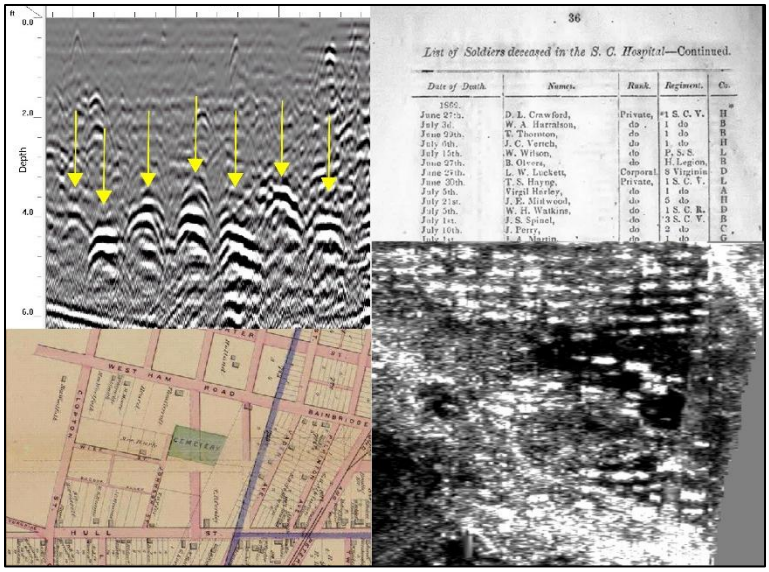
TECHNICAL REPORT MAY 2025

A Ground Penetrating Radar Survey of the 1857 Manchester Municipal Cemetery Richmond, Virginia



PREPARED FOR:

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RICHMOND, VA 23219-1907

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ABSTRACT

This report presents the results of a geophysical survey of a portion of the historic 1857 Manchester Municipal Cemetery, a 1.2-acre lot located adjacent to, and north of Wise Street, in the Manchester District in the City of Richmond, Virginia. The survey area is a suspected 19th-century cemetery associated with the City of Manchester. There are no records of who is buried at this location, but it is believed the site contains the remains of private citizens as well as deceased soldiers from military hospitals located in the area. The City of Richmond owns the property and serves as a gas booster and storage facility. A chain-link and barbed-wire fence fully encloses it. Aside from structures associated with the gas booster facility (i.e., transformers, shipping container, natural gas pipes, and treated power poles), the area was well-groomed grass and had few impediments. No extant grave markers were noted within the survey area. TerraSearch, under contract with the City of Richmond, conducted a non-invasive geophysical survey of approximately 1.28 acres of the substation lot and a portion of Wise Street.

The survey, conducted in March of 2025, included meticulous documentation, mapping, and a comprehensive geophysical study of the lot. The aim was to identify potential unmarked burials through a non-invasive geophysical survey, with the express intent of delineating the boundaries based on the results. The geophysical methodologies employed by TerraSearch entailed a systematic, gridded ground-penetrating radar (GPR) survey of the enclosed lot. Before conducting geophysical work, the team conducted an extensive pedestrian survey of the site to evaluate the existing evidence of potential burials, including stone grave markers, areas of grave subsidence, and invasive memorial vegetation.

Following best practices for cemetery surveys using non-invasive geophysical techniques, TerraSearch established systematic grids for data collection. The grids were formulated to be perpendicular to potential interments. Eight GPR grids were employed, encompassing approximately 4856.23 m^2 (52272.02 ft^2), and 792 individual transects were collected and analyzed during this survey.

The GPR survey results and subsequent analyses identified 742 potential unmarked graves in the cemetery (and likely more). Although all of the burials found were unmarked, the geophysical features identified throughout the cemetery displayed forensic evidence consistent with human interments and appeared unrelated to any other indication of burial, such as fieldstone or grave markers. While every effort has been made to identify features of interest through GPR, these methods are not foolproof and should be ground-truthed to verify the interpretations.

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CHAPTER I: INTRODUCTION

Introduction

TerraSearch, under contract with the City of Richmond, completed a comprehensive ground-penetrating radar (GPR) survey of a 1.2-acre lot and suspected interment area associated with the extant 19th -century Weisinger-Carroll House, a conscripted hospital located north of Wise Street, the South Carolina Hospital and General Hospital # 28 in the Manchester District, City of Richmond, Virginia. (Figures 1.1 & 1.2).

The site, located on property owned by the City of Richmond, is enclosed by a chain-link and barbed-wire fence and houses a substation with ancillary support buildings. Aside from a tree, a stump, and the modern structures, the lot was relatively open and free of impediments. Much of the lot features a well-manicured lawn and does not exhibit signs of interments.

The project objectives and methods were determined in consultation with Ms. Kimberly M. Chen, Senior Manager, City of Richmond. The work aimed to investigate and delineate any potential unmarked burials associated with the lot using non-invasive methods to survey portions of the property. The GPR (Figure 1.3) surveys (including a small section of Wise Street) totaled approximately 1.28 acres.

Scope of Work

The non-invasive geophysical work at the 1857 Manchester Municipal lot included the following tasks:

- Task 1: Background research and a detailed review of available sources and aerial photographs of the property to be surveyed;

- Task 2: Establishing a systematic grid or grids within the project area: the beginning and end points of each grid were recorded by a global positioning system (GPS) to provide accurate control points for the survey;

- Task 3: A non-invasive GPR prospection survey of the study area. No ground disturbance or ground-truthing of anomalies was undertaken as part of the project;

- Task 4: Review the GPR, background, and imagery data to assess the survey area for soil anomalies systematically and to make informed decisions about the nature of these anomalies (i.e., grave shafts, landscaping, utilities, etc.);

- Task 5: Produce a comprehensive technical report, including detailed summaries of all facets of research, methodology, survey results, and recommendations.

Project Personnel

Mr. David M. Givens, M.A., RPA, served as the Principal Investigator and supervised all aspects of this project. Kurt Fredrickson, M.S., RPA, and Mr. Givens conducted fieldwork. Mr. Givens performed data analysis and prepared the graphics for this report. Ms. Chen prepared the historical context for the site. Mr. Eric Heffter, Ph.D., conducted the thermal drone imaging (Remote Pilot License # 4834036). Mr. Givens and Ms. Chen co-authored the report.

Organization of the Report

Chapter II discusses the methods used to complete this investigation. Chapter III presents the region's natural setting encompassing the Project Area and includes a brief overview of the region's geology, hydrology, and soils. Chapter IV provides a short history of the site. Chapter V provides the results of the geophysical survey of the cemetery. Finally, Chapter VI contains a summary and conclusion of the data collected for this report. A bibliography (Chapter VII) is followed by referenced images, which, if not included in the body of the report, are located in the appendix (Chapter VIII).

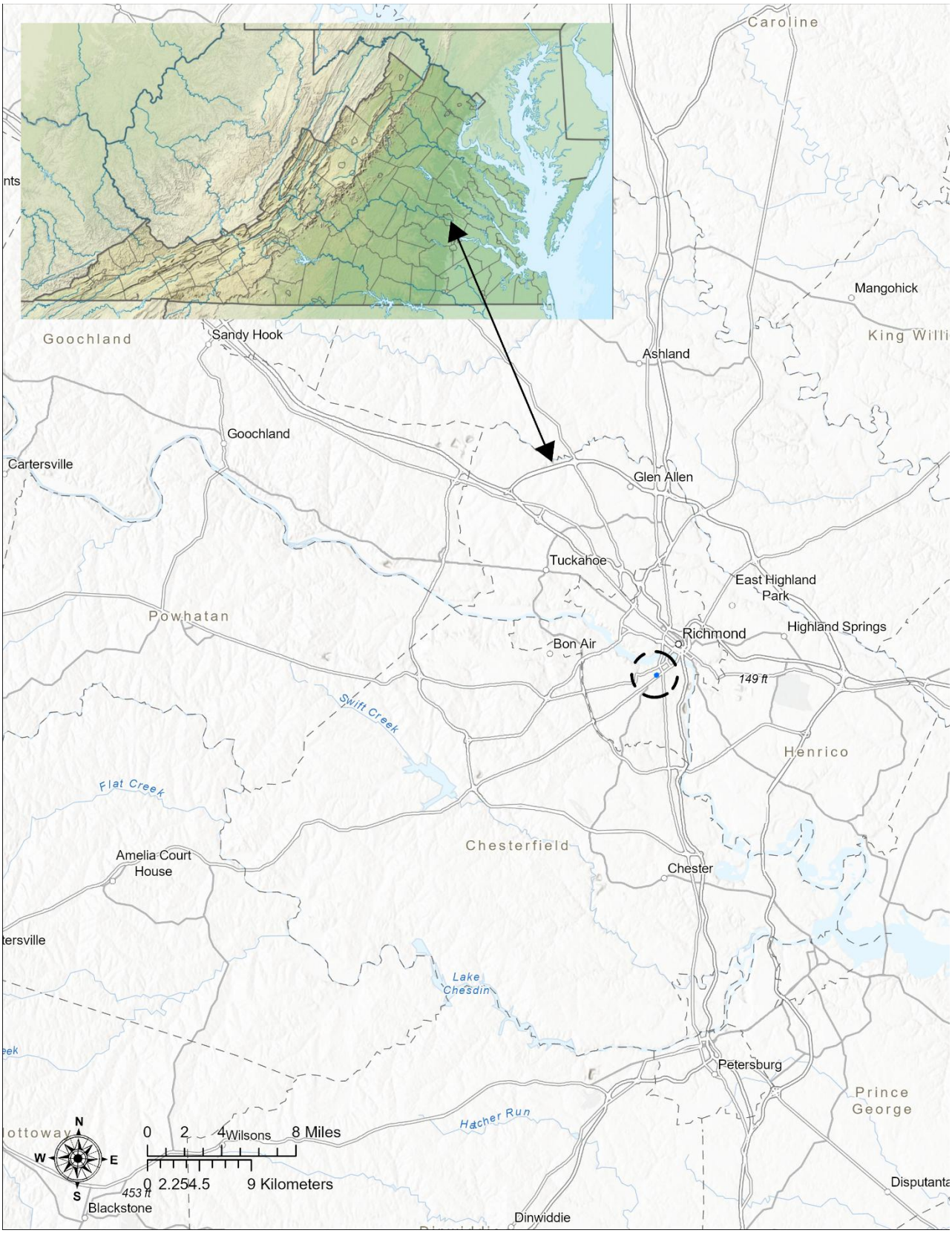


Figure 1.1. Location of the Project Area, City of Richmond, Virginia.

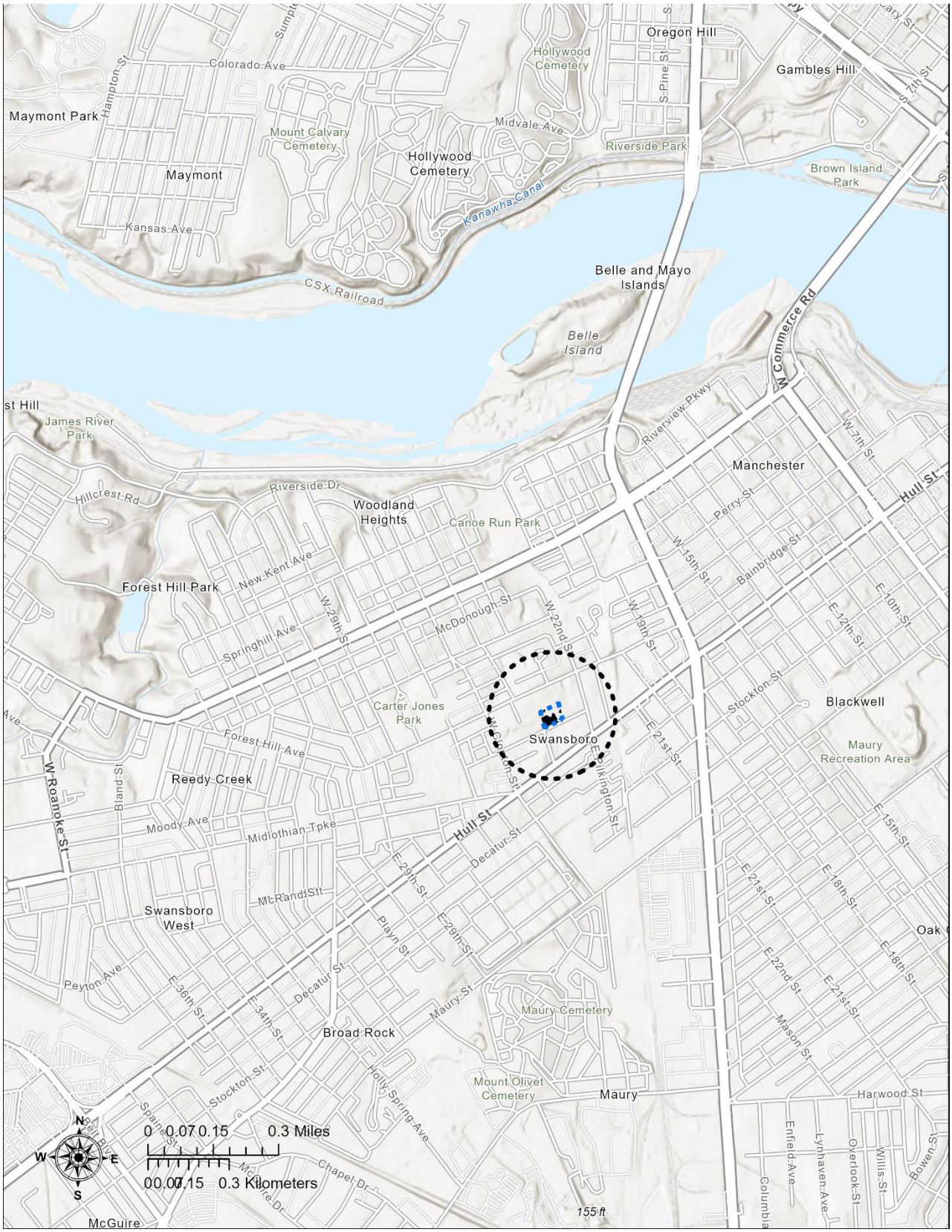


Figure 1.2. Location of the Project Area, Manchester District, City of Richmond, Virginia.

Figure 1.3. Aerial perspective of the Project Area, Manchester District, City of Richmond, Virginia.

CHAPTER II: METHODS

Introduction

This chapter describes the research design and field methods employed to conduct the geophysical survey of the Wise Street gas booster lot, including Ground Penetrating Radar (GPR), mapping, and documentation. Additionally, the location and point of contact for the facility where all cultural material, drawings, maps, photographs, and field notes generated during the survey will be curated are provided below.

The investigation's fieldwork was comprehensive, and planning utilized the information provided by the client before and during the undertaking (both virtually and on-site). The following sections provide an overview of the methods employed to conduct a comprehensive geophysical and documentary survey of the site. All work for this project was performed in accordance with and by TerraSearch staff who meet or exceed the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716).

Prospection and Recording Surficial-Related Features

Before any formal gridded geophysical data collection, a walkover of the entire site and surrounding area was conducted. The close inspection of the site was twofold: to identify contextual information that could aid in understanding the context of the site (e.g., the presence of grave makers, subsidence areas, age of markers, ground cover, and vegetation) and, if present, to determine the best way to conduct a gridded survey of the site (e.g., orientation of subsided grave shafts and burial markers).

Survey and Mapping Methods

After the walkover, TerraSearch personnel established eight survey grids within an area defined by the preliminary walkover and consultation with Ms. Chen. Each grid included two baselines, approximately perpendicular to the long axis of the lot (W-E) and parallel to Wise Street. These baselines were used to establish grids for referencing all geophysical data collected and accurately mapping all surficial features and vegetation associated with the cemetery that obstructed the survey.

