had no noted end date, but it does specify that the lease would end within 90 days within receipt of written notice from either party terminating the lease.

Elmwood and Pinewood cemeteries, although right beside each other, had always been considered two separate cemeteries since their beginnings. They were administered differently, and the records for each were kept differently as well. By the 1930s, this separation was highlighted by a fence that physically separated the two cemeteries. In the 1960s, when Frederick Douglas Alexander became Charlotte's first African American city counselor since the days of Reconstruction, one of his goals was to dismantle the fence. At his instigation, and over considerable opposition from the council, this was finally done in 1969 (Hanchett 1993, vol. 2, p. 507).

Years later, in 2003, Elmwood/Pinewood was designated a local historic landmark. Much of this was the work of the "Preserve Elmwood/Pinewood Committee," created the year before (Historic Charlotte, Inc. 2004). This was followed almost immediately by the Confederate flag controversy at the Confederate memorial in Section H (Rubin 2005:B-1). After some controversy, the flag was taken down for the last time at the end of 2004 and beginning of 2005.

As can be seen from an event as late as the Confederate flag controversy, the Elmwood/Pinewood Cemetery can still play a role in local and regional disputes, despite its reputation as a final resting place for many of those in the community. This is just more proof, if proof is needed, that cemeteries are often just as important to the local community as any other aspect of life.

CEMETERIES AS CULTURAL LANDSCAPES

Cemeteries are more than just places where dead people are buried: they are reservoirs of information about the people who used the cemetery. Cemeteries are filled with markers, edgings, decorations, plantings, and a host of other material representations designed to tell the world a little something about the people who are buried there. A few of the messages are universally understood. The casual visitor may stop by a cemetery, read the stones and view these objects, knowing what some of them may mean. For the outsider to interpret, understand, and finally appreciate a particular cemetery, it is first necessary to understand how cemeteries act as information centers.

Cemeteries are cultural landscapes that contain and express information about the past. They are more than simply places where the dead are buried: they also reflect the attitudes of living communities who use the cemetery (Dethlefsen 1981; Dethlefsen and Jensen 1977; Jeane 1989). The variety of markers, materials, epitaphs, symbols, offerings, and plantings all convey certain information about the deceased to a particular audience (Combs 1986; Dethlefsen 1981; Hijiya 1983). As the living community changes, so too do its ideas about death as expressed in mortuary behavior. The following quote (Dethlefsen 1981:137) provides an appropriate context for further discussion of the Elmwood/Pinewood cemetery:

> A cemetery should reflect the local, historical flow of attitudes about community. It is, after all, a community of the dead, created, maintained, and preserved by the community of the living. In many ways it should be a "filtered" and modified reflection of the living community, with an added dimension of controlled chronological depth. At least, the cemetery should have some hints for us about prevailing views of God, acceptable implications of life and death, intensity of status differentiation, and relative values of kin and other social-interactive relationships.

FORMAL CEMETERIES

Formal Cemeteries are regulated by Cemetery Institutions. These institutions are defined as organizations devoted to overseeing and regulating the range of expression applied to the cemetery as a whole. Cemetery institutions include churches, burial associations, federal, state or local governing authorities, and commercial enterprises.

In general, these groups recognize that the cemetery acts as a social feedback loop. Inclusion in the cemetery communicates culturally significant information about the dead buried there and, likewise, the dead communicate important ideas about the cemetery population as a whole. In order to ensure that the cemetery conveys socially appropriate messages, formal cemeteries develop following norms that are more restrictive than found in the community as a

whole. There are several consequences from this. First, formal cemeteries are exclusive. Inclusion is limited to these dead people whose social identities meet the institution's criteria. Burial in a formal cemetery may be limited by membership in the institution, economic status, belief system, moral character, race, or ethnicity, among other factors. Those not meeting these criteria are excluded. Second, placement of the grave within the cemetery must follow a predetermined order and structure. Access to burial space within the formal cemetery is not uniform and different areas emphasize or communicate specific meanings, including family affiliation, age, gender, or national origin, as well as those social factors listed above. In order for those meanings to be effectively conveyed, grave and plot placement must complement these messages. Grave and plot placement must follow a predetermined long-term plan as defined by the institution. Finally, the variety of potential mortuary behaviors, particularly material expressions, within the formal cemetery is limited to a range deemed acceptable by the institution. The manners in which graves and plots are delineated, memorialized, decorated, and maintained communicate enormous amounts of information about dead and about the depositing community. The information communicated needs to be appropriate and intelligible to the formal cemetery's audience. The cemetery institution acts as a filter to ensure that human behaviors within the cemetery are complementary of the cemetery as a whole.

Most Judeo-Christian cemeteries share common characteristics with respect to burial of the dead. In general, bodies are oriented east-west, with the head facing east (Crissman 1994). Depths vary, but are typically between four and six feet, depending on local conditions and customs. Shapes tend to oblong and rectangular because of coffins and caskets. Sizes can vary considerably, particularly between adults and infants, with most adults in the range of approximately six feet long and two feet wide. It is not uncommon to have multiple, overlapping, and stacked burials depending on available space and accurate record keeping (Patch 2009).

GRAVE MARKERS

Detailed study of cemeteries has been shown to reflect the attitudes of the larger society (Dethlefsen 1981; Dethlefsen and Deetz 1966; Dethlefsen and Jensen 1977). Grave markers are sensitive to a wide variety of stylistic changes including material form, form, and iconography. Because grave markers often contain names and dates, they are an especially valuable source of information about health, status, and family relationships (Combs 1986; Deetz and Dethlefsen 1965, 1978; Dethlefsen and Deetz 1966; Ludwig 1966). Studies of gravestone markers have been published for cemeteries all over the United States.

Grave markers are perhaps the most universally recognized architectural feature in American cemeteries. They help identify the location of an interment and serve as tangible memorials of the dead's social identities. Grave markers frequently memorialized individual interments, however, they were also used to address multiple family members. Traditionally, they were positioned at the head of the grave and footstones commonly marked the opposite limit.

Grave markers can be divided into two basic forms: formal and informal markers. Formal markers are defined by a morphology and suite of communicated information that most closely follows the norms of the dominant culture. In the Eastern United States, nineteenth- and early twentieth-century interpretations of the western cultural tradition established the professionally manufactured marker as the material norm. The vast majority of these markers were made of milled stone, most commonly marble, slate, granite, soapstone, or sandstone. These stones were minimally inscribed with the deceased's name (or initials) and, frequently, the date of death, birth and other social proveniences, including family history, birthplace, circumstances of death, or relevant prose, were recorded. These markers were usually professionally inscribed. It is the combined use of a professionally manufactured marker and written inscription that distinguished the formal from informal markers.

Concrete markers were a common substitute for the formal stone monuments in southern cemeteries (Jeane 1992:116, Vlach 1991:45). They were made by family members, by specialists in the community, or provided by commercial funeral homes. Paint was sometimes used to tint concrete markers white, perhaps in imitation of the white marble forms and to add a white color association to those stones. Jeane (1989:166) has noted the use of aluminum or silver colored paint on markers in African American cemeteries. This pattern was observed at Randolph cemetery in Columbia, South Carolina and Old School cemetery in Washington, Georgia (Richey, Patch, Joseph, and Matternes 2007; Richey, Matternes, and Joseph 2007).

IV. METHODS

ARCHIVAL RESEARCH

Archival research was conducted at three different local information repositories in the Charlotte area. The first was the Evergreen Cemetery Office, which serves as the repository for the records of Charlotte's municipal cemeteries, including Elmwood and Pinewood. Among the data kept there were specific maps of the cemeteries, and even cemetery section maps, almost all dating to the early years of the twentieth century. The office also maintained vertical files on both cemeteries, with news clippings that often went back to the late 1800s. The Evergreen staff was also helpful in interpreting the details of much of these data.

This information was augmented by information on file at the Robinson-Spangler Carolina Room of the Charlotte Mecklenburg Library. Here, various historical maps of the city, including Sanborn maps, as well as published sources dealing with Charlotte's history were reviewed. These sources were particularly useful in illustrating the development of the neighborhoods adjacent to Elmwood and Pinewood. The vertical files on both Elmwood and Pinewood cemeteries were used to canvas the newspaper accounts of the historical changes made to the cemeteries themselves.

The Mecklenburg County Register of Deeds was the last place visited that week. Here, the original deed records were examined in order to create a partial chain of title for Elmwood and Pinewood cemeteries, documenting the real estate development of the cemeteries from at least the time of the Civil War to the present day.

CEMETERY MAPPING

Field mapping was conducted with a Nikon DTM-32 total station and TDS Recon data collector. A primary map station was established near the eastern edge of the study area. Coordinates (UTM Zone 17, NAD83) for this point were then collected with a Trimble GeoXT global positioning system (GPS). These coordinates were entered into the data collector so the total station data could be incorporated into the GIS.

All grave markers and other cemetery features such as plots, roads, trees, and fences were recorded. Grave markers were identified with four points, one on each corner, to provide the maximum degree of accuracy and each was assigned a unique number in the field. The associated number for each grave feature was then displayed on subsequent maps prepared for the inventory phase.

All total station data were imported in ArcGIS for map production. Individual shapefiles were then created for each feature class (e.g., grave marker, tree, fence). These data were used in the production of a detailed map that was overlaid with other spatial data (e.g., aerial imagery, topography).

GRAVE MARKER INVENTORY

Each marker within the project area was inventoried and examined. A Microsoft *Access* database was used to document multiple attributes of each marker. Characteristics including construction material, monument shape, inscriptions and epitaphs, military service, grave landscaping, and adornment types were recorded.

Each marker was given a unique inventory number. This number tabulated the number of monuments, not the number of individuals associated with a given monument. In cases where multiple individuals were memorialized by a single marker, an alphanumeric designator was used to document the number of individuals present. A marker inventory number was first assigned to each monument and a letter was used to denote each individual associated with it. The first recorded individual was identified as "a" and continued until each individual celebrated by the marker was recorded. If, for example, three individuals were listed on a single marker (such as Feature 3), they would be identified by 3a, 3b, and 3c. This designation allowed the field team to accurately record the number of monuments as well as the number of individuals memorialized by these stones.

Once each marker was recorded, it was then photographed. At least one photograph was taken of the front of the marker. Supplementary photographs were taken to document additional inscriptions and decorations on other surfaces. Photographs were also taken to record the size, shape, or condition of the marker. When applicable, images of a grave's landscape and accouterments were made. An inventory of each photograph was made in order to link it with the marker inventory database. The end product created a complete visual and written record of each marker.

GRAVE MARKERS

Variation in grave markers has been a fertile research topic among anthropologists and genealogists because of the wealth of demographic information they contain. Marker style, material, and epitaphs are only a few examples of specific attributes that can be recorded. Because birth and death dates are often provided, it is possible to obtain information regarding overall population health and life expectancy that is otherwise unavailable. Field recording of grave markers required classification according to the types listed below.

Bench

Occasionally, a family plot (or individual grave) will have a bench near by for the decedents family to rest while visiting the cemetery (Figure 13a). Benches can be wooden, concrete, or stone. They often have the family's surname engraved on a plaque or carved into the surface.

Crypt

In modern terms, a crypt is a stone chambered burial vault used to store a coffin or casket holding the decedent (Figure 13b). They can be found beneath churches or in mausoleums. Six crypts were identified in the project area, all within Feature 84. The exposed side of the crypt may contain the decedent's pertinent information much like a headstone.

Displaced Marker

The designation displaced indicates a marker that has been broken, scattered, or otherwise moved from its original location (Figure 13c). Often, these displaced items have no identifiable marker type.

Family Monument

Family monuments are typically upright markers that identify the family's primary surname (Figure 13d). These markers do not mark individual graves but a group of graves with their own individual markers. Often die-and-base markers, they can also come in the form of a bench or other sculpture or monument form. At the Elmwood/Pinewood Cemetery, the most typical form was die-and-base markers constructed from granite.

Footstone

A footstone is a marker at the foot of the burial (Figure 14a). Typically, a footstone is associated with a headstone or tombstone and is a smaller version of the associated marker. A footstone can be in the style of a headstone (standing vertically on the ground surface) or in the style of a tombstone (resting horizontal to the ground surface). Materials usually match those of the associated headstone.

Fragment of Border

Individual graves or family plots can have stone or concrete borders that define their boundaries (Figure 14b). Over time, these borders can be displaced, broken, or sink below the grass, leaving only a fragment intact and visible.

Figure 13.
Examples of Grave Marker Types, 1 of 3

A. Bench

B. Crypt

C. Displaced Marker

D. Family Marker

Figure 14.
Examples of Grave Marker Types, 2 of 3

A. Footstone

B. Fragment of Border

C. Headstone and Ledger

D. Headstone

Headstone

Headstones are markers that stand vertically, marking the head of the deceased. Typical headstones come in a variety of shapes and sizes but are less than three feet tall (Figure 14d). The front of headstones can be beveled or angled. At the Elmwood/Pinewood cemetery, headstones were manufactured from a variety of materials such as concrete, granite, and marble.

Headstone and Ledger

Ledgers are markers that rest horizontally on the ground surface, similar to a tombstone. Ledgers are typically about coffin length (greater than three feet long) and are intended to cover the burial length (Figure 14c) (McVicker 2005). Ledgers can sit directly on the ground surface or on some sort of foundation placed below the ground.

Occasionally, multiple forms of grave markers are used in conjunction to identify a grave. In this form, a ledger stone is laid down and a headstone is placed on top to identify the individual. Often the ledger stone is concrete or granite, while the headstone is granite or marble. One example of this (F-309) was identified in the project area.

Mausoleum

A mausoleum is a tomb or building that house a burial or group of burials above ground (Figure 15a). Often mausoleums are constructed in the form of a church, house, or other building and contain the remains of a single family. They usually have a single door access on the front and often have a window on the opposite wall to allow in light. One example of this form (Feature 84) was noted in the project area. Built to resemble a church, six crypts were held inside. Only four of the six crypts held individuals.

Monument

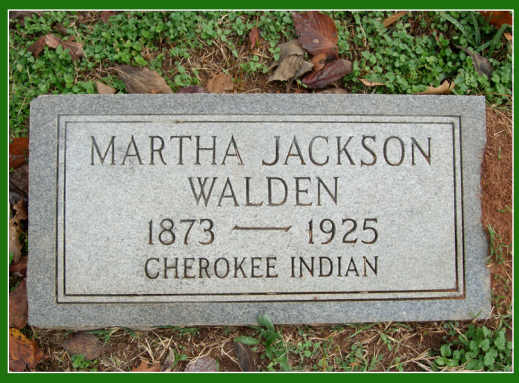
Monuments are typically greater than four feet in height, although some shorter variations are possible (Figure 15c). These markers can mark a single individual or a group of surrounding graves. The name(s) of the decedent(s) and other pertinent information is usually included. Woodsmen of the World monuments are an example of this form that was common in the Elmwood/Pinewood Cemetery. Monuments are often constructed out of granite or marble, though concrete forms are not uncommon.

Figure 15.
Examples of Grave Marker Types, 3 of 3

A. Mausoleum

B. Prepared Concrete

C. Monument



D. Tombstone

E. Temporary Metal Marker

Prepared Concrete Slab

While many headstones and tombstones are placed directly in the earth with no supporting base, many are placed on prepared concrete surfaces (Figure 15b). Concrete is used to prevent or at least retard sinking of the headstone over time. Usually, these concrete bases are below the ground surface and are not visible. However, over time the earth can erode away leaving the concrete exposed.

Tombstone

A tombstone is a marker that rests horizontally on the ground surface and is intended to mark the head of the deceased (Figure 15d). Tombstones will be less than three feet long. At the Elmowood/Pinewood cemetery, tombstones were constructed from a variety of materials, including concrete and granite.

Temporary Metal Marker

Temporary metal markers are typically placed by funeral homes to identify burial locations (Figure 15e). They are usually small with pertinent information about the deceased (such as name, date of birth, and date of death) placed on a placard attached to a stake. These markers are not intended to be permanent, although economically disadvantaged groups often use them for long periods of time. Information on these markers is typically typed or written on paper and inserted behind a glass or plastic window, or it is impressed onto a thin aluminum sheet attached to the face of the marker. Markers were manufactured from a variety of materials including metals (occasionally painted), plastic, and glass. Often, the identifying material on these markers is completely illegible. The markers themselves are frequently displaced.

Unknown Headstone/Footstone

An unknown headstone/footstone is a marker that remains at its original location but is impossible to identify as either a headstone or footstone. Often with historic markers, it is difficult to determine if the marker was intended to mark the head or the foot of the burial. This is particularly true in poorly maintained cemeteries where an original marker may have been displaced or with unfinished markers such as fieldstones.

GROUND PENETRATING RADAR (GPR)

GPR is a remote sensing technique frequently used by archaeologists to investigate a wide range of research questions. In archaeological applications, GPR is used to prospect for potential subsurface features. Because GPR is a remote sensing technique, it is non-invasive,

non-destructive, relatively quick and efficient, and highly accurate when used in appropriate situations. In cemeteries, GPR is commonly used to identify anomalies consistent with the expectations for human graves, without ground disturbance (Jones 2008; King et al. 1993).

The use of GPR for identifying potential historic graves is based on the concept of contrast, which may include differences in physical, electrical, or chemical properties between an object or feature and its surrounding matrix (Conyers 2006). For graves, the body itself is generally not detected; it is typically the coffin or casket, burial shaft, or bottom of the grave that causes the reflection (Jones 2008; King et al. 1993). Not surprisingly, greater contrast generally equates to better detection and resolution. For example, a metal casket in a concrete vault is much easier to see with GPR than a body buried in a wooden coffin only. In certain cases, it is also possible to detect buried markers or other associated grave features that were once present on the surface (Patch 2007).

GPR data are acquired by transmitting pulses of radar energy into the ground from a surface antenna, reflecting the energy off buried objects, features, or bedding contacts, and then detecting the reflected waves back at the ground surface with a receiving antenna (Conyers 2004a:1). When collecting radar reflection data, surface radar antennas are moved along the ground in transects, typically within a surveyed grid, and a large number of subsurface reflections are collected along each line. As radar energy moves through various materials, the velocity of the waves will change depending on the physical and chemical properties of the material through which they are traveling (Conyers and Lucius 1996). The greater the contrast in electrical and magnetic properties between two materials at an interface, the stronger the reflected signal, and, therefore, the greater the amplitude of reflected waves (Conyers 2004a). When travel times of energy pulses are measured, and their velocity through the ground is known, distance (or depth in the ground) can be accurately measured (Conyers and Lucius 1996). Each time a radar pulse traverses a material with a different composition or water saturation, the velocity will change and a portion of the radar energy will reflect back to the surface and be recorded. The remaining energy will continue to pass into the ground to be further reflected, until it finally dissipates with depth.

The depths to which radar energy can penetrate, and the amount of resolution that can be expected in the subsurface, are partially controlled by the frequency (and therefore the wavelength) of the radar energy transmitted (Conyers 2004a). Standard GPR antennas propagate radar energy that varies in frequency from about 10 megahertz (MHz) to 1000 MHz. Low frequency antennas (10-120 MHz) generate long wavelength radar energy that can penetrate up to 50 meters in certain conditions but are capable of resolving only very large buried features. In contrast, the maximum depth of penetration of a 900 MHz antenna is about one meter or less in

typical materials, but its generated reflections can resolve features with a maximum dimension of a few centimeters. A trade-off therefore exists between depth of penetration and subsurface resolution. In this survey, a 400 MHz antenna was used, which generally produced data of good resolution at depths up to just under two meters (about five ft.).

The success of GPR surveys in archaeology is largely dependent on soil and sediment mineralogy, clay content, ground moisture, depth of buried features, and surface topography and vegetation. Electrically conductive or highly magnetic materials will quickly attenuate radar energy and prevent its transmission to depth. Under ideal conditions, a 400 MHz antenna generally provides radar penetration to between two and four meters. However, the exact depth varies considerably depending on local conditions. Clay can be challenging for GPR because it has a low relative dielectric permittivity (RDP). In practical applications, this generally results in shallower than normal depth penetration because the radar signal is absorbed (attenuated) by the clay regardless of antenna frequency (Conyers 2004a).

The basic configuration for a GPR survey consists of an antenna (with both a transmitter and receiver), a harness or cart, and a wheel for calibrating distance. The operator then pulls or pushes the antenna across the ground surface systematically (a grid) collecting data along a transect. These data are then stored by the receiver and available for later processing.

The "time window" within which data were gathered was 35 nanoseconds (ns). This is the time during which the system is "listening" for returning reflections from within the ground. The greater the time window, the deeper the system can potentially record reflections. To convert time in nanoseconds to depth, it is necessary to determine the elapsed time it takes the radar energy to be transmitted, reflected, and recorded back at the surface by doing a velocity test. Hyperbolas were found on reflection profiles and measured to yield a relative dielectric permittivity (RDP), which is a way to calculate velocity. The shape of hyperbolas generated in programs is a function of the speed at which energy moves in the ground, and can therefore be used to calculate velocity (Conyers and Lucius 1996). The RDP for soils in the survey area was approximately 8, which, when converted to one-way travel time, (the time it takes the energy to reach a reflection source), is approximately 10 centimeters/nanosecond. All profiles and processed maps were converted from time in nanoseconds (ns) to depth in centimeters using this average velocity.

FIELD METHODS

The survey was conducted with a Geophysical Survey Systems, Inc. (GSSI) SIR 3000 control unit with an attached 400MHz antenna (Figure 16). The first step was to calibrate the antenna to local conditions by walking the survey area and adjusting the instrument's gain

Figure 16.
GPR Survey in Progress

settings. This method allows the user to get an average set of readings based on subtle changes in the RDP (Conyers 2004a). Field calibration was repeated as necessary to account for changes in soil and/or moisture conditions (Conyers 2004b). Effective depth penetration was approximately 1.75 meters. Slight signal attenuation (degradation) was noted in the field, which was due to the presence of clay soils. However, signal attenuation was not severe enough to limit detection of graves.

In order to effectively collect and process GPR data, it is necessary to establish a formal grid. For this project, grid layout was accomplished with metric tapes and surveyor's chaining pins. The actual size, orientation, and layout of the grid was determined by surface features and presumed orientation of the targets. In all cases, the fence separating the railroad from the cemetery was used as a fixed point and each grid was approximately 75 feet (23 m) in width. Because the study area is not perfectly linear, it was necessary to change the orientation of successive grids. In each case, there is overlap between adjoining areas to ensure complete coverage.

Table 1 lists summary information for each of the survey grids. Survey grid locations are shown in Figure 17. Total coverage was approximately 4.24 acres of land. All grid corners were mapped in each of the survey grids using a Nikon DTM-32 total station and TDS Recon data collector. There was significant variation in grave orientation between different sections.

Table 1. Summary Data for GPR Survey Grids

GPR Grid	Square Feet	Acres	Method
Grid A	27,002.2	0.62	Alternating
Grid B	24,393.6	0.56	Baseline
Grid C	3484.8	0.08	Alternating
Grid D	22,651.2	0.52	Alternating
Grid E	14,810.4	0.34	Alternating
Grid F	26136	0.60	Alternating
Grid G	24,829.2	0.57	Alternating
Grid H	24,393.6	0.56	Alternating
Grid I	17,424	0.40	Baseline
Total	185,125	4.25	

It is generally standard practice to orient transects perpendicular to the long axis of suspected features. For this reason, data collection orientation was changed as conditions warranted in different sections of the cemetery. Transect spacing was 50 centimeters, an interval

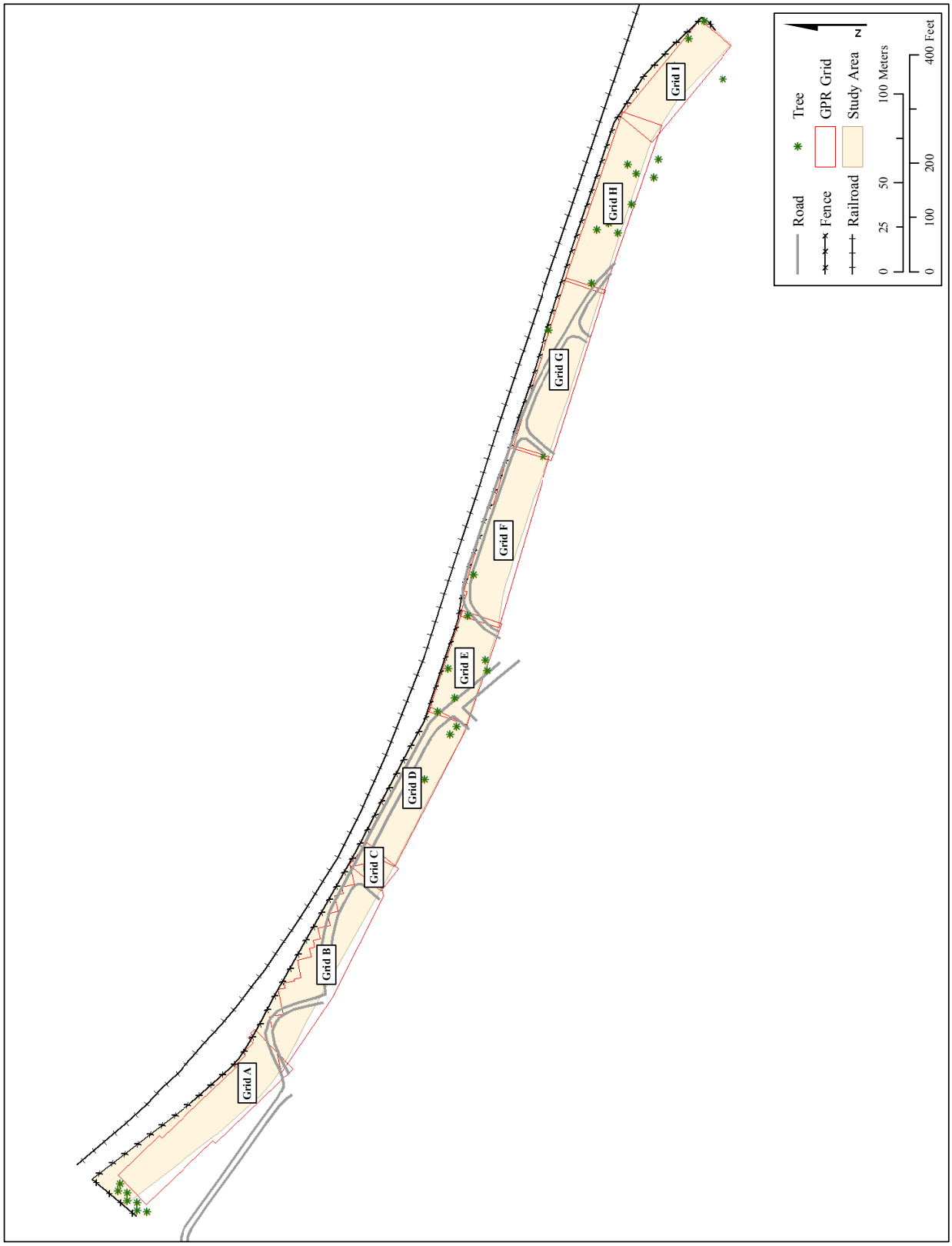


Figure 17.
Map Showing Location of GPR Survey Grids

that is well suited for identifying the subtle, moderate to large sized grave features (Pomfret 2006). Transects were collected in two ways depending on surface conditions. Alternating transects are faster because the antenna collects data in two directions, but it requires an even grid. Baseline transects require the antenna to be returned to the same starting position for each pass and data collection is slower. However, the advantage of this method is that it doesn't require a square grid, and it is particularly useful for surface obstacles.

DATA PROCESSING

All data were downloaded from the control unit to a laptop computer for post-processing. Radar returns are initially recorded by their strength and the elapsed time between their transmission and receipt by the antenna. Therefore, the first task in the data processing was to set "time zero", which tells the software where in the profile the true ground surface was. This is critical to getting accurate results when elapsed time is converted to target depth. A background filter was applied to the data, which removes the horizontal banding that can result from antenna energy "ringing" and outside frequencies such as cell phones and radio towers. Background noise can make it difficult to visually interpret reflections. The third and final step was to "migrate" the data, which eliminates the tails of the hyperbolic reflections and generates a more realistic view of the size, depth, and orientation of point targets. Hyperbolic reflections are generated from the way the radar energy reflects off point targets. In cemeteries, graves are often visible as hyperbolic reflections.

The next data processing step involved the generation of amplitude slice-maps (Conyers 2004a). Amplitude slice-maps are a three-dimensional tool for viewing differences in reflected amplitudes across a given surface at various depths (see Appendix A). Reflected radar amplitudes are of interest because they measure the degree of physical and chemical differences in the buried materials. Strong, or high amplitude reflections often indicate denser (or different) buried materials. Such reflections can be generated at pockets of air, such as within collapsed graves, or from slumping sediments. Amplitude slice-maps are generated through comparison of reflected amplitudes between the reflections recorded in vertical profiles. In this method, amplitude variations, recorded as digital values, are analyzed at each location in a grid of many profiles where there is a reflection recorded. The amplitudes of all reflection traces are compared to the amplitudes of all nearby traces along each profile. This database can then be "sliced" horizontally and displayed to show the variation in reflection amplitudes at a sequence of depths in the ground. The result is a map that shows amplitudes in plan view, but also with depth.

Slicing of the data was done using the mapping program *Surfer 8*. Slice maps are a series of x,y,z values, with x (east) and y (north) representing the horizontal location on the surface within each grid and z representing the amplitude of the reflected waves. All data were interpolated using the Inverse Distance Weighted method and then image maps were generated from the resulting files.

From the original .dzt files (raw reflection data), a series of image files was created for cross-referencing to the amplitude slice maps that were produced. Two-dimensional reflection profiles were also analyzed to determine the nature of the features identified on the amplitude slice maps (see Appendix B). The reflection profiles show the geometry of the reflections, which can lend insight into whether the radar energy is reflecting from a flat layer (seen as a distinct band on profile) or a single object (seen as a hyperbola in profile). Individual profile analysis was used in conjunction with amplitude slice maps to provide stronger interpretations about possible graves.

The final step in the data processing is to integrate the depth slices with other spatial data. This was done using ArcGIS 9.3, which can display and manipulate all forms of spatial data created for this project, including GPR results, GPS data, and base graphics such as aerial photography and topographic maps. The resulting anomalies were digitized as individual features and referenced to the UTM Zone 17, NAD83 coordinate system.

GPR IN CEMETERIES

Several factors influence the overall effectiveness of GPR for detecting human graves. Soil conditions are the most important, with clay being the most difficult to penetrate. Its high conductivity causes the radar signal to attenuate much quicker, which in turn limits its overall depth and strength.

Age of the graves is also critical, with older graves being more difficult to detect because they have had more time to decompose and are less likely to have intact coffins or caskets (if they were present to begin with).

Burial "container", what the physical remains may have been placed in, is also important, and includes simple linen or cloth shrouds, pine boxes or wooden coffins, lead or other metal caskets, and burial vaults (Trinkley and Hacker 2009). In certain cases, hardware such as nails, hinges, and handles may be present, but not necessarily all the time. Although there is a high degree of variation in specific types among different geographical regions, each of these tends to have been used at certain times throughout history and correlates with the presumed age of the grave. For example, burial shrouds were common throughout the seventeenth and early

eighteenth centuries before being replaced by wooden coffins. It must also be noted that cultural trends and patterns tended to persist longer in rural and/or economically depressed areas much longer than urban centers.

V. RESULTS

MARKER INVENTORY RESULTS

Analytic units for the discussion of the marker inventory were designated as the following: Elmwood purchased (lots), Elmwood potters field, Pinewood purchased, and Pinewood potters field (Figure 18). The marker inventory recorded 487 individual items, including headstones, footstones, and family markers (Figures 19-24). In certain cases, one grave might have both a headstone and footstone. However, these combinations are relatively rare and by far the most common type is a single headstone. There are also a few instances of graves with a headstone and ledger, or formal outline with stone, concrete, or brick. Family markers (n=28) typically do not contain a particular grave. They are identified based on the presence of a surname and are usually found in the center of a clearly marked family plot.

Feature 12 was recorded during the mapping stage as a small, irregular piece of concrete. However, it could not be relocated during the inventory phase despite repeated attempts to plot its location from scaled maps. It is possible that leaves could have obscured it and other debris or that it had been displaced in the intervening periods. For these reasons, it is not included in any of the following tabulations.

Using data from the current survey, several attributes are discussed below. These examples are not exhaustive, but are meant to address broad research questions and provide insight into social and cultural attitudes at particular points in time. These data were compiled from the *Access* database. It is important to note that the counts used for individual attributes vary because certain markers may have lacked that information. It is also important to note that the numeric values provided in each attribute are not necessarily equal. Demographic information on particular markers was highly variable and in several cases, incomplete. For example, several markers had only initials (e.g., W.J.S.), and it was impossible to determine the gender. The number of markers further complicates these data. For example, footstones were recorded as separate features but if associated with a headstone were given the same provenience number. Therefore, a single grave might have two or more markers.

RESEARCH ISSUES

Although the primary goal of this study was to determine the number of marked graves and GPR anomalies consistent with unmarked graves, the data generated also will allow us to address certain anthropological issues, in preliminary fashion. These issues pertain to patterned differences (or lack thereof) through time and by social class.

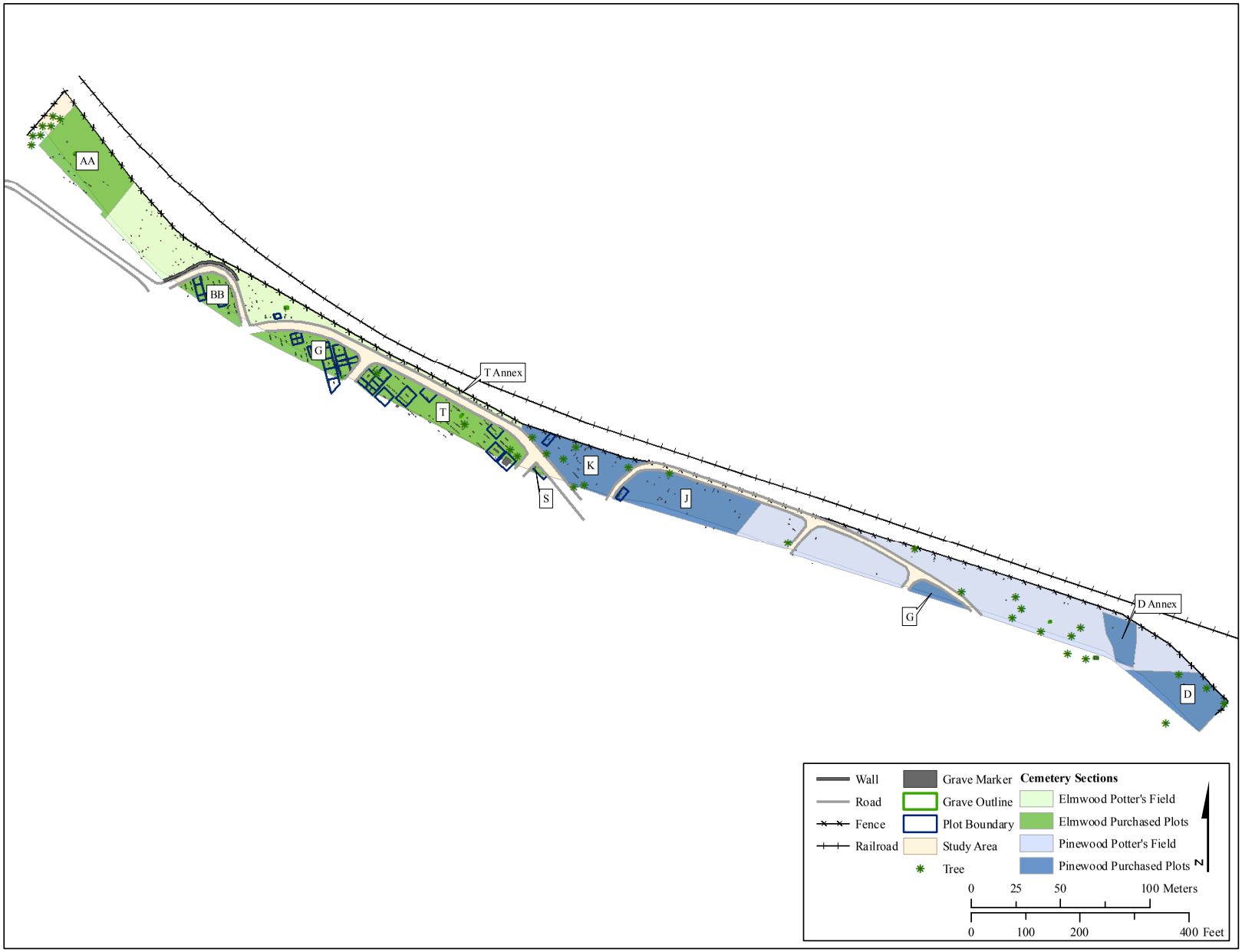


Figure 18.
Map Showing Survey Location of Cemetery Sections Discussed in the Text