All geophysical work at the cemetery was collected using fiberglass tapes and steel chaining pins, thereby minimizing errors in locating features identified through geophysical testing. Field observations and maps were digitized to create a permanent record of the GPR and survey areas, as well as related surficial information, observed field data, and landforms.

Digital Photography Methods

Digital photography of the survey in progress and from each corner of the survey area was conducted to document and digitally preserve the grid's location. All above-ground features were sufficiently well-lit such that photographs captured as much of the subject and relief of inscriptions as possible (see appendix).

Ground-Penetrating Radar Methods

GPR is an active, non-invasive geophysical method that records contrasts in the dielectric properties of subsurface materials (Heimmer and De Vore 1995; Clark 2001; Bristow and Jol 2003; Conyers 2004, 2006;

Daniels 2004). A pulse of transmitted electromagnetic energy emitted from the GPR antenna is reflected or absorbed by such contrasts, and the resulting reflections are recorded to produce a vertical profile. Most reflections are generated at interfaces between materials of differing relative dielectric permittivity, i.e., at the boundary between different stratigraphic layers, where changes in velocity occur (Figure 2.1). A two-dimensional GPR profile represents vertical and horizontal stratigraphy consisting of individual traces resulting from a single pulse of energy and the resulting reflections at a given location that are stitched together to produce an image of dielectric contrasts. In this sense, GPR does not provide a stratigraphic profile; rather, it represents local dielectric contrasts that provide a proxy for subsurface stratigraphic changes.

GPR is an established prospecting method for human graves and archaeological features, such as wells, privies, shafts, buried building foundations, trenches, and other forms of cultural stratigraphy. These features are visible with GPR due to dielectric contrasts between the feature fill and surrounding homogeneous soils, often visible truncation of internal "natural" stratigraphic layers, or as reflections from high-amplitude surfaces, compacted surfaces, or constructed floors made of bricks or stones.

Geophysical survey for human burials is a common and viable GPR application due to the above forensic characteristics. A grave shaft is a vertical cut into potentially intact stratigraphy, recognizable in reflectance profiles as a discrete incision into soil profiles. Observed grave fill will often display evidence of subsidence manifested as slumping stratigraphic layers within the shaft. Grave fill should and frequently does contain internal characteristics derived from disturbance or discombobulation of soil layers that contrast sharply with the surrounding undisturbed subsoil (Figure 2.2) (Bevan 1991). Unmarked graves in disturbed soil contexts may be more difficult to discern.

Well-preserved coffins, along with brick or concrete vaults, provide ideal point-source objects to generate characteristic hyperbolic reflectors in the GPR data. A high-amplitude reflector can also be mapped horizontally in three-dimensional time slices or amplitude maps. Profiles are generally collected across marked graves (i.e., headstones and footstones) as comparative data sets.

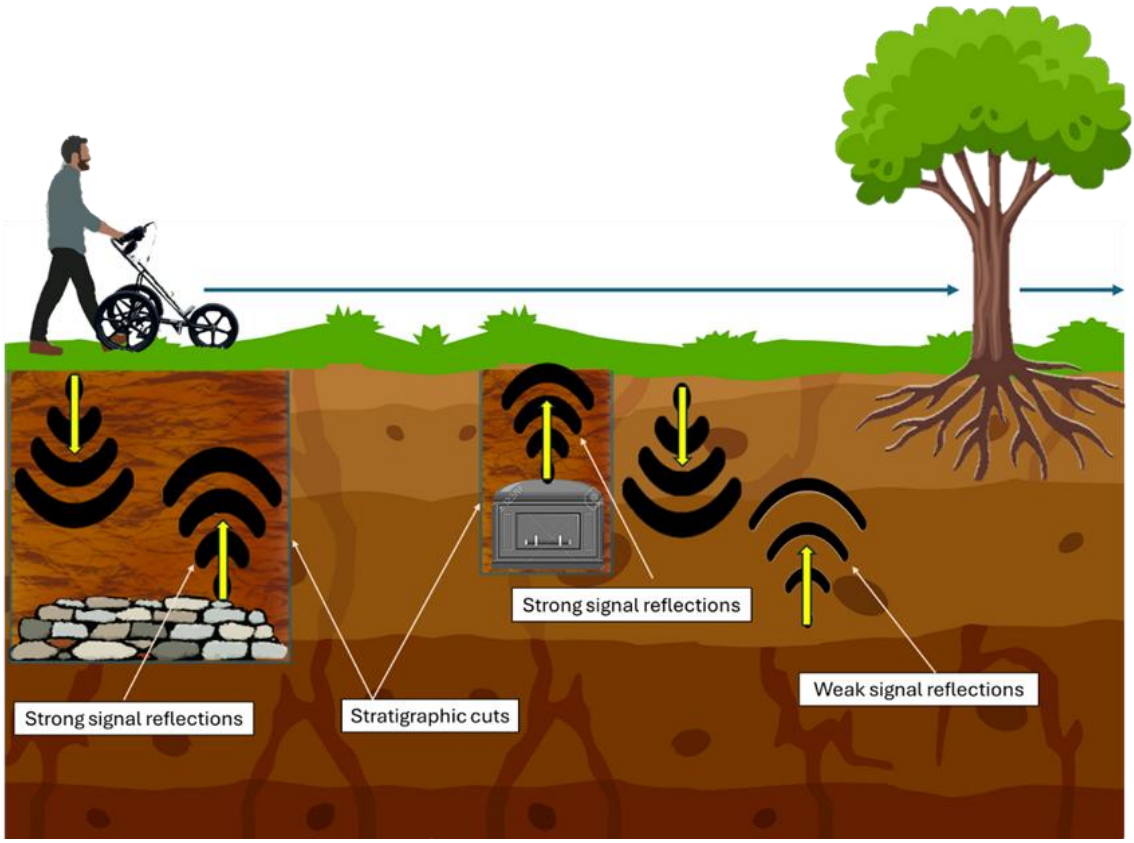


Figure 2.1. Idealized strong and weak reflectors from objects and soils via GPR.

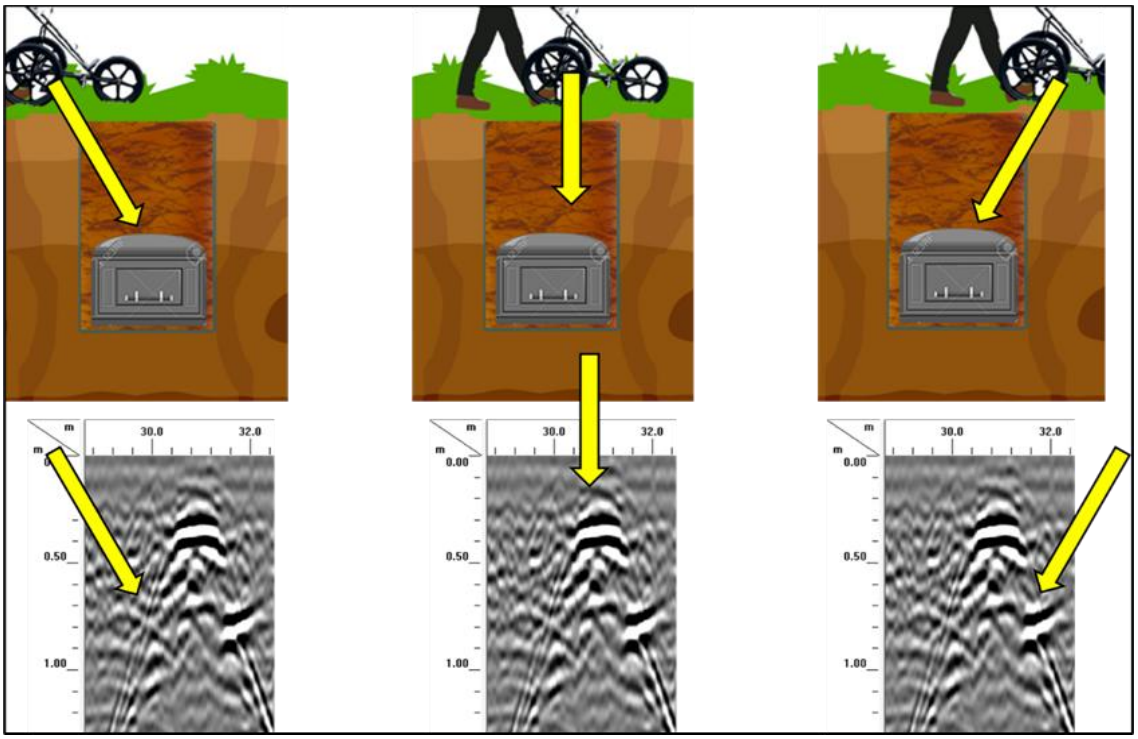


Figure 2.2. Idealized radar reflections from a coffin produce faint hyperbolic tails on either side of the coffin as the antenna approaches, moves over, and then passes the target. The result is a dense, bright parabolic reflector representing the top of the coffin.

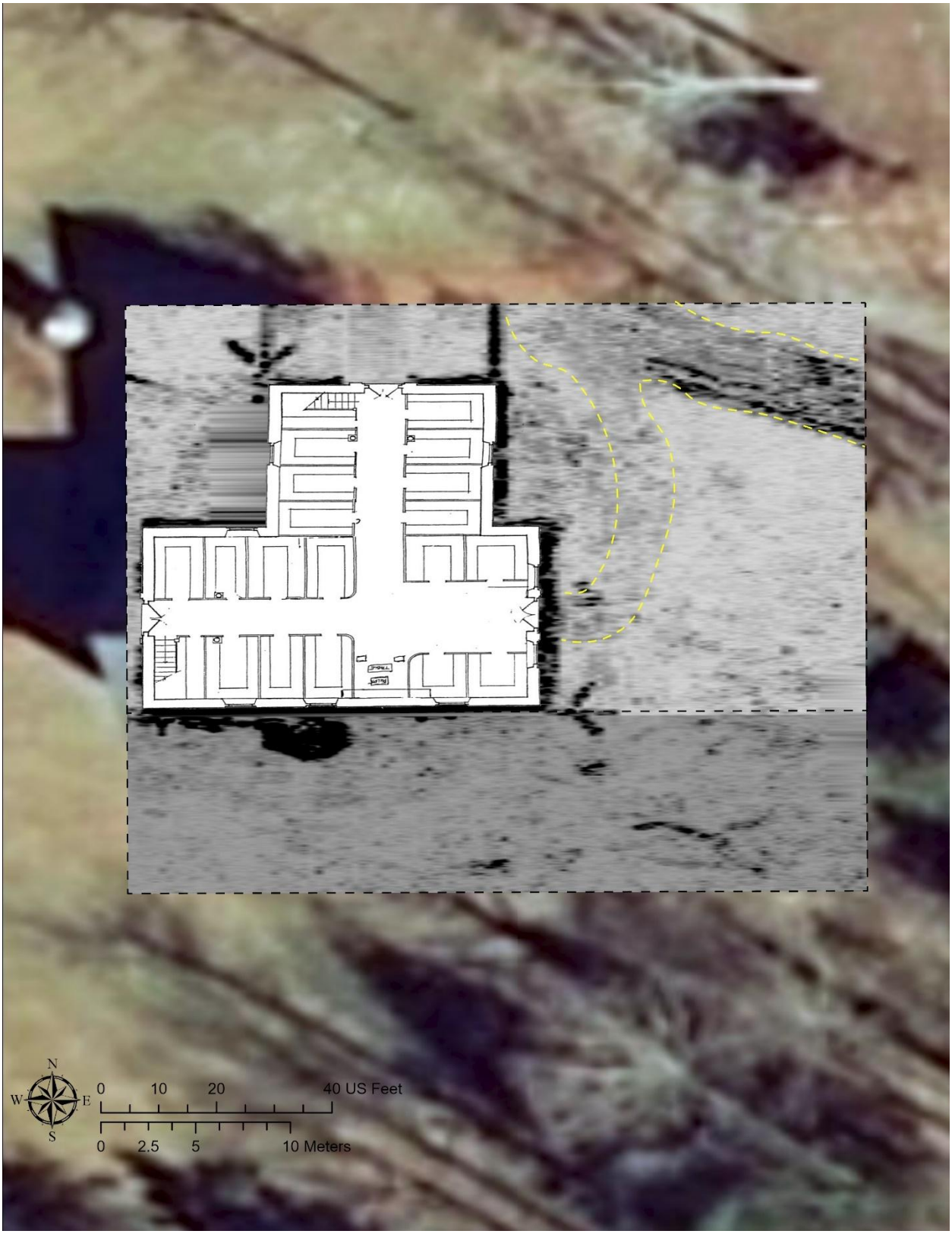


Figure 2.3. An example of a historic road and path (yellow dashed line) serving St. John's Church (ca. 1734), West Point, Virginia. Note the high-amplitude linear features likely representing wagon ruts (yellow arrow).

GPR prospection for historical period features yields differing characteristics and morphologies of the geophysical signatures. Structural cellars (stone- or brick-lined), foundations, postholes, and middens result in notably distinctive diagnostic GPR profiles. As many of these features entail a vertical cut through subsurface stratigraphy, the buried target often contrasts sharply with the surrounding undisturbed subsoil. Internal characteristics of these types of domestic features frequently contain a variety of point-source reflectors. Walls provide high-amplitude vertical surfaces with unique GPR signatures, characterized by "single tail" and often variegated hyperbolae as the survey unit passes over the target. The resulting three-dimensional maps usually yield ideal representations of buried structures. An example of an ideal amplitude map and profile transect displaying a service road and path to an 18th-century church in West Point, Virginia, is shown in Figure 2.3.

The geophysical work utilized a GSSI Utility Scan GPR system with a 350 MHz HyperStacking antenna to conduct the GPR survey. The antenna and UtilityScan are mounted on a custom-built carriage by GSSI and utilize an encoder-triggered collection of 50 traces per meter (one reading every 0.8 in). All GPR data were collected at 25 cm intervals in four unidirectional transect grids. In areas where obstructions were encountered that prevented completion of the survey transect, such as a headstone, fence, tree, etc., an additional or continuation transect was collected, beginning at the opposite end of the obstacle. Before starting the continuation, the position of the GPR machine was carefully recorded manually to ensure that no data was lost during the survey.

In addition to the GSSI antenna, the TerraSearch team utilized a MALÅ HDR (High Dynamic Range) GPR unit specifically to image a portion of Wise Street and the substation lot, confirming suppositions about potential interments in the street and providing additional forensic evidence for probable graves identified within the fenced survey area. The MALÅ HDR array utilizes 11,500 MHz center-frequency antennae and 12 receivers. For the Wise Street lot, the system was configured to collect data as a multi-channel array, simultaneously collecting data from 22 different frequencies, allowing for data collection from any transmitter-receiver combination within the array. Each antenna is spaced 6.5 cm apart, allowing for precise, high-resolution data that excels in complex contexts, such as streets and multi-acre (i.e., 35-acre) archaeological sites.

GPR Data Analysis

All GPR profiles were interpreted and analyzed using GSSI RADAN and MALÅ Vision software and industry-standard techniques (i.e., Conyers 2006; Leach 2019; 2021). These techniques include the following RADAN software adjustments to the raw data collected in the field: Time Zero, Range Gain, Background Removal, Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) Filters, Migration, as well as three-dimensional and two-dimensional exploratory data analysis.[1] Each of these techniques is described in more detail below.

Time Zero is a position correction of the ground surface relative to the radar pulse transmitted from the machine, measured in nanoseconds. For the Utility Scan, the position correction is generally minimal, approximately 1 to 3 nanoseconds. Range Gain is a critical analytical technique because it enables the user to adjust the radar signal relative to the depth of the recording device. As the signal travels farther from the machine, it becomes weaker, and vice versa. The dataset must be normalized to compensate for this and correctly interpret the entire target depth for the GPR analysis. TerraSearch personnel utilized an

[1] These techniques are applied generally to a dataset to "ground" the analysis. There is no "cookie cutter" approach to GPR analysis. Each survey presents unique environmental and soil conditions that require informed choices in both the analysis and the collection of data.

exponential Range Gain to analyze the data, as this technique most closely approximates the loss of signal with depth relative to the machine.

Background Removal is another normalization technique that removes horizontal "noise" from the dataset, or those targets that extend the entire length of a GPR transect and are thus not relevant for an archaeological analysis (but may be applicable for geological analyses); noise interference from radio frequencies (cell towers, WIFI, radio towers, etc.) are also removed using the Background Removal function. FIR and IIR filters are generally applied as a custom background removal of frequencies that appear spurious after an exploratory analysis. Migration is a transformation that flattens the appearance of a conical shape associated with hyperbolic reflectors, which are visible at depth and, thus, farther away from the machine in horizontal space.

Finally, while three-dimensional viewing of the GPR dataset presents a powerful way to interpret geometric patterns, it is merely an algorithmic approach to viewing two-dimensional data. All GPR transects were analyzed as amplitude profiles (two-dimensional) and in post-processed formats; these data were then compared with three-dimensional geometric targets to interpret geologic and anthropogenic features.

Curation

After completing and accepting the Final Report of Investigations, TerraSearch will curate all drawings, maps, photographs, field notes, and GPR data.

Report Preparation

The data gathered during the survey are synthesized and presented in this report. While TerraSearch understands that this work is being conducted solely for planning and preservation purposes, all work complied with the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716).

GPR Grid Layout

Eight GPR grids were collected during the cemetery's geophysical fieldwork (Figures 2.4 & 2.5). The GPR grids (Grids 1 – 8) were designed and surveyed to encompass what was believed to be the cemetery's core, based on 19th-century maps of the area (see Chapter IV). scattered around the landscape. The survey areas shared contiguous borders, allowing data processing and analysis of a larger bounded area, and a total of 792 survey lines were collected (Figures 2.6 & 2.7).

WCC GPR Grid	Approximate Size (m)	Approximate Size (ft)	m^2	ft^2	# Transects
WCC GPR Grid 1	29.96 (N-S) x 36.17 (E-W)	100 (N-S) x 119 (W-E)	999.36	10,757	119
WCC GPR Grid 2	29.96 (N-S) x 24.31(E-W)	100 (N-S) x 80 (W-E)	728.36	7,840	81
WCC GPR Grid 3	26.89 (N-S) x 19.21 (E-W)	88.23 (N-S) x 63.02 (W-E)	443.88	4,778	64
WCC GPR Grid 4	29.90 (N-S) x 30.37 (E-W)	98.1 (N-S) x 99.53 (W-E)	779.83	8,394	100
WCC GPR Grid 5	9.70 (N-S) x 49.68 (E-W)	31.84 (N-S) x 163 (W-E)	1,708.67	18,392	192
WCC GPR Grid 6	20.20 (N-S) x 24.34 (E-W)	66.27 (N-S) x 80 (W-E)	467.76	5,035	92
WCC GPR Grid 7	18.93 (N-S) x 28.96 (E-W)	62.10 (N-S) x 95 (W-E)	256.04	2,756	80
WCC GPR Grid 8	4.57 (N-S) x 19.21 (E-W)	15 (N-S) x 63.02 (W-E)	81.29	875	64

Table 2.1. The 1857 Manchester Municipal Cemetery GPR grid sizes and transect numbers.

Figure 2.4. The location of the 1857 Manchester Municipal Cemetery, GPR survey Grids 1-8 (terrain model).

Figure 2.5. The location of the 1857 Manchester Municipal Cemetery Survey, GPR survey Grids 1 – 8 (aerial image).

Figure 2.6. GPR survey lines across the 1857 Manchester Municipal Cemetery study area (Grids 1 – 8).

CHAPTER III: NATURAL SETTING

Introduction

This chapter briefly overviews the region's natural setting, including the study area associated with the Cemetery GPR Survey Area. It includes general ecological conditions and types of freshwater sources, soils, and slopes. The remainder of this section provides a brief overview of the ecology, hydrological resources, and soils near the study area and the larger region.

Ecoregion and Hydrology of the Study Region

The project area is part of the Northern Outer Piedmont ecoregion (45f), as defined by the United States Environmental Protection Agency (US EPA) in 1996. Streams and rivers of this region are primarily perennial and of low to moderate gradients and drain into the James River. The land form and streams and flow north to the James River and East into the Chesapeake Bay. Approximately 1.5 mi to the northeast of the survey area, the terminus of the granite scarp that has historically defined the foundation and development of Richmond's historic landscape. From the Fall Line, the James flows Southeast approximately 100 mi before emptying into the Chesapeake Bay.

Extending south into North Carolina, the Northern Outer Piedmont ecoregion is bordered to the West by the Appalachian Mountains and the Coastal Plain to the east. A small portion of the ecoregion is bordered in by the Northern Inner Piedmont (45e) and the Chesapeake Rolling Coastal Plain (65n). Elevations typically range from 30 to 250 feet, and local relief is 25 to 175 feet.

A humid climate with moderate precipitation characterizes the zone throughout the four distinctive seasons. The region tends to have more significant relief, elevation, and channel gradients than the coastal ecoregion to the East, generally resulting in better drainage. The region is "mostly underlain by heavily weathered metamorphic rocks, including gneiss and schist, with some igneous intrusions of granite." (Virginia Division of Mineral Resources, 1993).

Soil moisture is crucial in GPR interpretation, presenting challenges and opportunities. A thorough survey can generally overcome the interpretive difficulties of substantially wet soil. The water content is the most significant factor in determining a material's dielectric constant, and the presence of the water table or increased soil moisture within a survey area can radically alter the geophysical signature of sediments or features. Subtle differences in a soil layer's porosity may mean pockets of water that produce stark dielectric contrasts, generating multiple reflections or potentially scattering energy (Conyers 2013). Conversely, complete saturation of a material may reduce its contrast with neighboring materials, thereby muting some reflections. Finally, soil moisture can also alter the preservation environment of objects found within the soil, another factor to remember when analyzing amplitude reflections from near-surface or buried objects and surfaces.

Soils Comprising the Project Area

Soil formation directly results from the interaction of several variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they undergo many diagenic processes. Different classes of artifacts may be preferentially protected or unaffected by these processes, whereas others may deteriorate rapidly. Cyclical wetting, drying, freezing, thawing, and compression can accelerate the decay processes for animal bones, shells,

lithics, ceramics, and plant remains chemically and mechanically. Lithic and ceramic artifacts are mainly unaffected by soil pH. In contrast, animal bones and shells decay more quickly in acidic soils like those in the current Project area. In contrast, acidic soil enhances the preservation of charred plant remains. Varied soil chemistries affect geophysical signatures in many ways. Differing preservation environments can impact the presentation of an object or feature of archaeological interest (i.e., decayed coffins versus intact coffins). Variations in soil formation can also lead to soils with different electrical conductivity and moisture retention, directly impacting the depth penetration and effective wavelength of GPR signals.

The Wiesinger-Carroll Cemetery GPR Survey study area is mostly composed of Turbeville-Urban Series Soils, with the remaining defined as simply "Urban land." The Tuberville series is comprised of clayey alluvium on moderate to steep terraces south of the James River.

Turbeville Series

The Turbeville Series of soils consists of deep (more than 80 in), well-drained loams. These soils are formed from a parent material of alluvial sediment. Slopes typically range from 2 to 6 percent but can range from 0 to 50 percent, although slopes within the survey area did not exceed slopes of 15 percent. A typical profile associated with Turbeville soils is as follows: **H1** - 0 to 11 inches; fine sandy loam, **H2** - 11 to 62 inches; clay, and **H3** -62 to 70 inches; gravelly loam.

Summary

A review of mapping, geological data, ecological conditions, soils, slopes, and proximity to water can inform geophysical data analysis of the 1857 Manchester Municipal Cemetery data set. The soils featured therein generally have well-drained properties, making them ideal for GPR surveys performed with the GSSI 350MHz antenna and the Mala HDR multi-channel array. No saturation or inundation was observed during the study, and overall, the site, terrain, and underlying geology appeared favorable for a geophysical study.

CHAPTER IV: HISTORICAL CONTEXT

Introduction

This document will share research that has been compiled for the property at 2313 Wise Street in the City of Richmond. The property has been owned by the City of Richmond since 1930 and is the location of a Gas Booster facility, constructed in 1931 and operated by the Department of Public Utilities. The property has come under scrutiny recently because of the existence of a memorial marker placed on the property in 1939 by the United Daughters of the Confederacy. The granite marker states:

Here rest more than one hundred
South Carolina Soldiers who died
in the hospital in Manchester, VA,
1861-1865.
Elliott-Grays Chapter,
United Daughters of the Confederacy,
Erected October 6, 1939.

Because of the lack of marked graves, this research has been conducted to verify, through a document trail, that the property was used as a cemetery for the burial of Confederate soldiers. Maps, newspaper articles, resources related to Civil War hospitals and burials, and municipal records have been reviewed. The analysis is presented chronologically by theme, including map research, the Civil War era, and the early post-war years, including the establishment of Maury Cemetery, DPU ownership and development of the property, and the installation of the marker. While there is no definitive record of wartime burials or the post-war removals, this research makes a circumstantial case that the property was used for wartime burials and that there have been no substantial postwar reinternments at Maury, Hollywood, or Oakwood cemeteries. The research also indicates that soldiers from states other than South Carolina may have also been buried here.

Map Analysis

Historic maps indicate that the property at 2313 Wise Street has been utilized as a cemetery or graveyard for many years. The earliest map that clearly indicates this use is the 1876 Beers Atlas, which shows a cemetery in this location with an east-west orientation. The 1917 Plan of Swansboro illustrates the Town Graveyard in a north-south orientation. This graveyard corresponds to parcels purchased by the City of Richmond in 1930, which are the same as those purchased by the City of Manchester in 1857.

Below is a list of maps that were reviewed as part of this analysis. The maps are included as an appendix at the end of this document:

Figure 4.1. GIS overlay of the Dayton plat (ca. 1855) showing no cemetery

- 1855: Plan of Dayton, no cemetery indicated (Figure 4.1)
- 1857: Manchester purchased a parcel from Special Commissioner C. C. McRae (Figure 5)
- 1876: Beers Atlas – cemetery oriented east-west (Figure 4.2)
- 1910: Manchester was incorporated into the City of Richmond. The cemetery was just west of the new (1910) corporation line. (Figure 2)
  1914: The area including the cemetery was annexed into the City of Richmond
- 1917: Plan of Swansboro – Town Graveyard oriented north-south and aligns with the 1857 and 1930 parcels (Figure 3)
- 1919: Sanborn Map, no cemetery indicated (Figure 4)
- 1930: Plat of lots on the north and south sides of Wise Street, east of Johnson Street – property of the City of Richmond – Note: this property was acquired by the City of Manchester from C. C. Mc Rae, Special Commissioner, on March 13, 1857. The Department of Public Utilities was permitted to use the property by joint resolution of Jan. 8, 1930 (Figure 5)

Civil War Hospitals and Cemeteries in Manchester

During the Civil War, multiple hospitals were established on both sides of the James River to serve the cities of Richmond and Manchester. These hospitals took many forms: some were General Hospitals, some carried specific state designations, and some were homes, churches, and industrial buildings conscripted into service as needed. General Hospitals, like the larger hospital encampments such as Chimborazo, Howard's Grove, and Winder, received patients from various states.

There were two hospitals and a nearby conscripted home on the south side of the river in the City of Manchester:

- 1861-62: South Carolina Hospital was mentioned in an 1862 list as near the Mayo bridge in Manchester. It was probably in one of the buildings of the Manchester Cotton Factories Company. (*Confederate Military Hospitals in Richmond*, 1964). A list of South Carolina Soldiers deceased in the South Carolina Hospital at Manchester from October 1st, 1861, to November 26th, 1862, is included as an appendix.

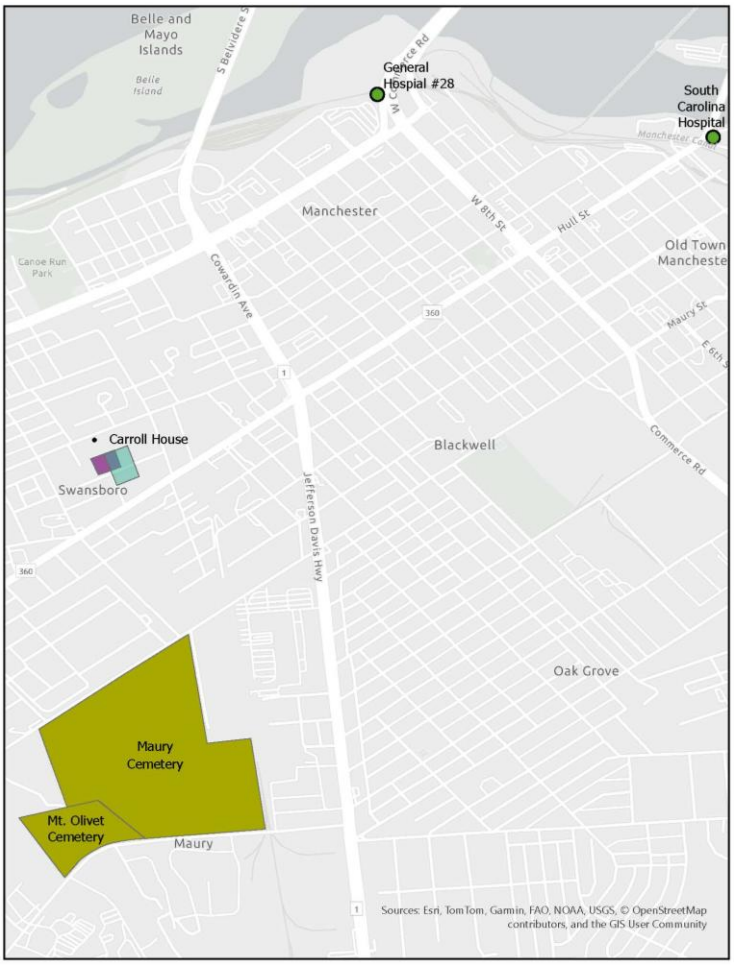


Figure 4.2. GIS overlay of the Beers Atlas (ca. 1876) shows the cemetery's location.

- 1862: General Hospital #28 was called the Danville Railroad Hospital. It was formerly a shop building in the Richmond and Danville railroad repair yards, which was a single-storied, brick building. It had several natural springs nearby. The hospital was opened on July 10, 1862, with 416 beds. Dr. Abraham Schultz Miller was the surgeon-in-charge. General Hospital #28 was in Manchester, Virginia, on the James River just east of the Richmond and Petersburg Railroad bridge. The present site is just east of the south end of Manchester Bridge. (*Confederate Military Hospitals in Richmond*, 1964; *Moore's Complete Civil War Guide to Richmond, Revised Edition,* 1978).

- N.D.: Weisiger-Carroll House, 2408 Bainbridge, was used as a hospital during the Civil War, and Confederate soldiers who died there are buried in a cemetery facing Wise Street behind the house. (*Old Manchester and Its Environs, 1769-1910,* 1993).