Figure 19.
Map Showing Distribution of Grave Markers, 1 of 6

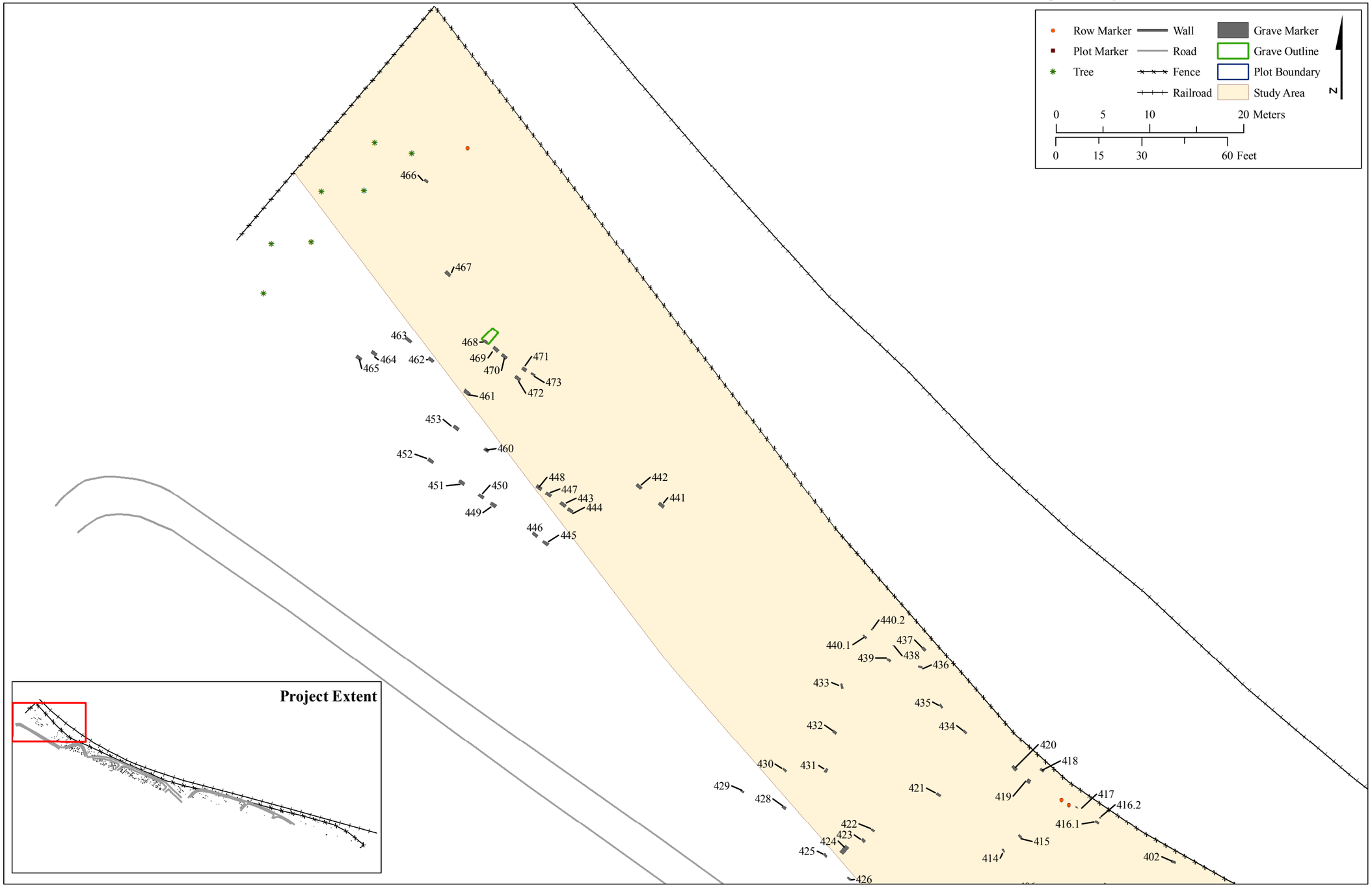


Figure 20.
Map Showing Distribution of Grave Markers, 2 of 6

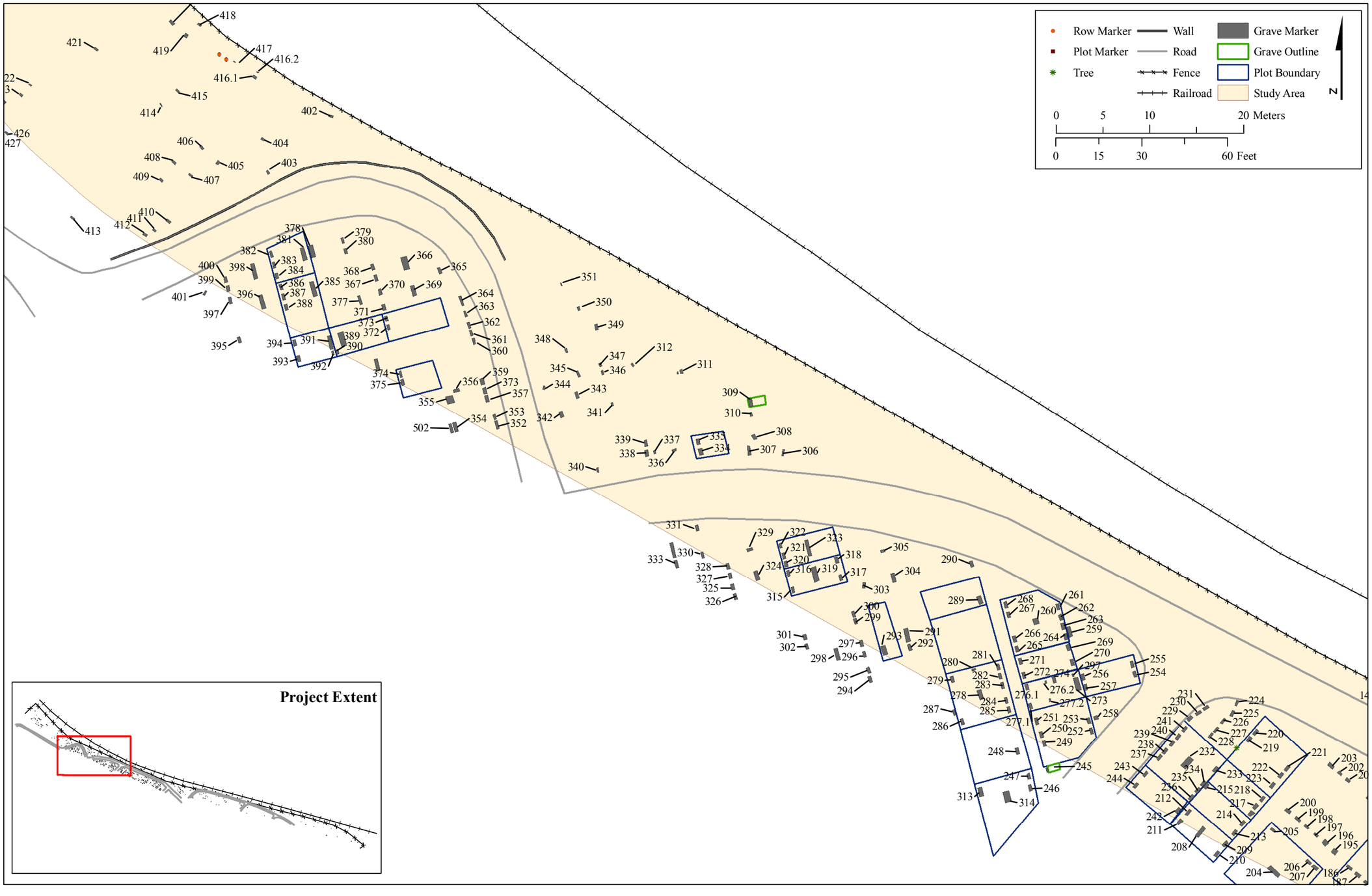


Figure 21.
Map Showing Distribution of Grave Markers, 3 of 6

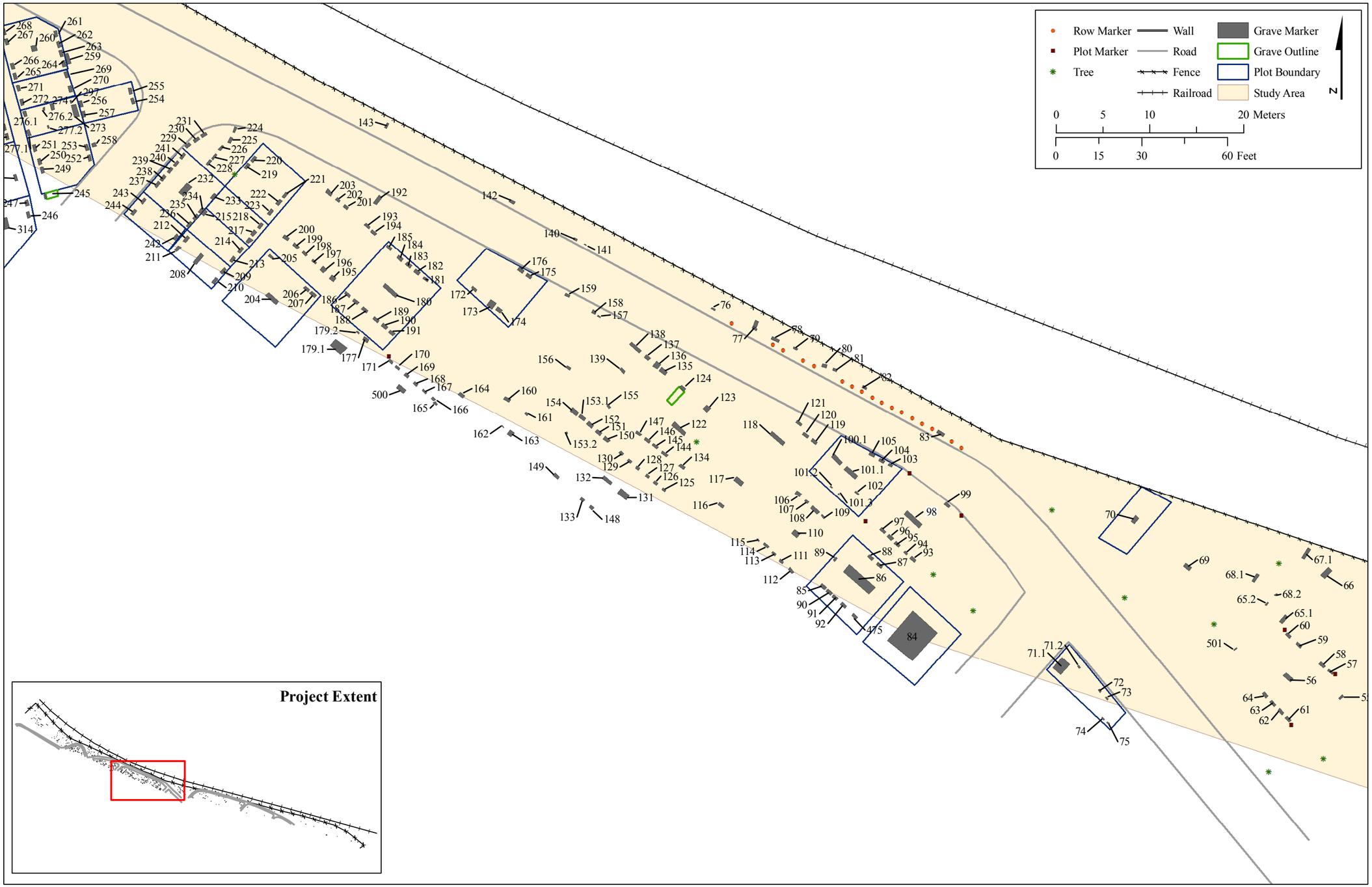


Figure 22.
Map Showing Distribution of Grave Markers, 4 of 6

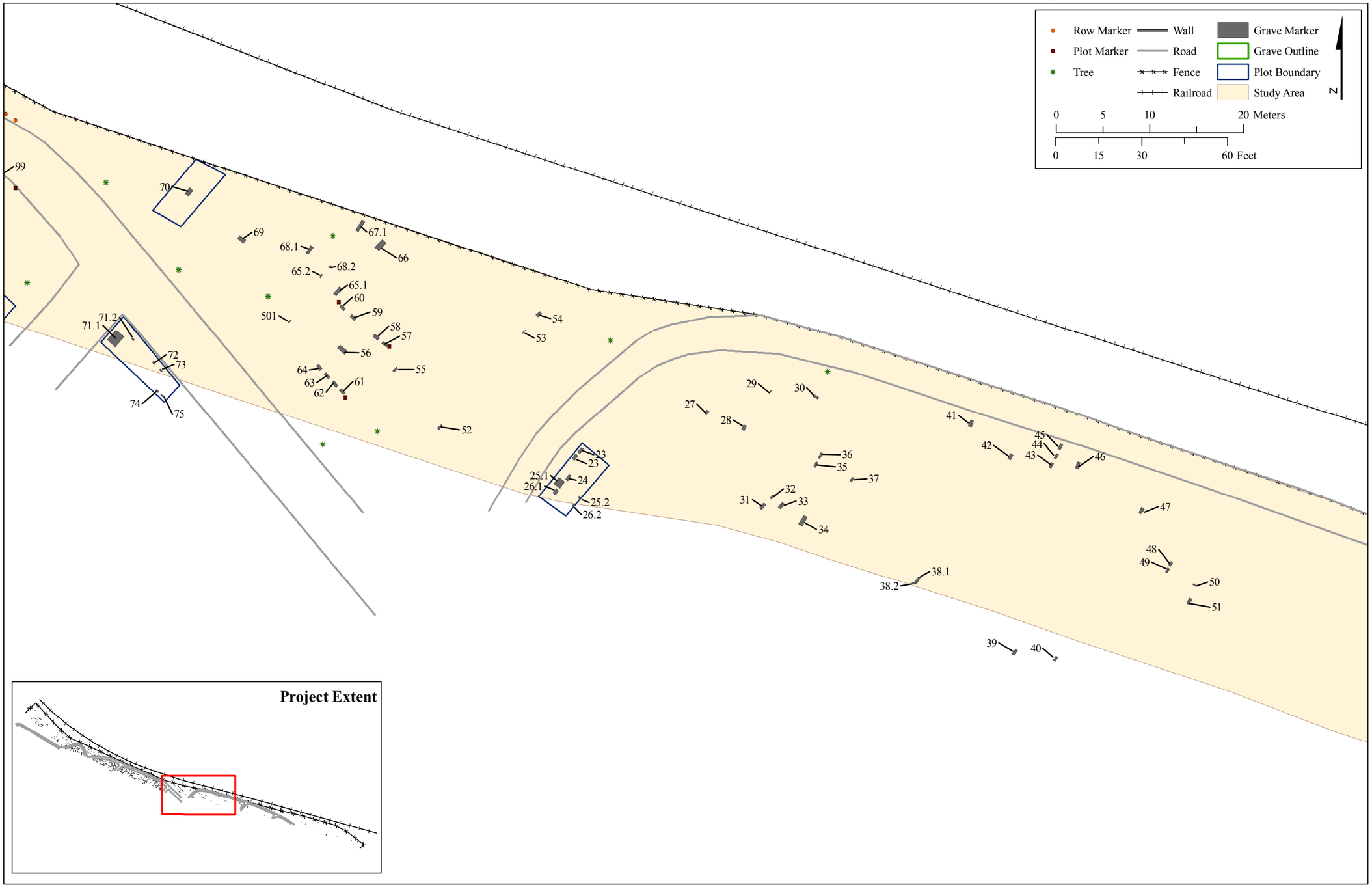


Figure 23.
Map Showing Distribution of Grave Markers, 5 of 6

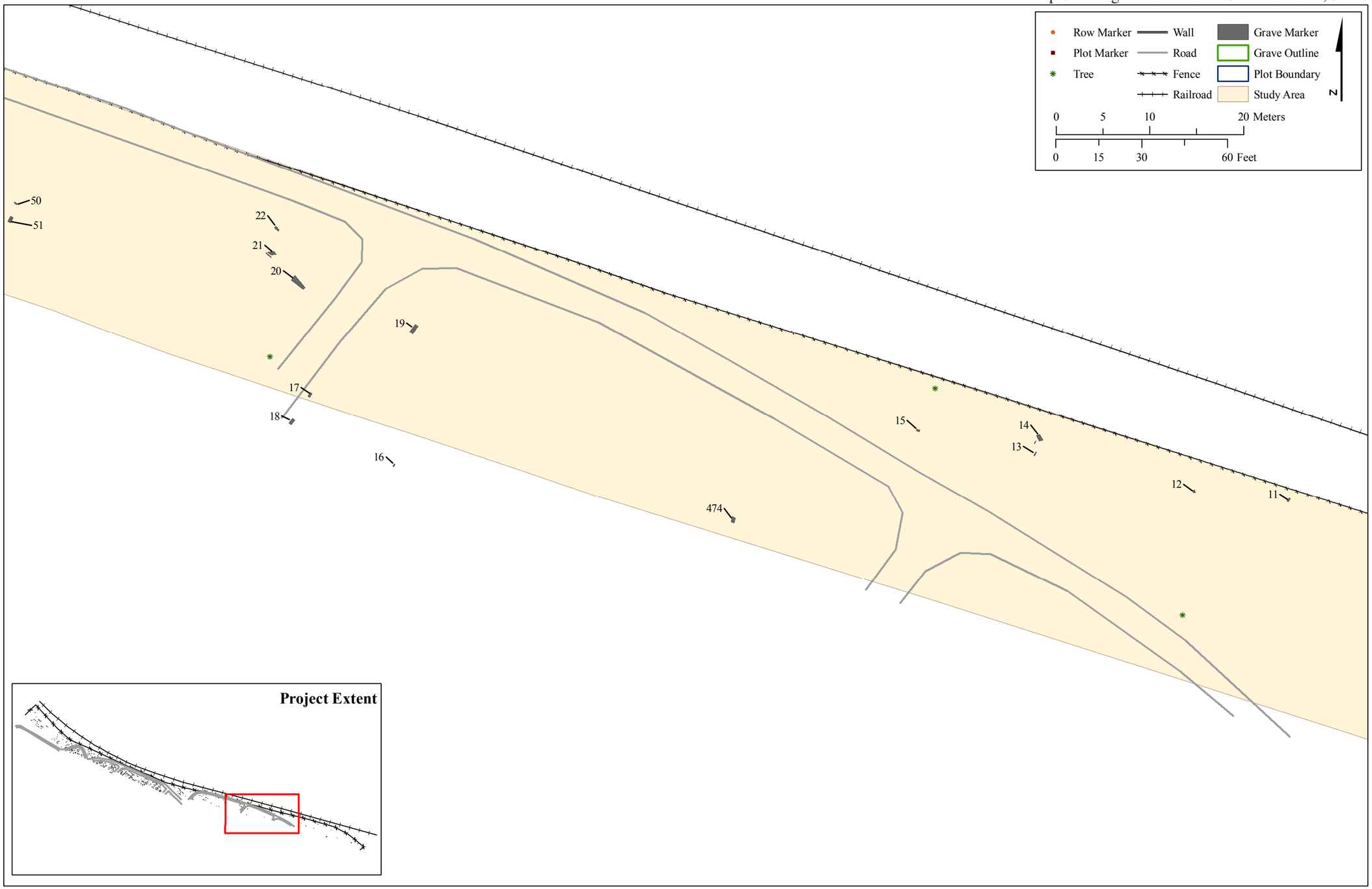
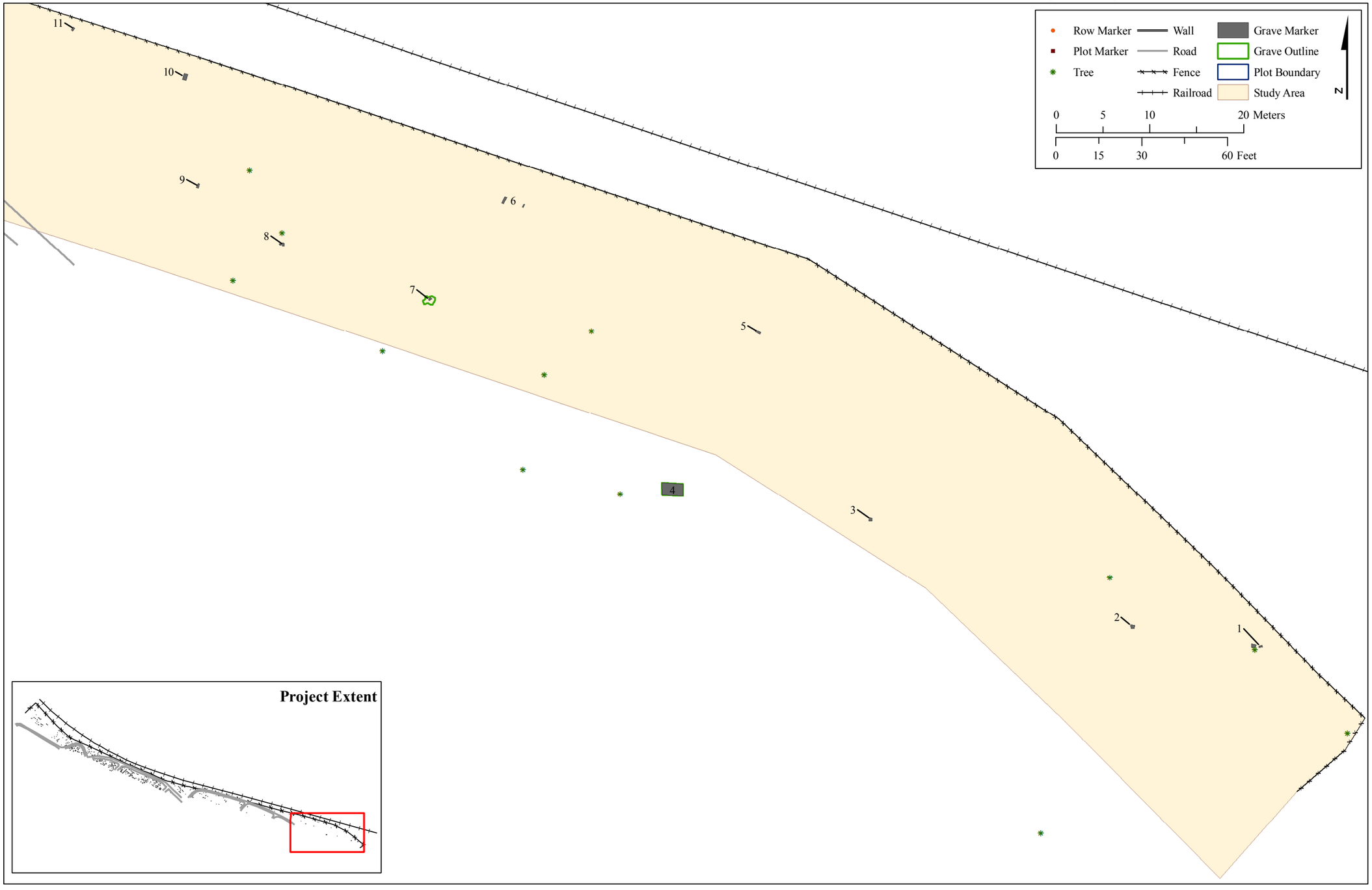


Figure 24.
Map Showing Distribution of Grave Markers, 6 of 6



SOCIAL DIFFERENCES

Our controls for this include the dates from the marked graves and the location of marked and unmarked graves. By geo-referencing historic maps, it was possible to assign all the marked graves and suspected unmarked graves to one of four categories: 1) whites buried in purchased plots (falling within the historical boundaries of Elmwood); 2) poor of unknown race/ethnicity buried in Elmwood potters field; 3) African Americans buried in purchased plots (falling within the historical boundaries of Pinewood, but not within designated potters fields); and 4) poor of unknown race/ethnicity buried in Pinewood's potters fields. Once the inferred categories and the boundaries of each area were added to the GIS, it was possible to compare and contrast based on a number of attributes including the following:

- *Count of marked graves*. The purchase of a marker represented a significant expenditure during the late nineteenth and twentieth centuries. Accordingly, more markers should be expected in purchased plots than in potters fields.

- *Density of marked graves per acre*. Because the acreage of the three categories varied, the most meaningful comparisons are based on densities rather than raw counts.

- *Count of suspected unmarked graves*.

- *Density of suspected unmarked graves per acre*. These data will reflect how heavily used and how tightly packed graves were in the various areas. It is generally expected that there should be more space between purchased plots than between graves in potters fields.

- *Ratio of marked to suspected unmarked graves*. As argued above, a correlation is expected between greater economic power and the presence of markers. The ratio provides a concise means for addressing this.

- *Density of total graves (marked and suspected unmarked) per acre*.

- *Count of marked graves within border-defined plots*. The creation of formal, multi-grave plots bordered by stone, brick, or concrete curbing represents an additional expenditure. As such, the incidence of marked graves that fall within border-defined plots should reflect the relative economic positions.

- *Percent of marked graves within border-defined plots per acre.* By considering this as a percentage, variability in marker counts and density does not affect the index.

- *Relative frequencies of major marker types*. Marker types vary in cost. As well, there may be cultural preferences based on race/ethnicity.

- *Relative frequencies of marker materials*. There is a significant variability in marker costs by the raw material selected. Concrete, for example, was considerably less expensive than marble.

- *Complexity of inscriptions*. A marker with a long epithet/inscription will generally cost more than a marker with a short inscription. For this attribute, the number of words other than name and dates of birth/death was used as a measure of complexity.

- *Organization of graves*. The consistency of orientation and spacing of graves and the presence/absence of formal rows will reflect the care expended managing the various areas of the cemetery. It is anticipated that this care will vary with the standing of those using the various locations.

Table 2. Variation by Cemetery Area

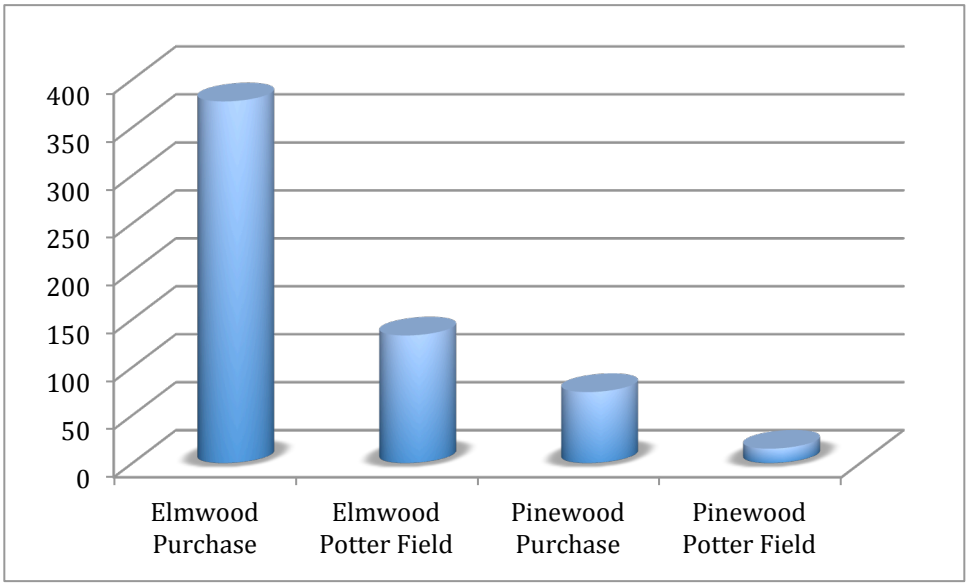
Attribute	Elmwood Purchased	Elmwood Potters field	Pinewood Purchased	Pinewood Potters field	Total Project Area
Acres (excluding non-mortuary areas)	1.10	0.63	1.05	1.24	4.03
Count of markers	331	78	62	16	487
Density of markers per acre	301/acre	123/acre	59/acre	13/acre	121/acre
Count of suspected unmarked graves	191	138	84	225	638
Density of suspected unmarked graves per acre	174/acre	217/acre	80/acre	219/acre	158/acre
Ratio of markers to suspected unmarked graves	1:0.6	1:1.8	1:1.4	1:14	1:1.3
Count of markers within border-defined plots	169	3	10	1	183
Percent of markers that fall within border-defined plots	51%	4%	16%	6%	38%

Table 2. Variation by Cemetery Area

Attribute	Elmwood Purchased	Elmwood Potters field	Pinewood Purchased	Pinewood Potters field	Total Project Area
Frequencies of major marker types	Tombstone (n=193, 59%) Headstone (n=86, 26.3%) Family Monument (n= 29, 8.9%) Footstone (n=10, 3.1%) Monument (n=9, 2.8%)	Headstone (n=38, 50.7%) Tombstone (n=35, 46.7%) Footstone (n=2, 2.6%)	Headstone (n=31, 56.4%) Tombstone (n=13, 23.6%) Footstone (n=6, 10.9%) Family Monument (n=3, 5.5%) Monument (n=2, 3.6%)	Headstone (n=13, 100%)	Headstone (n=168, 35.8%) Tombstone (n=241, 51.4%) Footstone (n=18, 3.8%) Family Monument (n=31, 6.6%) Monument (n=11, 2.4%)
Counts of marker materials	Concrete (n=0, 0%) Granite (n=260, 83.6%) Marble (n=51, 16.4%)	Concrete (n=5, 6.5%) Granite (n=43, 55.8%) Marble (n=29, 37.7%)	Concrete (n=4, 6.6%) Granite (n=30, 49.2%) Marble (n=27, 44.2%)	Concrete (n=3, 21.4%) Granite (n=1, 7.1%) Marble (n=10, 71.4%)	Concrete (n=12, 2.6%) Granite (n=334, 72.1%) Marble (n=117, 25.3%)
Count of family monuments	29	0	3	0	32
Family monuments per acre	26/acre	0/acre	2.9/acre	0/acre	7.9/acre
Complexity of inscriptions	2.9	4.2	4.8	3.0	

The measure of markers per acre appears to reflect economic differences by race/ethnicity (Figure 25). Both areas of Elmwood have more markers per acre than the two Pinewood areas. In addition, within Elmwood and within Pinewood, there is the expected pattern of fewer markers per acre in the potters fields than in the purchase areas. When comparing the potters fields for Elmwood and Pinewood, the higher density of markers in Elmwood appears to reflect the trend to more elaborately commemorate infants than other classes of deceased.

Figure 25. Markers Per Acre by Cemetery Area



Marker Type

The distribution of grave marker types show a significant degree of variation (Tables 3 and 4, Figure 26). However, the total number of markers is dominated by only a few types, including tombstones (n=241) and headstones (n=168),. Minority types include family monuments, monuments and single examples each of mausoleum, headstone and ledger combination, concrete slab, bench, temporary metal marker, and fragment of border.

There is a significant degree of variation in marker type between the different cemetery sections (Tables 3 and 4, Figure 26). For the Elmwood potters field, headstones (n=38) and tombstones (n=35) account for approximately 49 and 45 percent of the total, respectively. For the Elmwood Purchased sections tombstones (n=193) and headstones (n=86) account for approximately 58 and 26 percent, respectively. The Elmwood purchased section also contains 29 family monuments, which accounts for nine percent the total. In the Pinewood potters fields, headstones (n=13) account for 81 percent of the total, followed by displaced markers (n=2) at 12.5 percent, and single grave with a brick outline and no marker. In the Pinewood purchased sections, headstones (n=31) are the most common at 50 percent, followed by tombstones (n=13) at 21 percent, footstones (n=6) at 10 percent, displaced markers (n=4) at 6.5 percent, family monuments (n=3) at 5 percent, monuments (n=2) at 3 percent, and other types.

Table 3. Absolute Frequencies of Marker Type

Marker Type	Elmwood Potters Field	Elmwood Purchase	Pinewood Potters Field	Pinewood Purchase	Grand Total
Bench		1			1
Displaced Marker	1	2	2	4	9
Family Monument		29		3	32
Footstone	2	10		6	18
Fragment of Border		1			1
Headstone	38	86	13	31	168
Headstone & Ledger stone	1				1
Mausoleum		1			1
Monument		7		2	9
None			1	1	2
Prepared Concrete Slab				1	1
Temporary Metal Marker	1				1
Tombstone	35	193		13	241
Unknown Head or Footstone		1		1	2
Grand Total	78	331	16	62	487

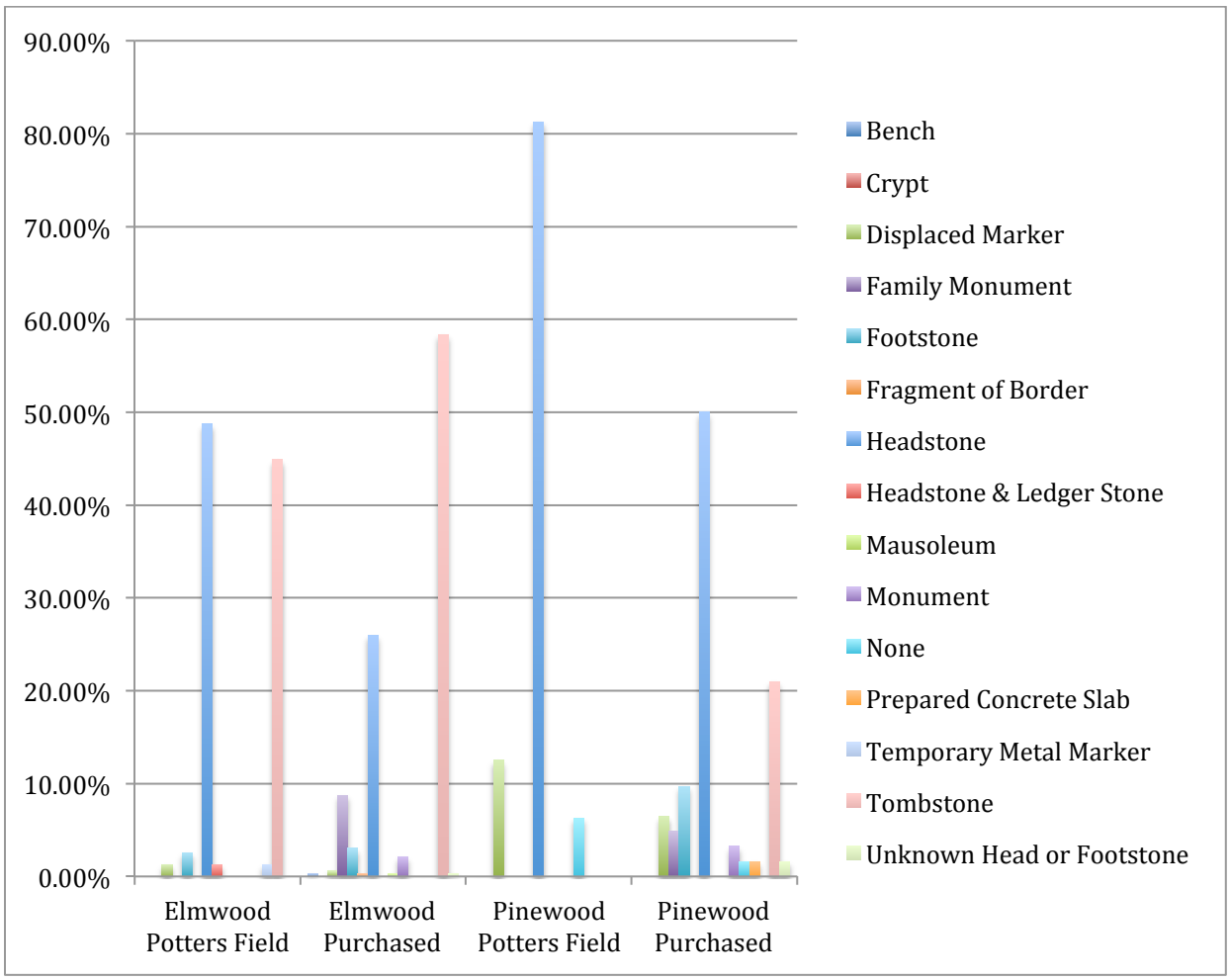
Table 4. Relative Frequencies of Marker Type

Marker Type	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
Bench	0.00	0.30	0.00	0.00	0.21
Displaced Marker	1.28	0.60	12.50	6.45	1.85
Family Monument	0.00	8.76	0.00	4.84	6.57
Footstone	2.56	3.02	0.00	9.68	3.70
Fragment of Border	0.00	0.30	0.00	0.00	0.21
Headstone	48.72	25.98	81.25	50.00	34.50
Headstone & Ledger Stone	1.28	0.00	0.00	0.00	0.21
Mausoleum	0.00	0.30	0.00	0.00	0.21
Monument	0.00	2.11	0.00	3.23	1.85
None	0.00	0.00	6.25	1.61	0.41
Prepared Concrete Slab	0.00	0.00	0.00	1.61	0.21
Temporary Metal Marker	1.28	0.00	0.00	0.00	0.21

Table 4. Relative Frequencies of Marker Type

Marker Type	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
Tombstone	44.87	58.31	0.00	20.97	49.49
Unknown Head or Footstone	0.00	0.30	0.00	1.61	0.41
Grand Total	100.00	100.00	100.00	100.00	100.00

Figure 26. Bar Chart Showing Relative Frequencies of Marker Type



Marker Material

Marker material is an attribute that is particularly sensitive to chronological change (Tables 5 and 6, Figure 27). Despite moderate diversity in material types, granite (n=334) and marble (n=117) account for approximately 69 and 24 percent, respectively. Other types include pink granite (n=14) at 3.0 percent, concrete (n=12) at 2.5 percent, and bronze (n=4), unknown (n=2), pink marble (n=1), and painted steel (n=1) at less than 1 percent each. Clearly, granite and marble were the most popular.

Marker material varies considerably between the different cemetery sections. Granite is the most common type in Elmwood potters fields (n=43, 55%), Elmwood purchased (n=260, 79%), and Pinewood purchased (n=30, 48%) areas. This trend fits well with known patterns from other cemeteries and archival research, particularly given the decades involved (Richey, Patch, Joseph, and Matternes 2007; Deetz and Dethlefsen 1966). However, Pinewood potters fields do not fit this pattern. In these cases, marble (n=10) accounts for approximately 62.5 percent of the total, followed by concrete (n=3) at 19 percent. The relatively high frequencies of marble in both Pinewood sections are contrary to expectations because of its presumed higher costs.

Table 5. Absolute Frequencies of Marker Raw Material

Marker Material	Elmwood Potters Field	Elmwood Purchase	Pinewood Potters Field	Pinewood Purchase	Grand Total
Bronze		4			4
Concrete	5		3	4	12
Granite	43	260	1	30	334
Marble	29	51	10	27	117
Metal					
NA			1	1	2
Painted steel	1				1
Pink Granite		14			14
Pink Marble		1			1
Unknown		1	1		2
Grand Total	78	331	16	62	487

Table 6. Relative Frequencies of Marker Raw Material

Row Labels	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
Bronze	0.00	1.21	0.00	0.00	0.82
Concrete	6.41	0.00	18.75	6.45	2.46
Granite	55.13	78.55	6.25	48.39	68.58
Marble	37.18	15.41	62.50	43.55	24.02
Metal	0.00	0.00	0.00	0.00	0.00
NA	0.00	0.00	6.25	1.61	0.41
Painted Steel	1.28	0.00	0.00	0.00	0.21
Pink Granite	0.00	4.23	0.00	0.00	2.87
Pink Marble	0.00	0.30	0.00	0.00	0.21
Unknown	0.00	0.30	6.25	0.00	0.41
Grand Total	100.00	100.00	100.00	100.00	100.00

Figure 27. Bar Chart Showing Relative Frequencies of Marker Material

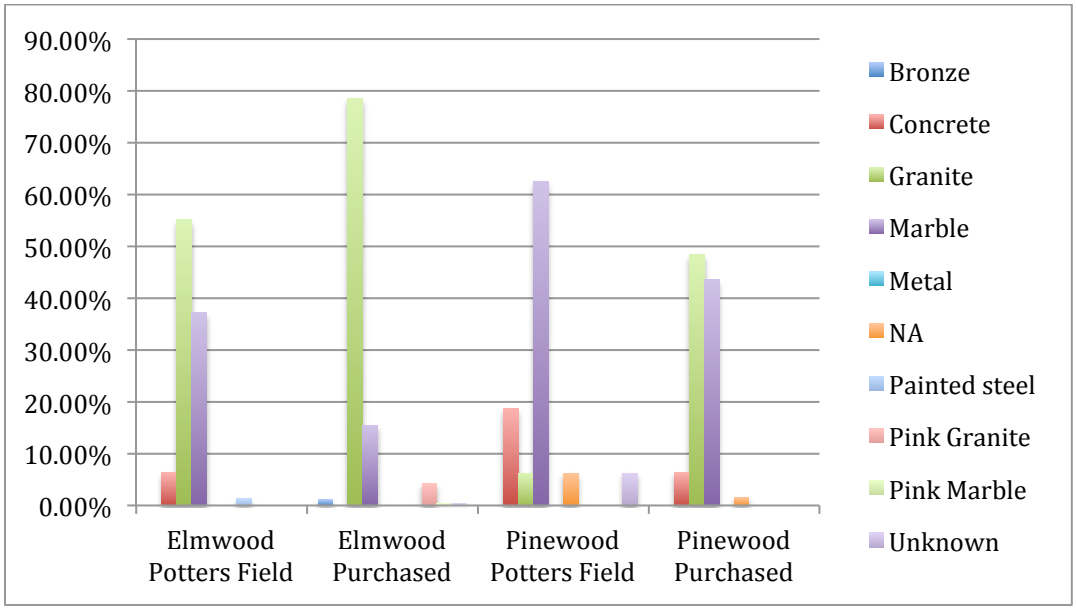
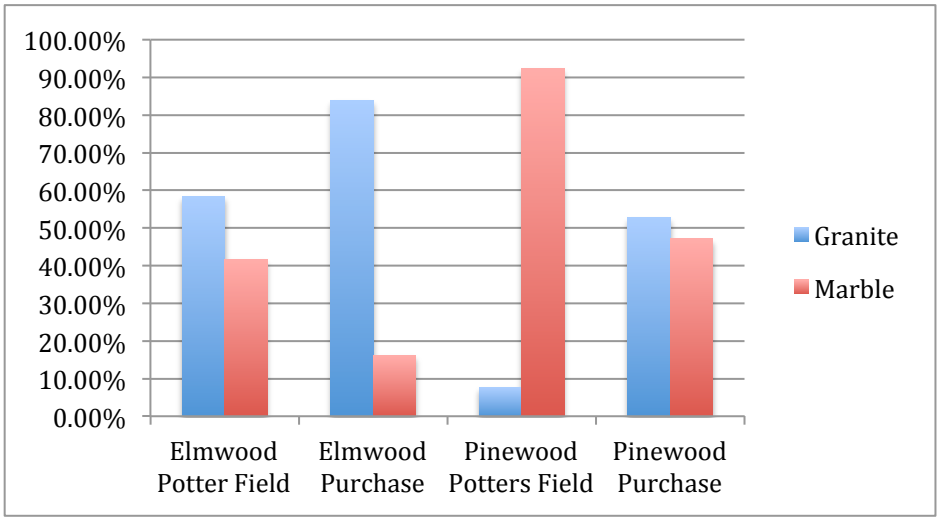


Figure 28 allows two additional attributes to be considered. It was originally hypothesized that the preferred raw material would vary by cemetery area and that marble would be associated with higher economic status. Furthermore, it was hypothesized that the type of marker would change through time consistently across all the cemetery areas, as broader fashions prevailed. The data depicted in Table 2 and Figure 28 dispute both of these points.

Figure 28. Relative Frequencies of Marble and Granite by Cemetery Area



The relative frequency of marble is higher in the potters fields than in their associated purchase areas, and marble is better represented in the Pinewood (whether purchase or potters field) than in Elmwood. This would suggest that there might have been a racial or ethnic preference among African Americans toward marble over granite.

The relative frequency of tombstones suggests racial/ethnic patterning, rather than trends through time. Tombstones are more prevalent in the two Elmwood contexts than in either of the Pinewood contexts (Table 6). In addition, there may be an economic element of this, as both potters fields have a lower incidence of tombstones than do their associated purchase areas.

Marker Production

The overwhelming majority of markers in all sections were professionally manufactured (Tables 7 and 8, Figure 29). For the Elmwood potters fields, professional markers (n=74) account for 95 percent and vernacular markers (n=4) for 5 percent. All markers in the Elmwood purchased (n=331) sections were professionally made. In the Pinewood purchased sections, professional markers (n=57) account for 92 percent of the total, vernacular markers (n=4) for 6 percent, and unknown (n=1) for 2 percent. The highest degree of variation is in the Pinewood potters fields, with professional markers (n=11) at 69 percent, vernacular markers (n=3) at 19 percent, and unknown (n=2) at 12 percent.

These data indicate differences in both economic and social status at several levels. The dominance of professional markers likely reflects the urban and municipal nature of the cemetery and there may have been rules governing the type of markers that could be erected. It is also possible that people who could afford to buy individual plots could also afford markers, thereby minimizing the need for vernacular styles.

As expected, the frequencies of vernacular markers are higher in potters fields. Although the overall numbers are low in each of the sections, their relative frequencies vary. As a percentage of individual totals, vernacular markers are significantly higher in the Pinewood purchased and Pinewood potters fields sections. This trend may be an indication of differences in both economic and social status between whites and African Americans.

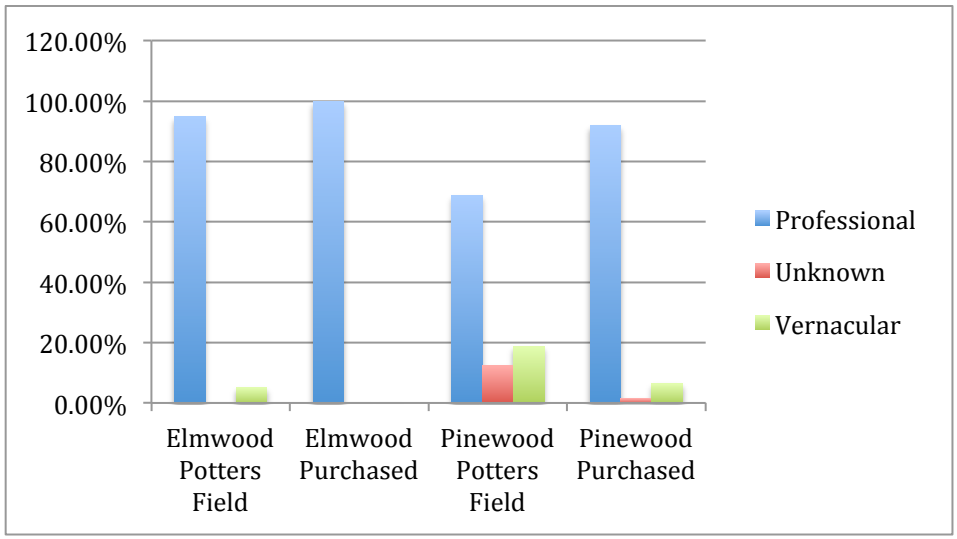
Table 7. Absolute Frequencies of Marker Production Type

Production Method	Elmwood Potters field	Elmwood Purchased	Pinewood Potters field	Pinewood Purchased	Grand Total
Professional	74	331	11	57	473
Unknown			2	1	3
Vernacular	4		3	4	11
Grand Total	78	331	16	62	487

Table 8. Relative Frequencies of Marker Production Type

Production Method	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
Professional	94.87	100.00	68.75	91.94	97.13
Unknown	0.00	0.00	12.50	1.61	0.62
Vernacular	5.13	0.00	18.75	6.45	2.26
Grand Total	100.00	100.00	100.00	100.00	100.00

Figure 29. Bar Chart Showing Relative Frequencies of Marker Production Method



Marker Inscription

The presence of an inscription beyond basic demographic data (e.g., name, birth and death dates) can provide important insight into broader social attitudes toward death. The presence or absence of an inscription was noted for all markers (Tables 9 and 10, Figure 30). Although economic considerations were certainly important, broader social attitudes toward the presentation of death may have been paramount. For example, in many parts of the United States, grave markers from the seventeenth, eighteenth, and early nineteenth centuries have elaborate inscriptions. Previous studies have documented a shift in not only inscription length but also the rhetorical style.