There were two cemeteries on the north side of the James River for the internment of Confederate soldiers – Hollywood and Oakwood. Both cemeteries were some distance, approximately 3 miles, from the hospitals in Manchester. There was also the issue of separate jurisdictions and the tolls for the Mayo Bridge that would have made it logical to bury Confederate dead at the small cemetery (Wise Street) on the western boundary of the city. The only direct corroboration of this supposition is an article in the May 23, 1871, edition of the Daily Enquirer:

> *Needs Attention. – Just on the suburbs of Manchester, and near Oakwood Park, are buried a large number of soldiers from different Southern States, who died at the South Carolina hospital, in this place, during the war. Will not some of our ladies select some good day, and place a few flowers on these little mounds, where sleeping their last sleep rest so many of the loved and lost chivalry of our sunny land. They can surely get some young men to aid them, and by next year we hope the Hollywood Association will have them moved.*

This plea suggests a desire to move the remains to Hollywood Cemetery, but there is no record that this action was ever taken. There is, however, some indication that a few of the remains from the Wise Street cemetery may have been moved to Maury Cemetery. In 1872, the town's trustees passed an ordinance outlawing private burials within the town limits of Manchester, and in 1874, the town purchased a portion of the nearby Buck Hill estate and opened Maury Cemetery. Area authorities directed that remains previously buried in the city be removed to the new site, Maury. As a result, some markers as early as 1847 predate the cemetery's founding. In 1877, the city again ruled that persons interred on the three-acre lot known as Dayton (Wise Street) were to be moved outside the city, and a suitable area was to be set aside in Maury Cemetery.

An article in the July 12, 1939, edition of The Richmond News Leader made the following statement concerning the Wise Street cemetery:

> *Records of Maury Cemetery which was not opened for a number of years after the close of the War Between the States, do not show that any of the soldier dead were reinterred there. Most of the civilians, however, were moved to the new cemetery.*

A review of Maury Cemetery burial records supports the claim that civilians were removed from the "Soldiers Burial Ground" to Maury. Below is a list of reburials from the "Soldiers Burial Ground" to Maury:

Date of burial at Maury	Name	Age	Grave Location
May 17, 1876	Thomas Johnson	22	Section 6
July 16, 1876	--------- Baugh	---	Section 10
November 17, 1876	Emma Moore	---	Section 11
November 17, 1876	Joseph Moore	---	Section 11
November 17, 1876	C. A. Huband	---	Section 11
November 17, 1876	Lulia A. Huband	---	Section 11
June 8, 1877	Nannie W. Gibbs	35	----------

Figure 4.3. List of reburials in the Maury Cemetery of individuals from the "Soldiers Burial Ground."

Department of Public Utilities

The City of Richmond purchased the Wise Street property on January 8, 1930, it being the same property acquired by the City of Manchester from C. C. McRea, Special Commissioner, on March 13, 1857. The property, containing approximately two acres, consisted of two parcels that Wise Street separated. The parcel on the south side of Wise Street has since been sold. Building permits were applied for in 1931 to construct a gas holder at this location. The 1934 Assessor's record for the property refers to the property as the "Old Soldier's Grave Yard." The same article quoted above also stated:

> *In excavating the gas booster site the workmen uncovered several bodies a few years ago, indicating that even though some may have been moved, others were overlooked and it is still believed that many are still buried in the immediate vicinity of the huge tank. The excavation was done in just a small part of the original burial ground.*

It is possible that the disturbance of some graves during the construction of the gas booster facility was a catalyst for Elliott Gray's Chapter, United Daughters of the Confederacy, to petition the city for permission to install a "marker or monument" at the site. The following joint resolution was approved on September 15, 1939.

> *To permit Elliott Grays Chapter of the United Daughters of the Confederacy to place a marker or monument in the block bounded by 23rd, 24th, Hull and Bainbridge Streets to mark a former burial place of Confederate soldiers.*
>
> *Be it resolved by the Council of the City of Richmond, the Board of Aldermen concurring:*
>
> *1. That the Elliott Grays Chapter of the United Daughters of the Confederacy be and it is hereby permitted to place a marker or monument, at its own cost and expense, in the block bounded by 23rd,*

> *24th, Hull and Bainbridge Streets, to mark a former burial place of Confederate soldiers, said marker or monument to be put at such place in said block as shall be designated by the Director of Public Utilities and shall be perpetually cared for and maintained by the City of Richmond. The placing of the marker or monument and all work in connection therewith shall be done under the direction and supervision of the Director of Public Utilities.*

The marker was unveiled with much pomp and circumstance on October 6, 1939, and was the culmination of the Virginia Daughters of the Confederacy annual state conference.

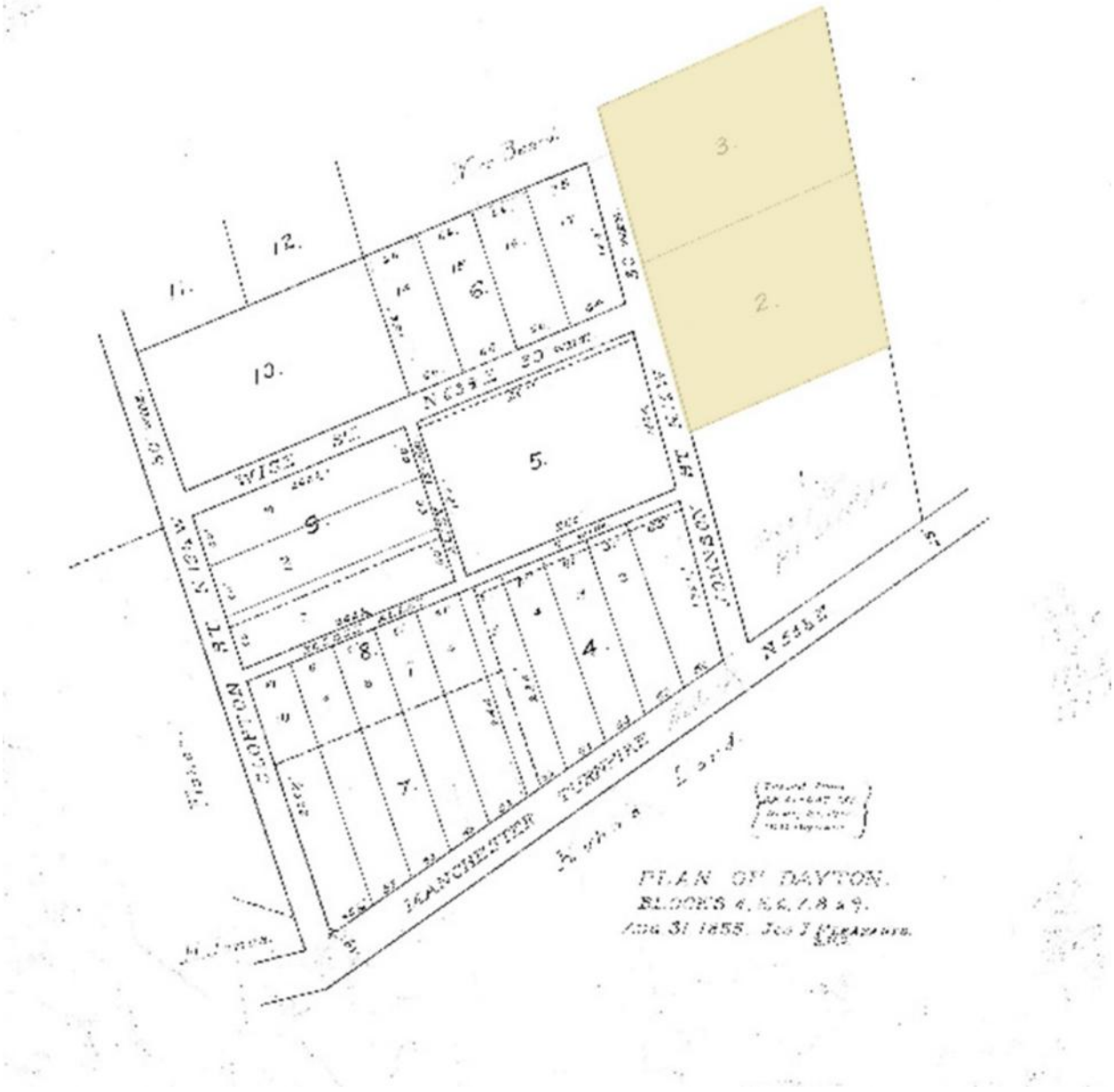


Figure 4.4. 1855 Plan of Dayton, approximate future location of cemetery, lots 2 & 3, shaded.

Figure 4.5. Portion 1876 Beers Atlas, cemetery shown in an east-west orientation (2313 Wise Street located on the northeast side of the intersection of Wise and Johnson streets).

Figure 4.6. Portion of the 1917 Plan of Section of Swansboro. The parcel purchased in 1930 by the City of Richmond aligns with the property identified as the Town Graveyard, and the land was purchased by the City of Manchester in 1857

Figure 4.7. 1919 Sanborn Map, cemetery no longer shown on the east side of the intersection of Wise and Johnson streets.

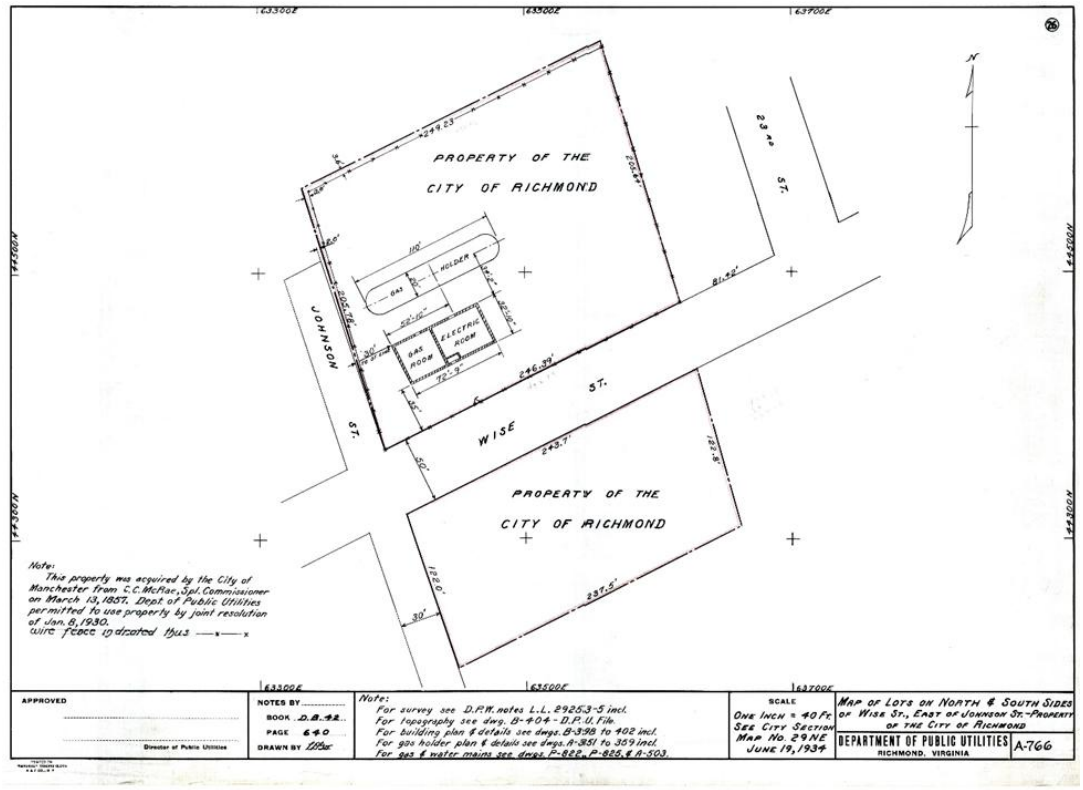


Figure 4.8. Property purchased by the City of Richmond in 1930 corresponds to the parcel purchased by the City of Manchester in 1857.

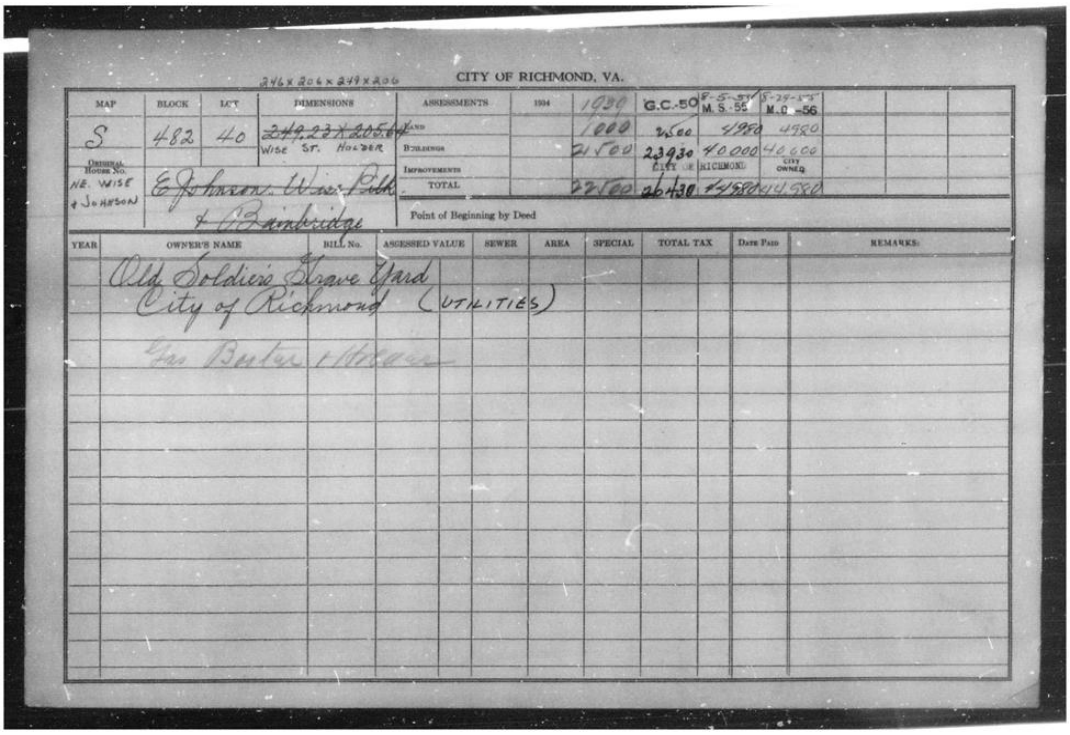
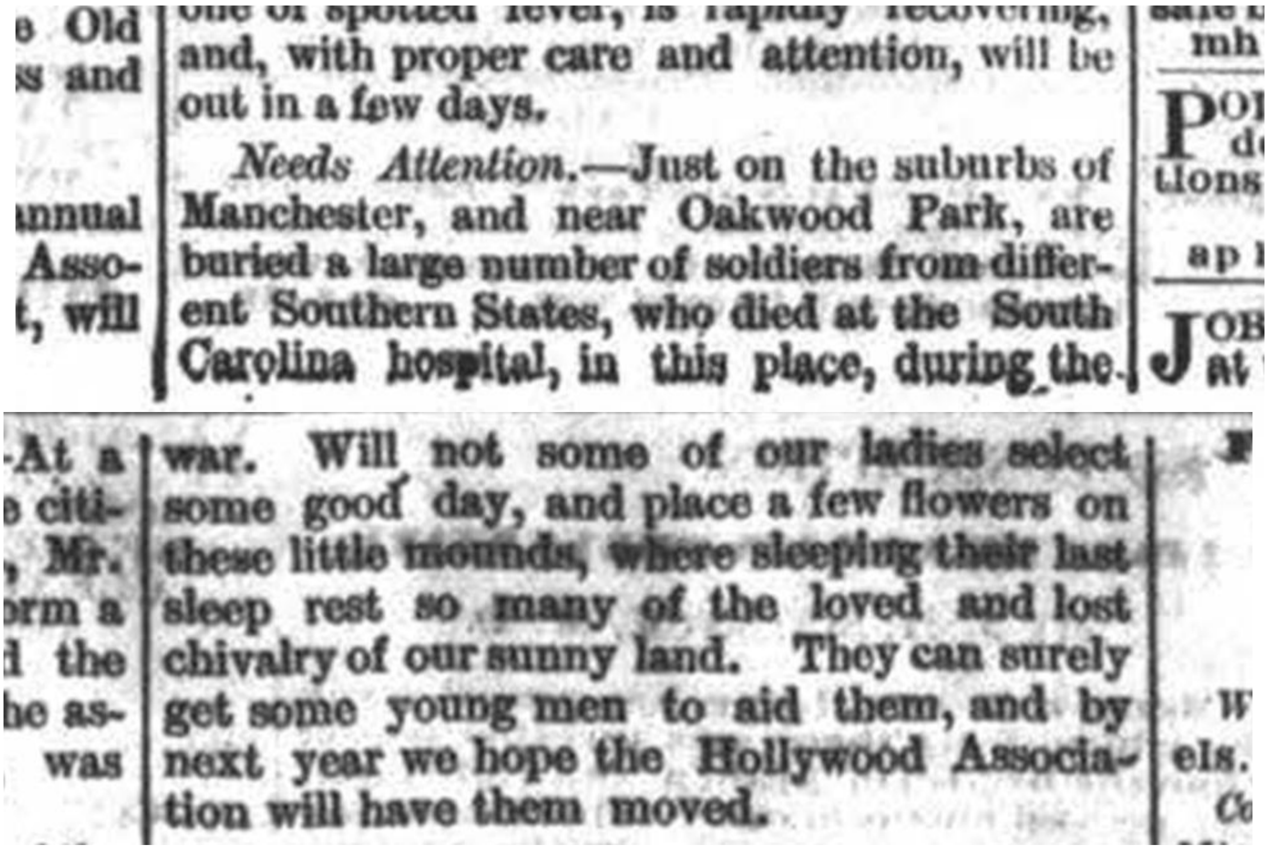


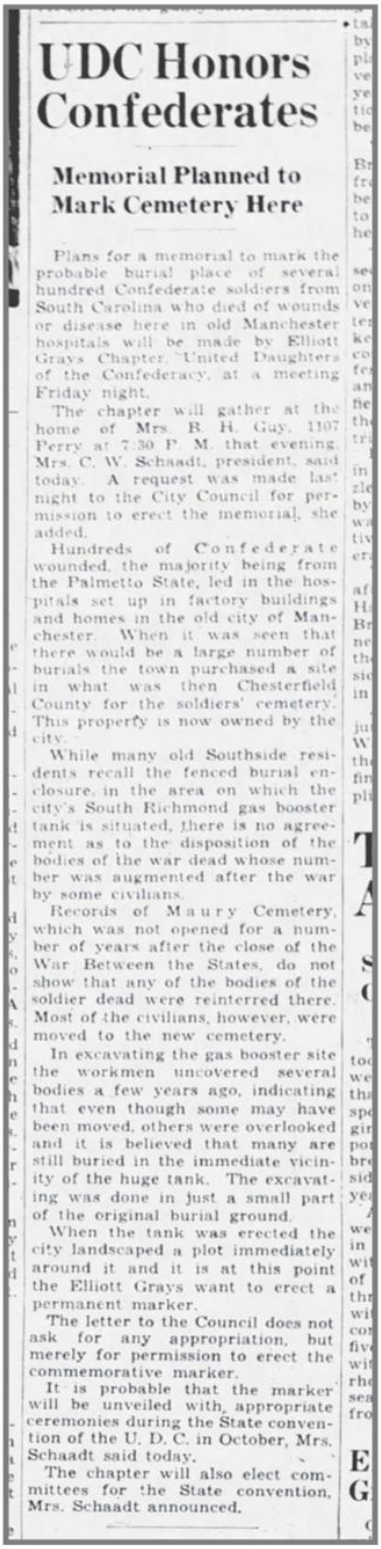
Figure 4.9. 1934 – 1956 City Assessors' Card



one of spotted fever, is rapidly recovering, and, with proper care and attention, will be out in a few days.

Needs Attention.—Just on the suburbs of Manchester, and near Oakwood Park, are buried a large number of soldiers from different Southern States, who died at the South Carolina hospital, in this place, during the war. Will not some of our ladies select some good day, and place a few flowers on these little mounds, where sleeping their last sleep rest so many of the loved and lost chivalry of our sunny land. They can surely get some young men to aid them, and by next year we hope the Hollywood Association will have them moved.

Figure 4.10. Daily Enquirer, May 23, 1871.



UDC Honors Confederates

Memorial Planned to Mark Cemetery Here

Plans for a memorial to mark the probable burial place of several hundred Confederate soldiers from South Carolina who died of wounds or disease here in old Manchester hospitals will be made by Elliott Grays Chapter, United Daughters of the Confederacy, at a meeting Friday night.

The chapter will gather at the home of Mrs. B. H. Guy, 1107 Perry at 7:30 P. M. that evening, Mrs. C. W. Schaadt, president, said today. A request was made last night to the City Council for permission to erect the memorial, she added.

Hundreds of Confederate wounded, the majority being from the Palmetto State, led in the hospitals set up in factory buildings and homes in the old city of Manchester. When it was seen that there would be a large number of burials the town purchased a site in what was then Chesterfield County for the soldiers' cemetery. This properfy is now owned by the city.

While many old Southside residents recall the fenced burial enclosure, in the area on which the city's South Richmond gas booster tank is situated, there is no agreement as to the disposition of the bodies of the war dead whose number was augmented after the war by some civilians.

Records of Maury Cemetery, which was not opened for a number of years after the close of the War Between the States, do not show that any of the bodies of the soldier dead were reinterred there. Most of the civilians, however, were moved to the new cemetery.

In excavating the gas booster site the workmen uncovered several bodies a few years ago, indicating that even though some may have been moved, others were overlooked and it is believed that many are still buried in the immediate vicinity of the huge tank. The excavating was done in just a small part of the original burial ground.

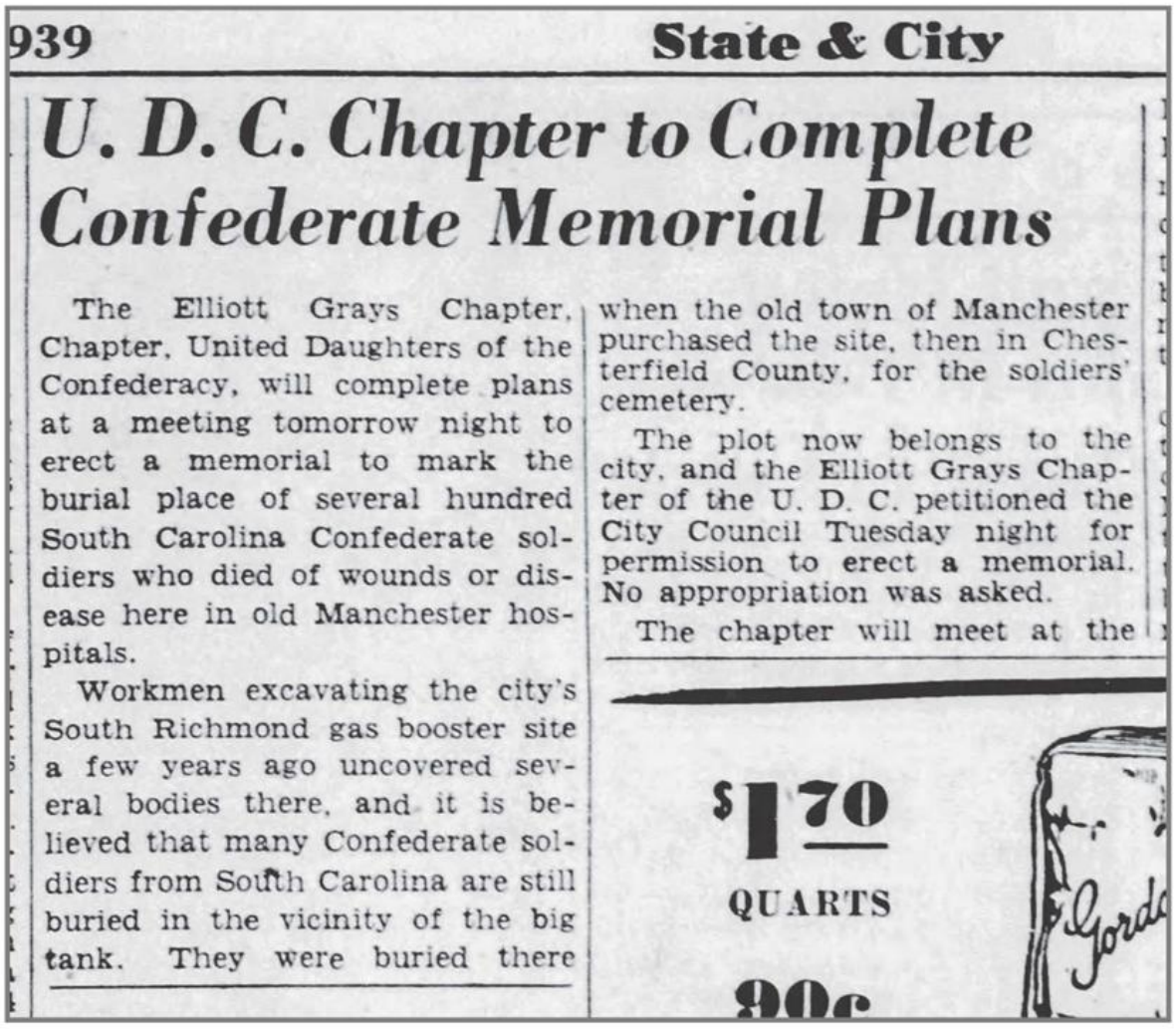
When the tank was erected the city landscaped a plot immediately around it and it is at this point the Elliott Grays want to erect a permanent marker.

The letter to the Council does not ask for any appropriation, but merely for permission to erect the commemorative marker.

It is probable that the marker will be unveiled with appropriate ceremonies during the State convention of the U. D. C. in October, Mrs. Schaadt said today.

The chapter will also elect committees for the State convention, Mrs. Schaadt announced.

Figure 4.11. The Richmond News Leader, July 12, 1939.



939 State & City

U. D. C. Chapter to Complete Confederate Memorial Plans

The Elliott Grays Chapter, Chapter, United Daughters of the Confederacy, will complete plans at a meeting tomorrow night to erect a memorial to mark the burial place of several hundred South Carolina Confederate soldiers who died of wounds or disease here in old Manchester hospitals.

Workmen excavating the city's South Richmond gas booster site a few years ago uncovered several bodies there, and it is believed that many Confederate soldiers from South Carolina are still buried in the vicinity of the big tank. They were buried there when the old town of Manchester purchased the site, then in Chesterfield County, for the soldiers' cemetery.

The plot now belongs to the city, and the Elliott Grays Chapter of the U. D. C. petitioned the City Council Tuesday night for permission to erect a memorial. No appropriation was asked.

The chapter will meet at the

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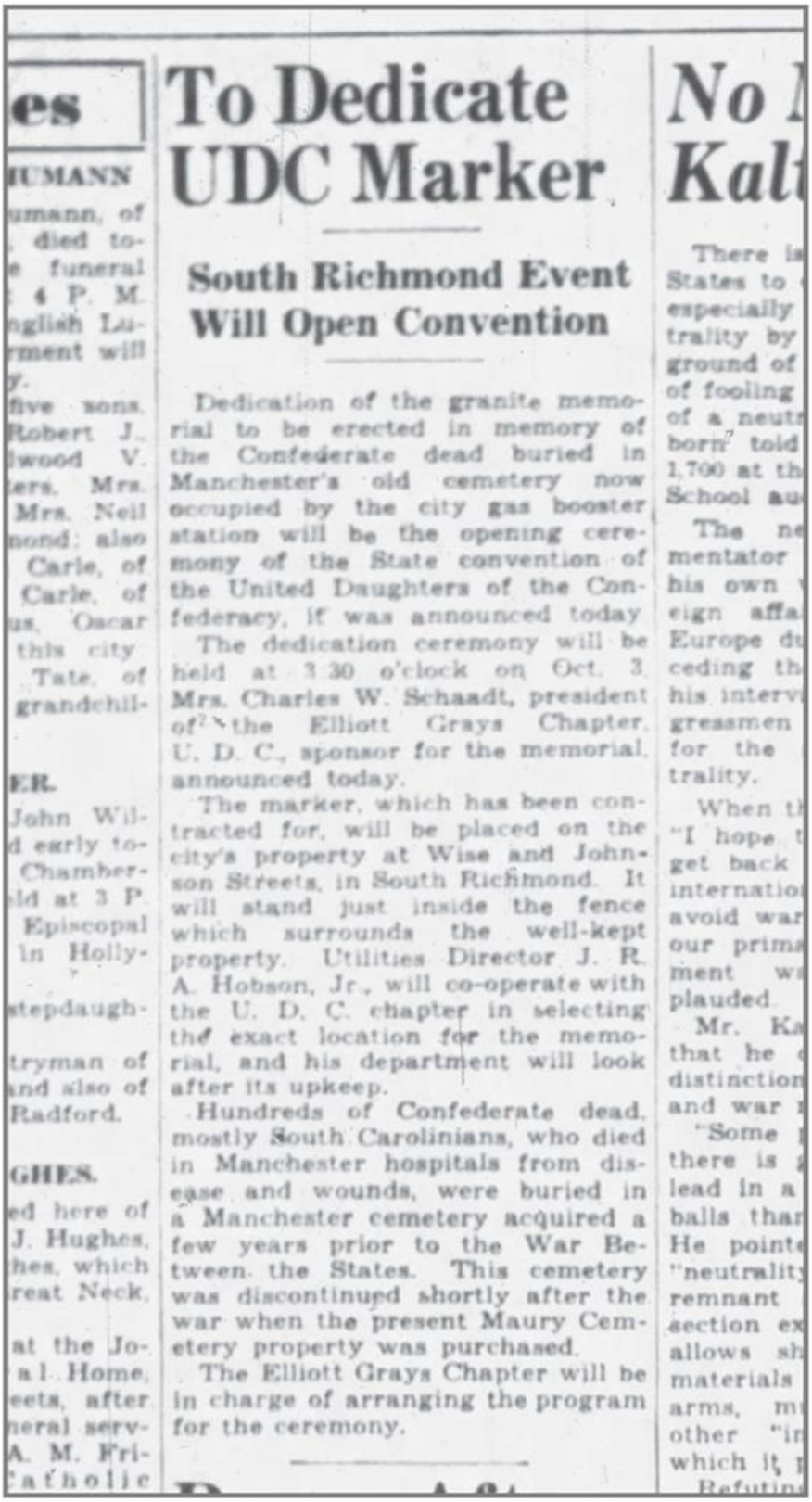
Figure 4.12. Richmond Times-Dispatch, July 13, 1939 (Newspapers by Ancestry).



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To Dedicate UDC Marker

South Richmond Event Will Open Convention

Dedication of the granite memorial to be erected in memory of the Confederate dead buried in Manchester's old cemetery now occupied by the city gas booster station will be the opening ceremony of the State convention of the United Daughters of the Confederacy, it was announced today.

The dedication ceremony will be held at 3:30 o'clock on Oct. 3, Mrs. Charles W. Schaadt, president of the Elliott Grays Chapter, U. D. C., sponsor for the memorial, announced today.