Table 9. Absolute Frequencies of Grave Marker Inscriptions (Presence/Absence)

Inscription Present	Elmwood Potters field	Elmwood Purchased	Pinewood Potters field	Pinewood Purchased	Grand Total
No	3	4	2	6	15
Yes	75	327	14	56	472
Grand Total	78	331	16	62	487

Table 10. Relative Frequencies of Grave Marker Inscriptions (Presence/Absence)

Inscription Present	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
No	3.85	1.21	12.50	9.68	3.08
Yes	96.15	98.79	87.50	90.32	96.92
Grand Total	100.00	100.00	100.00	100.00	100.00

Figure 30. Bar Chart Showing Relative Frequencies of Marker Inscriptions

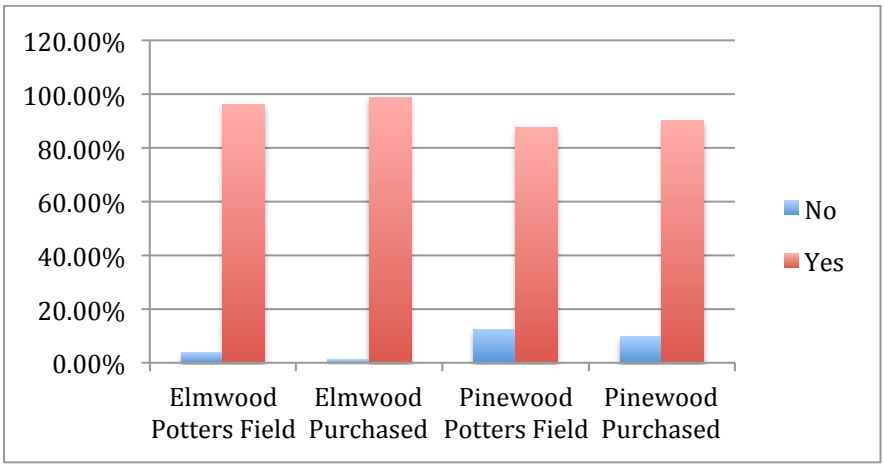
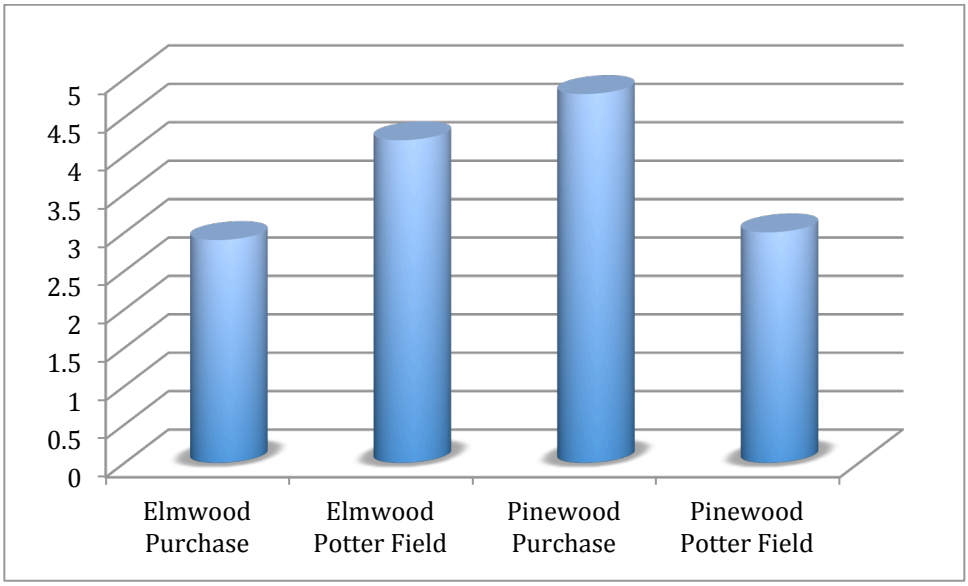


Figure 31 presents the mean count of words beyond the name and dates of birth and date, by cemetery area. In considering these data, it must be emphasized that the range in mean added words is only 2.9-4.8 words. With that caveat, the data can be further digested. First, if we compare the right and left halves of the figure, there may have been a racial/ethnic preference for African Americans to have marginally longer inscriptions, especially in the Pinewood purchase area. The other interesting contrast – Elmwood purchase at 2.9 words and Elmwood potters field at 4.2 words – seems related to a rather widespread Christian tradition to provide lengthier inscriptions for infants than for adults, as most of the Elmwood potters field was designated "Baby Land." In the late nineteenth and twentieth centuries, Americans have compensated for the tragic loss of an infant in part by elaborating the marker. In part because the infants did not have a life history, per se, to commemorate, the grieving families often added verses. This seems to be a part of what we are seeing in the Elmwood potters field data and this hypothesis warrants further testing in future cemetery studies.

Figure 31. Proxy for Inscription Complexity by Cemetery Area



Grave Type

Each marked grave was classified according to four broad types: couple-husband and wife; family-greater than paired clear family association; paired non-husband and wife; and single-marked grave (Tables 11 and 12, Figure 32). A final "unknown" category was included for the few graves that did not fit into any of the above classes. There is a significant degree of variation in this attribute between the different sections.

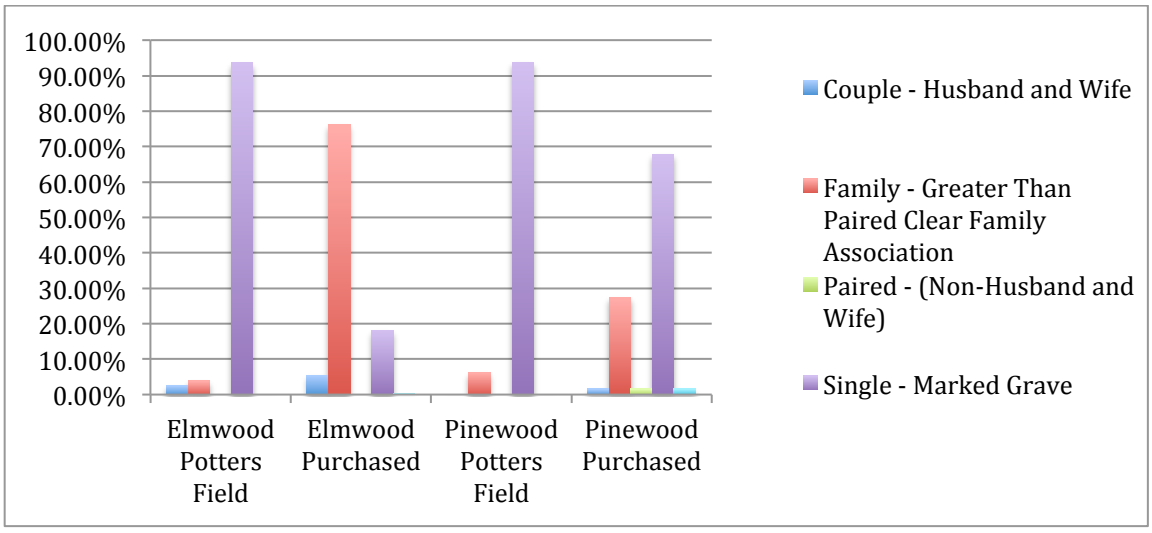
Table 11. Absolute Frequencies of Grave Type

Plot Type	Elmwood Potters field	Elmwood Purchase	Pinewood Potters field	Pinewood Purchase	Grand Total
Couple -Husband and Wife	2	18		1	21
Family -Greater than paired clear family association	3	252	1	17	273
Paired -(Non-Husband and Wife)				1	1
Single - Marked Grave	73	60	15	42	190
Unknown		1		1	2
Grand Total	78	331	16	62	487

Table 12. Relative Frequencies of Grave Type

Row Labels	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
Couple - Husband and Wife	2.56	5.44	0.00	1.61	4.31
Family - Greater than paired clear family association	3.85	76.13	6.25	27.42	56.06
Paired - (Non- Husband and Wife)	0.00	0.00	0.00	1.61	0.21
Single - Marked Grave	93.59	18.13	93.75	67.74	39.01
Unknown	0.00	0.30	0.00	1.61	0.41
Grand Total	100.00	100.00	100.00	100.00	100.00

Figure 32. Bar Chart Showing Relative Frequencies of Grave Type

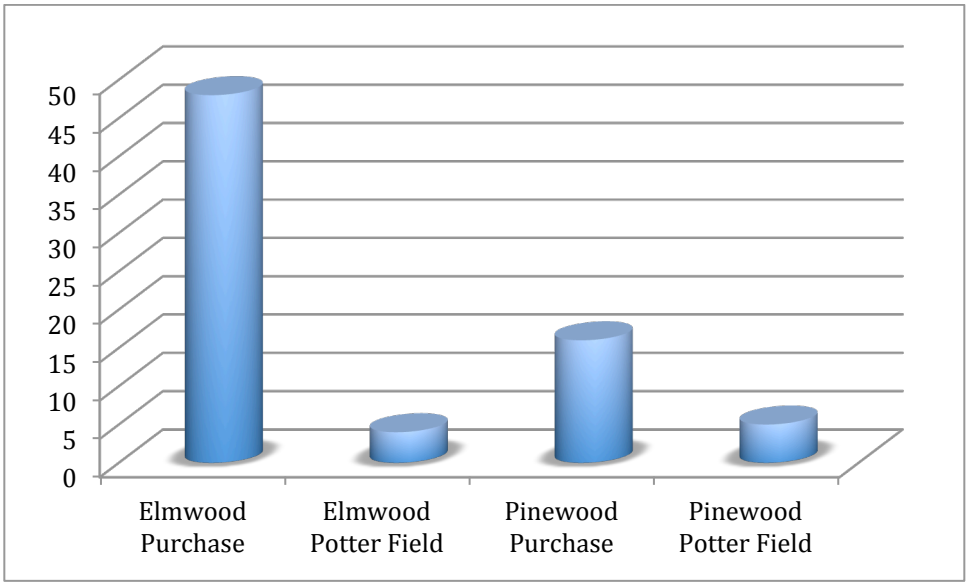


For Elmwood potters field, the most common type is single graves (n=73) at 94 percent, followed by family plots (n=3) at 4 percent, and couples (n=2) at 3 percent. This pattern clearly reflects the expected pattern of individual burials and informal use of space. In the Elmwood purchased sections, family plots (n=252) account for 76 percent, followed by single graves (n=60) at 18 percent, and couples (n=18) at 5 percent. This pattern indicates much more planning and tighter control over the available lots. For the Pinewood purchased lots, single graves (n=42) are the most common with 68 percent, followed by family plots (n=17) at 27 percent, and single examples of couples, paired, and unknown at approximately 2 percent each.

Family Plots

The purchase and demarcation of a formal family plot represents another aspect of costly elaboration of the burial place. Figure 33 graphs the percent of markers in each area that fall within bordered plots. As anticipated, bordered plots were very uncommon in both potters fields. In addition, the greater frequency of plot-burial in Elmwood purchase, relative to Pinewood purchase, may reflect economic factors. It should be recalled that formal family plots would generally have been purchased relatively early, for the long-term use of the family. The decision to bury in a family plot or not was generally not made on a burial-by-burial basis (unlike decisions about the material, style, and size of a marker) but was the outcome of an earlier family decision to buy a family plot.

Figure 33. Relative Frequencies of Markers in Bordered Plots by Cemetery Area



Decade of Death

One of the most important attributes from the data is decade of death (Tables 13 and 14, Figure 34). Several patterns are apparent in the data. First, for the overall study area, there is a huge spike in burials from 1900-1909 (n=4) to 1910-1919 (n=53). The relative frequency jumped from approximately 1-13 percent of the total. This is likely a reflection of cemetery expansion into these areas and suggests few formal burials prior to that time. Overall, burial activity continued at relatively constant rates through 1950-1959, gradually declining from 1960-1969. The peak decade for all burials was 1920-1929 (n=73), with approximately 18 percent of the total. Since the period from 1940-1949, overall rates have declined steadily, with a significant drop between 1980-1889 (n=36) to 1990-1999 (n=15). The decline in burials corresponds to the moratorium on plot sales in the 1940s.

Table 13. Absolute Frequencies of Burial by Decade

Decade	Elmwood Potters field	Elmwood Purchased	Pinewood Potters field	Pinewood Purchased	Grand Total
1880-1889			1		1
1890-1899		2			2
1900-1909		3		1	4
1910-1919		34	1	18	53
1920-1929	28	34	7	4	73
1930-1939	13	33	1	5	52
1940-1949	11	40	1	1	53
1950-1959	9	29		6	44
1960-1969		34		2	36
1970-1979	2	27		2	31
1980-1989	4	29		3	36
1990-1999	4	10		1	15
2000-2009		10		2	12
2010-2019		1			1
Grand Total	71	286	11	45	413

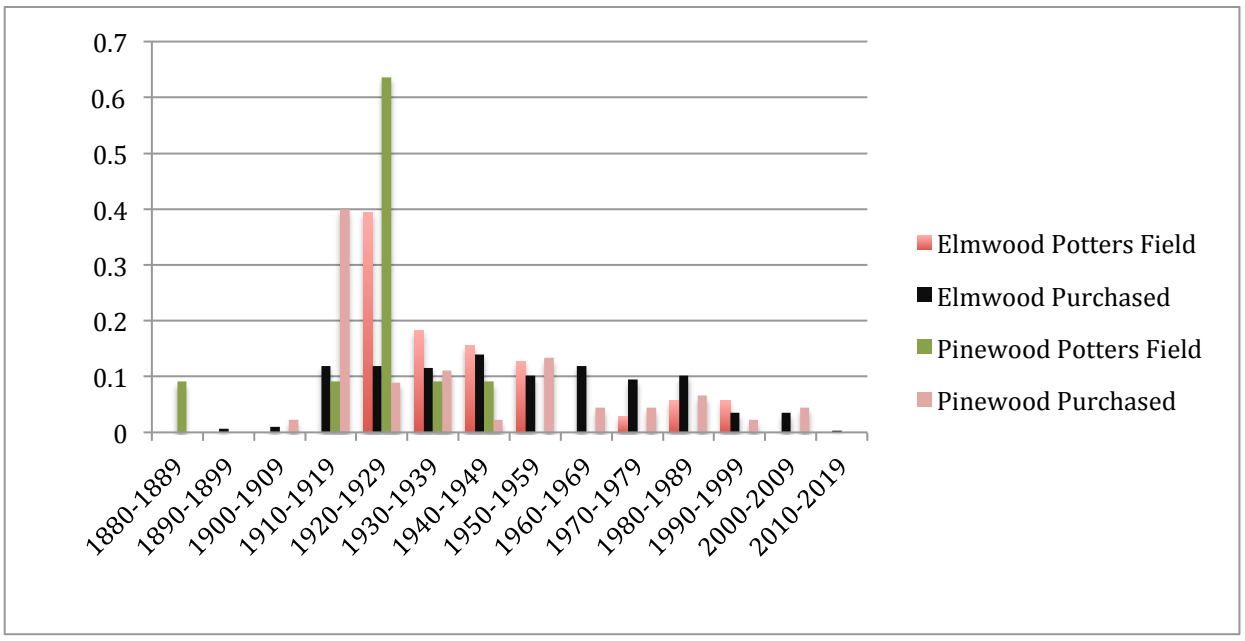
Note: Data include only grave markers with legible date (family monuments and footstones excluded).

Table 14. Relative Frequencies of Burial by Decade.

Decade (%)	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
1880-1889	0.00	0.00	9.09	0.00	0.24
1890-1899	0.00	0.70	0.00	0.00	0.48
1900-1909	0.00	1.05	0.00	2.22	0.97
1910-1919	0.00	11.89	9.09	40.00	12.83
1920-1929	39.44	11.89	63.64	8.89	17.68
1930-1939	18.31	11.54	9.09	11.11	12.59
1940-1949	15.49	13.99	9.09	2.22	12.83
1950-1959	12.68	10.14	0.00	13.33	10.65
1960-1969	0.00	11.89	0.00	4.44	8.72
1970-1979	2.82	9.44	0.00	4.44	7.51
1980-1989	5.63	10.14	0.00	6.67	8.72
1990-1999	5.63	3.50	0.00	2.22	3.63
2000-2009	0.00	3.50	0.00	4.44	2.91
2010-2019	0.00	0.35	0.00	0.00	0.24
Grand Total	100.00	100.00	100.00	100.00	100.00

Note: Data include only grave markers with legible date (family monuments and footstones excluded).

Figure 34. Bar Chart Showing Relative Frequencies of Death Date by Decade



The patterns for different cemetery sections are essentially the same, although there is a certain degree of variation. For Elmwood potters fields, the peak decade was 1920-1929 (n=28) with 39 percent. Burial activity dropped significantly from 1930-1939 (n=13, 18%), remained relatively constant through 1950-1959 (n=9, 13%), then dropped again with no burials from 1960-1969. Burials began again between 1970-1979 (n=2, 3%), and had a moderate increase in 1980-1989 (n=4, 6%) and 1990-1999 (n=4, 6%). There have been no new burials since that decade.

For the Elmwood purchased sections, burial activity was much more regular beginning in 1890-1899 (n=2, 1%). There was a major increase from 1910-1919 (n=34, 12%) and steady rates until the peak decade of 1940-1949 (n=40, 14%). From that point forward, burial activity fluctuated slightly with a gradual trend toward decreasing numbers. By 1990-1999 (n=10, 3.5%) and 2000-2009 (n=10, 3.5%), there were relatively few burials. There was a single burial in the decade from 2010-2019.

For the Pinewood potters fields, there was a single burial in 1880-1889 (9%) and no additional activity until 1910-1919 (n=1, 9%). Peak activity occurred from 1920-1929 (n=7, 64%) and then dropped significantly in the following decades. The last two marked burials occurred in 1930-1939 (9%) and 1940-1949 (9%). Although there are very few marked graves, the death dates appear earlier than any other section. It is difficult to determine with certainty whether or not the number of markers is an accurate representation of the actual number of graves in these areas.

Burials in the Pinewood purchased sections began in 1900-1909 (n=1, 2%). There was a dramatic increase in 1910-1919 (n=18, 40%), which also represents the peak decade. Burial activity dropped in 1920-1929 (n=4, 9%) and then fluctuated considerably in 1930-1939 (n=5, 11%), 1940-1949 (n=1, 2%), and 1950-1959 (n=6, 13%). After another decline in 1960-1969 (n=2, 4%), the number of burials per decade remained relatively constant, but at a reduced rate. The last burials occurred in 2000-2009 (n=2, 4%).

Gender

Overall frequencies of gender indicate slightly higher rates of males (n=214, 52%) to females (n=201, 48%) (Tables 15 and 16, Figure 35). Frequencies for different cemetery sections in the study area vary from the overall pattern. In the Elmwood potters fields, males (n=40, 60%) outnumber females (n=27, 40%). In the Elmwood purchased sections, females (n=145, 50.5%) and males (n=142, 49.5%) are almost evenly represented. In the Pinewood potters fields, females (n=8, 61.5%) are more common than males (n=5, 38.5%). For the Pinewood purchased sections, males (n=27, 56%) are more common than females (n=21,

43.75%). Analysis of these data suggests that the smaller sample sizes in the Elmwood potters fields, Pinewood potters fields, and Pinewood purchased sections could be affecting the overall numbers. Generally, the frequencies of each gender are relatively equal.

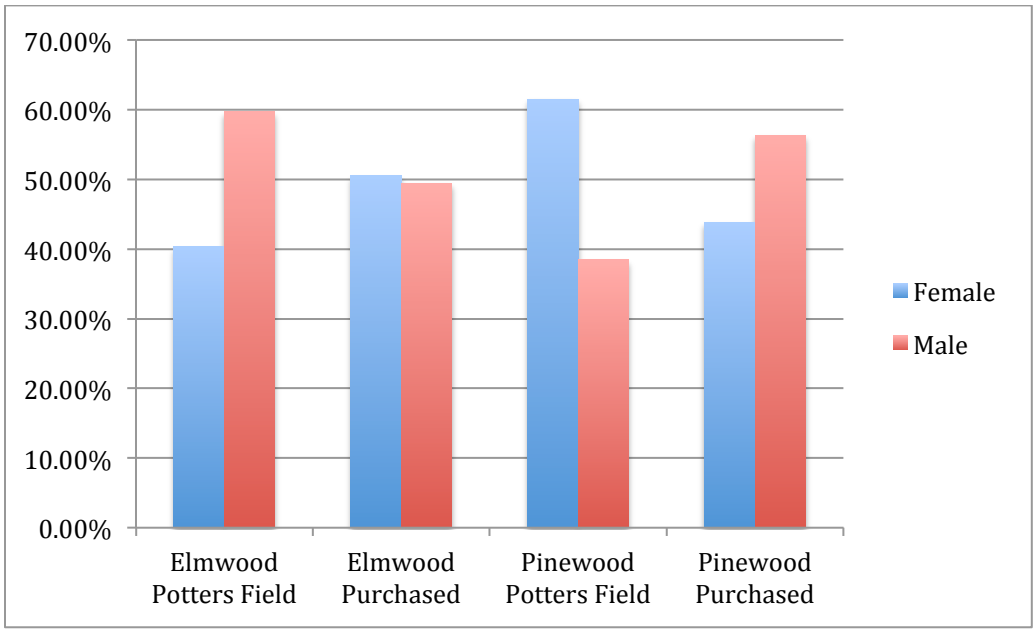
Table 15. Absolute Frequencies of Gender

Row Labels	Elmwood Potters field	Elmwood Purchased	Pinewood Potters field	Pinewood Purchased	Grand Total
Female	27	145	8	21	201
Male	40	142	5	27	214
Grand Total	67	287	13	48	415

Table 16. Relative Frequencies of Gender

Row Labels	Elmwood Potters field (%)	Elmwood Purchased (%)	Pinewood Potters field (%)	Pinewood Purchased (%)	Grand Total (%)
Female	40.30	50.52	61.54	43.75	48.43
Male	59.70	49.48	38.46	56.25	51.57
Grand Total	100.00	100.00	100.00	100.00	100.00

Figure 35. Bar Chart Showing Relative Frequencies of Gender



Marked Graves

The number of individual marked burials is approximately 452, including husbands and wives. It is difficult to determine the exact number because of ambiguous information on certain markers. For example, one marker might have two or more names listed, or even a second name with no death date. In such a case, it is unknown if the second burial ever occurred.

CHANGES THROUGH TIME

The marked grave data set was analyzed to address possible changes through time in raw material preference, marker styles, use of plot borders, and complexity of inscriptions. The data were compiled by 10-year span. There may be limited bias in the data caused by the use of the date of death to date the marker. It has been documented in other cemeteries that markers are occasionally replaced or upgraded at a later date.

In Table 17, the raw material column presents the percentages for the top three raw materials. This allows us to consider shifts through time in raw materials. Likewise, the marker styles column provides percentages for the major marker styles. As argued above, a grave that is both marked and is enclosed in a plot wall/curb represents the high end of the expenditure curve. Lastly, the examination of the mean complexity of inscriptions on a decadal basis should reflect broad changes in custom.

Table 17. Changes Through Time, Datable Markers

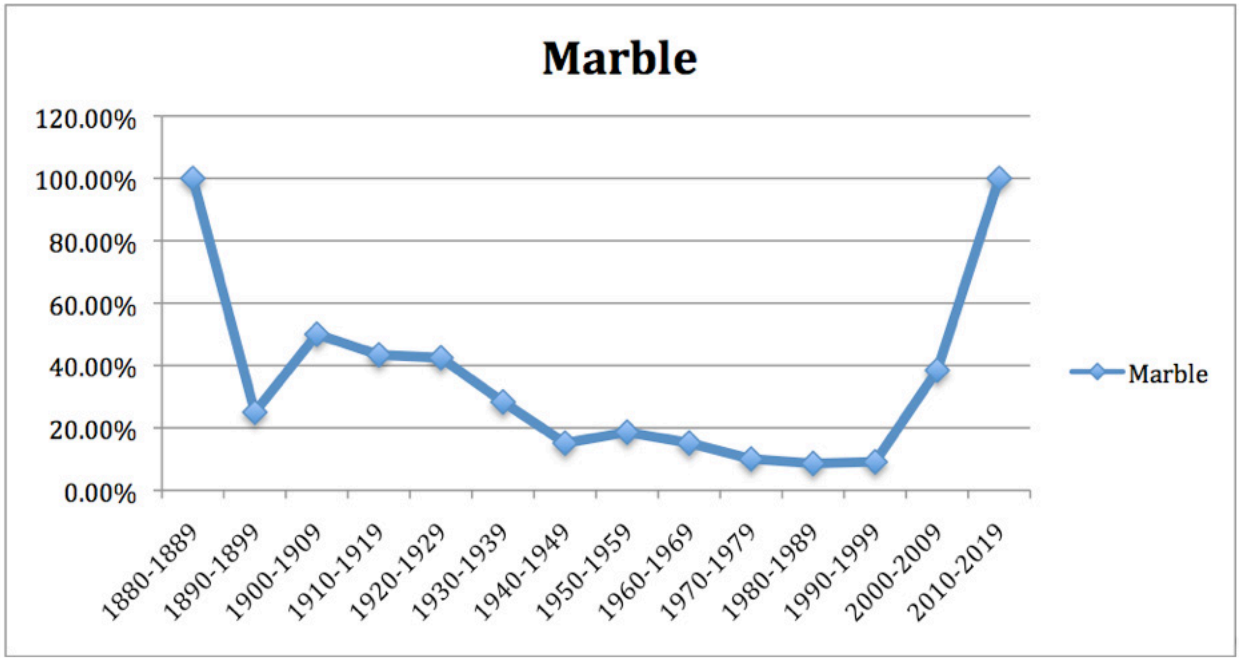
Span	Count	Raw Material (% Marble)	Count of Marker Styles (% Tombstone)	Count (%) of Markers in Bordered Plots	Mean Complexity of Inscription
1880-1889	2	0 Concrete 1 Granite 1 Marble (50%)	2 Headstone 0 Tombstone (0%)	0 (0%)	4.50
1890-1899	4	0 Concrete 3 Granite 1 Marble (25%)	2 Headstone 1 Tombstone (25%) 1 Crypt	3 (75%)	3.75
1900-1909	6	0 Concrete 3 Granite 3 Marble (50%)	3 Headstone 2 Tombstone (33%) 1 Monument	4 (67%)	5.33

Table 17. Changes Through Time, Datable Markers

Span	Count	Raw Material (% Marble)	Count of Marker Styles (% Tombstone)	Count (%) of Markers in Bordered Plots	Mean Complexity of Inscription
1910-1919	55	1 Concrete 30 Granite 24 Marble (44%)	33 Headstone 13 Tombstone (25%) 1 Crypt 6 Monument	11 (20%)	7.92
1920-1929	75	2 Concrete 43 Granite 30 Marble (40%)	42 Headstone 29 Tombstone (40%) 1 Monument	17 (23%)	4.57
1930-1939	53	0 Concrete 38 Granite 15 Marble (28%)	21 Headstone 31 Tombstone (60%)	18 (34%)	3.06
1940-1949	55	1 Concrete 46 Granite 8 Marble (15%)	23 Headstone 31 Tombstone (57%)	20 (36%)	2.71
1950-1959	46	1 Concrete 37 Granite 8 Marble (17%)	12 Headstone 32 Tombstone (70%) 2 Monument	19 (41%)	2.11
1960-1969	37	0 Concrete 31 Granite 5 Marble (14%)	7 Headstone 29 Tombstone (78%) 1 Crypt	12 (32%)	4.03
1970-1979	32	0 Concrete 27 Granite 3 Marble (9%)	11 Headstone 20 Tombstone (62%) 1 Crypt	16 (50%)	1.84
1980-1989	38	1 Concrete 34 Granite 3 Marble (8%)	12 Headstone 26 Tombstone (68%)	14 (37%)	1.24
1990-1999	17	0 Concrete 15 Granite 1 Marble (6%)	3 Headstone 12 Tombstone (80%)	9 (53%)	1.59
2000-2010	14	0 Concrete 8 Granite 6 Marble (43%)	3 Headstone 11 Tombstone (79%)	7 (50%)	2.79

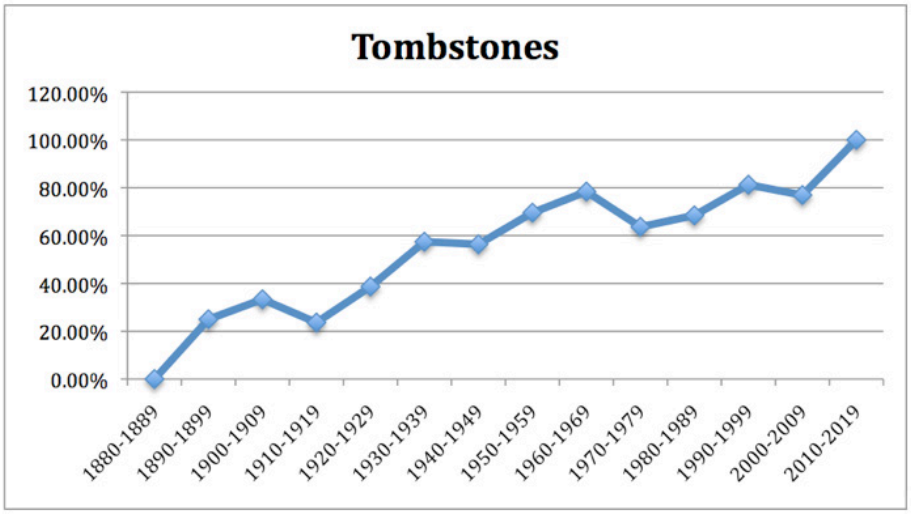
Figure 36 graphs the data on the prevalence of marble as a raw material. As seen in Table 17 above, marble and granite were by far the dominant raw materials from 1880 through present. Historically, marble has been the more expensive of these two materials.

Figure 36. Relative Frequencies of Marble Markers Through Time



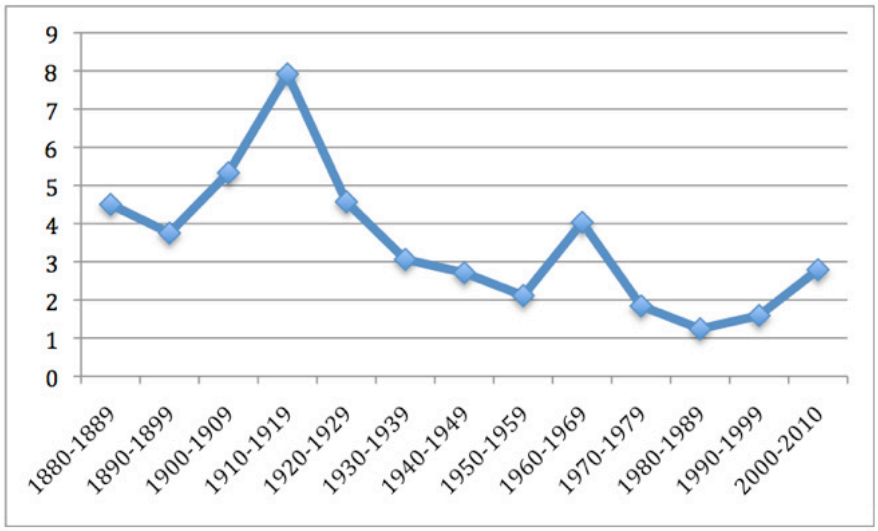
The general class of markers can reflect either cost or cultural norms. In the present sample, headstones and tombstones are the prevalent classes in all time periods. Figure 37 plots tombstones as the relative proportion of all markers, through time. These data show a fairly consistent trend through time away from headstones, in favor of tombstones. This trend was not significantly affected by major economic downturns, such as the Great Depression. Rather than being a reflection of a change in economic purchasing power, the trend toward tombstones at the expense of headstones seems to mark a change in fashion. The movement toward horizontal (tombstones) at the expense of vertical (headstone) markers may be related to the fact that the cemeteries were increasingly seen as public parkland beginning in the early twentieth century. Tombstones detract only minimally from an open, grassy area, whereas headstones represent upright 'intrusions.' In addition, headstones require more maintenance than do tombstones. As the cemetery began to fill, the City may have encouraged the use of tombstones over headstones because of their smaller size, lower profile, and the possibility of reduced maintenance.

Figure 37. Tombstones as Percentage of All Markers Through Time



All other factors remaining constant, a marker with a lengthy inscription would have cost more than a marker with a brief inscription. As a proxy measure of the complexity of the inscription, all words beyond the name, date of birth, and date of death were counted. The mean counts of these additional words were then calculated for 10-year spans. As seen in Figure 38, there generally were only (on average) between one and four extra words. The exception is an upswing that began after 1890 and peaked between 1910-1919. Five of the lengthier inscriptions from the 1910-1919 period are Woodmen of the World markers (the only other Woodmen of the World marker is 1923), and these account for the observed jump in additional words. From the late nineteenth century through the late 1920s, members of Woodmen of the World received a free tombstone as part of their death benefit.

Figure 38. Complexity of Inscriptions Through Time



Note: Y-axis is mean number of words beyond name, date of birth, and date of death.

NUMBER OF GRAVES

Demographic data from individual markers and the map of the T Annex were used to generate the total number of graves (Table 18). The data derived in Table 18 were calculated based on the number of individuals. The T Annex is a special situation because it is a potters field with an existing map showing the locations of individual graves. In many cases, a single marker commemorated more than one person (e.g., husband and wife). In fewer cases, a marker might contain information on three or more people and there is a single example of a vault with six burials. For these reasons, the total number of known graves is higher than the number of individual markers. Elmwood potters field contains 163 graves, Elmwood purchased sections contain 341 graves, Pinewood potters fields contain 18 graves, and Pinewood purchased sections contain 58 graves for a total of 580 known graves in the study area.

Table 18. Counts of Graves Based On Marker Demographics Data and T Annex Burial Map

	Elmwood Potters field	Elmwood Purchase	Pinewood Potters field	Pinewood Purchase	Grand Total
Total	163	341	18	58	580

GPR RESULTS

The primary purpose of the GPR survey was to identify potential unmarked graves for which their presence could not be determined from surface indicators. New South Associates takes a conservative approach to the identification of possible historic graves based on GPR data. Several factors influence the overall effectiveness of GPR for detecting anomalies consistent with graves including soil type and acidity, moisture and precipitation, age of probable graves, likely burial depth, burial container (e.g., shroud, wood coffin, metal casket, concrete vault), and social/cultural/economic practices of a particular group. Previous research has demonstrated variation in burial depth, multiple and overlapping burials, and differences between juvenile and adult graves (Patch 2009).

GPR data were analyzed in both plan and profile views. Amplitude slice maps were generated of all data at regular intervals of 25 centimeters (0.82 ft.) (Appendix A). These were used to analyze overall patterns. Profile analysis involved review of individual transects (linescans) in 2D mode to identify individual reflections (both hyperbolas and surfaces). Profiles showing selected anomalies are included in Appendix B.

The GPR results indicate 942 unique anomalies, including 938 probable graves, two possible mass graves or borrow pits, one series of buried plot boundaries, and compacted linear surface that could be a remnant fenceline or natural drainage (Table 19, Figures 39-44). A table of all GPR anomalies is included in Appendix C.

Table 19. Summary of GPR Anomalies and Probable Interpretations by Cemetery Sections

Cemetery Section	Interpretation				
	Compact Linear Surface	Mass Grave or Borrow Pit	Plot Boundaries	Grave (Marked and Unmarked)	Grand Total
Elmwood Potters field				263	263
Elmwood Purchased				335	335
Pinewood Potters field	1	2		234	237
Pinewood Purchased			1	106	107
Grand Total	1	2	1	938	942

Table 20 provides summary data on the number of potential graves in the study area, including those with markers and those identified only through GPR. These values were obtained by: 1) determining the number of known graves as inferred from markers and the T Annex burial map (Column A), 2) determining the number of possible GPR graves (Column B), 3) determining the number of known graves (marked and mapped) that had a corresponding GPR anomaly (Columns C and D), 4) subtracting the number of known graves from the GPR anomaly count determining the number of potential unmarked graves (Column B-C-D=E), and 5) adding the number of known graves to the number of potential unknown graves (Column A+E=F). The total count for known graves is 580 and potential unmarked graves is 638, for a total of approximately 1,218. Of this number, there are 301 in the Elmwood potters field, 532 in Elmwood purchased sections, 243 in Pinewood potters fields, and 142 in Pinewood purchased. The highest frequency of graves is clearly in the Elmwood purchased sections.