The marker, which has been contracted for, will be placed on the city's property at Wise and Johnson Streets, in South Richmond. It will stand just inside the fence which surrounds the well-kept property. Utilities Director J. R. A. Hobson, Jr., will co-operate with the U. D. C. chapter in selecting the exact location for the memorial, and his department will look after its upkeep.

Hundreds of Confederate dead, mostly South Carolinians, who died in Manchester hospitals from disease and wounds, were buried in a Manchester cemetery acquired a few years prior to the War Between the States. This cemetery was discontinued shortly after the war when the present Maury Cemetery property was purchased.

The Elliott Grays Chapter will be in charge of arranging the program for the ceremony.

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Figure 4.13. Richmond News Leader, September 21, 1939 (Newspapers by Ancestry).

U. D. C. Chapter to Unveil Monument at Hospital Site

Elliott Gray's Chapter, United Daughters of the Confederacy, will unveil a monument in the Old Manchester Cemetery tomorrow afternoon at 3:30 o'clock to the South Carolina soldiers who died in the South Carolina Hospital here during the War Between the States.

The cemetery, which was founded in 1857, is situated at the intersection of Johnson and Wise Streets. The hospital, which was located at the corner of Second and Porter Streets, formerly had been a tobacco factory.

Thomas Pickney, professor at the College of William and Mary, will make the presentation speech, and will be introduced by City Councilman Stanley R. Ford. Mrs. Charles Schaadt, president, will make the presentation address, and Mayor J. Fulmer Bright will receive the monument in behalf of the city.

The Richmond Blues and Grays and South Richmond Post No. 137 of the American Legion will attend, while members of Boy Scout Troop No. 157 of Bainbridge Street Baptist Church will direct the traffic.

All delegates to the State convention of the U. D. C., now in session at the Jefferson Hotel, have been invited to attend as well as the South Richmond Business and Profesional Men's Association, the Swansboro Citizens' Association, Sons of Confederate Veterans and other South Side civic organizations.

Matoaca Girl Presents Party

Miss Margaret Vaughan entertained a number of friends in her home recently. Her guests were Misses Junita Hall,

Social Worker Will Address Woman's Club

Mrs. P. E. Schools, prominent social worker, will be guest speaker at a meeting of the Forest Hill Woman's Club next Thursday afternoon at 3 o'clock in the Forest Hill Stone House. She will be introduced by Mrs. Clinton H. Sheppard and will speak on "The Woman Citizen and Public Welfare."

Mrs. Schools is the wife of Dr. Schools of Pine Camp Hospital, and was active in reorganizing

Figure 4.14. Richmond Times-Dispatch, South Side Supplement, October 5, 1939.

Left to right, Mrs. B. A. Blenner of Richmond, newly elected honorary president of the Virginia Division, U. D. C.; Mrs. B. C. Baldwin of Lynchburg, new president, and Mrs. R. S. Cox of Smithfield, retiring president.

Daughters of Confederacy End State Convention Here

Virginia Daughters of the Confederacy yesterday closed their State convention here with installation of new officers, headed by Mrs. B. C. Baldwin in Lynchburg, heard reports on historical and patriotic work and dedicated a marker to the memory of Confederate soldiers buried in South Richmond.

About 100 of the 300 who attended the convention at the Jefferson remained for yesterday's session, and there was some sharp talk from the floor about delegates leaving "this last most important meeting, which they should report back to their chapters." But Mrs. R. Sidney Cox, retiring president, despaired that "we have talked about it every year and I don't know what we can do about it."

Mrs. Lee Miller, head of a committee in charge of relics donated by R. E. Lee Camp of Veterans and General William Mek. Evans, commander, reported that the relics, papers and books, will be placed temporarily in Battle Abbey until further safekeeping is arranged. Mrs. Daisy Lester Avery appealed to the Daughters to "act immediately" to safeguard "this treasure," for the peace of mind of the veterans and lest some other organization secure them. Mrs. Miller's report was adopted.

Mrs. Thomas J. Starke of Richmond, chairman of the work to advance the name of Sidney Lanier for the Hall of Fame, announced that his election will come up in October, 1940, and expressed "confidence that he will be placed in the Hall of Fame."

Mrs. Frank Anthony Walke announced that after "years of work" she had ascertained that Father Ryan, the Confederate poet priest, was a native of Norfolk and not Maryland, but was baptised in Maryland. She found, she reported, that Father Ryan told "a lady in Alabama: 'I was born in Norfolk, Va.'"

Mrs. Lyon G. Tyler asked cooperation of Virginia Daughters in her work of compiling a history of Virginia women who contributed outstanding service to the Confederacy. Daughters who have records or knowlege of such deeds of their female ancestors should report them to her.

Recommendations presented by Mrs. R. E. Davenport were adopted, providing for appropriations and authorization to continue various policies and activities of the State program. Special committee reports were made by Mrs. Lewis Carper on publicity, Mrs. C. C. Linkenho on Southern literature for home and foreign libraries, Mrs. Severn Nottingham on the Jefferson Davis monument and Mrs. James Graham on radio.

Mrs. B. A. Blenner received the tribute of the Daughters for her work as general chairman of a "splendid convention" and as newly-elected honorary president. A rising vote of appreciation was accorded Mrs. Cox for her year's service as president, after she bestowed the president's ribbon and pin on Mrs. Baldwin, who accepted the "sacred trust." Mrs. Baldwin put the past president's ribbon and pin on Mrs. Cox.

Thomas Pinckney, director of public relations at the College of William and Mary, addressed the Daughters at their dedication service yesterday afternoon at old Manchester Cemetery, where a granite shaft to the memory of Confederate soldiers buried there was unveiled. The marker was placed by Elliott Gray's Chapter, U. D. C., Richmond and honors South Carolina soldiers who died of wounds or disease and were buried there.

Mrs. C. S. Schandt, Elliott Grays president, unveiled the marker. Councilman Stanley Ford introduced Mr. Pinckney, selected as

Mixing Bowl

A Saturday Night Supper

Chilled Grapefruit Juice
Frankfurter and Baked Bean
Salad Bowl
Celery Sticks
Whole Wheat Rolls
Banana Whip Cookies

Our Children

By Angelo Patri

THE telephone is a necessity in the household, and every member of the family should be trained in its use. That includes the children. There is no reason why a little child cannot answer the call and say, "This is Bunny. Will you hold on until I call mother, please?" That is the first lesson. Tell who it is that is talking.

It is not good manners to play with people on the telephone. "Guess who this is," can only annoy without pleasing anybody. Teach the children that the instrument is nothing to play with and so give them a good start in the right direction.

The older children need to be taught that long and useless talking is all out of order on a telephone system. Recently a girl of 15 used the house telephone for half an hour, and her father, trying to get a message to his home before he started on an unexpected trip, was obliged to call one of the neighbors in order to get his call through to his family. Holding a wire uselessly is likely to cause distressing delay in emergency.

Older young people need to be taught not to say over the wire what they would not say to the person at the other end were they face to face with one of them. It is better to be formal, polite, kindly and brief at any time. Save personalities of any sort for personal meetings, and so save embarrassing moments later on.

Don't, if you are a girl, call your boy friends on the telephone and hold endless conversations consisting mainly of, "Yeah? Who says? Sez you, O really, Huh-huh, Sorry, Yeah? Sez you, O really?" Your father loses his temper and shouts, "Cut that nonsense out. What's the idea?" What do you suppose the boy's father is saying to him? And the rest of the family? Let the boy call you, and answer him briefly and to the point. You will not lose anything by it and you will prevent a lot of trouble and annoyance in your families.

When young people are visiting they ought not to use the telephone without asking permission of their host or hostess. And they ought not to ask it unless it is absolutely necessary. If a long distance call, or any toll call, is made, the young person should make certain he pays for it. If a host gets a bill for his guest's long distance calls he does not remember that guest's visit with any pleasure.

Some young folk get into the habit of calling up one friend and asking him to call a neighbor chum to the telephone. Nothing is more inconsiderate than that. The immediate family is annoyed some one must go after the neighbor chum; he rushes in breathless, the messenger at his heels, also breathless. It is all very unpleasant. No well-bred young person would do it.

Use the telephone for what it is—a highly useful important service, remembering always that it is a community service. Many people are concerned in every call. Life, death, birth, marriage, good fortune and bad, every phase of life pulses over the wires minute by minute. Laughter and tears and hope and despair are behind the little bell. Take care. Mind your manners, for you might be coming face to face with fate when you lift the receiver.

Centenary Group To Meet Tuesday

The Woman's Auxiliary of Centenary Methodist Church will hold its monthly session at 11 A. M. Tuesday in the parish house.

Devotionals will be in charge of Mrs. J. H. Montgomery. Mrs. James Hawkins will talk on "Listing Our Horizons in Fields Afar." Mrs. E. R. Estes will sing.

Luncheon will be served.

Gaugh—Woolridge

PAMPLIN—Mr. and Mrs. W. A. Woolridge announce the marriage of their daughter, Hazel Virginia, to Frank W. Gough of Campbell County. The ceremony was performed September 15. The couple

Garden Clubs Of Petersburg Plan Sessions

The Poplar Lawn Garden Club of Petersburg will meet at 3 o'clock, October 18, at the home of Mrs. Richard T. Willson, with Mrs. Willson and Mrs. Herbert Gilliam as hostesses. Mrs. Clarence Thompson of Virginia Beach will review Julian Meade's "Adam's Profession and Eve's Conquest." Mr. Meade will come to Petersburg on January 10 and speak on "People and Gardens. The monthly exhibit will be chrysanthemums in pottery or glass.

• • •

The Cockade City Garden Club will hold their October meeting Tuesday at the home of Mrs. J. A. Nichols on Franklin Street in Petersburg.

Mrs. Donald Claiborne Holden will be the guest speaker, and her subject will be wild flowers. The monthly exhibit will be arrangement of chrysanthemums and specimen roses.

Etta Morris Wed To James Fisher In Tennessee

MARION—Mr. and Mrs. Raymond L. Morris of Marion announce the marriage of their daughter, Etta Virginia, to James William Fisher of Atlantic.

The marriage took place Sunday, October 1, at Mountain City, Tenn., with the Rev. Samuel Edwards of the Mountain City Baptist Church officiating.

They will make their home in Marion.

• • •

Meade—Keesling

MARION—Miss Myra Lee Keesling and R. C. Meade, formerly of Roanoke, now of Marion, were married here last Saturday, September 30. The marriage took place at the Marion Baptist parsonage and the ceremony was performed by the Rev. William Hugh Carter.

Mrs. Meade is the daughter of Mr. and Mrs. John Keesling and Mr. Meade is the son of Mr. and Mrs. J. P. Meade of Roanoke. The young couple will make their home in Marion.

• • •

Pennington—Bennetch

Mr. and Mrs. J. C. Pennington of Marion announce the engagement of their daughter, Charlotte Agnes, to John H. Bonnetch of Dallas, Texas.

Hospital Board to Meet In Board Room Thursday

The general board of Sheltering Arms Hospital will meet at 11 A. M. Thursday in the new board room at 1012 East Clay Street. Thursday is Donation Day for the hospital and board members will be at the institution to receive its friends and accept their donations, it was announced by Mrs. R. D. Garcia.

League Has Party

The Council League of Women entertained at a costume party Wednesday night. Members dressed in crepe paper and Miss Sadie Friedenberg was awared the prize for the best costume. Misses

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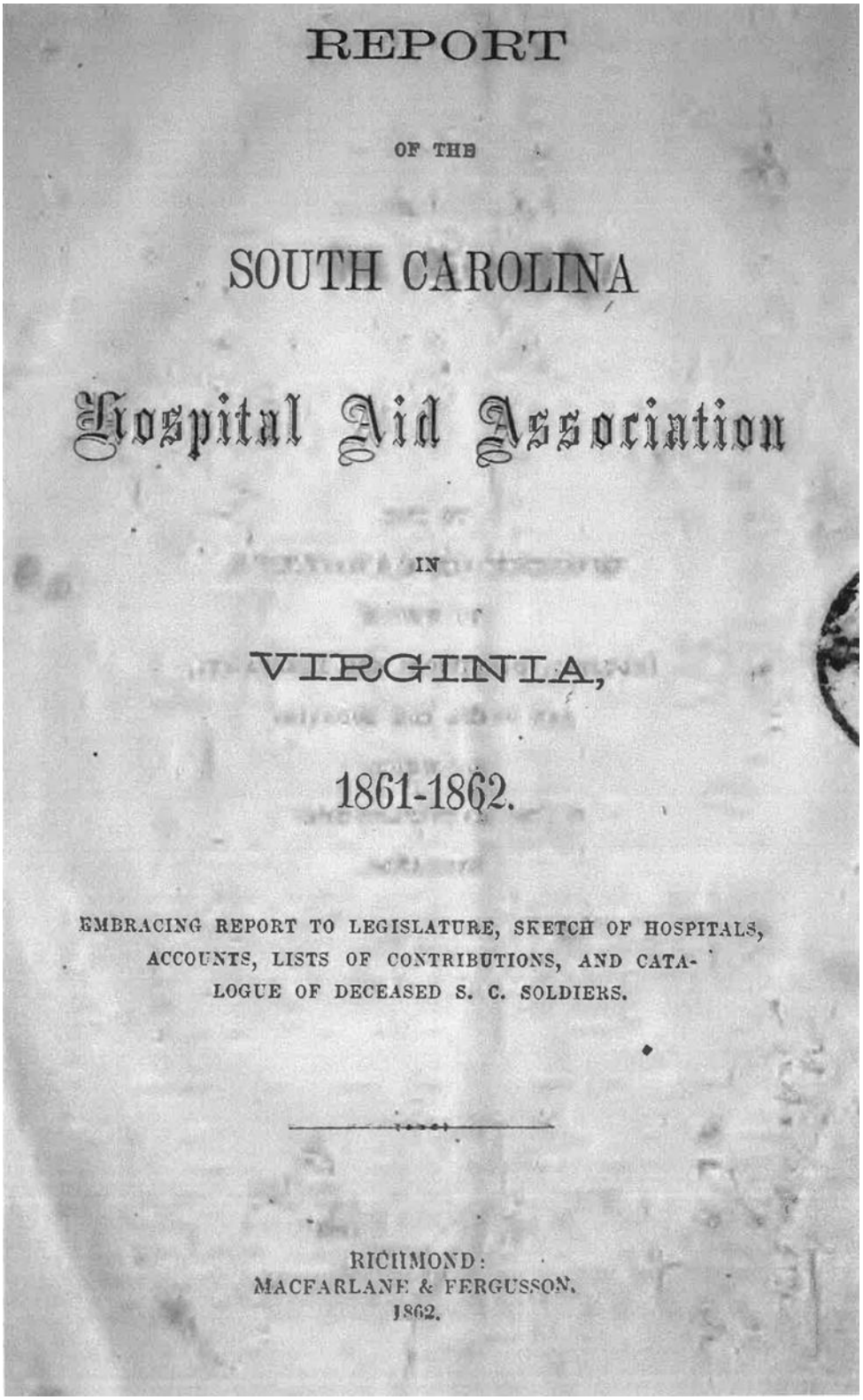
Figure 4.15. Richmond Times-Dispatch, October 7, 1939.