Table 20. Summary of Potential Graves (Marked and Unmarked)

	A	B	C	D	E	F
Cemetery Section	Known Graves (from markers and/or maps)	GPR Graves	Markers with GPR Anomaly	Mapped with GPR Anomaly	Unmarked Grave (GPR-no marker) (B-C-D)	Total Graves (known + unmarked) (A+E)
Elmwood Potters field	163	263	51	74	138	301
Elmwood Purchased	341	335	144		191	532
Pinewood Potters field	18	234	9		225	243
Pinewood Purchased	58	106	22		84	142
Total	580	938	226	74	638	1,218

Figure 39.
Map Showing Location of GPR Anomalies, 1 of 6

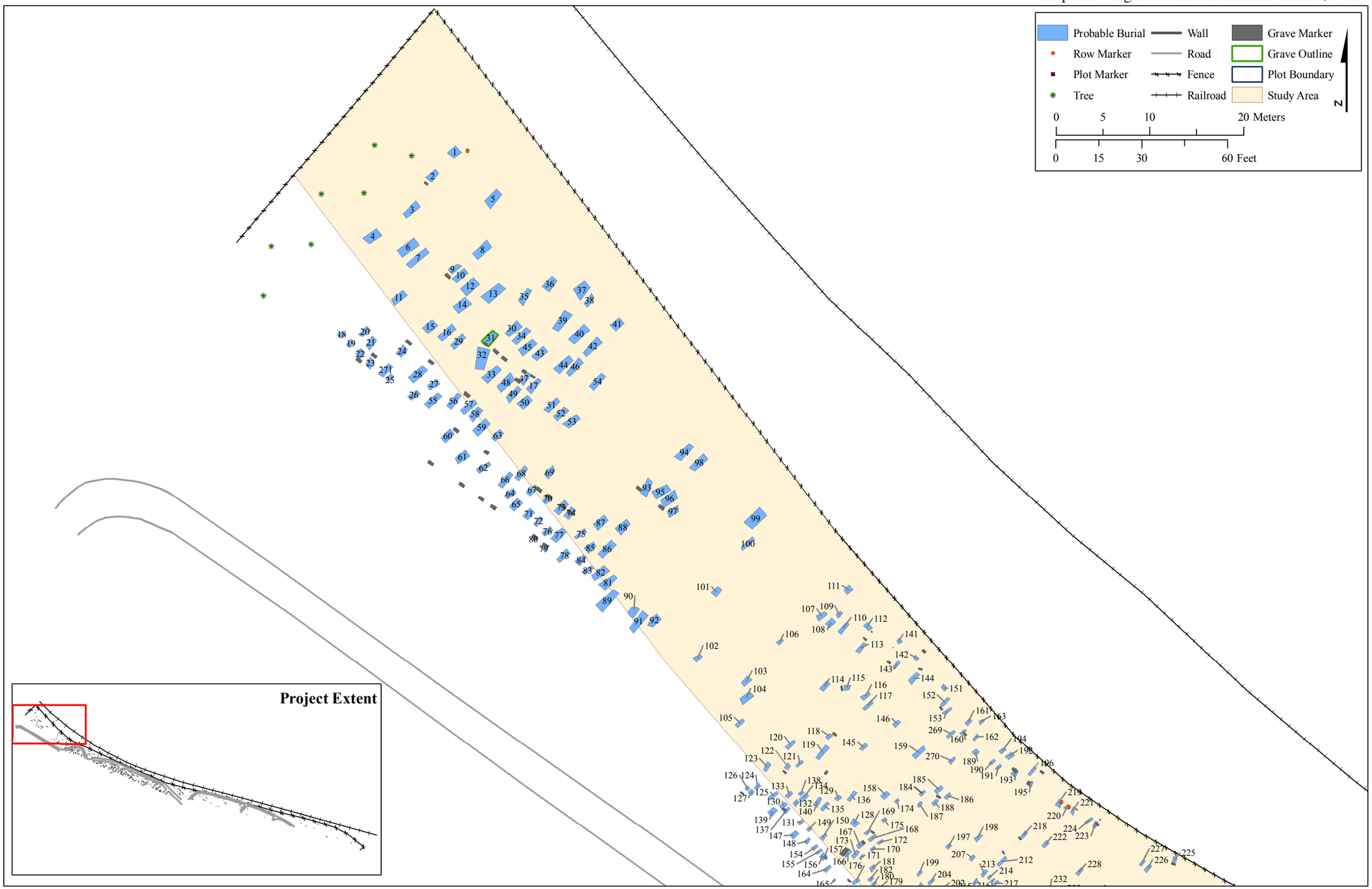


Figure 40.
Map Showing Location of GPR Anomalies, 2 of 6

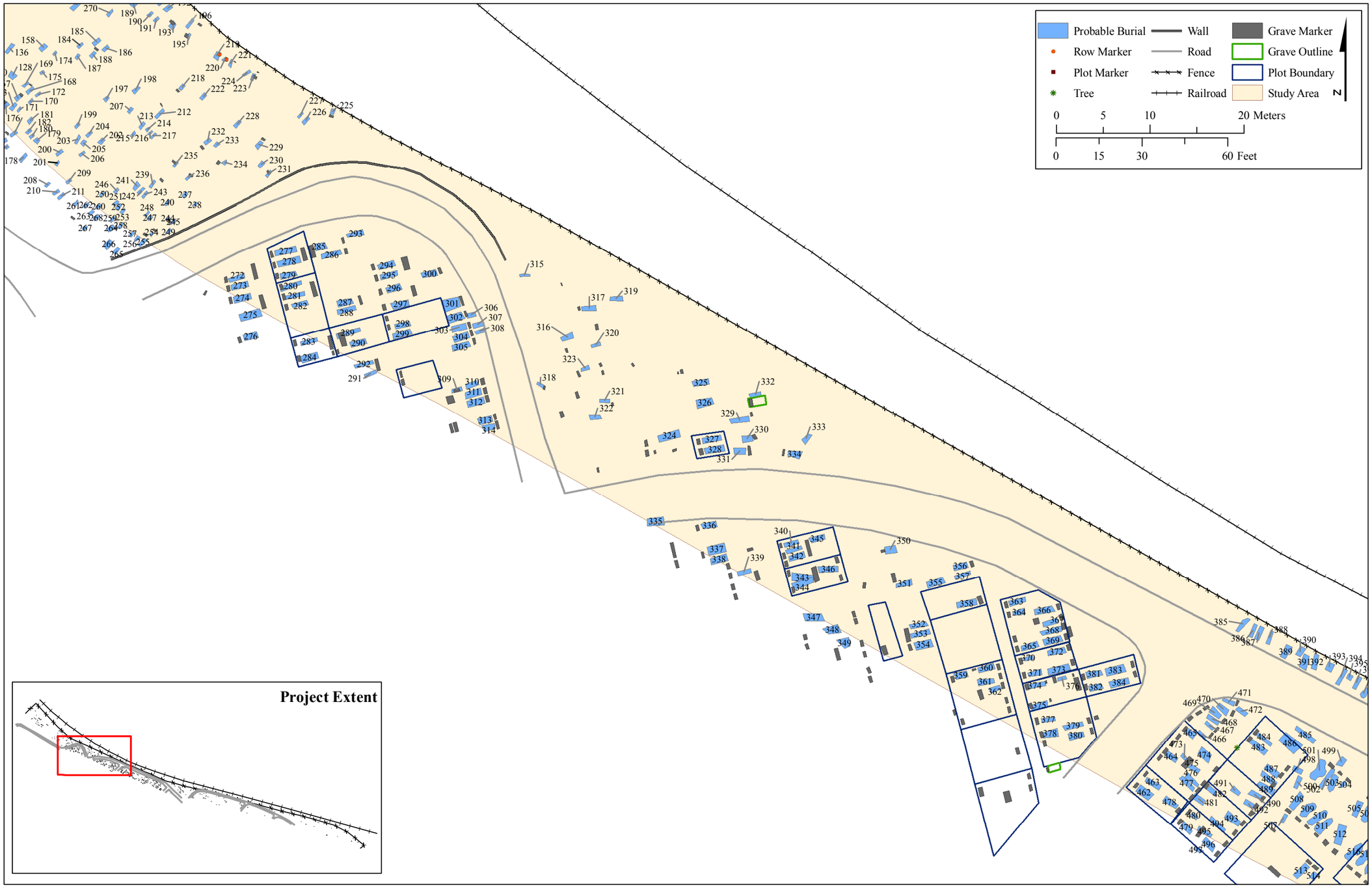


Figure 41.
Map Showing Location of GPR Anomalies, 3 of 6

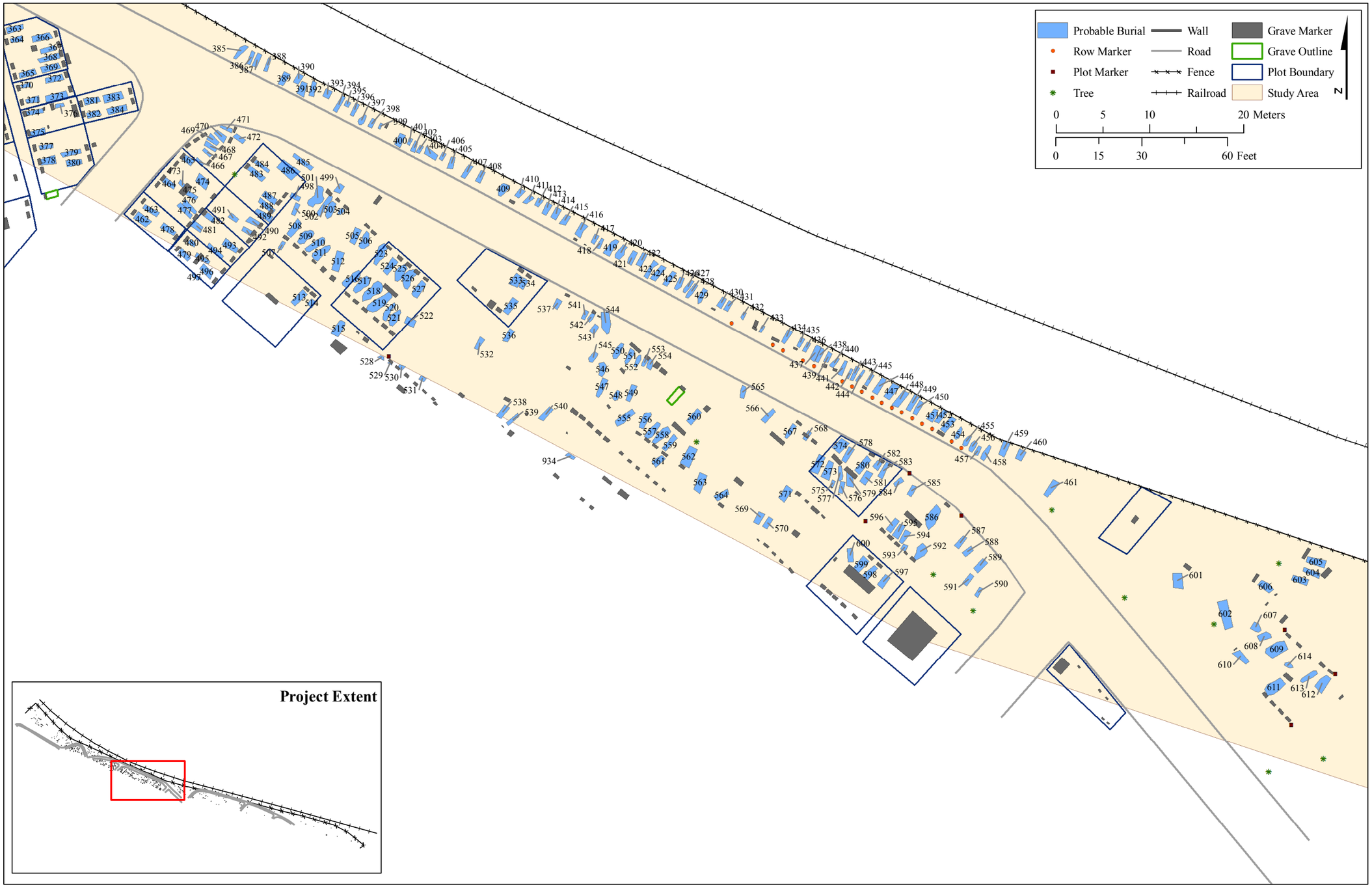


Figure 42.
Map Showing Location of GPR Anomalies, 4 of 6

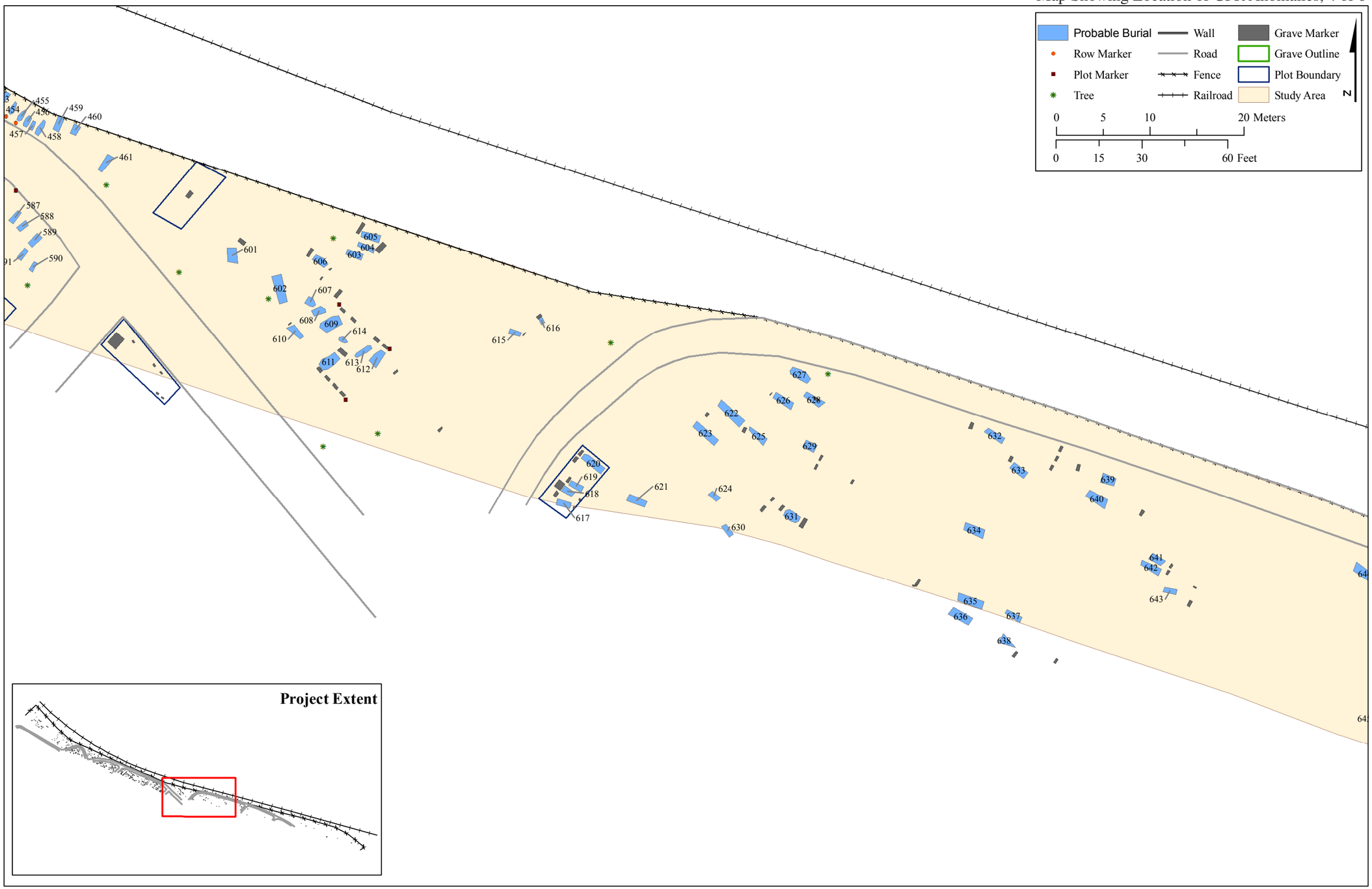


Figure 43.
Map Showing Location of GPR Anomalies, 5 of 6

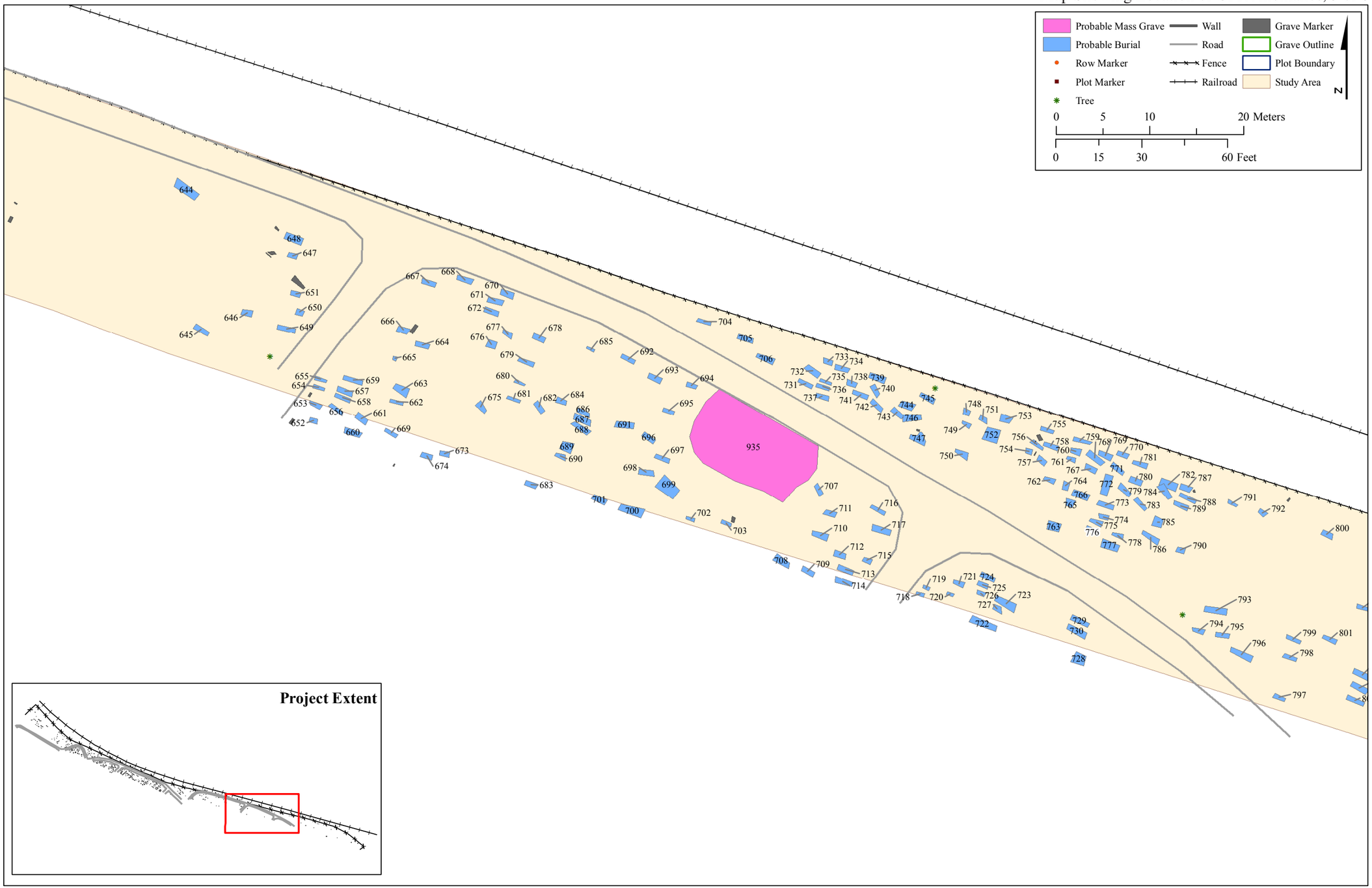
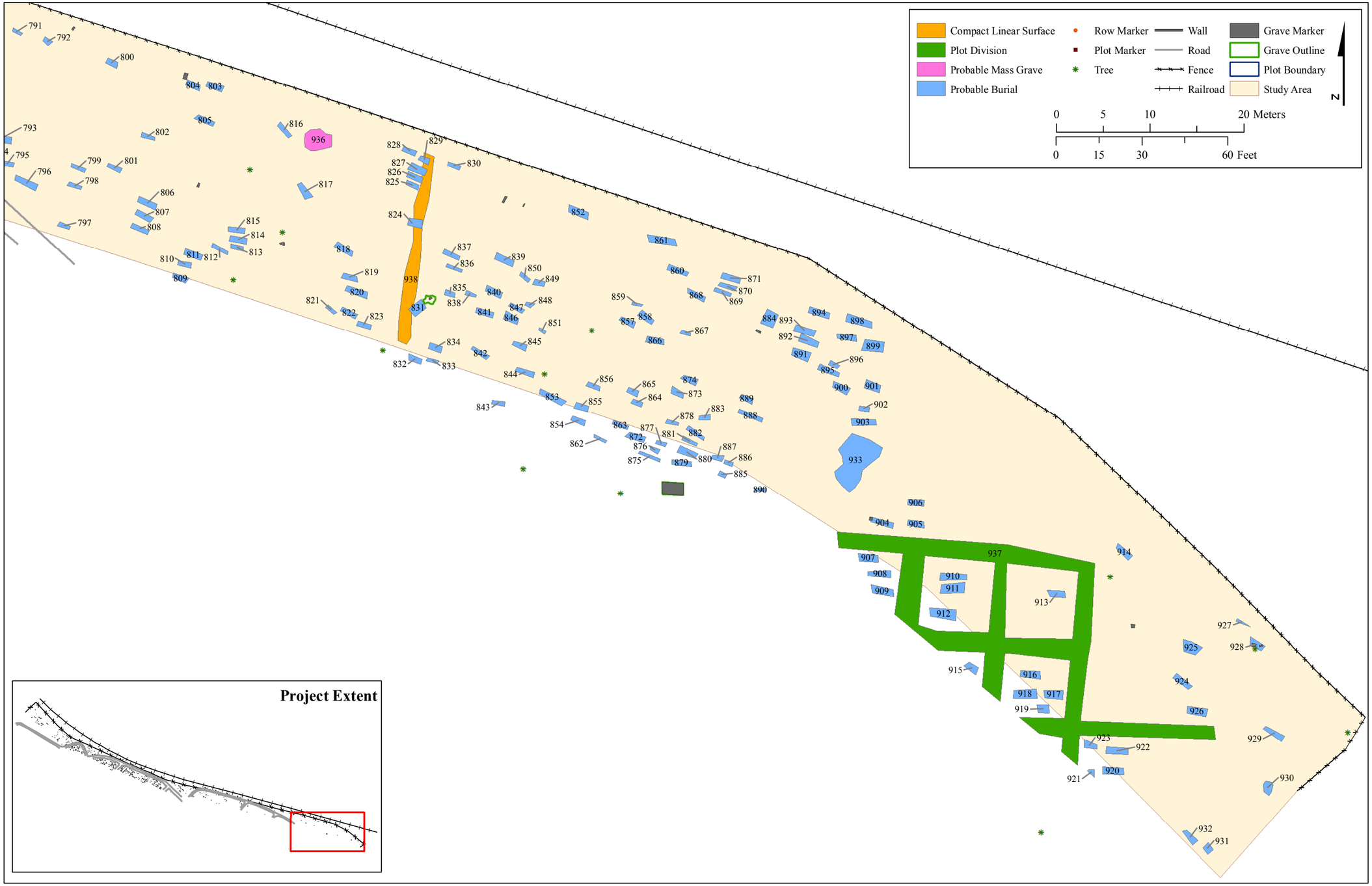


Figure 44.
Map Showing Location of GPR Anomalies, 6 of 6



Correlation of GPR anomalies with existing markers is variable across the study area. In the case of Elmwood purchased plots, the relatively low correlation is somewhat misleading because of the sheer number of markers and GPR anomalies. In many cases, there was more than one anomaly in close proximity to a particular marker, and it was difficult to determine which anomaly actually belonged to a given marker. For these reasons, a conservative approach was taken to assigning GPR anomalies to markers. It is also possible that at least certain markers were moved from their original positions.

ELMWOOD PURCHASED

The Elmwood purchased area includes Sections AA, BB, G, S, and T as indicated by the Colyer map (1928). In general, these sections contain high densities of marked graves clearly arranged in rows and family plots. The marker data indicate 341 known graves. The GPR survey identified 335 possible graves, 144 of which correspond to an existing marker. The remaining 191 GPR features are interpreted as possible unmarked graves. The total number of graves is approximately 532 (Table 20).

ELMWOOD POTTERS FIELD

Elmwood potters field includes the area designated as “Babyland” and the T-annex. The number of marked graves (n=163) in these sections is much higher than expected for a potters field. The GPR data indicate 138 possible unmarked graves. The total number of graves is estimated at 301 (Table 20).

The data for known graves in this section are skewed for two reasons. First, there is an unusually large concentration of markers immediately north of Section BB, in one corner. They are arranged in a more systematic and organized manner that suggests lots may have been demarcated at one time, although none are depicted on historic maps of the area. Second, although the T Annex contains only a few markers, there is a map showing individual graves of both adults and infants.

The bulk of the potters field is located on the eastern boundary of Section AA. Marker data indicate an exceptionally high number of child graves. GPR anomalies in this section are particularly dense. In many cases the sizes and morphology indicate probable child graves, which is consistent with other lines of evidence for this area. Child graves are typically smaller, shallower, and of lower reflective amplitude than adult graves.

The T Annex is located in a narrow strip of land (approximately 6-8 feet wide) on the north side of the study area between the boundary fence and the road. It is also referred to as the "Stranger's Section". Official records indicate it contains 49 adult and 47 infant graves, although only 12 are marked. Adults were interred beginning on the eastern end and proceeding west and infants were interred on the west end. GPR data indicate approximately 74 anomalies arranged in a row. Each marker has a corresponding GPR anomaly. Amplitude reflections for these are highly variable and almost all of them are very faint and not easily identified. The majority of these are consistent with expectations for adult graves. Despite the presence of 96 known graves, only 74 have corresponding GPR anomalies.

PINEWOOD PURCHASED

The Pinewood purchased area includes Sections D, the D Annex, G, J, and K as indicated by the Newton map (1916). The GPR survey encompasses only a small portion Section G, almost all of Section K, and a moderate amount of Section J. Section D and the D Annex are located on the far eastern boundary of the cemetery. Both of these are somewhat isolated from other marked sections and they are bounded by potters fields. There are no surface indications of formal plot boundaries.

These areas contain 58 marked graves and 106 GPR anomalies consistent with historic graves. Twenty-two of the known graves have a corresponding GPR anomaly. The remaining 84 GPR anomalies are possible unmarked graves. Combining these numbers yields a total of approximately 142 graves (Table 20).

Other GPR anomalies are also present in these areas. The outlines of plot boundaries are visible in Section D (Feature 937). They first appear at approximately 25 centimeters below surface and have very high amplitude reflections that are indicative of hard materials such as stone or brick buried in dirt. These correlate almost perfectly with lots shown on the Newton map (1916) of Pinewood cemetery. The fact that these are not visible on the surface indicates there has been a certain amount of deposition, either from deliberate filling or slope wash.

PINEWOOD POTTERS FIELDS

Large portions of the Pinewood section are designated by three distinct potters fields. There are very few existing markers and no family plots. The overall appearance is quite different from Elmwood with broad, open areas.

These sections contain 18 marked graves and 234 GPR anomalies. Of the marked graves, nine have a corresponding GPR anomaly. The remaining 225 GPR anomalies are interpreted as possible unmarked graves. Based on the markers and GPR data, the total number of potential graves is 243 (Table 20). This number is significantly lower than expected for a potters field based on previous archaeological research at other potters fields and will be discussed in greater detail below.

Other anomalies are also present, including two large features that are possible mass graves or borrow pits (Features 935 and 936). These were differentiated from other probable grave features based on their plan view morphology, size, and reflection characteristics as noted in the GPR data.

Feature 935 is located adjacent to one of the roads approximately ten meters south of the boundary fence. It is very large, measuring approximately 8x14 meters in size, and roughly square in plan view. In profile it appears as a large void with an uneven bottom typically characteristic of horizontal surfaces. There are point reflections (hyperbolas) inside and below the feature that may indicate individual graves. However, overall resolution is obscured by the presence of mixed stratigraphy that is consistent with fill episodes. Because of its location in Pinewood, it seems unlikely that this feature could be related to the visitor's rest facility shown in the 1877 map (See Figure 3). Although there is less detail on historic maps, the location of this facility was shown to be in the Elmwood section.

Feature 936 is located approximately four meters from the boundary fence. It measures approximately 3x2 meters in size and is roughly square, although the edges are irregular. Assuming this is a mass grave, it is relatively small and may contain only a few individuals.

DISCUSSION

Evaluation of the GPR results needs to consider the following points, particularly with respect to estimating the number of potential unmarked graves. First, it is highly unlikely that all graves were detected and imaged (Buck 2003; King et al. 1993). Because of the environmental variables noted above at least a certain number of graves likely exist that could not be defined. Second, at least a small percentage of the identified anomalies will be false positives; that is, they appear to be consistent with human graves yet are likely not actual graves. However, the GPR data provide a reliable estimate of the minimum number of probable graves in the study area.

Correlation between grave markers and GPR features at the Elmwood/Pinewood Cemetery is variable across the different sections. The highest correlation is in the Elmwood potters fields (65%), followed by Pinewood potters fields (56%), Elmwood purchased (44%),

and Pinewood purchased (36%), with an average for the overall cemetery of 46 percent. However, these figures are somewhat misleading primarily because of the sheer number of GPR anomalies and the difficulty with assigning them to a specific marker. The frequency of GPR anomalies consistent with expectations for historic graves is exceptionally high. This is important because it indicates favorable conditions for grave detection and imaging across the cemetery and serves as a way to "calibrate" the instrument. In those instances of marked graves with no corresponding GPR anomaly, there could be several additional possibilities, including a moved marker, variation in burial method, or depth beyond the limits of GPR detection.

Table 21 lists the number of known and unmarked graves, as well as acreage and density, for each cemetery section. The Elmwood purchased sections have the highest density, with a value of 485 graves per acres. Elmwood potters fields are very similar, with a density of 474 graves per acre. Values for Pinewood drop considerably, with approximately 196 graves per acre in the potters fields and 135 graves per acre in the purchased plots. These numbers are much lower than expectations for a cemetery assumed to be "full".

Table 21. Calculated Values of Graves Per Acre Based on Markers and GPR Data

Cemetery Section	Acreage	Known Graves	Unmarked Graves	Total Graves	Graves per Acre
Elmwood Potters field	0.63	163	138	301	474.05
Elmwood Purchased	1.10	341	191	532	485.21
Pinewood Potters field	1.24	18	225	243	195.51
Pinewood Purchased	1.05	58	84	142	135.12
Total	4.03	580	638	1,218	302.59

The lack of large numbers of GPR anomalies in the Pinewood sections is unexpected based on previous archaeological studies of potters fields, which typically contain high densities of burials (Bell 1993; Clow 2000; Dickens and Blakely 1979; Elia and Wesolowsky 1991; Owsley et al. 1987). Clow (2000), in the Dallas Freedmen's Cemetery, arrived at a density value of one grave every 46 square feet. Dickens and Blakely (1979), at Oakland Cemetery in Atlanta, calculated separate values for three different potters field sections of 1735 graves per acre, 1349 graves per acre, and 871 graves per acre, respectively. In each of these cases, the values given were conservative. Even the lowest of these values (e.g., 871 graves per acre) is approximately double the highest density at Elmwood/Pinewood (e.g., 485 graves per acre).

There is no reason to suspect major environmental differences between different sections of the cemetery. It is clear that the GPR data are high quality over the entire study area. In other sections, there are obvious anomalies consistent with graves, both marked and unmarked, although amplitude reflection values are variable. Given this situation, the same types of anomalies should be visible in the potters fields sections of Elmwood/Pinewood.

Several possibilities must be considered for the relatively low number of GPR anomalies in the Pinewood sections. First, it is possible that the GPR data essentially show an accurate picture of what is underground. In other words, these sections could contain relatively few graves and may not have been "full". Considering both the marker distributions and GPR data, this is entirely plausible.

Second, the number of graves could be so dense that individual outlines are totally obscured and undetectable. This possibility is highly unlikely because the overall GPR data are "clean" and almost identical to other sections of the cemetery. In addition, other anomalies are present, including both marked and unmarked graves.

Third, additional graves could be present that were not detectable with GPR. This, too, is plausible, particularly when one considers the role of social, cultural, and economic factors in burial. Potters fields in particular are known to contain graves of the poorest individuals, but even in poverty not all people were equal (Trinkley and Hacker 2009). It is not unreasonable to suspect that poor African Americans were not afforded the same basic treatment as poor whites. If, for example, there were differences even among the poor in terms of how they were buried and under what circumstances, those might affect their geophysical signatures today.

ESTIMATES FOR TOTAL NUMBER OF POTENTIAL GRAVES

Estimates for the total number of probable graves in the study area are based on a combination of known markers and GPR data. At present, based on multiple lines of evidence, the estimate is for at least 1,218 individual graves. This range includes 580 individuals identified from known markers and the T Annex map, and 638 GPR anomalies that are not clearly associated with existing markers. These values should be considered the minimum number of potential graves, with recognition that additional graves might also be present.

VI. CONCLUSIONS AND RECOMMENDATIONS

It is clear from investigations conducted for this project that the study area contains a high density of marked and unmarked graves. The current project has demonstrated the presence of at least 580 known/marked graves and approximately 638 additional graves represented by GPR anomalies not associated with a particular marker. The total number of graves in the study area is 1,218.

It must be emphasized that the figure of 1,218 graves may be a low estimate. It is likely that there are certain unmarked graves present in the project area that did not produce a sufficiently strong signal to be recognized as graves. In evaluating the potential impacts to this cemetery from the alternative that would take the project area, the NCDOT should consider the potential for more than 1,218 graves. The time, cost, and public relation issues associated with any potential relocation must be carefully weighed and evaluated when considering project alternatives.

New South Associates recommends that all of the GPR anomalies consistent with expectations for historic graves be treated as such. It is also important to consider the probability that a significant number of additional unmarked graves may be present in the Pinewood potters fields sections. Previous archaeological research in potters fields indicates a strong possibility for a high density of graves. The only way to verify the presence of unmarked graves with complete certainty is to mechanically remove the topsoil and expose a grave or shaft outline. If the current alternative is selected for further analysis, New South Associates recommends systematic sampling of selected areas of the cemetery to verify burial densities. This should focus specifically on evaluating the Pinewood potters fields.

Careful consideration should be given to the scale of potential impacts to human graves. If this alternative is selected, NCDOT will need to comply with state laws governing cemeteries and human graves. Permits and descendant notification will be required prior to any disinterment. New burial lots would need to be purchased and consideration given to moving and reinstalling grave markers. Given the cemetery's location and setting, it is reasonable to expect significant public interest in any undertaking that might adversely affect individual graves.

In addition, the cemetery has already been determined eligible for the NRHP under Criteria A, B, and C. Although Criterion D was not considered during the earlier evaluation (Mattson, Alexander and Associates, Inc. 2009:1), the present study has generated sufficient data to suggest that the cemetery should also be considered eligible under Criterion D. Large samples of graves from various classes of cemetery area (white purchased lots, childrens' potters field, white potters field, African American purchased lots, and African American potters field) would offer a tremendous amount of data that could be used in anthropological analyses along several lines of inquiry.

REFERENCES CITED

Agreement

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Annual Report

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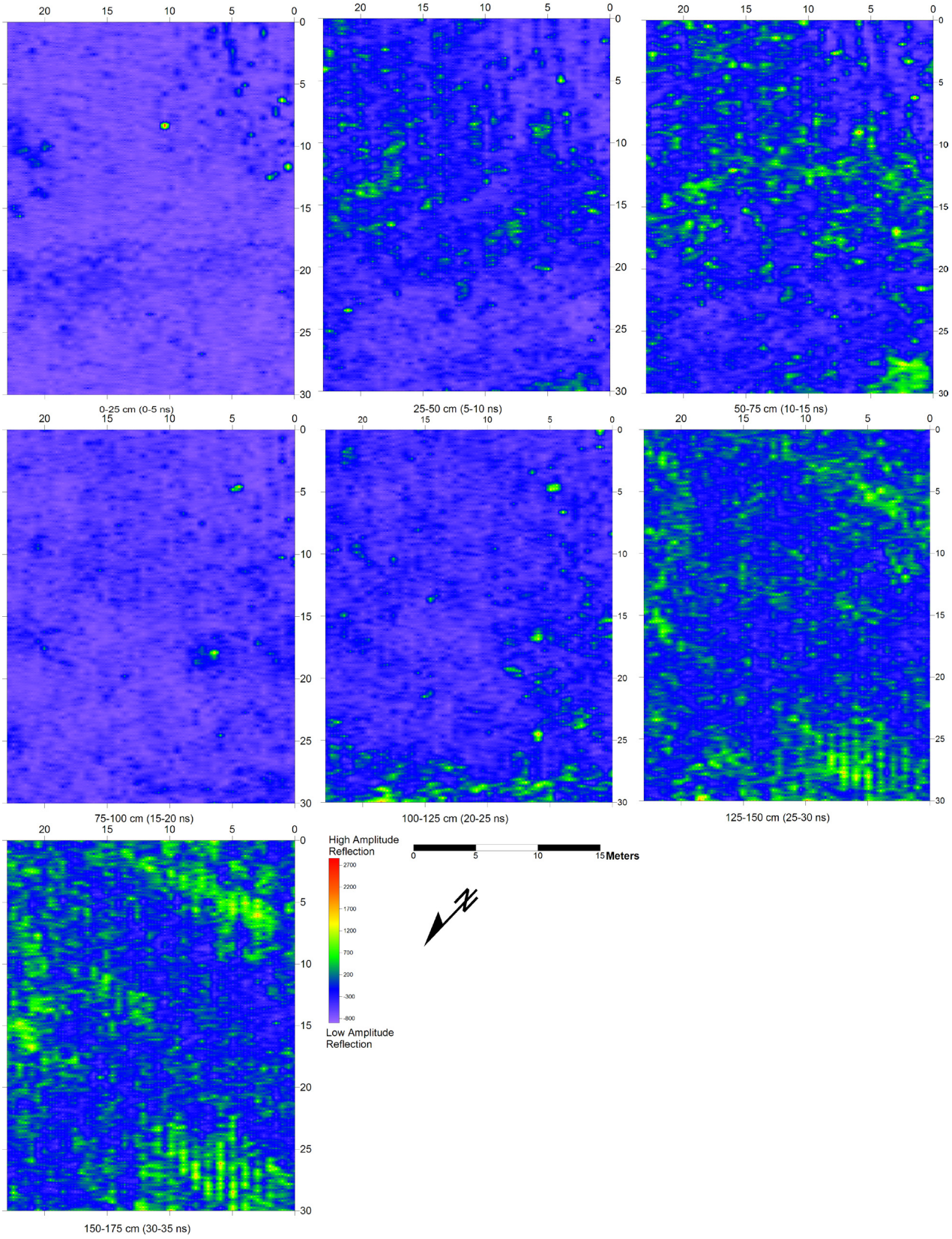
APPENDIX A: AMPLITUDE SLICE MAPS

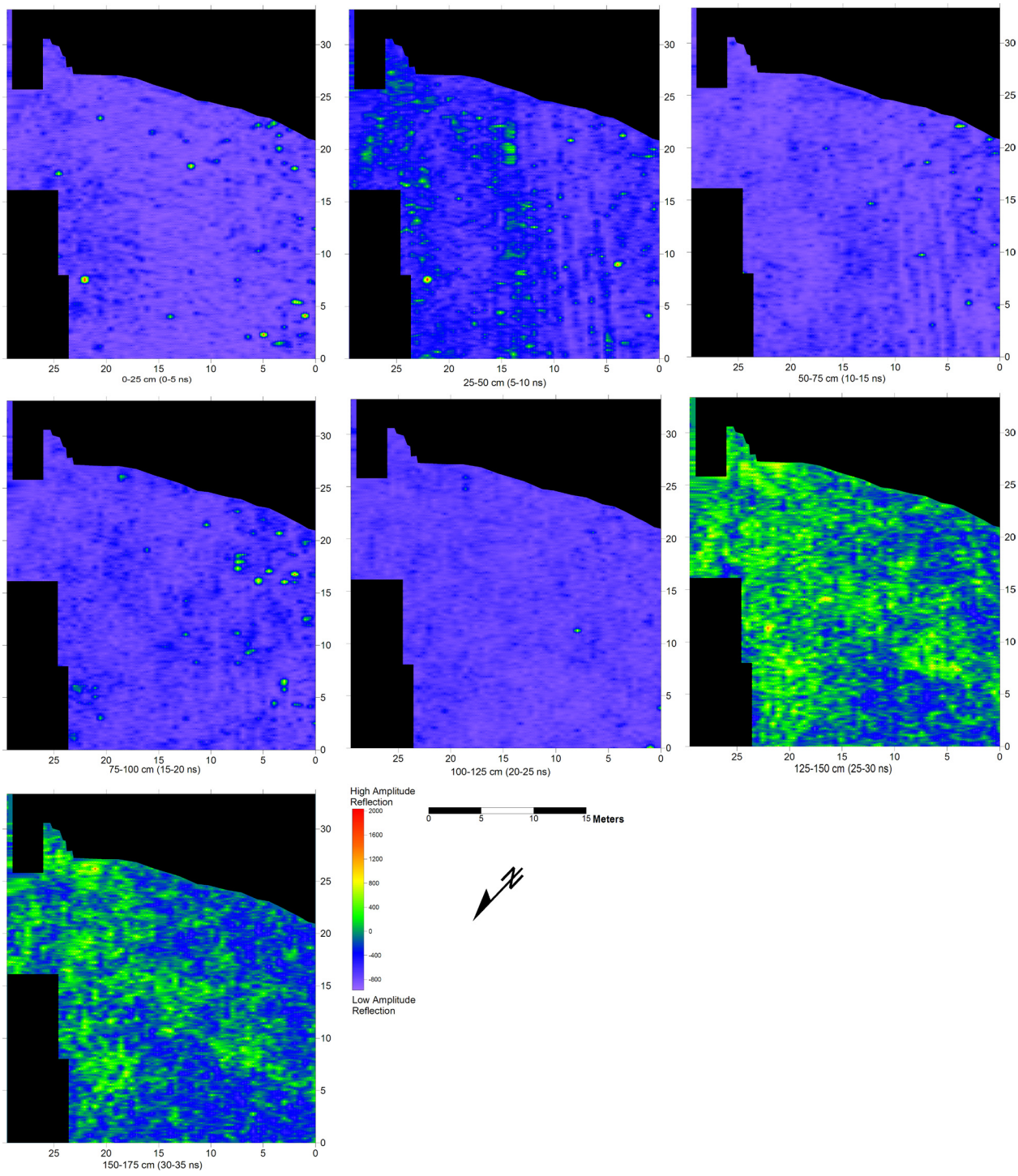
Appendix A

Grid A - Middle



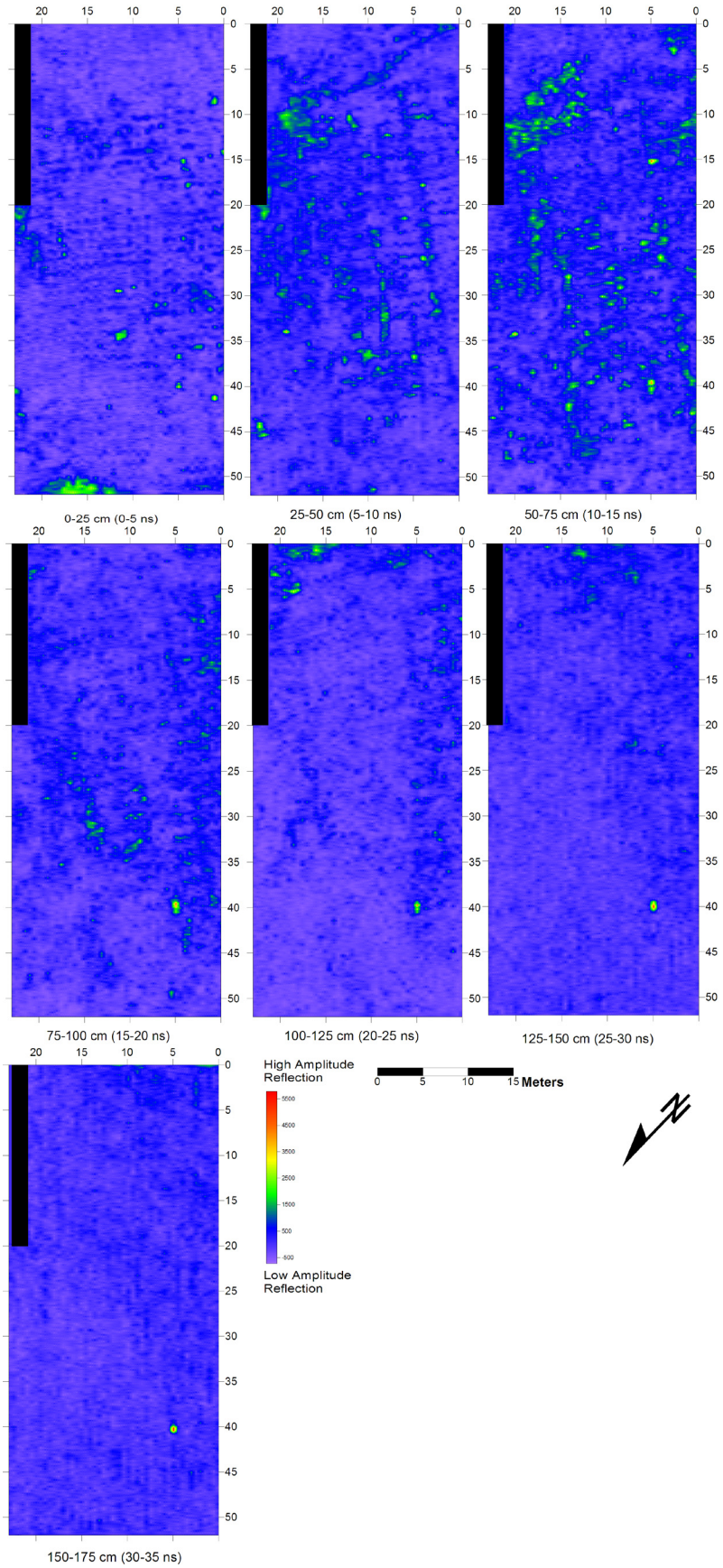
Appendix A

Grid A - North



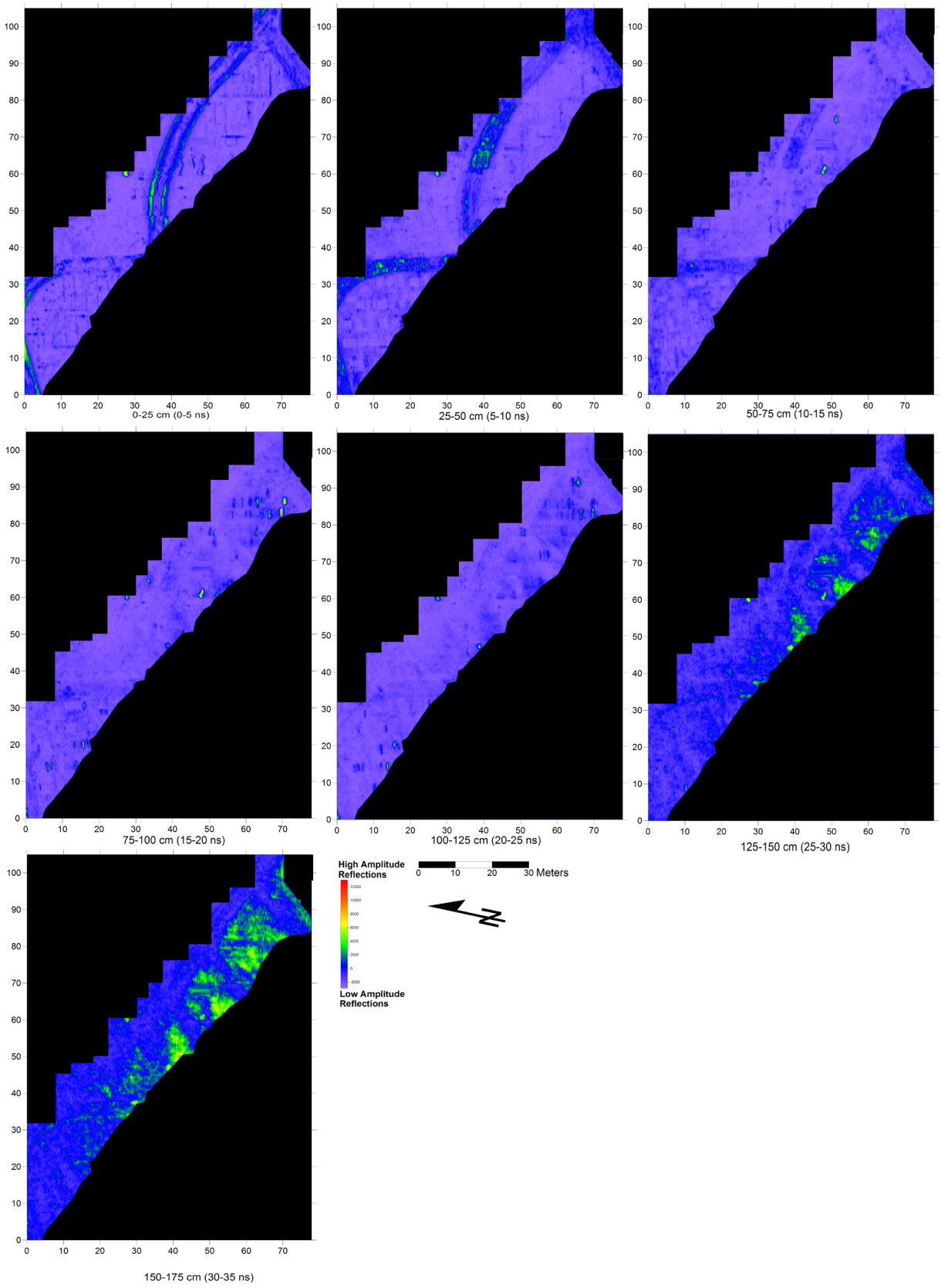
Appendix A

Grid A - South



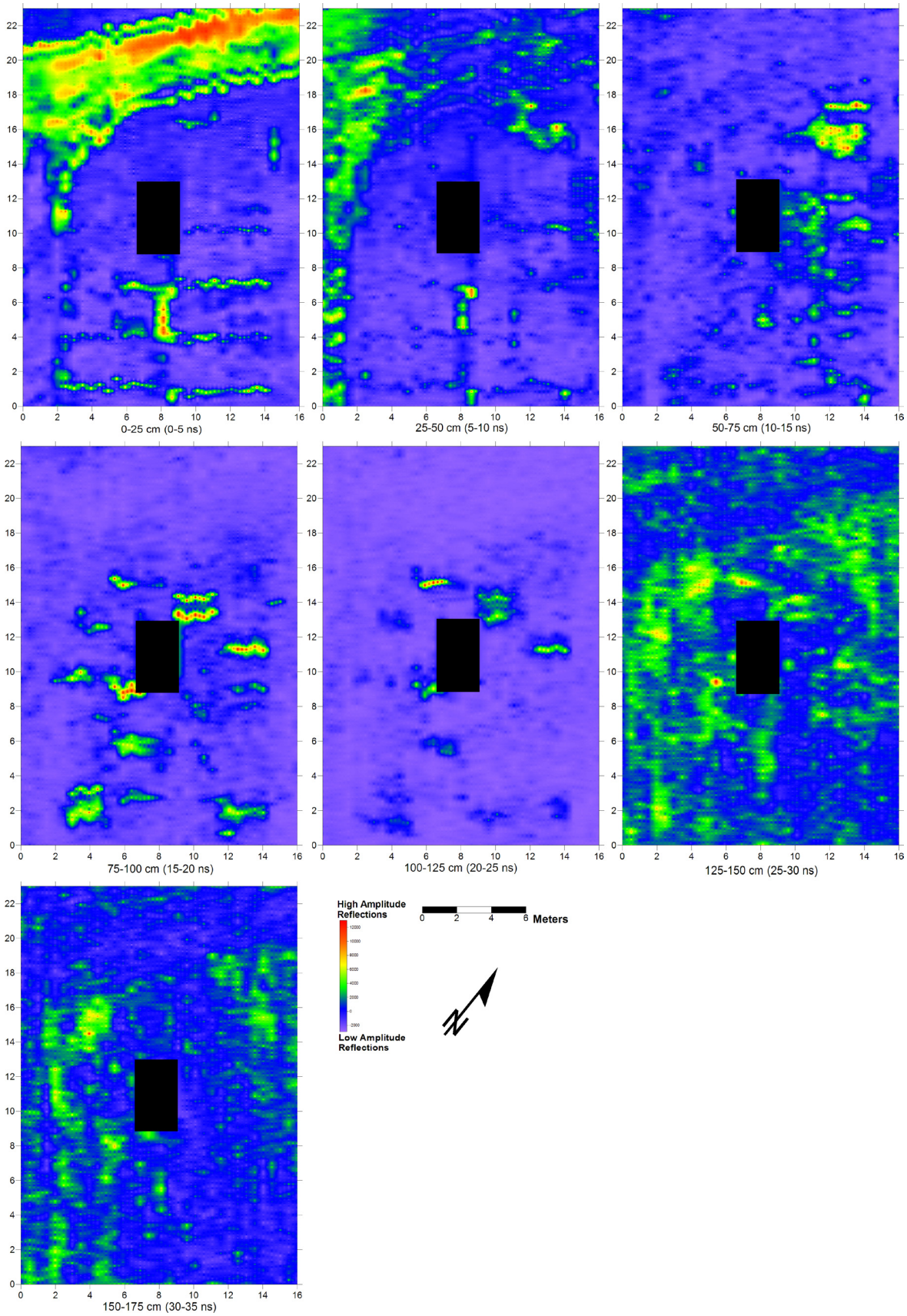
Appendix A

Grid B



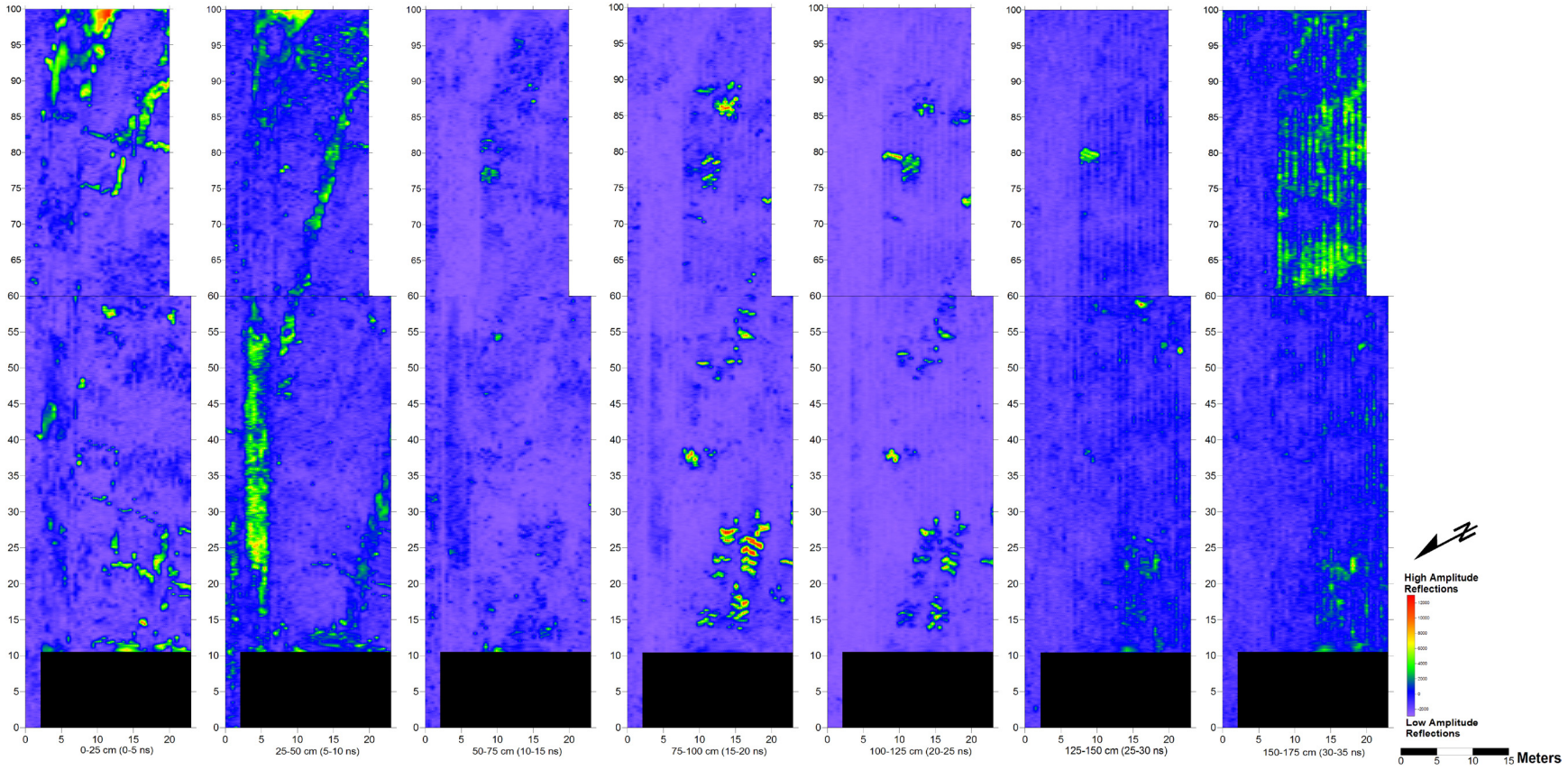
Appendix A

Grid C



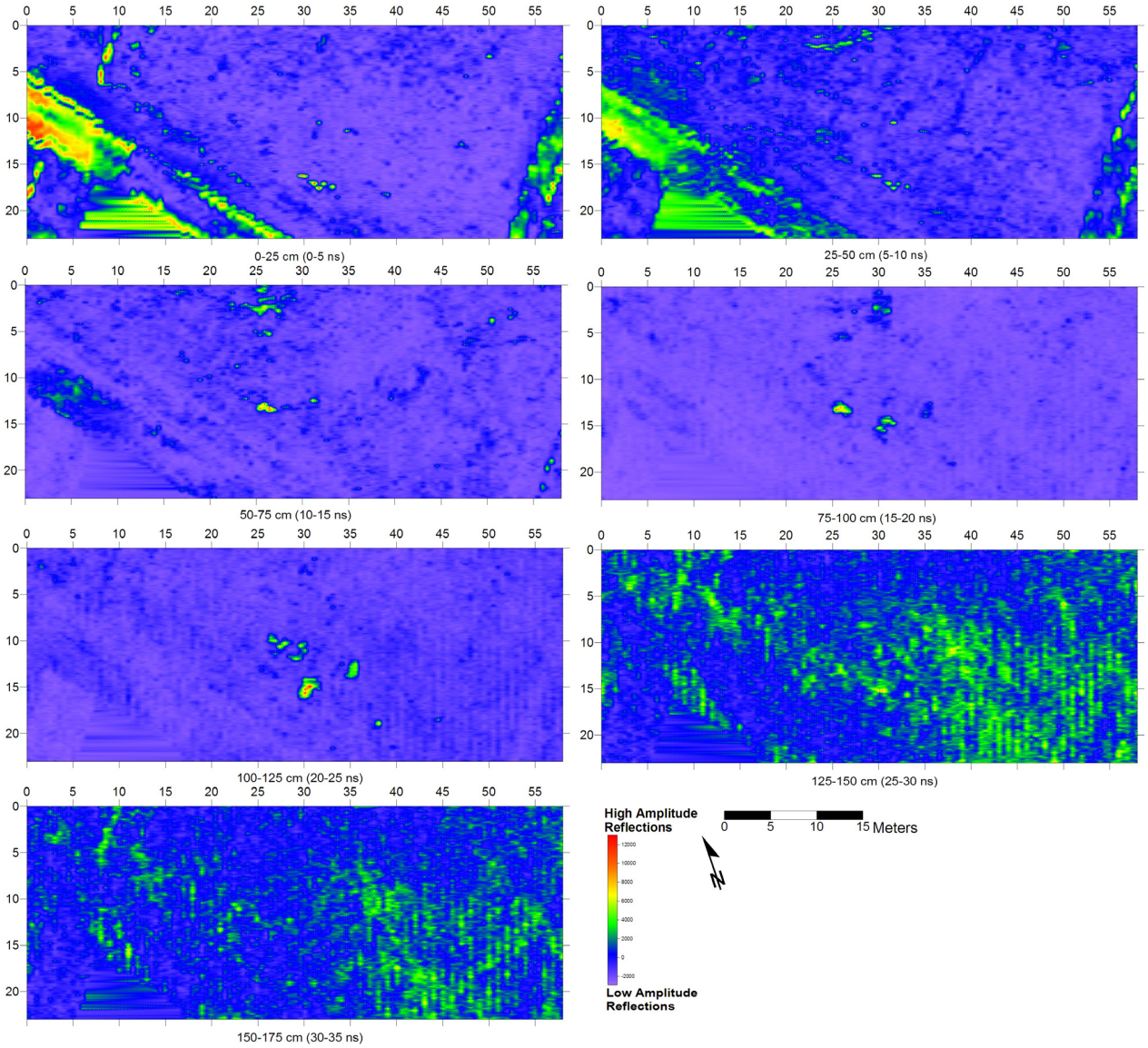
Appendix A

Grid D



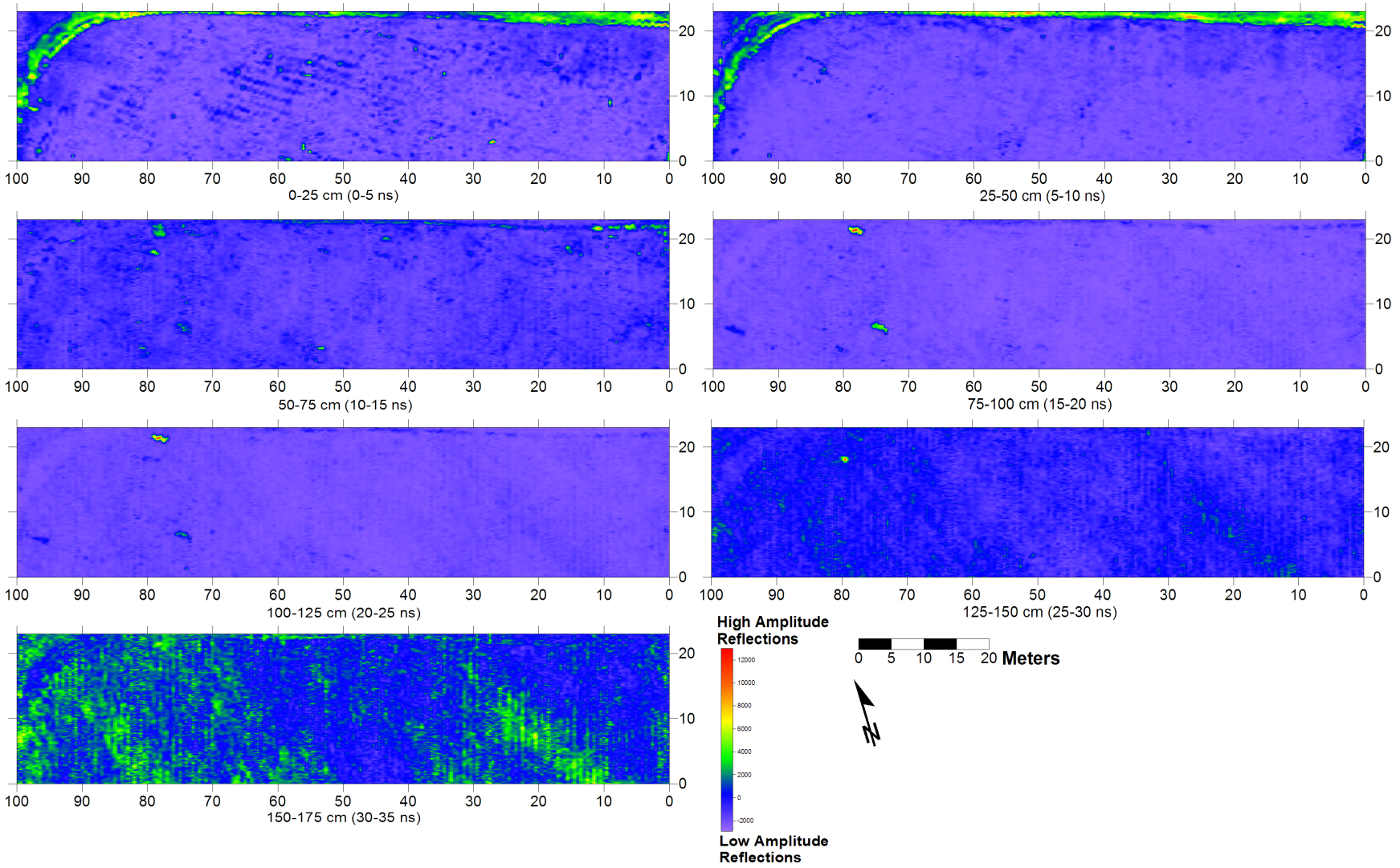
Appendix A

Grid E



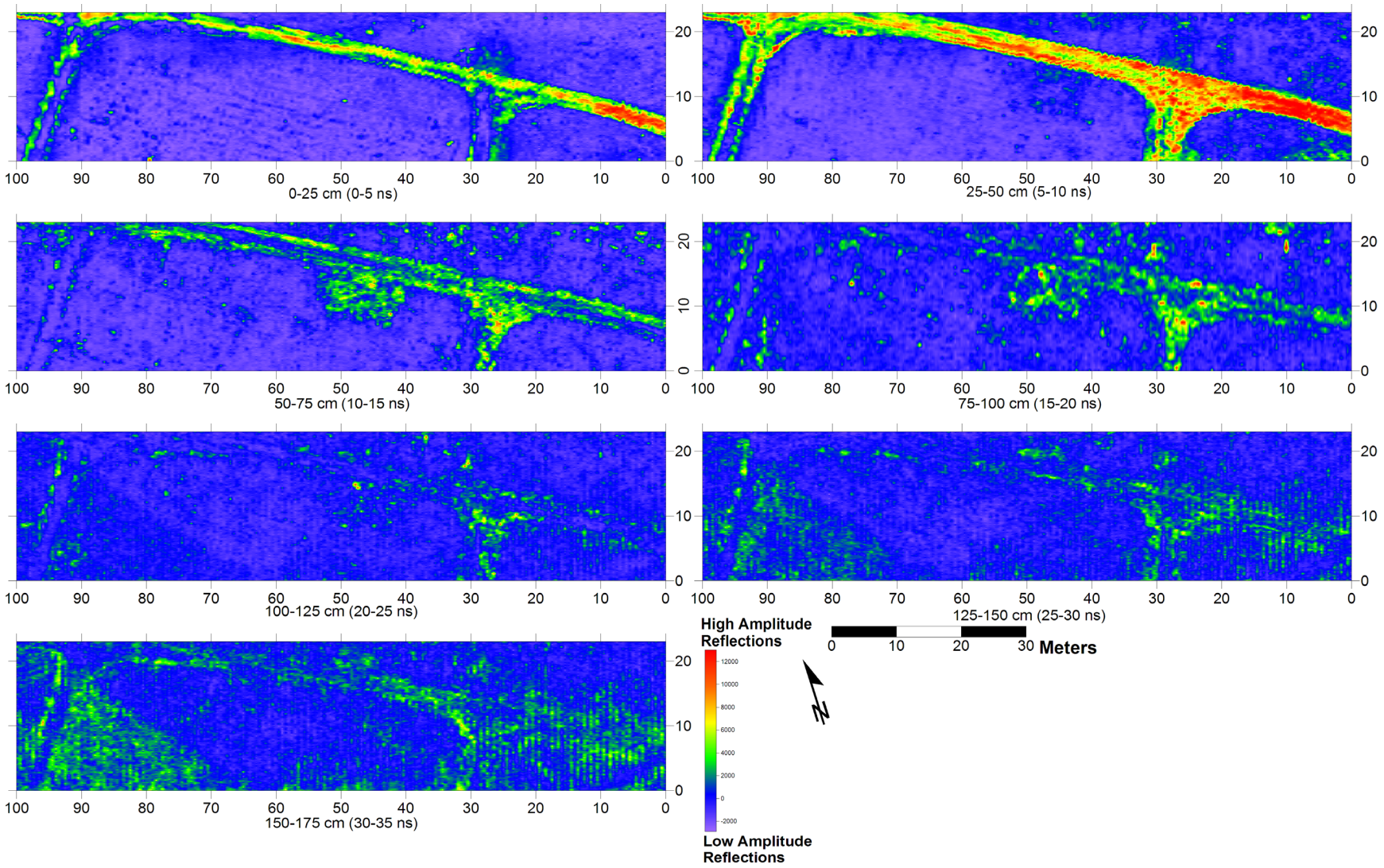
Appendix A

Grid F



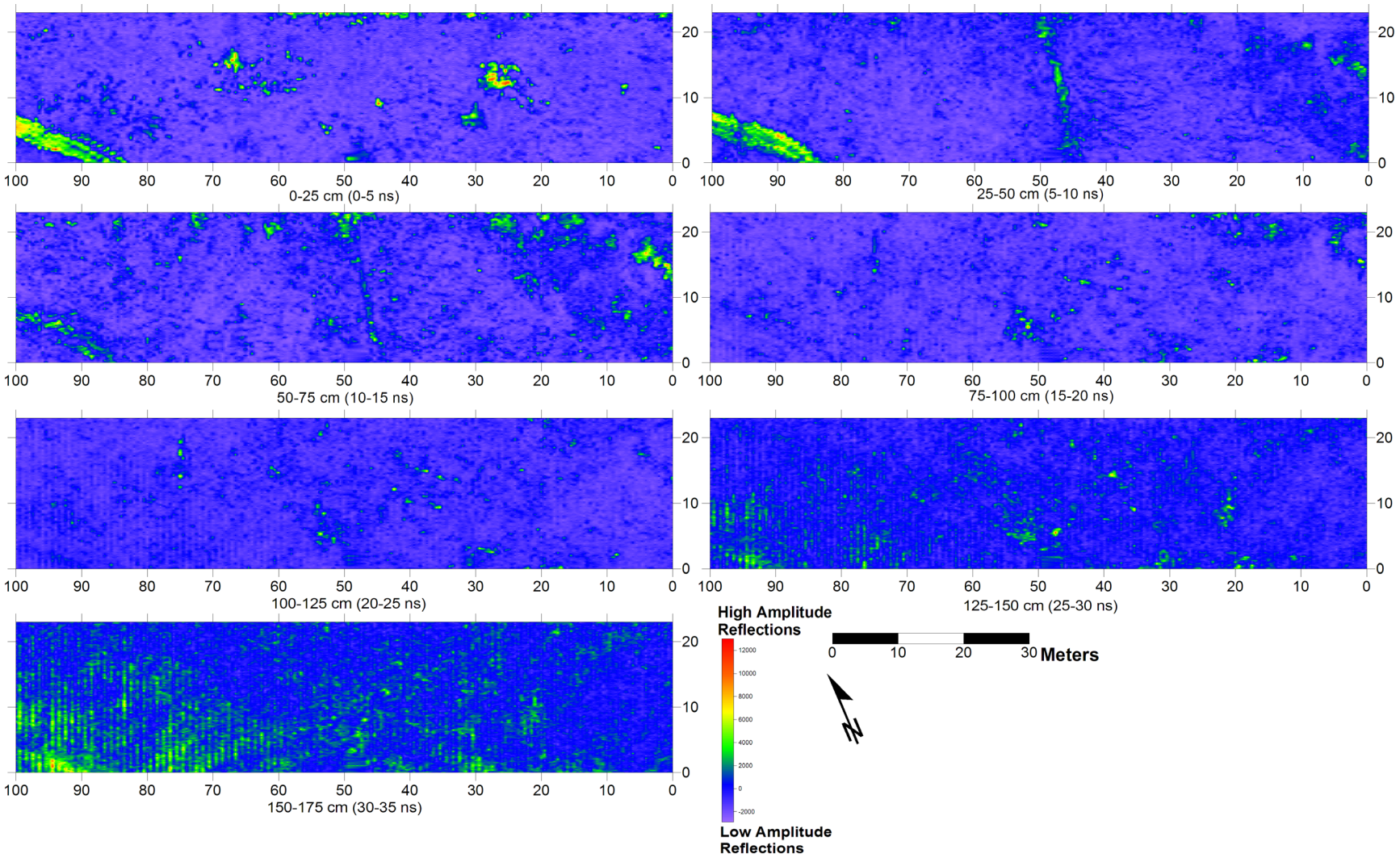
Appendix A

Grid G



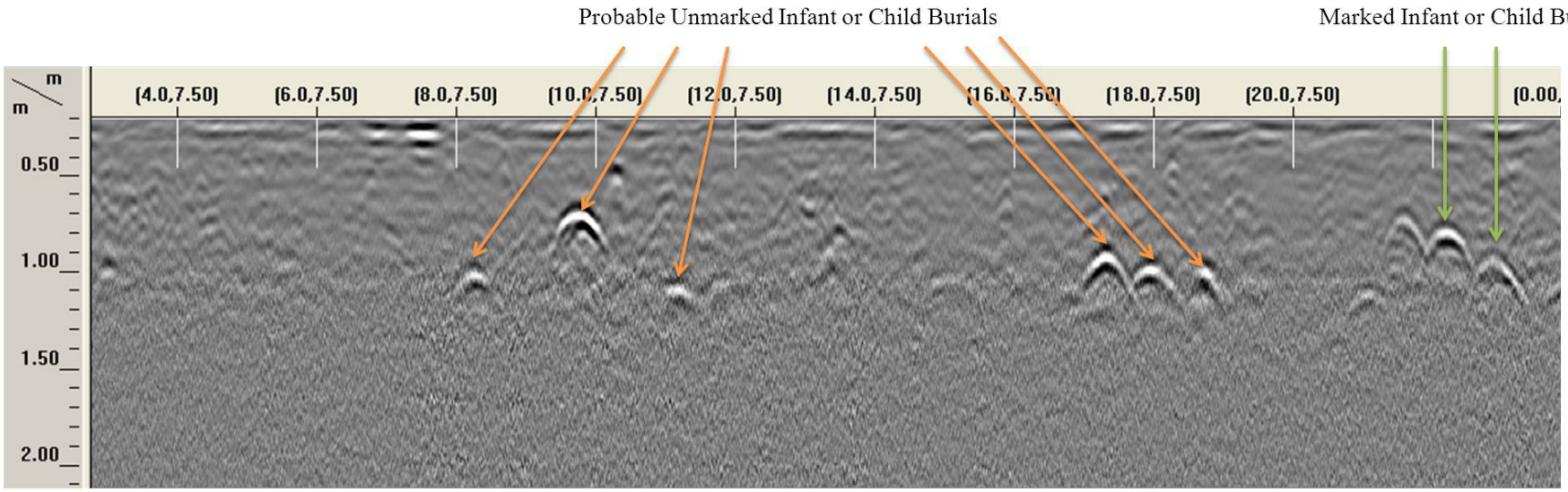
Appendix A

Grid H



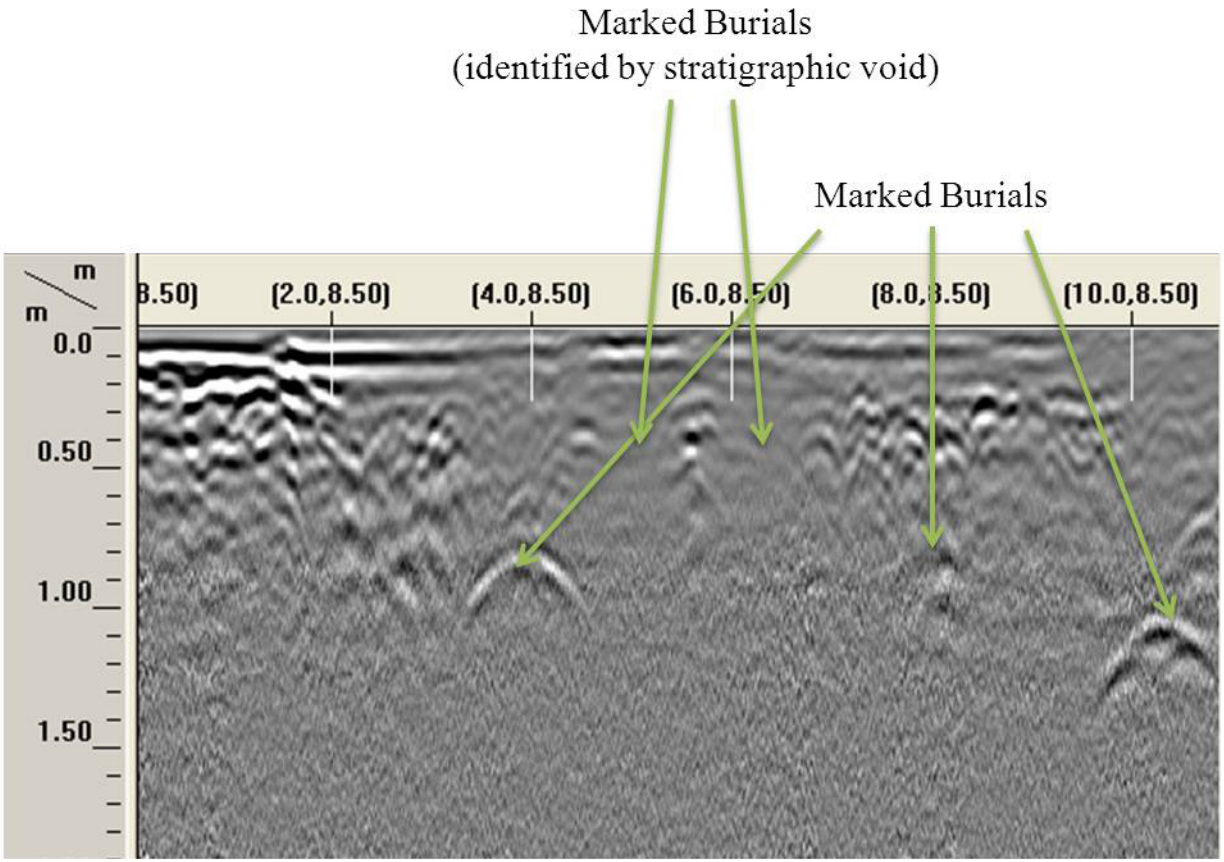
APPENDIX B: SELECTED GPR PROFILES

Appendix B



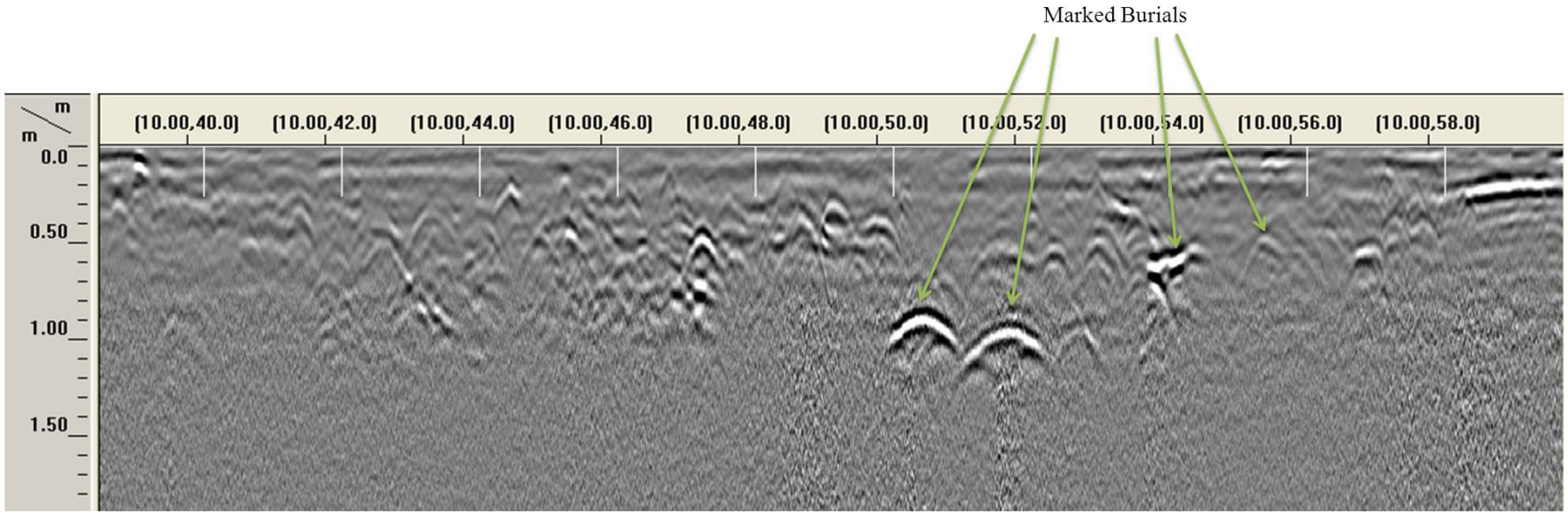
Grid A - Profile at 7.5 meters

Appendix B



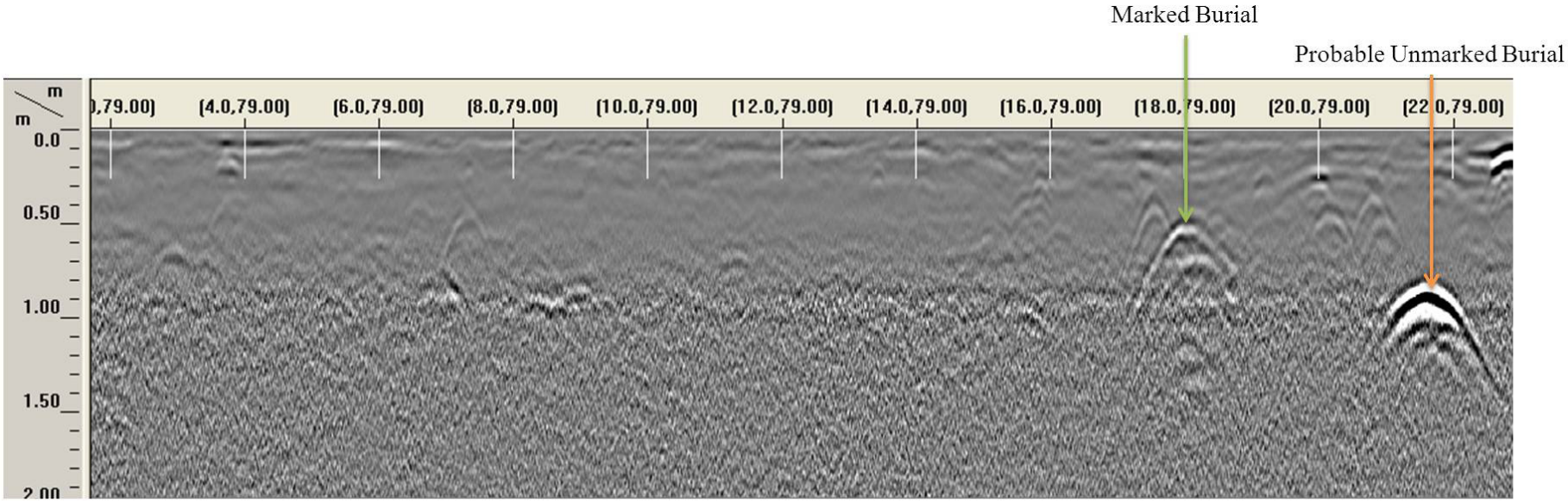
Grid B - Profile at 8.5 meters

Appendix B



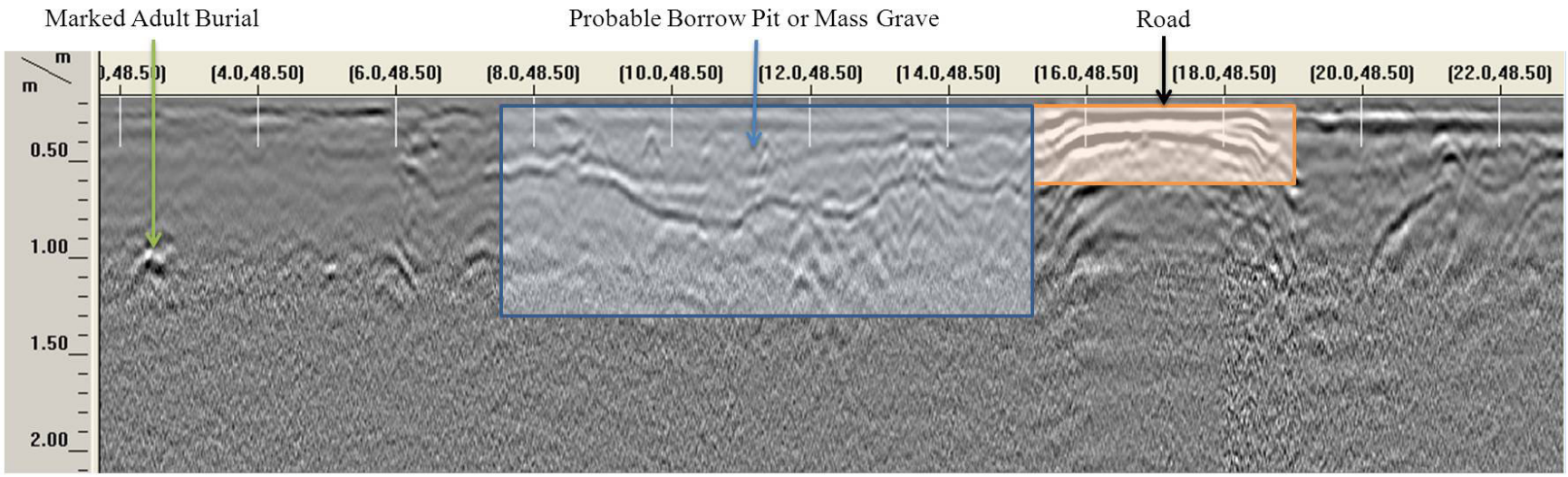
Grid D - Profile at 10 meters

Appendix B



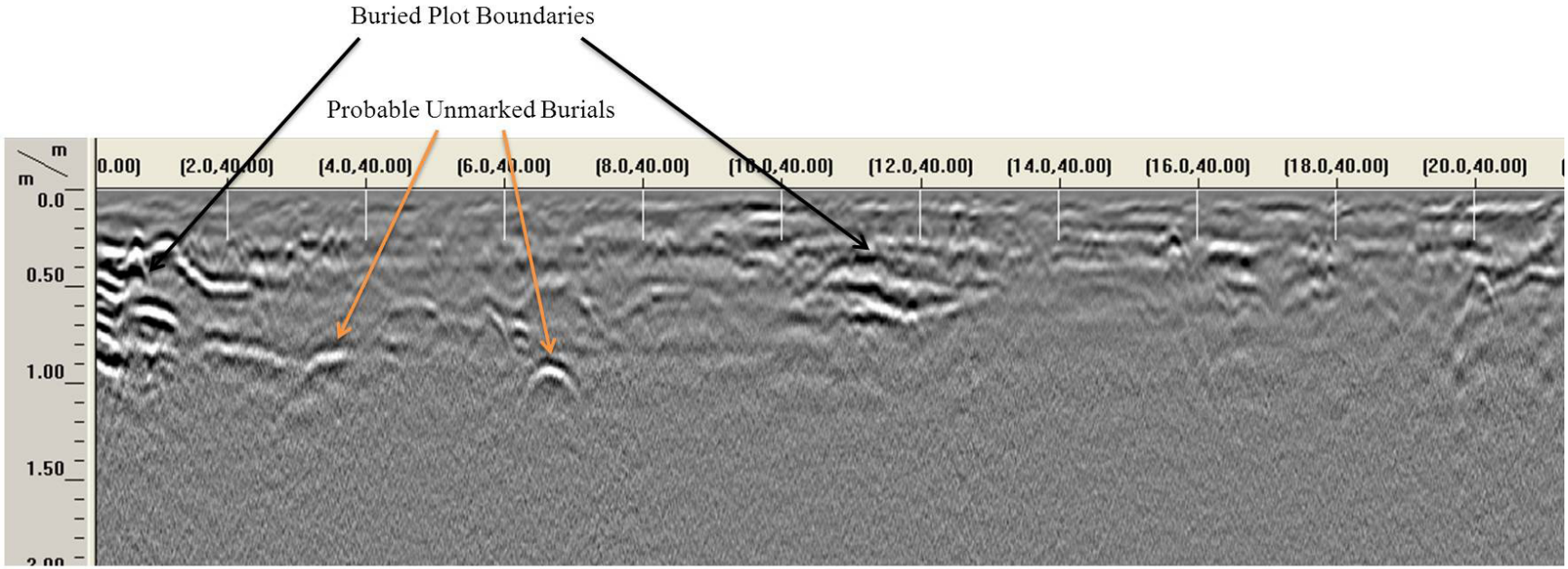
Grid F - Profile at 79 meters

Appendix B



Grid G - Profile at 48.5 meters

Appendix B



Grid I - Profile at 40 meters

APPENDIX C: INDIVIDUAL GPR ANOMALIES

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
1	Probable Burial	Yes	3899747.17	513605.79	50-75	1.64-2.46	Elmwood Purchased
2	Probable Burial	Yes	3899744.60	513603.44	50-75	1.64-2.46	Elmwood Purchased
3	Probable Burial	No	3899741.04	513601.24	75-100	2.46-3.28	Elmwood Purchased
4	Probable Burial	No	3899738.19	513597.07	50-75	1.64-2.46	Elmwood Purchased
5	Probable Burial	No	3899742.21	513609.90	50-75	1.64-2.46	Elmwood Purchased
6	Probable Burial	No	3899736.99	513600.84	50-75	1.64-2.46	Elmwood Purchased
7	Probable Burial	No	3899735.88	513601.91	50-75	1.64-2.46	Elmwood Purchased
8	Probable Burial	No	3899736.74	513608.75	50-75	1.64-2.46	Elmwood Purchased
9	Probable Burial	Yes	3899734.72	513605.79	50-75	1.64-2.46	Elmwood Purchased
10	Probable Burial	No	3899734.02	513606.40	75-100	2.46-3.28	Elmwood Purchased
11	Probable Burial	No	3899731.68	513599.87	50-75	1.64-2.46	Elmwood Purchased
12	Probable Burial	No	3899732.84	513607.45	50-75	1.64-2.46	Elmwood Purchased
13	Probable Burial	No	3899732.13	513609.91	50-75	1.64-2.46	Elmwood Purchased
14	Probable Burial	No	3899730.85	513606.61	100-125	3.28-4.10	Elmwood Purchased
15	Probable Burial	No	3899728.59	513603.18	50-75	1.64-2.46	Elmwood Purchased
16	Probable Burial	No	3899727.94	513604.99	50-75	1.64-2.46	Elmwood Purchased
17	Probable Burial	Yes	3899722.25	513614.22	50-75	1.64-2.46	Elmwood Purchased
18	Probable Burial	No	3899727.71	513593.74	50-75	1.64-2.46	Elmwood Purchased
19	Probable Burial	No	3899726.78	513594.68	50-75	1.64-2.46	Elmwood Purchased
20	Probable Burial	No	3899728.05	513596.22	75-100	2.46-3.28	Elmwood Purchased
21	Probable Burial	No	3899726.84	513596.89	50-75	1.64-2.46	Elmwood Purchased
22	Probable Burial	Yes	3899725.70	513595.74	50-75	1.64-2.46	Elmwood Purchased
23	Probable Burial	Yes	3899724.68	513596.80	50-75	1.64-2.46	Elmwood Purchased
24	Probable Burial	Yes	3899725.96	513600.18	100-125	3.28-4.10	Elmwood Purchased
25	Probable Burial	No	3899723.12	513598.91	50-75	1.64-2.46	Elmwood Purchased
26	Probable Burial	No	3899721.27	513601.47	50-75	1.64-2.46	Elmwood Purchased
27	Probable Burial	No	3899722.41	513603.56	75-100	2.46-3.28	Elmwood Purchased
28	Probable Burial	Yes	3899723.52	513601.88	75-100	2.46-3.28	Elmwood Purchased
29	Probable Burial	No	3899726.99	513606.18	50-75	1.64-2.46	Elmwood Purchased
30	Probable Burial	No	3899728.35	513612.07	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
31	Probable Burial	No	3899727.36	513609.65	75-100	2.46-3.28	Elmwood Purchased
32	Probable Burial	Yes	3899725.22	513608.68	75-100	2.46-3.28	Elmwood Purchased
33	Probable Burial	Yes	3899723.47	513609.72	75-100	2.46-3.28	Elmwood Purchased
34	Probable Burial	No	3899727.59	513612.90	75-100	2.46-3.28	Elmwood Purchased
35	Probable Burial	No	3899731.77	513613.27	75-100	2.46-3.28	Elmwood Purchased
36	Probable Burial	No	3899733.12	513615.94	50-75	1.64-2.46	Elmwood Purchased
37	Probable Burial	No	3899732.50	513619.34	50-75	1.64-2.46	Elmwood Purchased
38	Probable Burial	No	3899731.38	513620.15	50-75	1.64-2.46	Elmwood Purchased
39	Probable Burial	No	3899729.22	513617.27	100-125	3.28-4.10	Elmwood Purchased
40	Probable Burial	No	3899727.77	513619.06	75-100	2.46-3.28	Elmwood Purchased
41	Probable Burial	No	3899728.84	513623.12	50-75	1.64-2.46	Elmwood Purchased
42	Probable Burial	No	3899726.44	513620.49	75-100	2.46-3.28	Elmwood Purchased
43	Probable Burial	No	3899725.70	513614.88	75-100	2.46-3.28	Elmwood Purchased
44	Probable Burial	No	3899724.52	513617.38	75-100	2.46-3.28	Elmwood Purchased
45	Probable Burial	No	3899726.37	513613.56	75-100	2.46-3.28	Elmwood Purchased
46	Probable Burial	No	3899724.27	513618.60	75-100	2.46-3.28	Elmwood Purchased
47	Probable Burial	Yes	3899723.03	513613.36	50-75	1.64-2.46	Elmwood Purchased
48	Probable Burial	Yes	3899722.61	513611.26	75-100	2.46-3.28	Elmwood Purchased
49	Probable Burial	Yes	3899721.38	513612.07	50-75	1.64-2.46	Elmwood Purchased
50	Probable Burial	No	3899720.51	513613.28	50-75	1.64-2.46	Elmwood Purchased
51	Probable Burial	No	3899720.18	513616.17	50-75	1.64-2.46	Elmwood Purchased
52	Probable Burial	No	3899719.29	513617.12	50-75	1.64-2.46	Elmwood Purchased
53	Probable Burial	No	3899718.44	513618.27	50-75	1.64-2.46	Elmwood Purchased
54	Probable Burial	No	3899722.70	513621.02	75-100	2.46-3.28	Elmwood Purchased
55	Probable Burial	No	3899720.70	513603.50	50-75	1.64-2.46	Elmwood Purchased
56	Probable Burial	Yes	3899720.63	513605.70	75-100	2.46-3.28	Elmwood Purchased
57	Probable Burial	No	3899720.00	513607.31	50-75	1.64-2.46	Elmwood Purchased
58	Probable Burial	No	3899719.22	513608.01	100-125	3.28-4.10	Elmwood Purchased
59	Probable Burial	No	3899717.81	513608.65	100-125	3.28-4.10	Elmwood Purchased
60	Probable Burial	Yes	3899716.91	513605.06	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
61	Probable Burial	No	3899714.68	513606.62	50-75	1.64-2.46	Elmwood Purchased
62	Probable Burial	No	3899713.55	513608.85	50-75	1.64-2.46	Elmwood Purchased
63	Probable Burial	No	3899716.98	513610.38	100-125	3.28-4.10	Elmwood Purchased
64	Probable Burial	No	3899710.74	513611.74	75-100	2.46-3.28	Elmwood Purchased
65	Probable Burial	No	3899709.60	513612.33	50-75	1.64-2.46	Elmwood Purchased
66	Probable Burial	No	3899712.22	513611.21	100-125	3.28-4.10	Elmwood Purchased
67	Probable Burial	Yes	3899711.15	513614.05	75-100	2.46-3.28	Elmwood Purchased
68	Probable Burial	No	3899712.95	513612.91	75-100	2.46-3.28	Elmwood Purchased
69	Probable Burial	No	3899713.04	513615.94	75-100	2.46-3.28	Elmwood Purchased
70	Probable Burial	Yes	3899710.20	513615.69	75-100	2.46-3.28	Elmwood Purchased
71	Probable Burial	No	3899708.59	513613.71	100-125	3.28-4.10	Elmwood Purchased
72	Probable Burial	No	3899707.77	513614.70	100-125	3.28-4.10	Elmwood Purchased
73	Probable Burial	Yes	3899709.29	513617.17	75-100	2.46-3.28	Elmwood Purchased
74	Probable Burial	Yes	3899708.69	513618.08	50-75	1.64-2.46	Elmwood Purchased
75	Probable Burial	No	3899706.46	513619.24	75-100	2.46-3.28	Elmwood Purchased
76	Probable Burial	No	3899706.73	513615.69	50-75	1.64-2.46	Elmwood Purchased
77	Probable Burial	No	3899706.33	513616.90	75-100	2.46-3.28	Elmwood Purchased
78	Probable Burial	No	3899704.16	513617.43	50-75	1.64-2.46	Elmwood Purchased
79	Probable Burial	Yes	3899704.89	513615.29	75-100	2.46-3.28	Elmwood Purchased
80	Probable Burial	Yes	3899705.91	513614.22	75-100	2.46-3.28	Elmwood Purchased
81	Probable Burial	No	3899701.30	513622.12	100-125	3.28-4.10	Elmwood Purchased
82	Probable Burial	No	3899702.31	513621.33	75-100	2.46-3.28	Elmwood Purchased
83	Probable Burial	No	3899702.62	513619.97	100-125	3.28-4.10	Elmwood Purchased
84	Probable Burial	No	3899703.68	513619.27	100-125	3.28-4.10	Elmwood Purchased
85	Probable Burial	No	3899705.03	513620.25	50-75	1.64-2.46	Elmwood Purchased
86	Probable Burial	No	3899704.84	513622.05	50-75	1.64-2.46	Elmwood Purchased
87	Probable Burial	No	3899707.66	513621.36	50-75	1.64-2.46	Elmwood Purchased
88	Probable Burial	No	3899707.20	513623.71	50-75	1.64-2.46	Elmwood Purchased
89	Probable Burial	No	3899699.36	513622.03	50-75	1.64-2.46	Elmwood Purchased
90	Probable Burial	No	3899698.19	513624.83	50-75	1.64-2.46	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
91	Probable Burial	No	3899697.13	513625.40	50-75	1.64-2.46	Elmwood Purchased
92	Probable Burial	No	3899697.22	513627.07	50-75	1.64-2.46	Elmwood Purchased
93	Probable Burial	Yes	3899711.42	513626.27	50-75	1.64-2.46	Elmwood Purchased
94	Probable Burial	No	3899715.17	513630.26	75-100	2.46-3.28	Elmwood Purchased
95	Probable Burial	No	3899710.99	513627.79	50-75	1.64-2.46	Elmwood Purchased
96	Probable Burial	Yes	3899710.19	513628.67	50-75	1.64-2.46	Elmwood Purchased
97	Probable Burial	No	3899708.87	513629.07	50-75	1.64-2.46	Elmwood Purchased
98	Probable Burial	No	3899714.07	513631.84	75-100	2.46-3.28	Elmwood Purchased
99	Probable Burial	No	3899708.11	513637.86	75-100	2.46-3.28	Elmwood Purchased
100	Probable Burial	No	3899705.45	513637.02	100-125	3.28-4.10	Elmwood Purchased
101	Probable Burial	No	3899700.34	513633.70	75-100	2.46-3.28	Elmwood Purchased
102	Probable Burial	No	3899693.25	513631.70	100-125	3.28-4.10	Elmwood Potter's Field
103	Probable Burial	No	3899690.76	513636.88	100-125	3.28-4.10	Elmwood Potter's Field
104	Probable Burial	No	3899688.99	513636.89	75-100	2.46-3.28	Elmwood Potter's Field
105	Probable Burial	No	3899686.32	513636.20	75-100	2.46-3.28	Elmwood Potter's Field
106	Probable Burial	No	3899695.00	513640.46	75-100	2.46-3.28	Elmwood Potter's Field
107	Probable Burial	No	3899697.76	513644.89	75-100	2.46-3.28	Elmwood Potter's Field
108	Probable Burial	No	3899696.98	513645.86	50-75	1.64-2.46	Elmwood Potter's Field
109	Probable Burial	No	3899697.91	513646.78	75-100	2.46-3.28	Elmwood Potter's Field
110	Probable Burial	No	3899696.43	513647.22	75-100	2.46-3.28	Elmwood Potter's Field
111	Probable Burial	No	3899700.52	513647.74	50-75	1.64-2.46	Elmwood Potter's Field
112	Probable Burial	Yes	3899696.62	513649.82	50-75	1.64-2.46	Elmwood Potter's Field
113	Probable Burial	Yes	3899694.33	513649.10	50-75	1.64-2.46	Elmwood Potter's Field
114	Probable Burial	No	3899690.24	513645.25	75-100	2.46-3.28	Elmwood Potter's Field
115	Probable Burial	No	3899690.09	513647.60	100-125	3.28-4.10	Elmwood Potter's Field
116	Probable Burial	No	3899689.17	513649.57	75-100	2.46-3.28	Elmwood Potter's Field
117	Probable Burial	No	3899688.19	513649.84	75-100	2.46-3.28	Elmwood Potter's Field
118	Probable Burial	Yes	3899684.91	513645.68	50-75	1.64-2.46	Elmwood Potter's Field
119	Probable Burial	No	3899683.20	513645.01	50-75	1.64-2.46	Elmwood Potter's Field
120	Probable Burial	No	3899684.00	513641.58	75-100	2.46-3.28	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
121	Probable Burial	No	3899681.98	513642.55	50-75	1.64-2.46	Elmwood Potter's Field
122	Probable Burial	Yes	3899681.66	513641.26	50-75	1.64-2.46	Elmwood Potter's Field
123	Probable Burial	No	3899681.65	513639.07	75-100	2.46-3.28	Elmwood Potter's Field
124	Probable Burial	No	3899679.53	513638.06	75-100	2.46-3.28	Elmwood Potter's Field
125	Probable Burial	No	3899678.59	513639.75	100-125	3.28-4.10	Elmwood Potter's Field
126	Probable Burial	Yes	3899679.34	513636.99	75-100	2.46-3.28	Elmwood Potter's Field
127	Probable Burial	No	3899678.94	513637.42	75-100	2.46-3.28	Elmwood Potter's Field
128	Probable Burial	No	3899675.65	513648.42	50-75	1.64-2.46	Elmwood Potter's Field
129	Probable Burial	No	3899678.33	513646.66	100-125	3.28-4.10	Elmwood Potter's Field
130	Probable Burial	Yes	3899677.53	513640.81	75-100	2.46-3.28	Elmwood Potter's Field
131	Probable Burial	No	3899675.75	513642.69	75-100	2.46-3.28	Elmwood Potter's Field
132	Probable Burial	No	3899677.81	513642.18	75-100	2.46-3.28	Elmwood Potter's Field
133	Probable Burial	No	3899678.67	513641.41	75-100	2.46-3.28	Elmwood Potter's Field
134	Probable Burial	No	3899678.38	513643.03	50-75	1.64-2.46	Elmwood Potter's Field
135	Probable Burial	No	3899677.44	513645.25	75-100	2.46-3.28	Elmwood Potter's Field
136	Probable Burial	No	3899678.52	513648.13	50-75	1.64-2.46	Elmwood Potter's Field
137	Probable Burial	Yes	3899676.99	513641.18	50-75	1.64-2.46	Elmwood Potter's Field
138	Probable Burial	No	3899678.82	513642.71	100-125	3.28-4.10	Elmwood Potter's Field
139	Probable Burial	No	3899676.87	513639.67	75-100	2.46-3.28	Elmwood Potter's Field
140	Probable Burial	No	3899677.89	513644.47	75-100	2.46-3.28	Elmwood Potter's Field
141	Probable Burial	Yes	3899695.07	513653.18	50-75	1.64-2.46	Elmwood Potter's Field
142	Probable Burial	Yes	3899693.24	513654.96	100-125	3.28-4.10	Elmwood Potter's Field
143	Probable Burial	Yes	3899692.53	513652.88	75-100	2.46-3.28	Elmwood Potter's Field
144	Probable Burial	Yes	3899691.09	513654.71	75-100	2.46-3.28	Elmwood Potter's Field
145	Probable Burial	No	3899683.77	513649.36	50-75	1.64-2.46	Elmwood Potter's Field
146	Probable Burial	No	3899686.28	513652.89	75-100	2.46-3.28	Elmwood Potter's Field
147	Probable Burial	No	3899674.38	513641.99	75-100	2.46-3.28	Elmwood Potter's Field
148	Probable Burial	No	3899673.72	513643.37	75-100	2.46-3.28	Elmwood Potter's Field
149	Probable Burial	No	3899674.99	513643.58	75-100	2.46-3.28	Elmwood Potter's Field
150	Probable Burial	No	3899674.15	513645.10	100-125	3.28-4.10	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
151	Probable Burial	No	3899690.07	513657.96	50-75	1.64-2.46	Elmwood Potter's Field
152	Probable Burial	Yes	3899688.57	513658.04	75-100	2.46-3.28	Elmwood Potter's Field
153	Probable Burial	No	3899687.59	513658.27	100-125	3.28-4.10	Elmwood Potter's Field
154	Probable Burial	No	3899673.02	513644.17	100-125	3.28-4.10	Elmwood Potter's Field
155	Probable Burial	No	3899672.59	513644.63	75-100	2.46-3.28	Elmwood Potter's Field
156	Probable Burial	No	3899672.13	513644.98	100-125	3.28-4.10	Elmwood Potter's Field
157	Probable Burial	Yes	3899671.93	513645.21	100-125	3.28-4.10	Elmwood Potter's Field
158	Probable Burial	No	3899678.63	513651.68	75-100	2.46-3.28	Elmwood Potter's Field
159	Probable Burial	No	3899683.18	513655.24	75-100	2.46-3.28	Elmwood Potter's Field
160	Probable Burial	Yes	3899685.37	513659.98	30-50	0.98-1.64	Elmwood Potter's Field
161	Probable Burial	No	3899686.44	513660.53	30-50	0.98-1.64	Elmwood Potter's Field
162	Probable Burial	No	3899684.79	513661.30	100-125	3.28-4.10	Elmwood Potter's Field
163	Probable Burial	No	3899686.49	513661.93	75-100	2.46-3.28	Elmwood Potter's Field
164	Probable Burial	No	3899670.75	513645.47	75-100	2.46-3.28	Elmwood Potter's Field
165	Probable Burial	No	3899669.57	513646.23	75-100	2.46-3.28	Elmwood Potter's Field
166	Probable Burial	Yes	3899672.42	513647.68	50-75	1.64-2.46	Elmwood Potter's Field
167	Probable Burial	Yes	3899673.25	513648.97	50-75	1.64-2.46	Elmwood Potter's Field
168	Probable Burial	Yes	3899674.01	513650.27	75-100	2.46-3.28	Elmwood Potter's Field
169	Probable Burial	Yes	3899674.66	513649.80	30-50	0.98-1.64	Elmwood Potter's Field
170	Probable Burial	No	3899672.87	513650.35	75-100	2.46-3.28	Elmwood Potter's Field
171	Probable Burial	No	3899672.00	513649.14	75-100	2.46-3.28	Elmwood Potter's Field
172	Probable Burial	No	3899673.59	513651.15	50-75	1.64-2.46	Elmwood Potter's Field
173	Probable Burial	No	3899672.31	513648.50	100-125	3.28-4.10	Elmwood Potter's Field
174	Probable Burial	No	3899678.02	513652.91	50-75	1.64-2.46	Elmwood Potter's Field
175	Probable Burial	No	3899675.98	513651.58	75-100	2.46-3.28	Elmwood Potter's Field
176	Probable Burial	Yes	3899669.44	513648.55	75-100	2.46-3.28	Elmwood Potter's Field
177	Probable Burial	Yes	3899668.66	513647.44	100-125	3.28-4.10	Elmwood Potter's Field
178	Probable Burial	No	3899666.91	513649.56	50-75	1.64-2.46	Elmwood Potter's Field
179	Probable Burial	No	3899668.70	513651.00	75-100	2.46-3.28	Elmwood Potter's Field
180	Probable Burial	No	3899669.19	513650.49	75-100	2.46-3.28	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
181	Probable Burial	No	3899670.84	513650.32	75-100	2.46-3.28	Elmwood Potter's Field
182	Probable Burial	No	3899669.67	513650.13	50-75	1.64-2.46	Elmwood Potter's Field
183	Probable Burial	No	3899668.05	513647.78	50-75	1.64-2.46	Elmwood Potter's Field
184	Probable Burial	No	3899678.84	513655.62	100-125	3.28-4.10	Elmwood Potter's Field
185	Probable Burial	No	3899679.22	513657.38	30-50	0.98-1.64	Elmwood Potter's Field
186	Probable Burial	No	3899678.53	513658.33	30-50	0.98-1.64	Elmwood Potter's Field
187	Probable Burial	No	3899677.66	513655.34	75-100	2.46-3.28	Elmwood Potter's Field
188	Probable Burial	Yes	3899677.85	513656.98	50-75	1.64-2.46	Elmwood Potter's Field
189	Probable Burial	No	3899683.22	513661.30	75-100	2.46-3.28	Elmwood Potter's Field
190	Probable Burial	No	3899682.16	513663.08	75-100	2.46-3.28	Elmwood Potter's Field
191	Probable Burial	No	3899681.60	513663.74	75-100	2.46-3.28	Elmwood Potter's Field
192	Probable Burial	No	3899682.81	513664.97	75-100	2.46-3.28	Elmwood Potter's Field
193	Probable Burial	Yes	3899680.98	513665.49	30-50	0.98-1.64	Elmwood Potter's Field
194	Probable Burial	No	3899683.37	513664.16	50-75	1.64-2.46	Elmwood Potter's Field
195	Probable Burial	Yes	3899679.82	513667.18	30-50	0.98-1.64	Elmwood Potter's Field
196	Probable Burial	Yes	3899681.19	513667.33	75-100	2.46-3.28	Elmwood Potter's Field
197	Probable Burial	No	3899673.15	513658.42	75-100	2.46-3.28	Elmwood Potter's Field
198	Probable Burial	No	3899674.06	513661.58	75-100	2.46-3.28	Elmwood Potter's Field
199	Probable Burial	No	3899670.32	513655.33	75-100	2.46-3.28	Elmwood Potter's Field
200	Probable Burial	No	3899667.44	513653.42	30-50	0.98-1.64	Elmwood Potter's Field
201	Probable Burial	No	3899666.31	513653.19	50-75	1.64-2.46	Elmwood Potter's Field
202	Probable Burial	No	3899668.65	513657.88	100-125	3.28-4.10	Elmwood Potter's Field
203	Probable Burial	No	3899668.82	513655.35	75-100	2.46-3.28	Elmwood Potter's Field
204	Probable Burial	No	3899669.42	513656.58	50-75	1.64-2.46	Elmwood Potter's Field
205	Probable Burial	No	3899668.47	513655.98	75-100	2.46-3.28	Elmwood Potter's Field
206	Probable Burial	No	3899667.32	513655.81	50-75	1.64-2.46	Elmwood Potter's Field
207	Probable Burial	No	3899671.92	513660.95	75-100	2.46-3.28	Elmwood Potter's Field
208	Probable Burial	No	3899663.99	513652.15	50-75	1.64-2.46	Elmwood Potter's Field
209	Probable Burial	No	3899664.36	513654.39	50-75	1.64-2.46	Elmwood Potter's Field
210	Probable Burial	No	3899663.19	513653.08	75-100	2.46-3.28	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
211	Probable Burial	No	3899662.79	513653.62	75-100	2.46-3.28	Elmwood Potter's Field
212	Probable Burial	Yes	3899671.54	513664.08	50-75	1.64-2.46	Elmwood Potter's Field
213	Probable Burial	No	3899670.32	513662.22	75-100	2.46-3.28	Elmwood Potter's Field
214	Probable Burial	No	3899669.89	513662.80	75-100	2.46-3.28	Elmwood Potter's Field
215	Probable Burial	No	3899669.38	513661.27	50-75	1.64-2.46	Elmwood Potter's Field
216	Probable Burial	No	3899669.52	513663.10	75-100	2.46-3.28	Elmwood Potter's Field
217	Probable Burial	No	3899669.21	513663.40	50-75	1.64-2.46	Elmwood Potter's Field
218	Probable Burial	Yes	3899674.38	513666.47	30-50	0.98-1.64	Elmwood Potter's Field
219	Probable Burial	Yes	3899677.73	513670.17	30-50	0.98-1.64	Elmwood Potter's Field
220	Probable Burial	Yes	3899677.37	513671.03	30-50	0.98-1.64	Elmwood Potter's Field
221	Probable Burial	Yes	3899676.94	513671.66	30-50	0.98-1.64	Elmwood Potter's Field
222	Probable Burial	No	3899673.37	513668.73	30-50	0.98-1.64	Elmwood Potter's Field
223	Probable Burial	Yes	3899675.50	513674.04	50-75	1.64-2.46	Elmwood Potter's Field
224	Probable Burial	No	3899675.93	513673.38	30-50	0.98-1.64	Elmwood Potter's Field
225	Probable Burial	Yes	3899671.79	513682.53	100-125	3.28-4.10	Elmwood Potter's Field
226	Probable Burial	No	3899670.84	513679.67	50-75	1.64-2.46	Elmwood Potter's Field
227	Probable Burial	No	3899671.40	513679.07	50-75	1.64-2.46	Elmwood Potter's Field
228	Probable Burial	No	3899670.46	513672.36	50-75	1.64-2.46	Elmwood Potter's Field
229	Probable Burial	Yes	3899668.26	513674.68	30-50	0.98-1.64	Elmwood Potter's Field
230	Probable Burial	No	3899666.18	513674.92	100-125	3.28-4.10	Elmwood Potter's Field
231	Probable Burial	Yes	3899665.15	513675.70	75-100	2.46-3.28	Elmwood Potter's Field
232	Probable Burial	Yes	3899668.63	513669.20	75-100	2.46-3.28	Elmwood Potter's Field
233	Probable Burial	No	3899668.30	513670.16	50-75	1.64-2.46	Elmwood Potter's Field
234	Probable Burial	Yes	3899666.38	513671.02	30-50	0.98-1.64	Elmwood Potter's Field
235	Probable Burial	Yes	3899666.21	513665.79	50-75	1.64-2.46	Elmwood Potter's Field
236	Probable Burial	Yes	3899664.77	513667.15	50-75	1.64-2.46	Elmwood Potter's Field
237	Probable Burial	No	3899662.92	513666.78	75-100	2.46-3.28	Elmwood Potter's Field
238	Probable Burial	No	3899661.89	513667.85	50-75	1.64-2.46	Elmwood Potter's Field
239	Probable Burial	Yes	3899664.06	513663.33	50-75	1.64-2.46	Elmwood Potter's Field
240	Probable Burial	No	3899662.09	513664.91	30-50	0.98-1.64	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
241	Probable Burial	No	3899663.85	513661.62	75-100	2.46-3.28	Elmwood Potter's Field
242	Probable Burial	No	3899663.31	513662.09	75-100	2.46-3.28	Elmwood Potter's Field
243	Probable Burial	No	3899662.93	513662.50	75-100	2.46-3.28	Elmwood Potter's Field
244	Probable Burial	Yes	3899660.37	513664.98	50-75	1.64-2.46	Elmwood Potter's Field
245	Probable Burial	Yes	3899660.06	513665.54	75-100	2.46-3.28	Elmwood Potter's Field
246	Probable Burial	No	3899663.34	513659.48	75-100	2.46-3.28	Elmwood Potter's Field
247	Probable Burial	No	3899660.49	513663.04	75-100	2.46-3.28	Elmwood Potter's Field
248	Probable Burial	No	3899660.87	513662.75	50-75	1.64-2.46	Elmwood Potter's Field
249	Probable Burial	No	3899659.05	513665.02	50-75	1.64-2.46	Elmwood Potter's Field
250	Probable Burial	No	3899663.00	513657.97	50-75	1.64-2.46	Elmwood Potter's Field
251	Probable Burial	No	3899662.03	513659.42	75-100	2.46-3.28	Elmwood Potter's Field
252	Probable Burial	No	3899661.61	513659.73	50-75	1.64-2.46	Elmwood Potter's Field
253	Probable Burial	No	3899661.19	513660.16	50-75	1.64-2.46	Elmwood Potter's Field
254	Probable Burial	Yes	3899658.77	513663.23	75-100	2.46-3.28	Elmwood Potter's Field
255	Probable Burial	Yes	3899657.88	513662.28	50-75	1.64-2.46	Elmwood Potter's Field
256	Probable Burial	No	3899658.29	513661.67	30-50	0.98-1.64	Elmwood Potter's Field
257	Probable Burial	No	3899658.75	513661.14	75-100	2.46-3.28	Elmwood Potter's Field
258	Probable Burial	No	3899659.65	513659.93	50-75	1.64-2.46	Elmwood Potter's Field
259	Probable Burial	No	3899660.32	513659.05	50-75	1.64-2.46	Elmwood Potter's Field
260	Probable Burial	No	3899661.69	513657.57	75-100	2.46-3.28	Elmwood Potter's Field
261	Probable Burial	No	3899662.01	513655.18	75-100	2.46-3.28	Elmwood Potter's Field
262	Probable Burial	No	3899661.80	513656.24	50-75	1.64-2.46	Elmwood Potter's Field
263	Probable Burial	No	3899661.04	513656.82	75-100	2.46-3.28	Elmwood Potter's Field
264	Probable Burial	No	3899659.33	513658.90	75-100	2.46-3.28	Elmwood Potter's Field
265	Probable Burial	No	3899656.96	513659.48	50-75	1.64-2.46	Elmwood Potter's Field
266	Probable Burial	No	3899657.64	513658.65	75-100	2.46-3.28	Elmwood Potter's Field
267	Probable Burial	No	3899659.39	513656.12	75-100	2.46-3.28	Elmwood Potter's Field
268	Probable Burial	No	3899660.50	513657.33	75-100	2.46-3.28	Elmwood Potter's Field
269	Probable Burial	No	3899685.13	513658.66	75-100	2.46-3.28	Elmwood Potter's Field
270	Probable Burial	No	3899682.29	513658.78	50-75	1.64-2.46	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
271	Probable Burial	No	3899723.92	513598.44	50-75	1.64-2.46	Elmwood Purchased
272	Probable Burial	Yes	3899654.05	513672.34	75-100	2.46-3.28	Elmwood Purchased
273	Strat Break, Probable Burial	Yes	3899653.22	513672.65	125-150	4.10-4.92	Elmwood Purchased
274	Strat Break, Probable Burial	Yes	3899651.92	513672.91	125-150	4.10-4.92	Elmwood Purchased
275	Probable Burial	Yes	3899650.11	513673.77	75-100	2.46-3.28	Elmwood Purchased
276	Probable Burial	Yes	3899647.84	513673.80	100-125	3.28-4.10	Elmwood Purchased
277	Strat Break, Probable Burial	Yes	3899656.92	513677.56	125-150	4.10-4.92	Elmwood Purchased
278	Strat Break, Probable Burial	Yes	3899655.78	513677.89	125-150	4.10-4.92	Elmwood Purchased
279	Probable Burial	Yes	3899654.35	513677.77	100-125	3.28-4.10	Elmwood Purchased
280	Probable Burial	Yes	3899653.20	513678.03	75-100	2.46-3.28	Elmwood Purchased
281	Probable Burial	Yes	3899652.17	513678.49	75-100	2.46-3.28	Elmwood Purchased
282	Probable Burial	Yes	3899651.28	513679.08	75-100	2.46-3.28	Elmwood Purchased
283	Probable Burial	Yes	3899647.26	513679.96	100-125	3.28-4.10	Elmwood Purchased
284	Probable Burial	Yes	3899645.60	513680.04	75-100	2.46-3.28	Elmwood Purchased