Hospital List of Deceased Soldiers: 1861-1862



REPORT

OF THE

SOUTH CAROLINA

Hospital Aid Association

IN

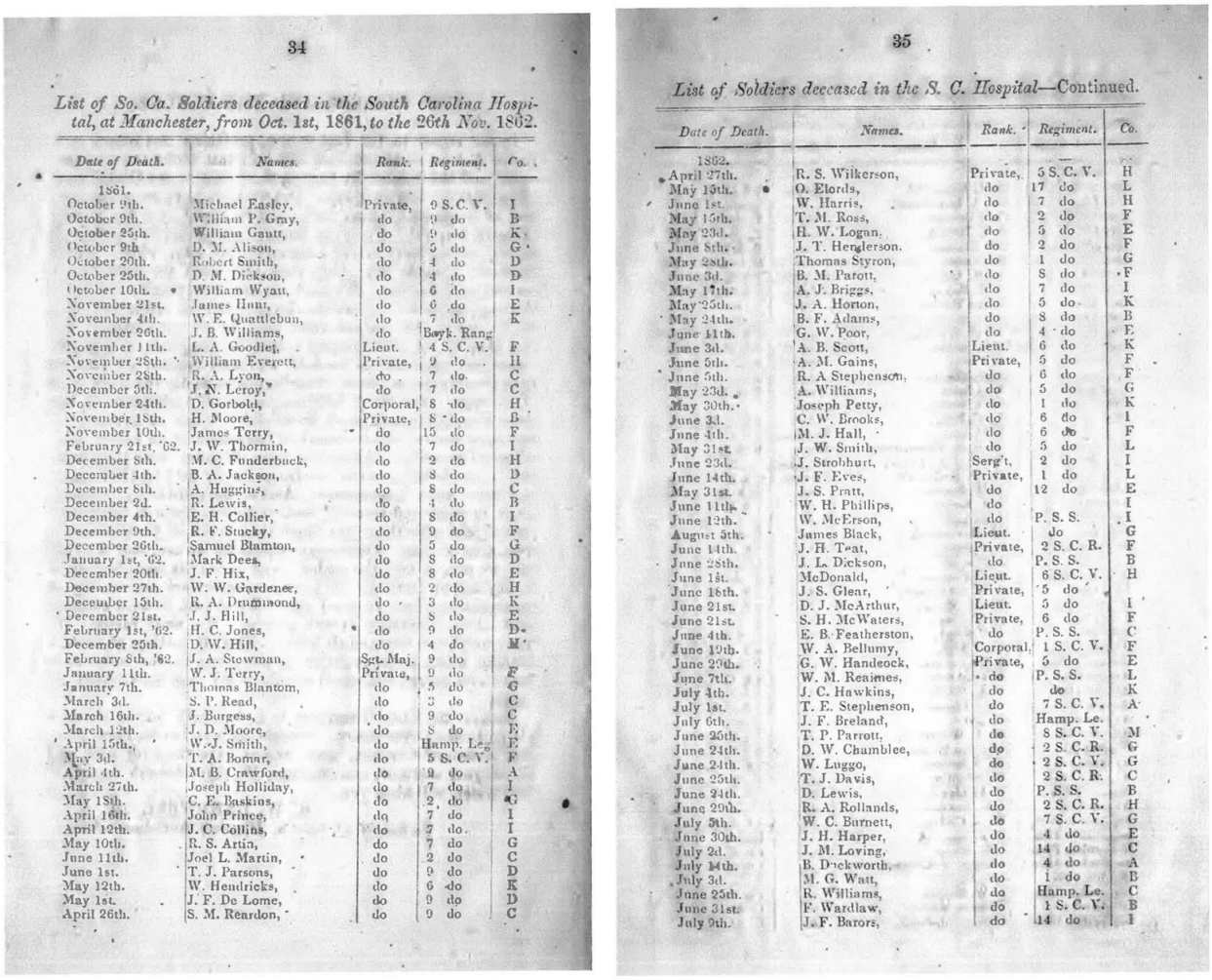
VIRGINIA,

1861-1862.

EMBRACING REPORT TO LEGISLATURE, SKETCH OF HOSPITALS, ACCOUNTS, LISTS OF CONTRIBUTIONS, AND CATALOGUE OF DECEASED S. C. SOLDIERS.

RICHMOND:
MACFARLANE & FERGUSSON.
1862.

Figure 4.16. Cover of the South Carolina Hospital Aid Association in Virginia: 1861 – 1862, list of deceased.



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List of So. Ca. Soldiers deceased in the South Carolina Hospital, at Manchester, from Oct. 1st, 1861, to the 26th Nov. 1862.

Date of Death.	Names.	Rank.	Regiment.	Co.
1861.				
October 9th.	Michael Easley,	Private,	9 S. C. V.	I
October 9th.	William P. Gray,	do	9 do	B
October 25th.	William Gantt,	do	9 do	K
October 9th	D. M. Alison,	do	5 do	G
October 20th.	Robert Smith,	do	4 do	D
October 25th.	D. M. Dickson,	do	4 do	D
October 10th.	William Wyatt,	do	6 do	I
November 21st.	James Hunt,	do	6 do	E
November 4th.	W. E. Quattlebun,	do	7 do	K
November 26th.	J. B. Williams,	do	Bayk. Rang	
November 11th.	L. A. Goodlet,	Lieut.	4 S. C. V.	F
November 28th.	William Everett,	Private,	9 do	H
November 28th.	R. A. Lyon,	do	7 do	C
December 5th.	J. N. Leroy,	do	7 do	C
November 24th.	D. Gorbold,	Corporal,	8 do	H
November 18th.	H. Moore,	Private,	8 do	B
November 10th.	James Terry,	do	15 do	F
February 21st, '62.	J. W. Thormin,	do	7 do	I
December 8th.	M. C. Funderbuck,	do	9 do	H
December 4th.	B. A. Jackson,	do	8 do	D
December 8th.	A. Huggins,	do	8 do	C
December 2d.	R. Lewis,	do	4 do	B
December 4th.	E. H. Collier,	do	8 do	I
December 9th.	R. F. Stucky,	do	9 do	F
December 26th.	Samuel Blanton,	do	5 do	G
January 1st, '62.	Mark Dees,	do	8 do	D
December 20th.	J. F. Hix,	do	8 do	E
December 27th.	W. W. Gardener,	do	2 do	H
December 15th.	R. A. Drummond,	do	3 do	K
December 21st.	J. J. Hill,	do	8 do	E
February 1st, '62.	H. C. Jones,	do	9 do	D
December 25th.	D. W. Hill,	do	4 do	M
February 8th, '62.	J. A. Stewman,	Sgt. Maj.	9 do	
January 11th.	W. J. Terry,	Private,	9 do	F
January 7th.	Thomas Blantom,	do	5 do	G
March 3d.	S. P. Read,	do	3 do	C
March 16th.	J. Burgess,	do	9 do	C
March 12th.	J. D. Moore,	do	8 do	E
April 15th.	W. J. Smith,	do	Hamp. Leg	E
May 3d.	T. A. Bomar,	do	5 S. C. V.	F
April 4th.	M. B. Crawford,	do	9 do	A
March 27th.	Joseph Holliday,	do	7 do	I
May 18th.	C. E. Baskins,	do	2 do	G
April 16th.	John Prince,	do	7 do	I
April 12th.	J. C. Collins,	do	7 do	I
May 10th.	R. S. Artis,	do	7 do	G
June 11th.	Joel L. Martin,	do	2 do	C
June 1st.	T. J. Parsons,	do	9 do	D
May 12th.	W. Hendricks,	do	6 do	K
May 1st.	J. F. De Lome,	do	9 do	D
April 26th.	S. M. Reardon,	do	9 do	C

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List of Soldiers deceased in the S. C. Hospital—Continued.

Date of Death.	Names.	Rank.	Regiment.	Co.
1862.				
April 27th.	R. S. Wilkerson,	Private,	5 S. C. V.	H
May 15th.	O. Etords,	do	17 do	L
June 1st.	W. Harris,	do	7 do	H
May 15th.	T. M. Ross,	do	2 do	F
May 23d.	H. W. Logan,	do	5 do	E
June 8th.	J. T. Henderson,	do	2 do	F
May 28th.	Thomas Styron,	do	1 do	G
June 3d.	B. M. Parott,	do	8 do	F
May 17th.	A. J. Briggs,	do	7 do	I
May 25th.	J. A. Horton,	do	5 do	K
May 24th.	B. F. Adams,	do	8 do	B
June 11th.	G. W. Poor,	do	4 do	E
June 3d.	A. B. Scott,	Lieut.	6 do	K
June 5th.	A. M. Gains,	Private,	5 do	F
June 5th.	R. A Stephenson,	do	6 do	F
May 23d.	A. Williams,	do	5 do	G
May 30th.	Joseph Petty,	do	1 do	K
June 3d.	C. W. Brooks,	do	6 do	I
June 4th.	M. J. Hall,	do	6 do	F
May 31st.	J. W. Smith,	do	5 do	L
June 23d.	J. Strobhurt,	Serg't,	2 do	I
June 14th.	J. F. Eves,	Private,	1 do	L
May 31st.	J. S. Pratt,	do	12 do	E
June 11th.	W. H. Phillips,	do		I
June 12th.	W. McErson,	do	P. S. S.	I
August 5th.	James Black,	Lieut.	do	G
June 14th.	J. H. Teat,	Private,	2 S. C. R.	F
June 28th.	J. L. Dickson,	do	P. S. S.	B
June 1st.	McDonald,	Lieut.	6 S. C. V.	H
June 18th.	J. S. Glear,	Private,	5 do	
June 21st.	D. J. McArthur,	Lieut.	5 do	I
June 21st.	S. H. McWaters,	Private,	6 do	F
June 4th.	E. B. Featherston,	do	P. S. S.	C
June 19th.	W. A. Bellumy,	Corporal,	1 S. C. V.	F
June 20th.	G. W. Handcock,	Private,	5 do	E
June 7th.	W. M. Reaimes,	do	P. S. S.	L
July 4th.	J. C. Hawkins,	do	do	K
July 1st.	T. E. Stephenson,	do	7 S. C. V.	A
July 6th.	J. F. Breland,	do	Hamp. Le.	
June 25th.	T. P. Parrott,	do	8 S. C. V.	M
June 24th.	D. W. Chamblee,	do	2 S. C. R.	G
June 24th.	W. Luggo,	do	2 S. C. V.	G
June 25th.	T. J. Davis,	do	2 S. C. R.	C
June 24th.	D. Lewis,	do	P. S. S.	B
June 29th.	R. A. Rollands,	do	2 S. C. R.	H
July 5th.	W. C. Burnett,	do	7 S. C. V.	G
June 30th.	J. H. Harper,	do	4 do	E
July 2d.	J. M. Loving,	do	14 do	C
July 4th.	B. Duckworth,	do	4 do	A
July 3d.	M. G. Watt,	do	1 do	B
June 25th.	R. Williams,	do	Hamp. Le.	C
June 31st.	F. Wardlaw,	do	1 S. C. V.	B
July 9th.	J. F. Barors,	do	14 do	I

Figure 4.17. Page 34 and 35 of the South Carolina Hospital Aid Association in Virginia: 1861 – 1862, list of deceased.

List of Soldiers deceased in the S. C. Hospital—Continued.

Date of Death.	*Names.*	*Rank.*	*Regiment.*	*Co.*
1862.				
June 27th.	D. L. Crawford,	Private,	1 S. C. V.	H
July 3d.	W. A. Harralson,	do	1 do	B
June 29th.	T. Thornton,	do	1 do	B
July 6th.	J. C. Vertch,	do	1 do	H
July 15th.	W. Wilson,	do	P. S. S.	L
June 27th.	B. Olvers,	do	H. Legion,	B
June 27th.	L. W. Luckett,	Corporal.	8 Virginia	D
June 30th.	T. S. Hayne,	Private,	1 S. C. V.	L
July 5th.	Virgil Harley,	do	1 do	A
July 21st.	J. E. Millwood,	do	5 do	H
July 5th.	W. H. Watkins,	do	1 S. C. R.	D
July 1st.	J. S. Spinel,	do	3 S. C. V.	B
July 10th.	J. Perry,	do	2 do	C
July 1st.	J. A. Martin,	do	1 do	G
August 9th.	R. Albert,	do	P. S. S.	K
July 11th.	H. S. Smith,	do	do	F
July 9th.	J. W. Rilly,	do	2 S. C. R.	B
July 16th	J. Masters,	Sergeant,	2 S. C. V.	C
July 4th.	W. E M. Richardson,	Major,	P. S. S.	I
July 4th.	William Anderson,	Sergeant.	do	
July 14th.	G. W. McDowell,	Private,	2 S. C. R.	L
July 7th.	J. M. Linder,	do	P. S. S.	H
August 2d.	J. L. Smith,	do	4 S. C. V.	A
July 17th.	J. Howell,	do	1. S. C. R.	H
July 8th.	M. McFarland,	do	P. S. S.	K
August 2d.	S. Simmons,	do	4 S. C. V.	B
July 28th.	J. Powell,	do	4 do	B
August 12th.	B. P. Farmer,	do	4 do	D
July 12th.	J. W. McIlwane,	do	1 S. C. R.	B
August 8th.	Henry Moore,	do	2 S. C. V.	F
July 12th.	H. H. Clay,	do	7 do	K
July 29th.	J. F. Brock,	do	P. S. S.	I
August 6th.	T. J. Nick,	do	1 S. C. R.	A
August 12th.	J. R. Allerson,	do	P. S. S.	G
August 6th.	S. V. Martin,	do	4 S. C. V.	A
August 11th.	S. A. Webb,	do	1 S. C. R.	D
August 8th.	John James,	do	1 S. C. V.	F
August 29th.	R. Luke,	do	3 do	B
August 23d.	W. F. Whitmore,	do	2 S. C. R.	B
October 2d.	Thomas Moore,	do	4 S. C. V.	E
August 24th.	W. B. Smith,	do	2 S. C. R.	F
August 27th,	E. Mauldin,	do	2 do	E
August 27th.	F. Teddards,	do	2 S. C. V.	F
August 31st.	J. P. Jowers,	do	2 do	K
September 10th.	W. L. Callos,	do	2 S. C. R.	B
September 19th.	P. Thompson,	do	Hall L.	A
September 13th.	J. S. Jerdan,	do	1 S. C. V.	D
September 24th.	Thomas McGowan,	do	2 S. C. R.	B
October 14th	J. S. Burnett,	do	2 do	E
September 25th.	L. W. Humby,	do	4 S. C. V.	A
October 2d.	Thomas Moore,	do	4 do	E
September 16th.	L. P. Featherston,	do	7 do	C

Figure 4.18. Page 36 of the South Carolina Hospital Aid Association in Virginia: 1861 – 1862, list of deceased.

The following is a list of deceased soldiers from the “South Carolina Hospital, at Manchester” who were “adjusted and updated,” with no date. It should be noted that this list does not indicate where these soldiers were buried.