285	Probable Burial	Yes	3899657.41	513681.24	75-100	2.46-3.28	Elmwood Purchased
286	Probable Burial	Yes	3899656.56	513682.37	75-100	2.46-3.28	Elmwood Purchased
287	Probable Burial	Yes	3899651.45	513683.83	50-75	1.64-2.46	Elmwood Purchased
288	Probable Burial	Yes	3899650.67	513684.02	50-75	1.64-2.46	Elmwood Purchased
289	Probable Burial	Yes	3899648.20	513684.14	100-125	3.28-4.10	Elmwood Purchased
290	Probable Burial	Yes	3899647.13	513685.24	75-100	2.46-3.28	Elmwood Purchased
291	Probable Burial	Yes	3899643.86	513686.54	75-100	2.46-3.28	Elmwood Purchased
292	Probable Burial	Yes	3899644.87	513685.86	75-100	2.46-3.28	Elmwood Purchased
293	Probable Burial	Yes	3899658.77	513684.99	75-100	2.46-3.28	Elmwood Purchased
294	Probable Burial	Yes	3899655.41	513688.28	100-125	3.28-4.10	Elmwood Purchased
295	Probable Burial	Yes	3899654.33	513688.51	125-150	4.10-4.92	Elmwood Purchased
296	Probable Burial	Yes	3899652.96	513689.05	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
297	Probable Burial	Yes	3899651.24	513689.71	50-75	1.64-2.46	Elmwood Purchased
298	Probable Burial	No	3899649.07	513689.98	50-75	1.64-2.46	Elmwood Purchased
299	Probable Burial	No	3899648.08	513689.93	100-125	3.28-4.10	Elmwood Purchased
300	Probable Burial	Yes	3899654.50	513692.85	100-125	3.28-4.10	Elmwood Purchased
301	Strat Break, Probable Burial	Yes	3899651.28	513695.20	125-150	4.10-4.92	Elmwood Purchased
302	Strat Break, Probable Burial	Yes	3899649.87	513695.63	125-150	4.10-4.92	Elmwood Purchased
303	Strat Break, Probable Burial	Yes	3899648.77	513695.99	125-150	4.10-4.92	Elmwood Purchased
304	Strat Break, Probable Burial	Yes	3899647.75	513696.21	125-150	4.10-4.92	Elmwood Purchased
305	Probable Burial	Yes	3899646.79	513696.20	75-100	2.46-3.28	Elmwood Purchased
306	Strat Break, Probable Burial	Yes	3899650.14	513697.27	125-150	4.10-4.92	Elmwood Purchased
307	Strat Break, Probable Burial	Yes	3899649.09	513697.97	125-150	4.10-4.92	Elmwood Purchased
308	Strat Break, Probable Burial	Yes	3899648.38	513698.20	125-150	4.10-4.92	Elmwood Purchased
309	Probable Burial	Yes	3899642.17	513695.77	75-100	2.46-3.28	Elmwood Purchased
310	Probable Burial	Yes	3899642.70	513697.34	100-125	3.28-4.10	Elmwood Purchased
311	Probable Burial	Yes	3899641.78	513697.53	125-150	4.10-4.92	Elmwood Purchased
312	Probable Burial	Yes	3899640.86	513697.79	125-150	4.10-4.92	Elmwood Purchased
313	Probable Burial	Yes	3899638.91	513698.79	125-150	4.10-4.92	Elmwood Purchased
314	Probable Burial	Yes	3899638.16	513699.15	100-125	3.28-4.10	Elmwood Purchased
315	Probable Burial	No	3899654.34	513702.98	50-75	1.64-2.46	Elmwood Potter's Field
316	Probable Burial	No	3899647.75	513707.53	50-75	1.64-2.46	Elmwood Potter's Field
317	Probable Burial	Yes	3899650.83	513709.87	50-75	1.64-2.46	Elmwood Potter's Field
318	Probable Burial	Yes	3899642.70	513704.66	50-75	1.64-2.46	Elmwood Potter's Field
319	Probable Burial	No	3899651.85	513712.78	50-75	1.64-2.46	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
320	Probable Burial	No	3899646.91	513710.59	50-75	1.64-2.46	Elmwood Potter's Field
321	Probable Burial	Yes	3899641.00	513711.52	50-75	1.64-2.46	Elmwood Potter's Field
322	Probable Burial	No	3899639.24	513710.48	50-75	1.64-2.46	Elmwood Potter's Field
323	Probable Burial	Yes	3899644.44	513709.44	50-75	1.64-2.46	Elmwood Potter's Field
324	Probable Burial	Yes	3899637.24	513718.40	50-75	1.64-2.46	Elmwood Potter's Field
325	Probable Burial	No	3899642.92	513721.75	75-100	2.46-3.28	Elmwood Potter's Field
326	Probable Burial	No	3899640.80	513722.12	75-100	2.46-3.28	Elmwood Potter's Field
327	Probable Burial	Yes	3899636.87	513722.91	75-100	2.46-3.28	Elmwood Potter's Field
328	Probable Burial	Yes	3899635.80	513723.23	75-100	2.46-3.28	Elmwood Potter's Field
329	Probable Burial	Yes	3899638.94	513725.93	75-100	2.46-3.28	Elmwood Potter's Field
330	Probable Burial	Yes	3899636.93	513726.71	75-100	2.46-3.28	Elmwood Potter's Field
331	Probable Burial	Yes	3899635.61	513725.90	75-100	2.46-3.28	Elmwood Potter's Field
332	Probable Burial	Yes	3899641.64	513727.58	75-100	2.46-3.28	Elmwood Potter's Field
333	Probable Burial	No	3899636.94	513733.02	75-100	2.46-3.28	Elmwood Potter's Field
334	Probable Burial	Yes	3899635.29	513731.78	75-100	2.46-3.28	Elmwood Potter's Field
335	Probable Burial	No	3899628.09	513716.97	50-75	1.64-2.46	Elmwood Purchased
336	Probable Burial	No	3899627.72	513722.66	50-75	1.64-2.46	Elmwood Purchased
337	Probable Burial	Yes	3899625.16	513723.45	50-75	1.64-2.46	Elmwood Purchased
338	Probable Burial	Yes	3899624.11	513723.70	50-75	1.64-2.46	Elmwood Purchased
339	Probable Burial	Yes	3899622.74	513726.37	50-75	1.64-2.46	Elmwood Purchased
340	Probable Burial	Yes	3899625.79	513731.37	100-125	3.28-4.10	Elmwood Purchased
341	Probable Burial	Yes	3899625.10	513731.66	100-125	3.28-4.10	Elmwood Purchased
342	Probable Burial	Yes	3899624.39	513732.00	100-125	3.28-4.10	Elmwood Purchased
343	Probable Burial	Yes	3899622.11	513732.55	75-100	2.46-3.28	Elmwood Purchased
344	Probable Burial	Yes	3899621.51	513732.56	100-125	3.28-4.10	Elmwood Purchased
345	Probable Burial	Yes	3899626.31	513734.16	50-75	1.64-2.46	Elmwood Purchased
346	Probable Burial	Yes	3899623.04	513735.33	50-75	1.64-2.46	Elmwood Purchased
347	Probable Burial	No	3899617.88	513733.76	75-100	2.46-3.28	Elmwood Purchased
348	Probable Burial	Yes	3899616.58	513735.80	75-100	2.46-3.28	Elmwood Purchased
349	Probable Burial	Yes	3899615.22	513737.05	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
350	Probable Burial	Yes	3899625.11	513741.96	125-150	4.10-4.92	Elmwood Purchased
351	Probable Burial	Yes	3899621.48	513743.46	125-150	4.10-4.92	Elmwood Purchased
352	Probable Burial	Yes	3899617.06	513744.94	100-125	3.28-4.10	Elmwood Purchased
353	Probable Burial	Yes	3899616.14	513745.16	100-125	3.28-4.10	Elmwood Purchased
354	Probable Burial	Yes	3899614.99	513745.47	100-125	3.28-4.10	Elmwood Purchased
355	Probable Burial	No	3899621.59	513746.75	75-100	2.46-3.28	Elmwood Purchased
356	Probable Burial	Yes	3899623.36	513749.42	75-100	2.46-3.28	Elmwood Purchased
357	Probable Burial	No	3899622.41	513749.62	75-100	2.46-3.28	Elmwood Purchased
358	Probable Burial	Yes	3899619.38	513750.09	75-100	2.46-3.28	Elmwood Purchased
359	Probable Burial	Yes	3899611.75	513749.46	75-100	2.46-3.28	Elmwood Purchased
360	Probable Burial	Yes	3899612.50	513752.17	100-125	3.28-4.10	Elmwood Purchased
361	Probable Burial	Yes	3899611.05	513752.07	75-100	2.46-3.28	Elmwood Purchased
362	Probable Burial	Yes	3899610.26	513753.07	150-175	4.92-5.74	Elmwood Purchased
363	Probable Burial	Yes	3899619.56	513755.43	150-175	4.92-5.74	Elmwood Purchased
364	Probable Burial	Yes	3899618.42	513755.67	75-100	2.46-3.28	Elmwood Purchased
365	Probable Burial	Yes	3899614.83	513756.81	75-100	2.46-3.28	Elmwood Purchased
366	Probable Burial	Yes	3899618.63	513758.32	75-100	2.46-3.28	Elmwood Purchased
367	Probable Burial	Yes	3899617.35	513758.98	100-125	3.28-4.10	Elmwood Purchased
368	Probable Burial	Yes	3899616.46	513759.14	75-100	2.46-3.28	Elmwood Purchased
369	Probable Burial	Yes	3899615.43	513759.23	100-125	3.28-4.10	Elmwood Purchased
370	Probable Burial	Yes	3899613.54	513756.65	75-100	2.46-3.28	Elmwood Purchased
371	Probable Burial	Yes	3899611.96	513757.39	100-125	3.28-4.10	Elmwood Purchased
372	Probable Burial	Yes	3899614.26	513759.66	75-100	2.46-3.28	Elmwood Purchased
373	Probable Burial	Yes	3899612.34	513759.87	75-100	2.46-3.28	Elmwood Purchased
374	Probable Burial	Yes	3899610.65	513757.37	75-100	2.46-3.28	Elmwood Purchased
375	Probable Burial	Yes	3899608.49	513757.86	75-100	2.46-3.28	Elmwood Purchased
376	Probable Burial	Yes	3899611.38	513760.22	100-125	3.28-4.10	Elmwood Purchased
377	Probable Burial	Yes	3899606.99	513758.76	100-125	3.28-4.10	Elmwood Purchased
378	Probable Burial	Yes	3899605.50	513759.00	75-100	2.46-3.28	Elmwood Purchased
379	Probable Burial	Yes	3899606.33	513761.43	100-125	3.28-4.10	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
380	Probable Burial	Yes	3899605.29	513761.70	75-100	2.46-3.28	Elmwood Purchased
381	Probable Burial	Yes	3899611.88	513763.60	100-125	3.28-4.10	Elmwood Purchased
382	Probable Burial	Yes	3899610.46	513763.82	75-100	2.46-3.28	Elmwood Purchased
383	Probable Burial	Yes	3899612.27	513765.90	100-125	3.28-4.10	Elmwood Purchased
384	Probable Burial	Yes	3899610.93	513766.32	100-125	3.28-4.10	Elmwood Purchased
385	Probable Burial	No	3899617.14	513779.49	50-75	1.64-2.46	Elmwood Potter's Field
386	Probable Burial	No	3899616.49	513780.58	50-75	1.64-2.46	Elmwood Potter's Field
387	Probable Burial	No	3899616.21	513781.24	50-75	1.64-2.46	Elmwood Potter's Field
388	Probable Burial	No	3899615.72	513782.35	50-75	1.64-2.46	Elmwood Potter's Field
389	Probable Burial	No	3899614.26	513784.10	25-50	0.82-1.64	Elmwood Potter's Field
390	Probable Burial	No	3899614.27	513785.64	25-50	0.82-1.64	Elmwood Potter's Field
391	Probable Burial	No	3899613.15	513786.06	25-50	0.82-1.64	Elmwood Potter's Field
392	Probable Burial	No	3899613.15	513787.19	25-50	0.82-1.64	Elmwood Potter's Field
393	Probable Burial	No	3899612.61	513788.74	75-100	2.46-3.28	Elmwood Potter's Field
394	Probable Burial	No	3899611.51	513789.98	75-100	2.46-3.28	Elmwood Potter's Field
395	Probable Burial	No	3899611.53	513790.86	50-75	1.64-2.46	Elmwood Potter's Field
396	Probable Burial	No	3899610.96	513791.65	50-75	1.64-2.46	Elmwood Potter's Field
397	Probable Burial	No	3899609.83	513792.43	50-75	1.64-2.46	Elmwood Potter's Field
398	Probable Burial	No	3899609.48	513793.48	25-50	0.82-1.64	Elmwood Potter's Field
399	Probable Burial	Yes	3899609.20	513794.39	50-75	1.64-2.46	Elmwood Potter's Field
400	Probable Burial	No	3899607.68	513796.47	25-50	0.82-1.64	Elmwood Potter's Field
401	Probable Burial	No	3899607.56	513797.50	25-50	0.82-1.64	Elmwood Potter's Field
402	Probable Burial	No	3899606.97	513797.99	25-50	0.82-1.64	Elmwood Potter's Field
403	Probable Burial	No	3899606.71	513798.57	50-75	1.64-2.46	Elmwood Potter's Field
404	Probable Burial	No	3899606.26	513799.75	25-50	0.82-1.64	Elmwood Potter's Field
405	Probable Burial	No	3899605.23	513801.96	50-75	1.64-2.46	Elmwood Potter's Field
406	Probable Burial	No	3899605.97	513801.01	25-50	0.82-1.64	Elmwood Potter's Field
407	Probable Burial	No	3899604.34	513803.62	50-75	1.64-2.46	Elmwood Potter's Field
408	Probable Burial	No	3899603.75	513805.03	50-75	1.64-2.46	Elmwood Potter's Field
409	Probable Burial	No	3899602.42	513807.46	50-75	1.64-2.46	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
410	Probable Burial	Yes	3899602.03	513809.24	50-75	1.64-2.46	Elmwood Potter's Field
411	Probable Burial	No	3899601.37	513810.17	50-75	1.64-2.46	Elmwood Potter's Field
412	Probable Burial	No	3899601.06	513811.24	25-50	0.82-1.64	Elmwood Potter's Field
413	Probable Burial	No	3899600.38	513812.11	25-50	0.82-1.64	Elmwood Potter's Field
414	Probable Burial	No	3899599.86	513813.10	50-75	1.64-2.46	Elmwood Potter's Field
415	Probable Burial	No	3899599.19	513814.06	50-75	1.64-2.46	Elmwood Potter's Field
416	Probable Burial	Yes	3899598.16	513815.75	50-75	1.64-2.46	Elmwood Potter's Field
417	Probable Burial	Yes	3899597.19	513817.24	25-50	0.82-1.64	Elmwood Potter's Field
418	Probable Burial	No	3899596.65	513817.76	25-50	0.82-1.64	Elmwood Potter's Field
419	Probable Burial	No	3899596.24	513818.93	50-75	1.64-2.46	Elmwood Potter's Field
420	Probable Burial	No	3899595.74	513820.00	50-75	1.64-2.46	Elmwood Potter's Field
421	Probable Burial	No	3899595.14	513821.19	50-75	1.64-2.46	Elmwood Potter's Field
422	Probable Burial	No	3899594.95	513822.21	75-100	2.46-3.28	Elmwood Potter's Field
423	Probable Burial	No	3899593.93	513823.17	50-75	1.64-2.46	Elmwood Potter's Field
424	Probable Burial	No	3899593.51	513823.97	50-75	1.64-2.46	Elmwood Potter's Field
425	Probable Burial	No	3899592.92	513825.17	50-75	1.64-2.46	Elmwood Potter's Field
426	Probable Burial	No	3899592.45	513826.24	50-75	1.64-2.46	Elmwood Potter's Field
427	Probable Burial	No	3899592.12	513827.16	75-100	2.46-3.28	Elmwood Potter's Field
428	Probable Burial	No	3899591.64	513827.55	50-75	1.64-2.46	Elmwood Potter's Field
429	Probable Burial	No	3899591.17	513828.63	50-75	1.64-2.46	Elmwood Potter's Field
430	Probable Burial	Yes	3899590.40	513830.73	25-50	0.82-1.64	Elmwood Potter's Field
431	Probable Burial	No	3899590.06	513831.45	25-50	0.82-1.64	Elmwood Potter's Field
432	Probable Burial	Yes	3899589.04	513833.06	25-50	0.82-1.64	Elmwood Potter's Field
433	Probable Burial	Yes	3899587.61	513835.01	25-50	0.82-1.64	Elmwood Potter's Field
434	Probable Burial	Yes	3899586.78	513837.66	50-75	1.64-2.46	Elmwood Potter's Field
435	Probable Burial	Yes	3899586.17	513839.15	50-75	1.64-2.46	Elmwood Potter's Field
436	Probable Burial	No	3899585.65	513839.78	50-75	1.64-2.46	Elmwood Potter's Field
437	Probable Burial	Yes	3899585.01	513840.71	50-75	1.64-2.46	Elmwood Potter's Field
438	Probable Burial	Yes	3899584.81	513841.21	50-75	1.64-2.46	Elmwood Potter's Field
439	Probable Burial	Yes	3899584.56	513842.06	75-100	2.46-3.28	Elmwood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
440	Probable Burial	Yes	3899583.98	513842.76	50-75	1.64-2.46	Elmwood Potter's Field
441	Probable Burial	Yes	3899583.37	513843.61	50-75	1.64-2.46	Elmwood Potter's Field
442	Probable Burial	Yes	3899582.81	513844.36	50-75	1.64-2.46	Elmwood Potter's Field
443	Probable Burial	No	3899582.86	513844.93	50-75	1.64-2.46	Elmwood Potter's Field
444	Probable Burial	Yes	3899582.59	513845.50	50-75	1.64-2.46	Elmwood Potter's Field
445	Probable Burial	Yes	3899582.19	513846.47	50-75	1.64-2.46	Elmwood Potter's Field
446	Probable Burial	Yes	3899581.51	513847.53	50-75	1.64-2.46	Elmwood Potter's Field
447	Probable Burial	Yes	3899580.96	513848.82	50-75	1.64-2.46	Elmwood Potter's Field
448	Probable Burial	Yes	3899580.13	513849.79	50-75	1.64-2.46	Elmwood Potter's Field
449	Probable Burial	Yes	3899579.73	513851.08	50-75	1.64-2.46	Elmwood Potter's Field
450	Probable Burial	Yes	3899579.16	513851.66	25-50	0.82-1.64	Elmwood Potter's Field
451	Probable Burial	Yes	3899578.35	513853.22	50-75	1.64-2.46	Elmwood Potter's Field
452	Probable Burial	Yes	3899578.26	513854.12	50-75	1.64-2.46	Elmwood Potter's Field
453	Strat Break, Probable Burial	Yes	3899577.38	513854.86	75-100	2.46-3.28	Elmwood Potter's Field
454	Probable Burial	Yes	3899576.42	513855.96	25-50	0.82-1.64	Elmwood Potter's Field
455	Probable Burial	Yes	3899575.65	513856.88	25-50	0.82-1.64	Elmwood Potter's Field
456	Probable Burial	No	3899575.08	513857.50	50-75	1.64-2.46	Elmwood Potter's Field
457	Probable Burial	No	3899574.58	513858.01	25-50	0.82-1.64	Elmwood Potter's Field
458	Probable Burial	No	3899574.34	513858.87	50-75	1.64-2.46	Elmwood Potter's Field
459	Probable Burial	No	3899574.81	513860.82	75-100	2.46-3.28	Pinewood Purchased Plots
460	Probable Burial	No	3899574.16	513862.59	75-100	2.46-3.28	Pinewood Purchased Plots
461	Probable Burial	No	3899570.65	513865.86	100-125	3.28-4.10	Pinewood Purchased Plots
462	Probable Burial	Yes	3899599.24	513769.02	75-100	2.46-3.28	Elmwood Purchased
463	Probable Burial	Yes	3899600.19	513769.95	75-100	2.46-3.28	Elmwood Purchased
464	Probable Burial	Yes	3899603.06	513771.87	50-75	1.64-2.46	Elmwood Purchased
465	Probable Burial	Yes	3899605.56	513773.91	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
466	Probable Burial	Yes	3899605.39	513775.12	50-75	1.64-2.46	Elmwood Purchased
467	Probable Burial	Yes	3899606.37	513775.93	50-75	1.64-2.46	Elmwood Purchased
468	Probable Burial	Yes	3899607.02	513776.29	75-100	2.46-3.28	Elmwood Purchased
469	Probable Burial	Yes	3899607.75	513776.54	100-125	3.28-4.10	Elmwood Purchased
470	Probable Burial	Yes	3899608.12	513777.36	50-75	1.64-2.46	Elmwood Purchased
471	Probable Burial	Yes	3899608.89	513778.04	50-75	1.64-2.46	Elmwood Purchased
472	Probable Burial	Yes	3899607.87	513779.37	75-100	2.46-3.28	Elmwood Purchased
473	Probable Burial	Yes	3899602.92	513773.28	75-100	2.46-3.28	Elmwood Purchased
474	Probable Burial	Yes	3899603.26	513775.42	75-100	2.46-3.28	Elmwood Purchased
475	Probable Burial	Yes	3899601.78	513774.30	50-75	1.64-2.46	Elmwood Purchased
476	Probable Burial	Yes	3899600.59	513774.03	75-100	2.46-3.28	Elmwood Purchased
477	Probable Burial	Yes	3899600.21	513773.55	75-100	2.46-3.28	Elmwood Purchased
478	Probable Burial	Yes	3899598.20	513771.76	75-100	2.46-3.28	Elmwood Purchased
479	Probable Burial	Yes	3899595.47	513773.48	100-125	3.28-4.10	Elmwood Purchased
480	Probable Burial	Yes	3899596.76	513774.31	75-100	2.46-3.28	Elmwood Purchased
481	Probable Burial	No	3899598.54	513774.79	50-75	1.64-2.46	Elmwood Purchased
482	Probable Burial	Yes	3899599.44	513776.21	50-75	1.64-2.46	Elmwood Purchased
483	Probable Burial	Yes	3899604.07	513781.17	75-100	2.46-3.28	Elmwood Purchased
484	Probable Burial	Yes	3899604.90	513781.77	75-100	2.46-3.28	Elmwood Purchased
485	Probable Burial	No	3899605.35	513786.18	50-75	1.64-2.46	Elmwood Purchased
486	Probable Burial	No	3899604.50	513784.55	50-75	1.64-2.46	Elmwood Purchased
487	Probable Burial	Yes	3899601.53	513782.57	50-75	1.64-2.46	Elmwood Purchased
488	Probable Burial	Yes	3899600.68	513782.25	75-100	2.46-3.28	Elmwood Purchased
489	Probable Burial	Yes	3899599.70	513782.02	50-75	1.64-2.46	Elmwood Purchased
490	Probable Burial	Yes	3899599.02	513780.81	75-100	2.46-3.28	Elmwood Purchased
491	Probable Burial	No	3899599.43	513778.71	100-125	3.28-4.10	Elmwood Purchased
492	Probable Burial	Yes	3899598.04	513780.16	75-100	2.46-3.28	Elmwood Purchased
493	Probable Burial	Yes	3899596.44	513778.38	50-75	1.64-2.46	Elmwood Purchased
494	Probable Burial	Yes	3899595.89	513776.80	50-75	1.64-2.46	Elmwood Purchased
495	Probable Burial	No	3899595.07	513775.41	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
496	Probable Burial	Yes	3899593.71	513775.85	75-100	2.46-3.28	Elmwood Purchased
497	Probable Burial	No	3899593.15	513774.73	75-100	2.46-3.28	Elmwood Purchased
498	Probable Burial	No	3899601.62	513785.32	75-100	2.46-3.28	Elmwood Purchased
499	Probable Burial	Yes	3899602.50	513789.99	50-75	1.64-2.46	Elmwood Purchased
500	Probable Burial	No	3899600.34	513785.36	50-75	1.64-2.46	Elmwood Purchased
501	Probable Burial	Yes	3899601.59	513787.61	75-100	2.46-3.28	Elmwood Purchased
502	Probable Burial	Yes	3899600.73	513788.45	75-100	2.46-3.28	Elmwood Purchased
503	Probable Burial	Yes	3899600.28	513789.06	75-100	2.46-3.28	Elmwood Purchased
504	Probable Burial	Yes	3899600.09	513790.17	100-125	3.28-4.10	Elmwood Purchased
505	Probable Burial	Yes	3899597.53	513791.71	100-125	3.28-4.10	Elmwood Purchased
506	Probable Burial	Yes	3899596.95	513792.72	75-100	2.46-3.28	Elmwood Purchased
507	Probable Burial	Yes	3899596.50	513783.87	50-75	1.64-2.46	Elmwood Purchased
508	Probable Burial	Yes	3899598.32	513785.24	75-100	2.46-3.28	Elmwood Purchased
509	Probable Burial	Yes	3899597.43	513786.41	75-100	2.46-3.28	Elmwood Purchased
510	Probable Burial	Yes	3899596.55	513787.43	75-100	2.46-3.28	Elmwood Purchased
511	Probable Burial	Yes	3899595.69	513788.05	75-100	2.46-3.28	Elmwood Purchased
512	Probable Burial	Yes	3899594.78	513789.85	100-125	3.28-4.10	Elmwood Purchased
513	Probable Burial	Yes	3899590.92	513785.72	75-100	2.46-3.28	Elmwood Purchased
514	Probable Burial	Yes	3899590.36	513787.04	75-100	2.46-3.28	Elmwood Purchased
515	Probable Burial	Yes	3899587.65	513789.93	75-100	2.46-3.28	Elmwood Purchased
516	Probable Burial	No	3899592.92	513791.35	75-100	2.46-3.28	Elmwood Purchased
517	Probable Burial	Yes	3899592.33	513792.42	75-100	2.46-3.28	Elmwood Purchased
518	Probable Burial	Yes	3899591.62	513793.60	75-100	2.46-3.28	Elmwood Purchased
519	Probable Burial	Yes	3899590.37	513794.26	75-100	2.46-3.28	Elmwood Purchased
520	Probable Burial	Yes	3899589.43	513795.22	75-100	2.46-3.28	Elmwood Purchased
521	Probable Burial	Yes	3899588.77	513795.88	75-100	2.46-3.28	Elmwood Purchased
522	Probable Burial	Yes	3899588.35	513797.56	100-125	3.28-4.10	Elmwood Purchased
523	Probable Burial	Yes	3899595.60	513794.39	75-100	2.46-3.28	Elmwood Purchased
524	Probable Burial	Yes	3899594.26	513795.44	100-125	3.28-4.10	Elmwood Purchased
525	Probable Burial	Yes	3899593.57	513796.50	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
526	Probable Burial	Yes	3899592.95	513797.37	75-100	2.46-3.28	Elmwood Purchased
527	Probable Burial	Yes	3899591.81	513798.46	75-100	2.46-3.28	Elmwood Purchased
528	Probable Burial	No	3899584.51	513794.49	75-100	2.46-3.28	Elmwood Purchased
529	Probable Burial	Yes	3899583.89	513795.40	75-100	2.46-3.28	Elmwood Purchased
530	Probable Burial	Yes	3899583.51	513796.61	50-75	1.64-2.46	Elmwood Purchased
531	Probable Burial	Yes	3899582.29	513798.87	75-100	2.46-3.28	Elmwood Purchased
532	Probable Burial	No	3899586.06	513804.92	50-75	1.64-2.46	Elmwood Purchased
533	Probable Burial	Yes	3899592.74	513808.82	100-125	3.28-4.10	Elmwood Purchased
534	Probable Burial	Yes	3899592.40	513809.63	100-125	3.28-4.10	Elmwood Purchased
535	Probable Burial	Yes	3899590.03	513808.25	100-125	3.28-4.10	Elmwood Purchased
536	Probable Burial	No	3899586.90	513808.04	50-75	1.64-2.46	Elmwood Purchased
537	Probable Burial	Yes	3899590.27	513813.23	100-125	3.28-4.10	Elmwood Purchased
538	Probable Burial	Yes	3899578.76	513807.44	75-100	2.46-3.28	Elmwood Purchased
539	Probable Burial	Yes	3899577.91	513808.49	75-100	2.46-3.28	Elmwood Purchased
540	Probable Burial	No	3899578.51	513812.01	75-100	2.46-3.28	Elmwood Purchased
541	Probable Burial	No	3899589.11	513816.17	25-50	0.82-1.64	Elmwood Purchased
542	Probable Burial	Yes	3899588.82	513816.81	25-50	0.82-1.64	Elmwood Purchased
543	Probable Burial	Yes	3899587.56	513817.16	75-100	2.46-3.28	Elmwood Purchased
544	Probable Burial	No	3899588.32	513818.40	25-50	0.82-1.64	Elmwood Purchased
545	Probable Burial	No	3899584.59	513817.04	75-100	2.46-3.28	Elmwood Purchased
546	Probable Burial	No	3899583.33	513818.02	100-125	3.28-4.10	Elmwood Purchased
547	Probable Burial	No	3899581.38	513817.96	75-100	2.46-3.28	Elmwood Purchased
548	Probable Burial	Yes	3899580.50	513819.52	75-100	2.46-3.28	Elmwood Purchased
549	Probable Burial	No	3899580.78	513821.10	75-100	2.46-3.28	Elmwood Purchased
550	Probable Burial	Yes	3899585.23	513819.69	75-100	2.46-3.28	Elmwood Purchased
551	Probable Burial	Yes	3899584.69	513820.93	100-125	3.28-4.10	Elmwood Purchased
552	Probable Burial	No	3899584.19	513821.80	100-125	3.28-4.10	Elmwood Purchased
553	Probable Burial	Yes	3899584.01	513822.51	25-50	0.82-1.64	Elmwood Purchased
554	Probable Burial	No	3899583.82	513823.10	50-75	1.64-2.46	Elmwood Purchased
555	Probable Burial	No	3899578.10	513820.42	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
556	Probable Burial	Yes	3899577.86	513822.57	75-100	2.46-3.28	Elmwood Purchased
557	Probable Burial	Yes	3899576.73	513823.37	100-125	3.28-4.10	Elmwood Purchased
558	Probable Burial	Yes	3899576.26	513824.35	100-125	3.28-4.10	Elmwood Purchased
559	Probable Burial	Yes	3899575.47	513825.23	100-125	3.28-4.10	Elmwood Purchased
560	Probable Burial	Yes	3899578.23	513827.81	75-100	2.46-3.28	Elmwood Purchased
561	Probable Burial	Yes	3899573.52	513824.01	25-50	0.82-1.64	Elmwood Purchased
562	Probable Burial	Yes	3899573.98	513827.25	75-100	2.46-3.28	Elmwood Purchased
563	Probable Burial	No	3899571.24	513828.46	75-100	2.46-3.28	Elmwood Purchased
564	Probable Burial	Yes	3899569.88	513830.74	25-50	0.82-1.64	Elmwood Purchased
565	Probable Burial	No	3899580.87	513833.01	75-100	2.46-3.28	Elmwood Purchased
566	Probable Burial	No	3899578.30	513835.72	75-100	2.46-3.28	Elmwood Purchased
567	Probable Burial	Yes	3899576.68	513838.04	100-125	3.28-4.10	Elmwood Purchased
568	Probable Burial	Yes	3899576.21	513839.84	75-100	2.46-3.28	Elmwood Purchased
569	Probable Burial	No	3899567.43	513834.71	75-100	2.46-3.28	Elmwood Purchased
570	Probable Burial	No	3899566.90	513835.64	75-100	2.46-3.28	Elmwood Purchased
571	Probable Burial	Yes	3899570.02	513837.53	75-100	2.46-3.28	Elmwood Purchased
572	Probable Burial	Yes	3899573.15	513840.99	75-100	2.46-3.28	Elmwood Purchased
573	Probable Burial	Yes	3899572.47	513842.03	75-100	2.46-3.28	Elmwood Purchased
574	Probable Burial	Yes	3899575.13	513843.41	50-75	1.64-2.46	Elmwood Purchased
575	Probable Burial	Yes	3899571.13	513842.55	75-100	2.46-3.28	Elmwood Purchased
576	Probable Burial	Yes	3899570.74	513843.52	75-100	2.46-3.28	Elmwood Purchased
577	Probable Burial	No	3899572.21	513843.37	100-125	3.28-4.10	Elmwood Purchased
578	Probable Burial	Yes	3899574.20	513844.18	75-100	2.46-3.28	Elmwood Purchased
579	Probable Burial	No	3899571.66	513844.41	75-100	2.46-3.28	Elmwood Purchased
580	Probable Burial	Yes	3899573.08	513845.78	100-125	3.28-4.10	Elmwood Purchased
581	Probable Burial	Yes	3899571.76	513846.13	50-75	1.64-2.46	Elmwood Purchased
582	Probable Burial	Yes	3899573.07	513847.34	50-75	1.64-2.46	Elmwood Purchased
583	Probable Burial	Yes	3899572.49	513847.98	50-75	1.64-2.46	Elmwood Purchased
584	Probable Burial	No	3899571.30	513849.59	50-75	1.64-2.46	Elmwood Purchased
585	Probable Burial	No	3899570.35	513851.00	75-100	2.46-3.28	Elmwood Purchased

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
586	Probable Burial	Yes	3899567.52	513853.22	75-100	2.46-3.28	Elmwood Purchased
587	Probable Burial	No	3899564.86	513856.18	75-100	2.46-3.28	Elmwood Purchased
588	Probable Burial	No	3899563.88	513856.99	75-100	2.46-3.28	Elmwood Purchased
589	Probable Burial	No	3899562.38	513858.32	75-100	2.46-3.28	Elmwood Purchased
590	Probable Burial	No	3899559.55	513858.10	75-100	2.46-3.28	Elmwood Purchased
591	Probable Burial	No	3899560.87	513857.00	75-100	2.46-3.28	Elmwood Purchased
592	Probable Burial	Yes	3899563.84	513851.95	75-100	2.46-3.28	Elmwood Purchased
593	Probable Burial	Yes	3899564.29	513850.20	75-100	2.46-3.28	Elmwood Purchased
594	Probable Burial	Yes	3899565.47	513850.22	75-100	2.46-3.28	Elmwood Purchased
595	Probable Burial	Yes	3899566.02	513849.59	75-100	2.46-3.28	Elmwood Purchased
596	Probable Burial	Yes	3899566.63	513848.95	75-100	2.46-3.28	Elmwood Purchased
597	Probable Burial	Yes	3899560.69	513848.00	75-100	2.46-3.28	Elmwood Purchased
598	Probable Burial	Yes	3899561.62	513846.56	100-125	3.28-4.10	Elmwood Purchased
599	Probable Burial	Yes	3899562.51	513845.61	100-125	3.28-4.10	Elmwood Purchased
600	Probable Burial	Yes	3899563.47	513844.45	75-100	2.46-3.28	Elmwood Purchased
601	Probable Burial	Yes	3899560.76	513879.33	50-75	1.64-2.46	Pinewood Purchased Plots
602	Probable Burial	No	3899557.21	513884.39	75-100	2.46-3.28	Pinewood Purchased Plots
603	Probable Burial	No	3899560.83	513892.38	75-100	2.46-3.28	Pinewood Purchased Plots
604	Probable Burial	Yes	3899561.62	513893.60	75-100	2.46-3.28	Pinewood Purchased Plots
605	Probable Burial	Yes	3899562.76	513894.13	75-100	2.46-3.28	Pinewood Purchased Plots
606	Probable Burial	Yes	3899560.15	513888.71	75-100	2.46-3.28	Pinewood Purchased Plots
607	Probable Burial	No	3899555.80	513887.66	100-125	3.28-4.10	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
608	Probable Burial	Yes	3899554.82	513888.55	100-125	3.28-4.10	Pinewood Purchased Plots
609	Probable Burial	Yes	3899553.48	513889.84	100-125	3.28-4.10	Pinewood Purchased Plots
610	Probable Burial	Yes	3899552.66	513886.07	50-75	1.64-2.46	Pinewood Purchased Plots
611	Probable Burial	Yes	3899549.44	513889.64	75-100	2.46-3.28	Pinewood Purchased Plots
612	Probable Burial	Yes	3899549.80	513894.77	75-100	2.46-3.28	Pinewood Purchased Plots
613	Probable Burial	Yes	3899550.55	513893.30	100-125	3.28-4.10	Pinewood Purchased Plots
614	Probable Burial	Yes	3899551.76	513891.13	50-75	1.64-2.46	Pinewood Purchased Plots
615	Probable Burial	Yes	3899552.51	513909.44	50-75	1.64-2.46	Pinewood Purchased Plots
616	Probable Burial	Yes	3899553.81	513912.29	50-75	1.64-2.46	Pinewood Purchased Plots
617	Probable Burial	Yes	3899534.30	513914.64	75-100	2.46-3.28	Pinewood Purchased Plots
618	Probable Burial	Yes	3899535.63	513915.09	75-100	2.46-3.28	Pinewood Purchased Plots
619	Probable Burial	Yes	3899536.16	513915.98	75-100	2.46-3.28	Pinewood Purchased Plots
620	Probable Burial	Yes	3899538.58	513917.78	75-100	2.46-3.28	Pinewood Purchased Plots
621	Probable Burial	No	3899534.60	513922.42	75-100	2.46-3.28	Pinewood Purchased Plots
622	Probable Burial	Yes	3899543.92	513932.50	25-50	0.82-1.64	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
623	Probable Burial	No	3899541.78	513929.76	50-75	1.64-2.46	Pinewood Purchased Plots
624	Probable Burial	No	3899535.10	513930.66	75-100	2.46-3.28	Pinewood Purchased Plots
625	Probable Burial	Yes	3899541.48	513935.38	75-100	2.46-3.28	Pinewood Purchased Plots
626	Probable Burial	Yes	3899545.29	513938.07	50-75	1.64-2.46	Pinewood Purchased Plots
627	Probable Burial	No	3899548.04	513939.82	75-100	2.46-3.28	Pinewood Purchased Plots
628	Probable Burial	Yes	3899545.41	513941.29	50-75	1.64-2.46	Pinewood Purchased Plots
629	Probable Burial	Yes	3899540.42	513940.87	50-75	1.64-2.46	Pinewood Purchased Plots
630	Probable Burial	No	3899531.42	513932.09	75-100	2.46-3.28	Pinewood Purchased Plots
631	Probable Burial	Yes	3899532.96	513938.94	75-100	2.46-3.28	Pinewood Purchased Plots
632	Probable Burial	Yes	3899541.55	513960.59	50-75	1.64-2.46	Pinewood Purchased Plots
633	Probable Burial	Yes	3899537.86	513963.13	50-75	1.64-2.46	Pinewood Purchased Plots
634	Probable Burial	No	3899531.45	513958.39	75-100	2.46-3.28	Pinewood Purchased Plots
635	Probable Burial	No	3899523.91	513957.99	50-75	1.64-2.46	Pinewood Purchased Plots
636	Probable Burial	No	3899522.30	513956.93	50-75	1.64-2.46	Pinewood Purchased Plots
637	Probable Burial	No	3899522.32	513962.59	100-125	3.28-4.10	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
638	Probable Burial	Yes	3899519.64	513961.73	50-75	1.64-2.46	Pinewood Purchased Plots
639	Probable Burial	No	3899536.86	513972.63	50-75	1.64-2.46	Pinewood Purchased Plots
640	Probable Burial	No	3899534.80	513971.47	50-75	1.64-2.46	Pinewood Purchased Plots
641	Probable Burial	Yes	3899528.35	513977.82	50-75	1.64-2.46	Pinewood Purchased Plots
642	Probable Burial	Yes	3899527.49	513977.23	50-75	1.64-2.46	Pinewood Purchased Plots
643	Probable Burial	No	3899524.99	513979.27	50-75	1.64-2.46	Pinewood Purchased Plots
644	Probable Burial	No	3899526.84	514000.04	50-75	1.64-2.46	Pinewood Potter's Field
645	Probable Burial	No	3899511.90	514001.65	75-100	2.46-3.28	Pinewood Potter's Field
646	Probable Burial	No	3899513.70	514006.54	50-75	1.64-2.46	Pinewood Potter's Field
647	Probable Burial	No	3899519.76	514011.38	75-100	2.46-3.28	Pinewood Potter's Field
648	Probable Burial	Yes	3899521.61	514011.50	50-75	1.64-2.46	Pinewood Potter's Field
649	Probable Burial	No	3899511.97	514010.71	100-125	3.28-4.10	Pinewood Potter's Field
650	Probable Burial	No	3899513.76	514012.13	100-125	3.28-4.10	Pinewood Potter's Field
651	Probable Burial	No	3899515.73	514011.71	50-75	1.64-2.46	Pinewood Potter's Field
652	Probable Burial	No	3899502.22	514013.59	100-125	3.28-4.10	Pinewood Potter's Field
653	Probable Burial	Yes	3899503.90	514013.84	50-75	1.64-2.46	Pinewood Potter's Field
654	Probable Burial	No	3899505.75	514014.13	50-75	1.64-2.46	Pinewood Potter's Field
655	Probable Burial	No	3899506.62	514014.34	50-75	1.64-2.46	Pinewood Potter's Field
656	Probable Burial	No	3899503.46	514016.03	50-75	1.64-2.46	Pinewood Potter's Field
657	Probable Burial	No	3899505.35	514016.93	50-75	1.64-2.46	Pinewood Potter's Field
658	Probable Burial	No	3899504.67	514016.71	50-75	1.64-2.46	Pinewood Potter's Field
659	Probable Burial	No	3899506.54	514017.83	50-75	1.64-2.46	Pinewood Potter's Field
660	Probable Burial	No	3899500.96	514017.77	75-100	2.46-3.28	Pinewood Potter's Field
661	Probable Burial	No	3899502.46	514018.71	75-100	2.46-3.28	Pinewood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
662	Probable Burial	No	3899504.22	514022.44	50-75	1.64-2.46	Pinewood Potter's Field
663	Probable Burial	No	3899505.50	514022.99	50-75	1.64-2.46	Pinewood Potter's Field
664	Probable Burial	No	3899510.27	514025.19	50-75	1.64-2.46	Pinewood Potter's Field
665	Probable Burial	No	3899508.85	514022.27	50-75	1.64-2.46	Pinewood Potter's Field
666	Probable Burial	Yes	3899511.85	514023.16	50-75	1.64-2.46	Pinewood Potter's Field
667	Probable Burial	No	3899516.89	514025.87	50-75	1.64-2.46	Pinewood Potter's Field
668	Probable Burial	No	3899517.22	514029.74	50-75	1.64-2.46	Pinewood Potter's Field
669	Probable Burial	No	3899500.91	514021.87	50-75	1.64-2.46	Pinewood Potter's Field
670	Probable Burial	No	3899515.71	514034.25	50-75	1.64-2.46	Pinewood Potter's Field
671	Probable Burial	No	3899514.95	514032.96	50-75	1.64-2.46	Pinewood Potter's Field
672	Probable Burial	No	3899513.85	514032.54	50-75	1.64-2.46	Pinewood Potter's Field
673	Probable Burial	No	3899498.69	514027.56	50-75	1.64-2.46	Pinewood Potter's Field
674	Probable Burial	No	3899498.45	514025.66	50-75	1.64-2.46	Pinewood Potter's Field
675	Probable Burial	No	3899503.68	514031.46	50-75	1.64-2.46	Pinewood Potter's Field
676	Probable Burial	No	3899510.34	514032.56	50-75	1.64-2.46	Pinewood Potter's Field
677	Probable Burial	No	3899511.45	514034.31	50-75	1.64-2.46	Pinewood Potter's Field
678	Probable Burial	No	3899511.01	514037.62	100-125	3.28-4.10	Pinewood Potter's Field
679	Probable Burial	No	3899508.46	514036.30	100-125	3.28-4.10	Pinewood Potter's Field
680	Probable Burial	No	3899506.31	514035.53	100-125	3.28-4.10	Pinewood Potter's Field
681	Probable Burial	No	3899504.49	514034.93	100-125	3.28-4.10	Pinewood Potter's Field
682	Probable Burial	No	3899503.67	514037.65	50-75	1.64-2.46	Pinewood Potter's Field
683	Probable Burial	No	3899495.39	514036.79	50-75	1.64-2.46	Pinewood Potter's Field
684	Probable Burial	No	3899504.32	514039.97	50-75	1.64-2.46	Pinewood Potter's Field
685	Probable Burial	No	3899509.82	514043.15	50-75	1.64-2.46	Pinewood Potter's Field
686	Probable Burial	No	3899503.09	514042.36	50-75	1.64-2.46	Pinewood Potter's Field
687	Probable Burial	No	3899502.33	514042.24	50-75	1.64-2.46	Pinewood Potter's Field
688	Probable Burial	No	3899501.41	514042.14	50-75	1.64-2.46	Pinewood Potter's Field
689	Probable Burial	No	3899499.42	514040.60	50-75	1.64-2.46	Pinewood Potter's Field
690	Probable Burial	No	3899498.43	514039.93	50-75	1.64-2.46	Pinewood Potter's Field
691	Probable Burial	No	3899501.77	514046.75	75-100	2.46-3.28	Pinewood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
692	Probable Burial	No	3899508.77	514047.13	50-75	1.64-2.46	Pinewood Potter's Field
693	Probable Burial	No	3899506.73	514049.97	75-100	2.46-3.28	Pinewood Potter's Field
694	Probable Burial	No	3899505.97	514053.88	50-75	1.64-2.46	Pinewood Potter's Field
695	Probable Burial	No	3899503.23	514051.44	100-125	3.28-4.10	Pinewood Potter's Field
696	Probable Burial	No	3899500.39	514049.31	75-100	2.46-3.28	Pinewood Potter's Field
697	Probable Burial	No	3899498.17	514050.76	50-75	1.64-2.46	Pinewood Potter's Field
698	Probable Burial	No	3899496.69	514049.06	75-100	2.46-3.28	Pinewood Potter's Field
699	Probable Burial	No	3899495.10	514051.33	75-100	2.46-3.28	Pinewood Potter's Field
700	Probable Burial	No	3899492.64	514047.53	100-125	3.28-4.10	Pinewood Potter's Field
701	Probable Burial	No	3899493.79	514044.06	75-100	2.46-3.28	Pinewood Potter's Field
702	Probable Burial	No	3899491.71	514053.79	50-75	1.64-2.46	Pinewood Potter's Field
703	Probable Burial	Yes	3899491.27	514057.55	50-75	1.64-2.46	Pinewood Potter's Field
704	Probable Burial	No	3899512.74	514055.20	50-75	1.64-2.46	Pinewood Potter's Field
705	Probable Burial	No	3899510.97	514059.61	50-75	1.64-2.46	Pinewood Potter's Field
706	Probable Burial	No	3899508.81	514061.80	50-75	1.64-2.46	Pinewood Potter's Field
707	Probable Burial	No	3899494.83	514067.42	50-75	1.64-2.46	Pinewood Potter's Field
708	Probable Burial	No	3899487.28	514063.47	50-75	1.64-2.46	Pinewood Potter's Field
709	Probable Burial	No	3899486.17	514066.28	50-75	1.64-2.46	Pinewood Potter's Field
710	Probable Burial	No	3899489.97	514067.63	50-75	1.64-2.46	Pinewood Potter's Field
711	Probable Burial	No	3899492.33	514068.64	50-75	1.64-2.46	Pinewood Potter's Field
712	Probable Burial	No	3899487.94	514069.65	50-75	1.64-2.46	Pinewood Potter's Field
713	Probable Burial	No	3899486.33	514070.27	50-75	1.64-2.46	Pinewood Potter's Field
714	Probable Burial	No	3899485.05	514070.02	50-75	1.64-2.46	Pinewood Potter's Field
715	Probable Burial	No	3899487.31	514072.62	50-75	1.64-2.46	Pinewood Potter's Field
716	Probable Burial	No	3899492.67	514073.75	50-75	1.64-2.46	Pinewood Potter's Field
717	Probable Burial	No	3899490.55	514074.08	50-75	1.64-2.46	Pinewood Potter's Field
718	Probable Burial	No	3899483.72	514078.25	50-75	1.64-2.46	Pinewood Purchased Plots
719	Probable Burial	No	3899484.41	514078.90	50-75	1.64-2.46	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
720	Probable Burial	No	3899483.72	514081.44	50-75	1.64-2.46	Pinewood Purchased Plots
721	Probable Burial	No	3899484.85	514082.39	50-75	1.64-2.46	Pinewood Purchased Plots
722	Probable Burial	No	3899480.59	514084.92	75-100	2.46-3.28	Pinewood Purchased Plots
723	Probable Burial	No	3899482.69	514087.40	75-100	2.46-3.28	Pinewood Purchased Plots
724	Probable Burial	No	3899485.55	514085.42	50-75	1.64-2.46	Pinewood Purchased Plots
725	Probable Burial	No	3899484.71	514084.90	50-75	1.64-2.46	Pinewood Purchased Plots
726	Probable Burial	No	3899483.82	514084.73	50-75	1.64-2.46	Pinewood Purchased Plots
727	Probable Burial	No	3899482.14	514086.48	50-75	1.64-2.46	Pinewood Purchased Plots
728	Probable Burial	No	3899476.81	514095.14	50-75	1.64-2.46	Pinewood Purchased Plots
729	Probable Burial	No	3899480.85	514095.22	50-75	1.64-2.46	Pinewood Purchased Plots
730	Probable Burial	No	3899479.77	514094.93	50-75	1.64-2.46	Pinewood Purchased Plots
731	Probable Burial	No	3899506.16	514066.03	50-75	1.64-2.46	Pinewood Potter's Field
732	Probable Burial	No	3899507.49	514066.78	50-75	1.64-2.46	Pinewood Potter's Field
733	Probable Burial	No	3899508.49	514068.42	50-75	1.64-2.46	Pinewood Potter's Field
734	Probable Burial	No	3899507.75	514069.87	50-75	1.64-2.46	Pinewood Potter's Field
735	Probable Burial	No	3899506.35	514068.17	50-75	1.64-2.46	Pinewood Potter's Field
736	Probable Burial	No	3899505.82	514067.86	50-75	1.64-2.46	Pinewood Potter's Field
737	Probable Burial	No	3899504.79	514067.82	50-75	1.64-2.46	Pinewood Potter's Field
738	Probable Burial	No	3899506.20	514070.93	125-150	4.10-4.92	Pinewood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
739	Probable Burial	No	3899506.78	514073.70	50-75	1.64-2.46	Pinewood Potter's Field
740	Probable Burial	No	3899505.45	514073.43	50-75	1.64-2.46	Pinewood Potter's Field
741	Probable Burial	No	3899505.00	514071.86	125-150	4.10-4.92	Pinewood Potter's Field
742	Probable Burial	No	3899503.86	514073.58	50-75	1.64-2.46	Pinewood Potter's Field
743	Probable Burial	No	3899503.06	514075.78	100-125	3.28-4.10	Pinewood Potter's Field
744	Probable Burial	No	3899503.85	514076.84	50-75	1.64-2.46	Pinewood Potter's Field
745	Probable Burial	No	3899504.63	514079.05	50-75	1.64-2.46	Pinewood Potter's Field
746	Probable Burial	No	3899502.52	514077.30	50-75	1.64-2.46	Pinewood Potter's Field
747	Probable Burial	Yes	3899500.30	514078.07	100-125	3.28-4.10	Pinewood Potter's Field
748	Probable Burial	No	3899503.15	514083.16	50-75	1.64-2.46	Pinewood Potter's Field
749	Probable Burial	No	3899501.81	514083.18	50-75	1.64-2.46	Pinewood Potter's Field
750	Probable Burial	No	3899498.66	514082.71	50-75	1.64-2.46	Pinewood Potter's Field
751	Probable Burial	No	3899502.35	514084.95	50-75	1.64-2.46	Pinewood Potter's Field
752	Probable Burial	No	3899500.69	514085.86	50-75	1.64-2.46	Pinewood Potter's Field
753	Probable Burial	No	3899502.42	514087.36	50-75	1.64-2.46	Pinewood Potter's Field
754	Probable Burial	Yes	3899498.95	514089.82	75-100	2.46-3.28	Pinewood Potter's Field
755	Probable Burial	No	3899501.21	514091.76	50-75	1.64-2.46	Pinewood Potter's Field
756	Probable Burial	Yes	3899499.65	514090.66	50-75	1.64-2.46	Pinewood Potter's Field
757	Probable Burial	Yes	3899497.96	514091.18	50-75	1.64-2.46	Pinewood Potter's Field
758	Probable Burial	Yes	3899499.51	514092.17	50-75	1.64-2.46	Pinewood Potter's Field
759	Probable Burial	No	3899500.06	514095.43	50-75	1.64-2.46	Pinewood Potter's Field
760	Probable Burial	No	3899498.95	514094.83	50-75	1.64-2.46	Pinewood Potter's Field
761	Probable Burial	No	3899498.12	514094.34	50-75	1.64-2.46	Pinewood Potter's Field
762	Probable Burial	No	3899495.88	514092.04	50-75	1.64-2.46	Pinewood Potter's Field
763	Probable Burial	No	3899490.95	514092.46	75-100	2.46-3.28	Pinewood Potter's Field
764	Probable Burial	No	3899495.26	514093.76	75-100	2.46-3.28	Pinewood Potter's Field
765	Probable Burial	No	3899493.43	514094.21	50-75	1.64-2.46	Pinewood Potter's Field
766	Probable Burial	No	3899494.28	514095.34	50-75	1.64-2.46	Pinewood Potter's Field
767	Probable Burial	No	3899497.09	514096.41	50-75	1.64-2.46	Pinewood Potter's Field
768	Probable Burial	No	3899498.25	514096.87	75-100	2.46-3.28	Pinewood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
769	Probable Burial	No	3899498.50	514098.00	50-75	1.64-2.46	Pinewood Potter's Field
770	Probable Burial	No	3899498.60	514099.81	75-100	2.46-3.28	Pinewood Potter's Field
771	Probable Burial	No	3899497.11	514099.25	50-75	1.64-2.46	Pinewood Potter's Field
772	Probable Burial	No	3899495.40	514098.09	75-100	2.46-3.28	Pinewood Potter's Field
773	Probable Burial	No	3899493.20	514098.00	75-100	2.46-3.28	Pinewood Potter's Field
774	Probable Burial	No	3899491.95	514097.79	50-75	1.64-2.46	Pinewood Potter's Field
775	Probable Burial	No	3899491.37	514097.03	75-100	2.46-3.28	Pinewood Potter's Field
776	Probable Burial	No	3899490.54	514096.59	75-100	2.46-3.28	Pinewood Potter's Field
777	Probable Burial	No	3899488.91	514098.44	50-75	1.64-2.46	Pinewood Potter's Field
778	Probable Burial	No	3899489.95	514099.32	50-75	1.64-2.46	Pinewood Potter's Field
779	Probable Burial	No	3899494.82	514099.99	50-75	1.64-2.46	Pinewood Potter's Field
780	Probable Burial	No	3899495.78	514101.20	50-75	1.64-2.46	Pinewood Potter's Field
781	Probable Burial	No	3899497.58	514101.70	50-75	1.64-2.46	Pinewood Potter's Field
782	Probable Burial	No	3899495.40	514104.71	50-75	1.64-2.46	Pinewood Potter's Field
783	Probable Burial	No	3899493.31	514101.71	50-75	1.64-2.46	Pinewood Potter's Field
784	Probable Burial	No	3899494.69	514104.27	50-75	1.64-2.46	Pinewood Potter's Field
785	Probable Burial	No	3899491.37	514103.52	50-75	1.64-2.46	Pinewood Potter's Field
786	Probable Burial	No	3899489.75	514102.83	50-75	1.64-2.46	Pinewood Potter's Field
787	Probable Burial	Yes	3899495.02	514106.54	50-75	1.64-2.46	Pinewood Potter's Field
788	Probable Burial	No	3899493.93	514106.77	50-75	1.64-2.46	Pinewood Potter's Field
789	Probable Burial	No	3899493.14	514106.05	50-75	1.64-2.46	Pinewood Potter's Field
790	Probable Burial	No	3899488.43	514106.00	100-125	3.28-4.10	Pinewood Potter's Field
791	Probable Burial	No	3899493.39	514111.48	50-75	1.64-2.46	Pinewood Potter's Field
792	Probable Burial	No	3899492.39	514114.70	50-75	1.64-2.46	Pinewood Potter's Field
793	Probable Burial	No	3899481.98	514109.75	75-100	2.46-3.28	Pinewood Potter's Field
794	Probable Burial	No	3899479.82	514107.89	75-100	2.46-3.28	Pinewood Potter's Field
795	Probable Burial	No	3899479.34	514110.43	50-75	1.64-2.46	Pinewood Potter's Field
796	Probable Burial	No	3899477.28	514112.51	75-100	2.46-3.28	Pinewood Potter's Field
797	Probable Burial	No	3899472.72	514116.47	75-100	2.46-3.28	Pinewood Potter's Field
798	Probable Burial	No	3899476.97	514117.63	75-100	2.46-3.28	Pinewood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
799	Probable Burial	No	3899478.90	514118.00	50-75	1.64-2.46	Pinewood Potter's Field
800	Probable Burial	No	3899490.08	514121.60	50-75	1.64-2.46	Pinewood Potter's Field
801	Probable Burial	No	3899478.89	514121.89	75-100	2.46-3.28	Pinewood Potter's Field
802	Probable Burial	No	3899482.25	514125.40	50-75	1.64-2.46	Pinewood Potter's Field
803	Probable Burial	No	3899487.56	514132.56	75-100	2.46-3.28	Pinewood Potter's Field
804	Probable Burial	Yes	3899487.71	514130.24	50-75	1.64-2.46	Pinewood Potter's Field
805	Probable Burial	No	3899483.95	514131.49	50-75	1.64-2.46	Pinewood Potter's Field
806	Probable Burial	No	3899475.12	514125.36	75-100	2.46-3.28	Pinewood Potter's Field
807	Probable Burial	No	3899473.75	514125.02	50-75	1.64-2.46	Pinewood Potter's Field
808	Probable Burial	No	3899472.39	514124.56	50-75	1.64-2.46	Pinewood Potter's Field
809	Probable Burial	No	3899467.15	514128.87	75-100	2.46-3.28	Pinewood Potter's Field
810	Probable Burial	No	3899468.59	514129.37	75-100	2.46-3.28	Pinewood Potter's Field
811	Probable Burial	No	3899469.65	514130.24	75-100	2.46-3.28	Pinewood Potter's Field
812	Probable Burial	No	3899470.23	514133.05	50-75	1.64-2.46	Pinewood Potter's Field
813	Probable Burial	No	3899470.38	514134.93	50-75	1.64-2.46	Pinewood Potter's Field
814	Probable Burial	No	3899471.22	514135.06	75-100	2.46-3.28	Pinewood Potter's Field
815	Probable Burial	No	3899472.26	514134.88	50-75	1.64-2.46	Pinewood Potter's Field
816	Probable Burial	No	3899482.92	514139.96	50-75	1.64-2.46	Pinewood Potter's Field
817	Probable Burial	No	3899476.38	514142.12	100-125	3.28-4.10	Pinewood Potter's Field
818	Probable Burial	No	3899470.23	514146.27	75-100	2.46-3.28	Pinewood Potter's Field
819	Probable Burial	No	3899467.21	514146.93	75-100	2.46-3.28	Pinewood Potter's Field
820	Probable Burial	No	3899465.67	514147.68	75-100	2.46-3.28	Pinewood Potter's Field
821	Probable Burial	No	3899463.78	514144.92	100-125	3.28-4.10	Pinewood Potter's Field
822	Probable Burial	No	3899463.45	514146.85	75-100	2.46-3.28	Pinewood Potter's Field
823	Probable Burial	No	3899462.13	514148.45	75-100	2.46-3.28	Pinewood Potter's Field
824	Probable Burial	No	3899473.01	514153.94	50-75	1.64-2.46	Pinewood Potter's Field
825	Probable Burial	No	3899477.07	514153.61	50-75	1.64-2.46	Pinewood Potter's Field
826	Probable Burial	No	3899477.91	514153.86	50-75	1.64-2.46	Pinewood Potter's Field
827	Probable Burial	No	3899478.75	514154.12	75-100	2.46-3.28	Pinewood Potter's Field
828	Probable Burial	No	3899480.68	514153.30	50-75	1.64-2.46	Pinewood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
829	Probable Burial	No	3899479.77	514154.89	50-75	1.64-2.46	Pinewood Potter's Field
830	Probable Burial	No	3899479.12	514158.05	50-75	1.64-2.46	Pinewood Potter's Field
831	Probable Burial	Yes	3899463.97	514154.16	125-150	4.10-4.92	Pinewood Potter's Field
832	Probable Burial	No	3899458.50	514153.86	75-100	2.46-3.28	Pinewood Potter's Field
833	Probable Burial	No	3899458.35	514155.75	50-75	1.64-2.46	Pinewood Potter's Field
834	Probable Burial	No	3899459.72	514156.08	50-75	1.64-2.46	Pinewood Potter's Field
835	Probable Burial	No	3899465.49	514157.59	50-75	1.64-2.46	Pinewood Potter's Field
836	Probable Burial	No	3899468.18	514158.01	75-100	2.46-3.28	Pinewood Potter's Field
837	Probable Burial	No	3899469.64	514157.75	50-75	1.64-2.46	Pinewood Potter's Field
838	Probable Burial	No	3899465.44	514159.77	100-125	3.28-4.10	Pinewood Potter's Field
839	Probable Burial	No	3899469.08	514163.40	75-100	2.46-3.28	Pinewood Potter's Field
840	Probable Burial	No	3899465.67	514162.28	75-100	2.46-3.28	Pinewood Potter's Field
841	Probable Burial	No	3899463.47	514161.31	75-100	2.46-3.28	Pinewood Potter's Field
842	Probable Burial	No	3899459.14	514160.87	50-75	1.64-2.46	Pinewood Potter's Field
843	Probable Burial	No	3899453.87	514162.76	100-125	3.28-4.10	Pinewood Potter's Field
844	Probable Burial	No	3899457.13	514165.61	75-100	2.46-3.28	Pinewood Potter's Field
845	Probable Burial	No	3899459.93	514165.08	50-75	1.64-2.46	Pinewood Potter's Field
846	Probable Burial	No	3899462.90	514164.10	75-100	2.46-3.28	Pinewood Potter's Field
847	Probable Burial	No	3899463.97	514164.68	75-100	2.46-3.28	Pinewood Potter's Field
848	Probable Burial	No	3899464.32	514166.07	75-100	2.46-3.28	Pinewood Potter's Field
849	Probable Burial	No	3899466.62	514167.09	75-100	2.46-3.28	Pinewood Potter's Field
850	Probable Burial	No	3899467.23	514165.55	100-125	3.28-4.10	Pinewood Potter's Field
851	Probable Burial	No	3899461.53	514167.43	50-75	1.64-2.46	Pinewood Potter's Field
852	Probable Burial	No	3899474.16	514171.29	75-100	2.46-3.28	Pinewood Potter's Field
853	Probable Burial	No	3899454.45	514168.51	100-125	3.28-4.10	Pinewood Potter's Field
854	Probable Burial	No	3899451.96	514171.31	50-75	1.64-2.46	Pinewood Potter's Field
855	Probable Burial	No	3899453.44	514171.61	100-125	3.28-4.10	Pinewood Potter's Field
856	Probable Burial	No	3899455.64	514172.88	100-125	3.28-4.10	Pinewood Potter's Field
857	Probable Burial	No	3899462.47	514176.56	50-75	1.64-2.46	Pinewood Potter's Field
858	Probable Burial	No	3899462.99	514178.45	75-100	2.46-3.28	Pinewood Potter's Field

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
859	Probable Burial	No	3899464.36	514177.51	100-125	3.28-4.10	Pinewood Potter's Field
860	Probable Burial	No	3899467.94	514181.83	75-100	2.46-3.28	Pinewood Potter's Field
861	Probable Burial	No	3899471.17	514180.17	75-100	2.46-3.28	Pinewood Potter's Field
862	Probable Burial	No	3899450.02	514173.59	100-125	3.28-4.10	Pinewood Potter's Field
863	Probable Burial	No	3899451.51	514175.75	125-150	4.10-4.92	Pinewood Potter's Field
864	Probable Burial	No	3899453.87	514177.53	75-100	2.46-3.28	Pinewood Potter's Field
865	Probable Burial	No	3899455.04	514177.09	100-125	3.28-4.10	Pinewood Potter's Field
866	Probable Burial	No	3899460.49	514179.46	75-100	2.46-3.28	Pinewood Potter's Field
867	Probable Burial	No	3899461.29	514182.70	100-125	3.28-4.10	Pinewood Potter's Field
868	Probable Burial	No	3899465.32	514183.86	75-100	2.46-3.28	Pinewood Potter's Field
869	Probable Burial	No	3899465.64	514186.63	75-100	2.46-3.28	Pinewood Purchased Plots
870	Probable Burial	No	3899466.24	514187.20	75-100	2.46-3.28	Pinewood Purchased Plots
871	Probable Burial	No	3899467.13	514187.51	75-100	2.46-3.28	Pinewood Purchased Plots
872	Probable Burial	No	3899450.19	514177.42	125-150	4.10-4.92	Pinewood Potter's Field
873	Probable Burial	No	3899454.97	514181.81	75-100	2.46-3.28	Pinewood Potter's Field
874	Probable Burial	No	3899456.31	514183.18	75-100	2.46-3.28	Pinewood Potter's Field
875	Probable Burial	No	3899448.15	514178.85	75-100	2.46-3.28	Pinewood Potter's Field
876	Probable Burial	No	3899448.85	514179.42	75-100	2.46-3.28	Pinewood Potter's Field
877	Probable Burial	No	3899449.51	514180.14	75-100	2.46-3.28	Pinewood Potter's Field
878	Probable Burial	No	3899451.76	514181.27	75-100	2.46-3.28	Pinewood Potter's Field
879	Probable Burial	No	3899447.43	514182.31	75-100	2.46-3.28	Pinewood Potter's Field
880	Probable Burial	No	3899448.59	514182.88	75-100	2.46-3.28	Pinewood Potter's Field
881	Probable Burial	No	3899449.78	514183.10	75-100	2.46-3.28	Pinewood Potter's Field
882	Probable Burial	No	3899450.65	514183.74	75-100	2.46-3.28	Pinewood Potter's Field
883	Probable Burial	No	3899452.29	514184.76	75-100	2.46-3.28	Pinewood Potter's Field
884	Probable Burial	Yes	3899462.84	514191.64	50-75	1.64-2.46	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
885	Probable Burial	No	3899446.21	514186.62	50-75	1.64-2.46	Pinewood Potter's Field
886	Probable Burial	No	3899447.43	514187.30	75-100	2.46-3.28	Pinewood Potter's Field
887	Probable Burial	No	3899448.01	514186.13	75-100	2.46-3.28	Pinewood Potter's Field
888	Probable Burial	No	3899452.52	514189.61	50-75	1.64-2.46	Pinewood Potter's Field
889	Probable Burial	No	3899454.30	514189.22	50-75	1.64-2.46	Pinewood Purchased Plots
890	Probable Burial	No	3899444.60	514190.67	50-75	1.64-2.46	Pinewood Potter's Field
891	Probable Burial	No	3899459.01	514195.03	50-75	1.64-2.46	Pinewood Purchased Plots
892	Probable Burial	No	3899460.45	514195.79	100-125	3.28-4.10	Pinewood Purchased Plots
893	Probable Burial	No	3899461.53	514195.36	50-75	1.64-2.46	Pinewood Purchased Plots
894	Probable Burial	No	3899463.45	514196.93	75-100	2.46-3.28	Pinewood Purchased Plots
895	Probable Burial	No	3899457.30	514197.89	50-75	1.64-2.46	Pinewood Purchased Plots
896	Probable Burial	No	3899457.93	514198.50	75-100	2.46-3.28	Pinewood Purchased Plots
897	Probable Burial	No	3899460.83	514199.95	75-100	2.46-3.28	Pinewood Purchased Plots
898	Probable Burial	No	3899462.58	514201.14	75-100	2.46-3.28	Pinewood Purchased Plots
899	Probable Burial	No	3899459.89	514202.69	75-100	2.46-3.28	Pinewood Purchased Plots
900	Probable Burial	No	3899455.44	514199.30	100-125	3.28-4.10	Pinewood Purchased Plots
901	Probable Burial	No	3899455.65	514202.60	100-125	3.28-4.10	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
902	Probable Burial	No	3899453.23	514201.72	75-100	2.46-3.28	Pinewood Purchased Plots
903	Probable Burial	No	3899451.80	514201.64	75-100	2.46-3.28	Pinewood Purchased Plots
904	Probable Burial	Yes	3899441.05	514203.68	75-100	2.46-3.28	Pinewood Potter's Field
905	Probable Burial	No	3899440.95	514207.26	75-100	2.46-3.28	Pinewood Potter's Field
906	Probable Burial	No	3899443.20	514207.27	75-100	2.46-3.28	Pinewood Potter's Field
907	Probable Burial	No	3899437.33	514202.17	125-150	4.10-4.92	Pinewood Purchased Plots
908	Probable Burial	No	3899435.62	514203.44	75-100	2.46-3.28	Pinewood Purchased Plots
909	Probable Burial	No	3899433.80	514203.66	75-100	2.46-3.28	Pinewood Purchased Plots
910	Probable Burial	No	3899435.32	514211.17	100-125	3.28-4.10	Pinewood Purchased Plots
911	Probable Burial	No	3899434.07	514211.19	75-100	2.46-3.28	Pinewood Purchased Plots
912	Probable Burial	No	3899431.37	514210.20	75-100	2.46-3.28	Pinewood Purchased Plots
913	Probable Burial	No	3899433.47	514222.26	50-75	1.64-2.46	Pinewood Purchased Plots
914	Probable Burial	No	3899437.95	514229.42	75-100	2.46-3.28	Pinewood Potter's Field
915	Probable Burial	No	3899425.60	514213.21	100-125	3.28-4.10	Pinewood Purchased Plots
916	Probable Burial	No	3899424.91	514219.46	50-75	1.64-2.46	Pinewood Purchased Plots
917	Probable Burial	No	3899422.77	514221.96	75-100	2.46-3.28	Pinewood Purchased Plots
918	Probable Burial	No	3899422.82	514218.91	75-100	2.46-3.28	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
919	Probable Burial	No	3899421.25	514220.82	75-100	2.46-3.28	Pinewood Purchased Plots
920	Probable Burial	No	3899414.62	514228.23	75-100	2.46-3.28	Pinewood Purchased Plots
921	Probable Burial	No	3899414.47	514225.99	75-100	2.46-3.28	Pinewood Purchased Plots
922	Probable Burial	No	3899416.76	514228.65	50-75	1.64-2.46	Pinewood Purchased Plots
923	Probable Burial	No	3899417.36	514225.77	50-75	1.64-2.46	Pinewood Purchased Plots
924	Probable Burial	No	3899424.16	514235.63	75-100	2.46-3.28	Pinewood Purchased Plots
925	Probable Burial	No	3899427.77	514236.59	50-75	1.64-2.46	Pinewood Purchased Plots
926	Probable Burial	No	3899421.00	514237.21	50-75	1.64-2.46	Pinewood Purchased Plots
927	Probable Burial	No	3899430.46	514241.92	50-75	1.64-2.46	Pinewood Purchased Plots
928	Probable Burial	Yes	3899428.11	514243.52	75-100	2.46-3.28	Pinewood Purchased Plots
929	Probable Burial	No	3899418.61	514245.42	75-100	2.46-3.28	Pinewood Purchased Plots
930	Probable Burial	No	3899412.86	514244.75	75-100	2.46-3.28	Pinewood Purchased Plots
931	Probable Burial	No	3899406.37	514238.35	75-100	2.46-3.28	Pinewood Purchased Plots
932	Probable Burial	No	3899407.58	514236.48	75-100	2.46-3.28	Pinewood Purchased Plots
933	Probable Burial	No	3899447.76	514200.85	75-100	2.46-3.28	Pinewood Purchased Plots

Individual GPR Anomalies

Anomaly ID	Description	Marker	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Depth (cm)	Depth (ft.)	Section
934	Probable Burial	No	3899574.03	513814.61	75-100	2.46-3.28	Elmwood Purchased
935	Possible borrow pit or mass grave	No	3899499.40	514060.31	50-125	1.64-4.10	Pinewood Potter's Field
936	Possible borrow pit or mass grave	No	3899481.87	514143.50	50-75	1.64-2.46	Pinewood Potter's Field
937	Plot Divisions	N/A	3899429.58	514217.75	25-100	0.82-3.28	Pinewood Purchased Plots
938	Linear Compacted Surface	N/A	3899469.84	514153.88	25-75	0.82-2.46	Pinewood Potter's Field

APPENDIX D: SCOPE OF WORK

REQUEST FOR PROPOSAL

REMOTE SENSING SURVEY
ELMWOOD/PINEWOOD CEMETERY

MECKLENBURG COUNTY, NORTH CAROLINA

TIP #P-5002
WBS #51800.1.STR01T1A

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I. INTRODUCTION

The North Carolina Department of Transportation (NCDOT) Rail Division proposes to construct a grade separation between the Norfolk Southern Railway Mainline and the CSXT Mainline in Charlotte. The purpose of the project is to improve mobility along both raillines. Currently, over forty (40) freight and passenger trains pass through the crossing daily. Considerable delays occur when freights along one mainline have to wait for freights on the other mainline to pass through the crossing.

The project proposes to lower the CSXT Mainline railroad tracks into a trench. The project limits extend from the CSXT bridge over I-77 to the Tryon Street overpass. The trench will be wide enough to accommodate two railroad tracks. The proposed trench is along the CSX Charlotte Subdivision. The Elmwood/Pinewood Cemetery borders the south side of the proposed trench. The National Register of Historic Places boundary of the cemetery is the centerline of the CSX mainline whereas the CSXT right-of-way extends into the cemetery. It has been noted that unmarked graves may be located within the CSXT right-of-way portion of the cemetery. The number of marked and unmarked graves as well as any other potential burials within this sliver of property paralleling the railroad needs to be determined.

Remote Sensing operations will be limited to the CSXT right-of-way, which extends into the Elmwood/ Pinewood Cemetery (i.e. the APE), and, more specifically, to the area between the existing fenceline and the edge of right-of-way (see attached). This Remote Sensing Survey outlines the measures the NCDOT, in consultation with the State Historic Preservation Office (hereafter NC-HPO), proposes to carry out in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

II. PROJECT BACKGROUND

Archaeological investigations, of any kind, have never been conducted within the confines of Elmwood/Pinewood Cemetery. However, a Phase II architectural survey was conducted in order to identify all historic architectural resources located within the Area of Potential Effects (APE) for the proposed grade separation (Mattson et al. 2009).

That technical report is part of the environmental studies conducted by NCDOT, Rail Division and is on file at the NCDOT, Raleigh, North Carolina. The report meets the guidelines for architectural surveys established by the NCDOT (October 2003). These guidelines set forth the following goals for architectural surveys: (1) to determine the area of potential effects (APE) for the project, which is defined as the geographic area or areas within which a project may cause changes to the character or use of historic properties, if any such properties exist; (2) to locate and identify all resources within the APE that are fifty years of age or older; and (3) to determine the potential eligibility of these resources for listing in the National Register of Historic Places (NRHP).

The Phase II architectural resources survey consisted of background research into the historical and architectural development of the study area and a field survey of the APE. The field survey was undertaken to identify all properties within the APE that appeared to be at least fifty years of age. Mattson et al. (2009) note that the Elmwood/Pinewood Cemetery had been previously determined eligible for the NRHP (DOE [Ramsey 2001]) and that the cemetery is considered a local landmark.

III. DESCRIPTION OF ELMWOOD/PINEWOOD CEMETERY

The primary focus of the remote sensing survey will be on a portion of the historic Elmwood/Pinewood Cemetery in uptown Charlotte, which is overlapped by the Right-of-Way for the neighboring CSX Rail Line. Elmwood/Pinewood Cemetery is located on the 700 block of West 6th Street in Charlotte, North Carolina. Previous historical research has indicated that Elmwood/Pinewood Cemetery possesses special historical significance for the City of Charlotte and Mecklenburg County (Ramsey 2001). Originally opened in 1853 as a 100-acre plot that included Pinewood Cemetery, a segregated African American cemetery, and Potter's Field, a pauper's cemetery, Elmwood Cemetery forms one of Charlotte's oldest public cemeteries. For a more detailed description of Elmwood/Pinewood Cemetery, please refer to Ramsey (2001).

IV. GENERAL RESEARCH GOALS AND OBJECTIVES

In recent years, remote sensing techniques have been increasingly used by archaeologists. Geophysical investigations, one branch of remote sensing, are valuable because of their potential for predicting what is underground without disturbing the archaeological record.

Burials are often poorly marked in cemeteries, and many cemeteries suffer from poor or non-existent record keeping. What you see on the surface does not always reflect what is below. Grave markers can be at the head, foot, or center of a grave, or can be some distance from the grave. Burials can be oriented in any direction relative to a marker or nearby burials. The markings on the gravestone may face towards or away from the burial. Multiple individuals may be buried under one marker. Many burials lack markers, typically because the original marker was made of wood or because of vandalism. Markers may be situated over empty graves. Well-maintained cemeteries typically do not have depressions over a grave; if there is a depression, it may be far larger or smaller than one would think necessary. Depressions are not always signifiers of graves, since grave diggers can borrow soil from nearby areas to fill in low spots, creating depressions that resemble graves.

In sum, you cannot assume that surface indications have anything to do with what is below the surface. If records are inadequate, some sort of remote sensing or subsurface testing is needed to locate burials.

A. General Objectives

The general objectives of the Remote Sensing Survey slated for the Elmwood/Pinewood Cemetery are to document the number of potential burials located within the project's APE (Area of Potential Effects), and to record any extant markers for analysis and interpretation of the cemetery. Additional background research will be required in order to determine the timeframe and nature of any potential burials recorded. Such an endeavor will include documenting the depth and extent of possible burial anomalies and defining any additional anomalies and features within the cemetery. Detailed mapping of the site is required.

B. Research Questions

Historic cemeteries are found in every rural and urban community across North Carolina, providing rare opportunities to study and honor our ancestors and the communities they created. They are not only memorials to past generations, but are evidence of settlement patterns, family relationships, religion, lifestyles, and craftsmanship.

Historic-period cemeteries represent an important cultural resource class, which has benefitted from advances in the application of remote sensing techniques. Unlike domestic archaeological sites, cemeteries often have low site visibility. Their principal above-ground material elements may include only stone, wooden, or iron grave markers. In many cases, these markers have been displaced or are no longer extant. Often, only landscape features, such as fences or plantings of periwinkle, English ivy, or certain trees, may signal the presence of a historic period cemetery.

The identification of graves within such cemeteries is important for a number of reasons. Increasing development pressures in many parts of the country threaten both marked and unmarked cemeteries. This trend is paralleled by a heightened awareness of the legal and ethical concerns associated with cemeteries and their preservation. In response, individuals, families, and preservation organizations are reclaiming "lost" cemeteries. Moreover, cemeteries contain important data on human mortuary patterns and on biological and pathological variations that are often unavailable from any other source.

Urban Setting

Alternative arrangements were required for the large and increasing numbers of burials required each year in towns and cities across the country. The solution favored was that of large, secular cemeteries, though the ownership, management, style, and other function varied greatly. In America, local government and

private companies set up most cemeteries, though some secular societies and religious institutions established them as well (Florence 1997; Masson 1993; Sledge 2002; Sloane 1991).

Ethnicity

In some contexts, segregation was often employed, with distinct newly designed cemeteries for racial groups, as well as different denominations. As racial segregation intensified in the late 19th and early 20th century, separate cemeteries were established associated with the ethnically defined suburbs that were being constructed. The situation regarding racial separation varied across America. Cost was the only factor in most of the Northeast, but there were planned segregated sections in the Midwest, and completely separate cemeteries in much of the South (Jordan 1982; Little 1998; Sloane 1991; Stokes 1991). The perceived need for racial segregation within the burial site was a significant element in the planning and design of cemeteries in some American contexts.

Later 20th century memorials from North Carolina have been surveyed and the importance of concrete markers and plot enclosures has been noted; there is also a significant number of unique, home-made memorials in various materials, often reusing other items (Little 1989, 1998; Nigh 1997).

Social Hierarchy

The position of a burial, and of any subsequent memorials, was often heavily influenced by the social standing of the family of the deceased. This may relate to which burial ground was used, or where within the burial ground interment was located. Thus, social and racial segregation could be relevant, or cost would be a factor. As burial spaces became occupied, and as desirable locations for interment and commemoration changed over time, so the dynamics of social differentiation led to shifts in the competitive social arena of death.

Commercial cemeteries may have wished to maximize income, and so from the 19th century onwards many people were faced with choices regarding location and type of burial which was based on cost and, in some cases, other social criteria as well. In this way, a more complex spatial element in the social stratification in death could be constructed, and was a clear outcome of the rules and regulations of each cemetery. Cemeteries in North America in the 19th century provided the middle classes with an arena for commemoration and remembrance, and the poorer sections of society an area for common burials, at a low charge and with no rights for a memorial (Barnard 1990; Murray 1991; Sloane 1991). Evidence for these burials may be very limited, but documentary sources should allow their place in the overall demography and mortuary culture of the cemetery.

V. REMOTE SENSING METHODOLOGY

A. Ground Penetrating Radar (GPR)

Ground-penetrating radar (GPR) data is generated by the reflection of pulses of energy transmitted into the ground. The energy bounces off the buried features, and is detected with a receiving antenna. Each below-ground feature reflects this energy in its own unique way. Objects and soils of different densities will generate detectable signals. By providing the user with the ability to "see" below the surface without disturbing anything, GPR is the ideal tool for locating sensitive features such as graves.

Though GPR does not currently reveal details such as skeletons or coffins, it does show excavation features. In some cases, the actual shafts of the burial can be detected, while in other cases, only the near-surface soil truncation may be detected. By analysing slice-maps, it may be possible to determine the locations of burials relative to their headstones, whether or not caskets were wooden with no metal, lead-lined, or even some other significant metal. Furthermore, GPR may be able to detect slight void spaces caused by partial collapse of the coffin.

Since historic-period graves most often are aligned in an east-west trend, GPR profiles generated along north-south lines are much more likely to cross graves. The spacing between profile lines directly affects

the reliability (and cost) of the survey (Jones 2008; King et al. 1993). Closely spaced profiles of 1-2 ft. apart usually allow excellent definition of underground features. While such a survey is time-consuming and can be costly, it is most successful for identifying the location of individual graves. Widely spaced profiles of 10-20 ft. apart, on the other hand, may only intersect a fraction of the graves. Such surveys are useful, however, if the goal is simply the definition of the cemetery boundaries. Perpendicular profiles, along both north-south and east-west lines, also aid in the location of graves and help define the orientation of the burials; however, this doubles the amount of field work and analysis. Given the size of the survey area, environmental conditions (e.g. vegetation, soil), and the number of burials that may be encountered, an appropriately spaced profile interval will be determined in consultation with representatives from the NCDOT Archaeology Group.

Site conditions are a critical consideration in designing a successful survey. Sampling strategies should be adapted to expected feature types and patterning, site conditions, instrumentation, research goals, and time and budgetary considerations. Choice of instrumentation and methodology, scheduling, budgets, and overall feasibility are all affected by the cultural and physical contexts of the cemetery. Conditions that should be considered include:

- Age of cemetery
- Burial practices
- Monument types and landscape features
- Ethnicity, status, and other factors that may affect the archaeological record
- The presence of metal as debris, fences, utilities, etc.
- The use of metal and igneous rock in monuments and burial features
- Detailed characterization of soils
- The presence and composition of rock and gravel.
- Vegetation
- Physical obstacles to survey

No meaningful consideration of survey design or budget can occur without considering sample density. Although appropriate sample densities differ between each instrument, the sample interval should be proportional to the scale and contrast of anticipated features. Cemeteries are rather challenging subjects, and experience has shown that transect intervals of 0.5 meter or less, with multiple readings per linear meter along each transect are generally required for good results. The patterning and orientation of sampling are also important. Bias introduced by sampling patterns can obscure cemetery patterning, or introduce "false positives" that resemble cemetery patterning. This fieldwork will follow general documentation standards delineated in the following section on Excavation Procedures and Standards.

B. Remote Sensing Standards

The Remote Sensing Survey for the Elmwood/Pinewood Cemetery will conform to the *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation* (36 CFR 61) and will follow these specific standards:

1. A temporary datum (since this is a maintained, public cemetery) will be placed in the site vicinity and all transects and anomalies will be located in reference to the datum.
2. Measurements will be recorded using English system units, since Native American components are not anticipated.
3. A plan view of the surface features and elevations of the site should be drawn to scale and tied to the rail design plans. The consulting archaeologist is expected to incorporate all relevant spatial data into current design files.
4. Please note that the system of designating all spatial-control contexts should be systematically and uniformly applied in field notes, maps, analytical records, and in the report – from the table of contents to the appended data spreadsheets, including figure captions and tabulated data presented in the text. Mapping of all anomalies will provide very useful data for assessing the number of graves, if any, potentially impacted by the proposed project.

5. All cultural features (e.g. headstones, footstones, markers, curbing) will be properly recorded. Burial features will not be investigated/excavated. Feature locations will be tied to a general site map. Written descriptions of features should include, but not be limited to, dimensions, shape, and material.
6. A digital photographic record of the Remote Sensing Survey will be maintained.

C. Analyses

Elmwood/Pinewood Cemetery represents one of the oldest historic cemeteries in downtown Charlotte, having been established in 1853. The recovery of artifacts is not to be considered a part of this survey. The collection and analysis of spatial data regarding potential burial locations is the primary objective of this remote sensing survey. Emphasis should be placed on the spatial patterning of archaeological features (i.e. soil anomalies, probable burials, etc.). Analysis of the spatial patterning of features/anomalies will be used to determine the organization and use of space and number of potential graves that may be impacted by the proposed project. Material culture analyses (i.e. extant grave markers) may also lead to the determination of the temporal range of the site. A multidisciplinary approach to cemetery analysis is highly recommended.

1. Intra-site Spatial Arrangement: The study of intra-site patterning can be carried out rarely with a study of both surface commemorative markers and the interments within the burial ground. Studies of surface memorials are the easiest to conduct, but it should be remembered that many interments may not be marked, or that commemoration may take place on a monument which was not at the location of the burial. Nevertheless, intra-site spatial analysis offers many opportunities for research. A site plan or plans will be drawn, showing the topographic contours of the site, landmarks, the site grid, features, and important site data plotted during the survey. Photographs, drawings, maps, and other illustrations will be used as necessary to support interpretations.
2. Material Culture Analysis: Grave markers (e.g. headstones, footstones, plaques, etc.) within the APE should be analyzed, typed, quantified, and described in comparison to an established typology like Little (1998) or Mytum (2004) (see Bell 1994).

D. Documentary Research

Documentary research will be conducted at the State Archives and other appropriate sources in an attempt to locate more detailed information about the history of Charlotte and Mecklenburg County, in general, and the establishment of Elmwood/Pinewood Cemetery, in particular. In order to understand the historic components investigated during this survey, previous historical research in the area should be consulted. Such research should include all gray literature in the reports and library of the State Historic Preservation Office (SHPO) and/or the Office of State Archaeology (OSA) and consultation with the appropriate SHPO/OSA personnel. From an historical perspective, additional research may include sources such as census records; land deeds; historic maps and plats; family papers, wills, probate inventories; and military records from the Department of Archives and History, the Mecklenburg County Courthouse, local and regional libraries; and informant interviews. The Public Library of Charlotte & Mecklenburg County maintains a database of known cemeteries and burial records for Mecklenburg County (http://www.cmstory.org/cemetery/default.asp); it should be noted that there are separate entries for Elmwood Cemetery, Pinewood Cemetery, and Elmwood/Pinewood Cemetery, the listings for which may overlap.

Mr. Mike Shroyer (Engineering & Property Management Dept.) is the City of Charlotte point of contact for the Pinewood/Elmwood Cemetery; he may be reached at (704) 336-2124 or by email at mshroyer@charlottenc.gov; Mr. Shroyer will need to know the remote sensing schedule in advance so that he can coordinate mowing, parking, and necessary brush removal activities. The Charlotte-Mecklenburg Historic Landmarks Commission ([CMHLC] http://www.cmhpf.org/index.html) and Historic Charlotte, Inc. (http://www.historiccharlotte.org/pep.shtml) may also have pertinent information pertaining to the history of Elmwood/Pinewood Cemetery.

E. Constraints on the Investigations

As with any archaeological investigation, some constraints on the methodology and analysis are inevitable. Environmental factors that may affect the project include the presence of vegetation, natural disturbances such as bioturbation of materials, erosion and soil matrix deflation, and modern and historic landscape alterations. The field investigator will attempt to identify and consider such constraints during the fieldwork and analysis phases of the project. All constraints or limitations should be addressed in the written report of the findings. If major alterations of the RFP are necessary, they will be done through the process defined in Section X below.

The National Register of Historic Places (NRHP) boundary of the Elmwood/Pinewood Cemetery is the centerline of the CSX mainline, and the CSXT right-of-way extends into the cemetery. The Remote Sensing Survey will be limited to the right-of-way and construction easements of the project (i.e. the APE). In particular, remote sensing operations will be conducted between the existing fenceline and the CSXT right-of-way that extends into Elmwood/Pinewood Cemetery.

VI. PROCESSING AND CURATION OF MATERIALS

It should be noted that this RFP is for a Remote Sensing Survey only. However, artifacts recovered from transportation-related projects in North Carolina generally become the property and responsibility of the North Carolina Department of Cultural Resources (hereafter DCR). The NCDOT, in cooperation with that department, ensures proper preservation and curation of cultural materials resulting from archaeological investigations as part of state transportation projects. Recovered artifacts will be stored in archival-quality bags or containers labeled by provenience unit, level, date, and other pertinent information. With the exception of brick fragments, marine shell, and iron, all material culture items will be washed, dried, inventoried, and marked with a permanent accession number. If required, preservation specialists from the DCR will be consulted on preservation treatments for perishable items.

Accession numbers will be assigned by the Office of State Archaeology (OSA). After analysis is complete, an inventory of all artifacts and samples will be prepared. The materials will be packaged for curation according to the *Archaeological Curation Standards and Guidelines* (OSA 1995). Artifacts may be stored temporarily at either the contractor's laboratory facility or until space is available for permanent curation either at the NCDOT or in a facility maintained by the DCR.

VII. REPORT OF INVESTIGATIONS

A. Management Summary

A brief summary report of the results of the survey will be prepared at the conclusion of the fieldwork, describing preliminary interpretations and the course of analysis, certifying that the research design set forth has been implemented and that the fieldwork specified has been completed for the Elmwood/Pinewood Cemetery. This management summary shall include a description of the Remote Sensing efforts, a summary of results, and recommendations. This summary will also be submitted to the SHPO as a progress report as part of the consultation process.

B. Draft and Final Technical Report

Following completion of the analyses, reports will be prepared detailing the results of the Remote Sensing Survey. This report will meet the requirements of the *Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716).

A thirty-day period will be required for review of the draft reports by NCDOT. Revised draft (i.e. final) reports will be submitted within four (4) weeks of the receipt of NCDOT comments, if any. A similar thirty-day period will then be required by the SHPO and EBCI THPO for the review of the revised draft (i.e. final) reports. Thereafter, any revisions required by the SHPO will then be submitted within four (4) weeks of their comments, if any. High-quality copies of the final reports will be produced either as print

medium or digital medium or a combination of those media (see Section XII for Deliverables). Non-technical summaries, if deemed necessary, may be prepared during the review periods, but distribution will be dependent upon the schedule of the selected publication outlet.

C. Popular Report/Displays

If deemed appropriate by the NCDOT, a popular report, or non-technical summary, of the remote sensing survey will be produced after the final report is completed. Such summaries will be prepared for distribution to the public. Outlets for distribution may include, but not be limited to, an appropriate state-wide archaeological or preservation program publication such as the *Archaeological Society of North Carolina Newsletter*, *Carolina Comments*, or *North Carolina Archaeology*, or through an NCDOT publication or internet site.

VIII. PROJECT PERSONNEL

This Remote Sensing Survey will be conducted by consulting archaeologists under contract with the NCDOT. The NCDOT Archaeology Supervisor will act as Project Administrator for this project in order to oversee the contract and coordinate consultation with the SHPO. Staff archaeologists for the NCDOT may provide additional coordination with the archaeological contractor as needed, or act as Project Administrator in lieu of the Archaeology Supervisor.

The Contract Principal Investigator (PI) will contact the NCDOT Human Environment Unit to discuss the initiation of the project and, if applicable, to schedule a field inspection of the project. Representatives from the Office of State Archaeology will be invited to attend any field inspection and will be consulted on any changes or modifications in the research design required by unforeseen developments or constraints (see Section X below).

All project personnel will meet the qualifications for professional archaeologists as listed in the *Secretary of the Interior's Professional Qualification Standards* (48 FR 22716).

IX. SCHEDULE

The schedule for this Remote Sensing Survey has not been finalized, but will commence with the Notice to Proceed. Right-of-Way acquisition has yet to be determined, but Construction is scheduled for FY 2014. It is anticipated that fieldwork will begin within two (2) weeks upon receipt of the Notice to Proceed. Management Summaries will be completed within ten (10) business days of the completion of fieldwork and documentary research. Draft reports of investigations and completed site forms, if appropriate, will be submitted within one (1) month of completion of fieldwork.

A thirty-day period will be required for review of the draft reports by NCDOT. Revised draft (i.e. final) reports will then be submitted within four (4) weeks of the receipt of NCDOT comments, if any. A similar thirty-day period will be required by the SHPO for the review of the revised draft (i.e. final) reports. Thereafter, any revisions required by the SHPO will then be submitted within four (4) weeks of their comments, if any. Non-technical summaries, if deemed necessary, may be prepared during the review periods, but distribution will be dependent upon the schedule of the selected publication outlet.

X. PROJECT CHANGES

Unforeseen constraints or unexpected findings may necessitate changes to the Request for Proposal (RFP) for the Remote Sensing Survey. If changes to RFP are recommended by the contractor or by the NCDOT, the NCDOT will consult with the SHPO about the need for such changes.

XI. ADDITIONAL PROVISIONS

1. Should human skeletal remains be encountered during this survey, the contractor will notify NCDOT and the proper authorities as provided under the provision of North Carolina General

Statutes No. 70{3}, "The Unmarked Human Burial and Human Skeletal Remains Protection Act."

2. The contractor will provide all materials, supplies, vehicles, and personnel, other than those expressly provided by NCDOT and approved by the NCDOT project director.
3. Neither the Contractor nor representatives of the Contractor shall release any sketch, photograph, report, or other material of any nature obtained or prepared under the contract without specific approval of the North Carolina Department of Transportation, Human Environment Unit, prior to the time of acceptance of the final report. Thereafter, use of information, and materials will by guided by agreement between the Contractor and NCDOT.

XII. DELIVERABLES

Deliverables under this contract include the following:

1. Management Summary of Remote Sensing Survey at Elmwood/Pinewood Cemetery within the proposed P-5002 project corridor (six copies).
2. Draft Report of Remote Sensing Survey for Elmwood/Pinewood Cemetery (two bound copies).
3. Final Report of Remote Sensing Survey for Elmwood/Pinewood Cemetery (six bound copies, two unbound copies, and two digital copies [text files should be in either Microsoft Word or Adobe PDF format; tables should be in Microsoft Excel format]).
4. Inventory of GPS Data (one digital copy; data must be compatible with ArcGIS and MicroStation).
5. North Carolina Archaeological Site Form, if appropriate.

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