MANCHESTER HOSPITAL DEATHS

	Name		Unit		State	Death	Notes
1	Easley, Michael	Pvt.	I	9	SC	10/9/1861	Easler Mitchell B.
2	Gray William P.	Pvt.	B	9	SC	10/9/1861	Gray William
3	Gantt William	Pvt.	K	9	SC	10/25/1861	Gantt William
4	Alison D. M.	Pvt.	G	5	SC	10/9/1861	
5	Smith Robert	Pvt.	D	4	SC	10/20/1861	Smith Robert
6	Dickson D. M.	Pvt.	D	4	SC	10/25/1861	Dickson, David M.
7	Wyatt William	Pvt.	I	6	SC	10/10/1861	
8	Hunt James	Pvt.	E	6	SC	11/21/1861	
9	Quattlebun W. E.	Pvt.	K	7	SC	11/4/1861	
10	Williams J. B.	Pvt.			SC	11/26/1861	
11	Goodlet L. A.	Lieut.	F	4	SC	11/11/1861	Goodlett, "L. A. ""Alex"""
12	Everett, William	Pvt.	H	9	SC	11/28/1861	
13	Lyon R. A.	Pvt.	C	7	SC	11/28/1861	
14	Leroy J. N.	Pvt.	C	7	SC	12/5/1861	
15	Gorbold D.	Corp.	H	8	SC	11/24/1861	
16	Moore H.	Pvt.	B	8	SC	11/18/1861	
17	Terry "James	Pvt.	F	15	SC	11/10/1861	
18	Thormin, J. W.	Pvt.	I	7	SC	2/21/1862	Thurmond, J. W.
19	Funderbuck M. C.	Pvt.	H	2	SC	12/8/1861	Funderburk, M. C.
20	Jackson B. A.	Pvt.	D	8	SC	12/4/1861	
21	Huggins A.	Pvt.	C	8	SC	12/8/1861	
22	Lewis R .	Pvt.	B	4	SC	12/2/1861	
23	Collier E. H .	Pvt.	I	8	SC	12/4/1861	
24	Stucky, R. F.	Pvt.	F	9	SC	12/9/1861	
25	Blamton, Samuel	Pvt.	G	5	SC	12/26/1861	Blanton, Samuel D.
26	Dees Mark	Pvt.	D	8	SC	1/1/1862	
27	Hix, J. F.	Pvt.	E	8	SC	12/20/1861	
28	Gardener, W. W.	Pvt.	H	2	SC	12/17/1861	
29	Drummond, R. A.	Pvt.	K	3	SC	12/15/1861	
30	Hill, J. J.	Pvt.	E	8	SC	12/21/1861	
31	Jones H. C.	Pvt.	D	9	SC	2/1/1862	
32	Hill, D. W.	Pvt.	H	4	SC	12/25/1861	
33	Stewman, J. A.	Sgt. Maj.		9	SC	2/8/1862	
34	Terry W. J.	Pvt.	F	9	SC	1/11/1862	
35	Blantom, Thomas	Pvt.	G	5	SC	1/7/1862	Blanton,Thomas
36	Read S. P.	Pvt.	C	3	SC	3/3/1862	
37	Burgess, J.	Pvt.	C	9	SC	3/16/1862	
38	Moore J. D.	Pvt.	E	8	SC	3/12/1862	
39	Smith W. J.	Pvt.	E		SC	4/15/1862	
40	Bomar T. A.	Pvt.	F	5	SC	5/3/1862	
41	Crawford, M. B.	Pvt.	A	9	SC	4/4/1862	
42	Holliday, Joseph	Pvt.	I	7	SC	3/27/1862	
43	Baskins, C. E.	Pvt.	G	2	SC	5/18/1862	
44	Prince John	Pvt.	I	7	SC	4/16/1862	
45	Collins, J. C.	Pvt.	I	7	SC	4/12/1862	
46	Artin, R. S.	Pvt.	G	7	SC	5/10/1862	
47	Martin Joel L.	Pvt.	C	2	SC	6/11/1862	
48	Parsons, T. J.	Pvt.	D	9	SC	6/1/1862	
49	Hendricks, W.	Pvt.	K	6	SC	5/12/1862	
50	De Lome, J. F.	Pvt.	D	9	SC	5/1/1862	
51	Reardon, S. M.	Pvt.	C	9	SC	4/26/1862	
52	Wilkerson, R. S.	Pvt.	H	5	SC	4/27/1862	
53	Elords O.	Pvt.	L	17	SC	5/15/1862	

Slightly adjusted & updated by John Kindred and Jim Upton

Figure 4.19. Manchester Hospital Deaths "Slightly Adjusted & Updated" by John Kindred and Jim Upton.

54	Harris W.	Pvt.	H	7	SC	6/1/1862	
55	Ross T. M.	Pvt.	F	2	SC	5/15/1862	
56	Logan H. W.	Pvt.	E	5	SC	5/23/1862	
57	Henderson, J. T.	Pvt.	F	2	SC	6/8/1862	
58	Styron Thomas	Pvt.	G	1	SC	5/28/1862	
59	Parott B. M.	Pvt.	F	8	SC	6/3/1862	
60	Briggs A. J.	Pvt.	I	7	SC	5/17/1862	
61	Horton, J. A.	Pvt.	K	5	SC	5/25/1862	
62	Adams, B. F.	Pvt.	B	8	SC	5/25/1862	
63	Poor, G. W.	Pvt.	E	4	SC	6/11/1862	
64	Scott A. B.	Lieut.	K	6	SC	6/3/1862	
65	Gains A. M.	Pvt.	F	5	SC	6/5/1862	
66	Stephenson R. A.	Pvt.	F	6	SC	6/5/1862	
67	Williams A.	Pvt.	G	5	SC	5/23/1862	
68	Petty Joseph	Pvt.	K	1	SC	5/30/1862	
69	Brooks, C. W.	Pvt.	I	6	SC	6/30/1862	
70	Hall, M. J.	Pvt.	F	6	SC	6/4/1862	
71	Smith J. W.	Pvt.	L	5	SC	5/31/1862	
72	Strobhurt, J.	Serg't.	I	2	SC	6/23/1862	Strobhart, Jr. James A.
73	Eves, J. F .	Pvt.	L	1	SC	6/14/1862	
74	Pratt, J. S.	Pvt.	E	12	SC	5/31/1862	
75	Phillips, W. H.	Pvt.	I			6/11/1862	
76	McErson, W.	Pvt.	I		SC	6/12/1862	
77	Black, James	Lieut.	G		SC	8/5/1862	
78	Teat, J. H.	Pvt.	F	2	SC	6/14/1862	
79	Dickson, J. L.	Pvt.	B		SC	6/28/1862	
80	McDonald	Lieut.	H	6	SC	6/1/1862	
81	Glear, J. S.	Pvt.		5	SC	6/18/1862	
82	McArthur, D. J.	Lieut.	I	5	SC	6/21/1862	
83	McWaters, S. H.	Pvt.	F	6	SC	6/21/1862	
84	Featherston,E. B.	Pvt.	C		SC	6/4/1862	
85	Bellumy, W. A.	Corp.	F	1	SC	6/19/1862	
86	Handcock,G. W.	Pvt.	E	5	SC	6/29/1862	Hancock, George W.
87	Reaimes, W. M.	Pvt.	L		SC	6/7/1862	
88	Hawkins, J. C.	Pvt.	K		SC	7/4/1862	
89	Stephenson,T. E.	Pvt.	A	7	SC	7/1/1862	
90	Breland,J. F.	Pvt.			SC	7/6/1862	
91	Parrott, T. P.	Pvt.	M	8	SC	6/25/1862	
92	Chamblee, D. W.	Pvt.	G	2	SC	6/24/1862	
93	Luggo W.	Pvt.	G	2	SC	6/24/1862	
94	Davis T. J.	Pvt.	C	2	SC	6/25/1862	
95	Lewis D.	Pvt.	B		SC	6/24/1862	
96	Rollands, R. A.	Pvt.	H	2	SC	6/29/1862	
97	Burnett, W. C.	Pvt.	G	7	SC	7/5/1862	
98	Harper, J. H.	Pvt.	E	4	SC	6/30/1862	
99	Loving ,J. M.	Pvt.	C	14	SC	7/2/1862	
100	Duckworth,B.	Pvt.	A	4	SC	7/14/1862	
101	Watt, M. G.	Pvt.	B	1	SC	7/3/1862	
102	Williams, R.	Pvt.	C		SC	6/25/1862	
103	Wardlaw,F.	Pvt.	B	1	SC	6/30/1862	Wardlaw, Francis H.
104	Barors , J. F.	Pvt.	I	14	SC	7/9/1862	
105	Crawford,D. L.	Pvt.	H	1	SC	6/27/1862	
106	Harralson, W. A.	Pvt.	B	1	SC	7/3/1862	
107	Thornton,T.	Pvt.	B	1	SC	6/29/1862	
108	Vertch ,J. C.	Pvt.	H	1	SC	7/6/1862	
109	Wilson,W.	Pvt.	L		SC	7/15/1862	
110	Olvers B.	Pvt.	B		SC	6/27/1862	

Figure 4.20. Manchester Hospital Deaths "Slightly Adjusted & Updated" by John Kindred and Jim Upton.

111	Luckett,L. W.	Corp.	D	8	VA	6/27/1862	
112	Hayne T. S.	Pvt.	L	1	SC	6/30/1862	
113	Hartley,Virgil	Pvt.	A	1	SC	7/5/1862	
114	Millwood, J. E.	Pvt.	H	5	SC	7/21/1862	
115	Watkins,W. H.	Pvt.	D	1	SC	7/5/1862	
116	Spinel J. S.	Pvt.	B	3	SC	7/1/1862	
117	Perry J.	Pvt.	C	2	SC	7/10/1862	
118	Martin J. A.	Pvt.	G	1	SC	7/1/1862	
119	Albert R.	Pvt.	K		SC	8/9/1862	
120	Smith H. S.	Pvt.	F		SC	7/11/1862	
121	Rilly J. W.	Pvt.	B	2	SC	7/9/1862	
122	Richardson,W. E. M.	Major	I		SC	7/4/1862	
123	Anderson, William	Sgt.			SC	7/4/1862	
124	Masters,J.	Sgt.	C	2	SC	7/16/1862	
125	McDowell,G. W.	Pvt.	L	2	SC	7/14/1862	
126	Linder J. M.	Pvt.	H		SC	7/7/1862	
127	Smith J. L.	Pvt.	A	4	SC	8/2/1862	
128	Howell,J.	Pvt.	H	1	SC	7/17/1862	
129	McFarland, M.	Pvt.	K		SC	7/8/1862	
130	Simmons,S.	Pvt.	B	4	SC	8/12/1862	
131	Powell J.	Pvt.	B	4	SC	7/28/1862	
132	Farmer,B P.	Pvt.	D	4	SC	8/12/1862	
133	McIlwane, J. W.	Pvt.	B	1	SC	7/12/1862	
134	Moore Henry	Pvt.	F	2	SC	8/8/1862	
135	Clay, H. H.	Pvt.	K	7	SC	7/12/1862	
136	Brock J. F.	Pvt.	I		SC	7/29/1862	
137	Nick, T. J.	Pvt.	A	1	SC	8/6/1862	
138	Allerson,J. R.	Pvt.	G		SC	8/12/1862	
139	Martin S. V.	Pvt.	A	4	SC	8/6/1862	
140	Webb S. A.	Pvt.	D	1	SC	8/11/1862	
141	James John	Pvt.	F	1	SC	8/8/1862	
142	Luke R.	Pvt.	B	3	SC	8/29/1862	
143	Whitmore,W. F.	Pvt.	B	2	SC	8/23/1862	
144	Moore Thomas	Pvt.	E	4	SC	10/2/1862	
145	Smith W. B.	Pvt.	F	2	SC	8/24/1862	
146	Mauldin,E.	Pvt.	E	2	SC	8/27/1862	
147	Teddards, F.	Pvt.	F	2	SC	8/27/1862	
148	Jowers, J. P.	Pvt.	K	2	SC	8/31/1862	
149	Callos W. L.	Pvt.	B	2	SC	9/10/1862	
150	Thompson, P.	Pvt.	A		SC	9/19/1862	
151	Jerdan, J. S.	Pvt.	D	1	SC	9/13/1862	
152	McGowan,Thomas	Pvt.	B	2	SC	9/24/1862	
153	Burnett, J. S.	Pvt.	E	2	SC	10/14/1862	
154	Humby,L. W.	Pvt.	A	4	SC	9/25/1862	
155	Moore Thomas	Pvt.	E	4	SC	10/2/1862	
156	Featherston, L. P.	Pvt.	C	7	SC	9/16/1862	
157	Presley, B. A.	Pvt.	D	5	SC	11/14/1862	
158	Cornwell,J. P.	Pvt.	H	1	SC	10/13/1862	
159	Anderson,H.	Pvt.	D	1	SC	10/18/1862	
160	Hughes,J.	Pvt.			SC	11/10/1862	
161	Cobmer,J. P.	Pvt.	K	2	SC	11/21/1862	
162	Williams,J. E.	Pvt.	A	1	SC	11/26/1862	
163	Wise, H. G.	Pvt.	B	1	SC	12/11/1862	Wise, Halton George

Figure 4.21. Manchester Hospital Deaths "Slightly Adjusted & Updated" by John Kindred and Jim Upton.

CHAPTER V: GPR RESULTS

Introduction

The following results are based on the comprehensive geophysical survey of a portion of the 1857 Manchester Municipal Cemetery lot in Richmond, Virginia. Before the intensive gridded GPR survey of the site was undertaken, an intensive walkover of the survey area was conducted, and all surficial information related to the cemetery and cultural context (e.g., grave markers, extant and buried vaults, grave subsidence areas, orientation of the graves, and vegetation) of the site were noted.

After the pedestrian survey, the TerraSearch team conducted a prospection GPR survey of the observed potential graves to confirm that the orientation of the buried interments matched the potential grave slumping (see below). The synthesis of the collected data provided the necessary information for the team to formulate a comprehensive set of GPR grids for systematic geophysical data collection.

As described in Chapter II, eight contiguous GPR grids were collected during the fieldwork effort (see Figures 2.4 – 2.6). Each GPR grid was triangulated using cloth tapes to encompass the suspected boundaries of the cemetery and the requested area to be surveyed. The grids were designed to be contiguous and comprehensive and surveyed up to the fence-enclosed areas in each of the cardinal directions of the prescribed study area.

In addition to the gridded GPR survey, a limited multi-channel array GPR survey was conducted outside the enclosed survey area on Wise Street. Running parallel (W-E), the street is separated by a pedestrian sidewalk and a chain-link fence. In general, the street was free from impediments, however several parked vehicles blocked portions of the thoroughfare resulting in only a partial survey (see below). Although not part of the scope of work, the information gathered supplements the information collected in the gridded GPR survey area and suggests that the cemetery extends into Wise Street outside the limits of the fenced area.

Initial Prospection and Walkover

The preliminary site walkover revealed no *in-situ* grave markers that would suggest the lot was a formal cemetery. However, several potential rectangular depressions were noted in the northwestern quadrant of the survey area. The depressions or potential "grave slumps" can result from the settling of grave shaft fill, coffin collapse, subsidence, or a combination of these factors. The features were exceptionally ephemeral, and instead of mapping each, a thermal drone survey of the cemetery was conducted (see below). Several large, angular blocks of Richmond granite were found scattered about the site, particularly in the northeastern quadrant of the lot, and do not appear to be related to markers. However, that does not preclude their potential to have been impromptu head or foot stones, or both. One lone piece of non-local sandstone was found amongst the rubble. The fragment is highly weathered and is similar to Aquia sandstone (Figure 4.1) exported as carved blocks for memorial and utilitarian uses (i.e., interment stones, property corner markers, and mounting blocks). Interestingly, the Aquia sandstone was heavily consumed in South Carolina, particularly in Charleston, for architectural and utilitarian purposes (Figure 4.1).

Figure 5.1. Fragment of sandstone (Aquia?) found on the northeast corner of the site (top). An example of an Aquia sandstone carved mounting block outside the Miles Brewton House in Charleston, South Carolina (bottom).

In addition to the surficial forensic information potentially related to a cemetery, invasive plant species of periwinkle (*Vinca* major) and English Ivy (*Hedera helix*) was observed along the margins of the lot and extended outside the limits into the adjacent domestic lots to the west, north, and east of the gridded GPR study area.

After performing an antenna calibration to maximize data collection within the local geologic settings, several initial prospecting survey lines were conducted across and perpendicular to several subsided grave shafts, all oriented east to west (the graves appear to respect the lot layout). The results of the geophysical prospection indicated clear indications of grave shaft incision, high- and low-amplitude reflectors of probable coffins, and potential shrouded or clothed burials.

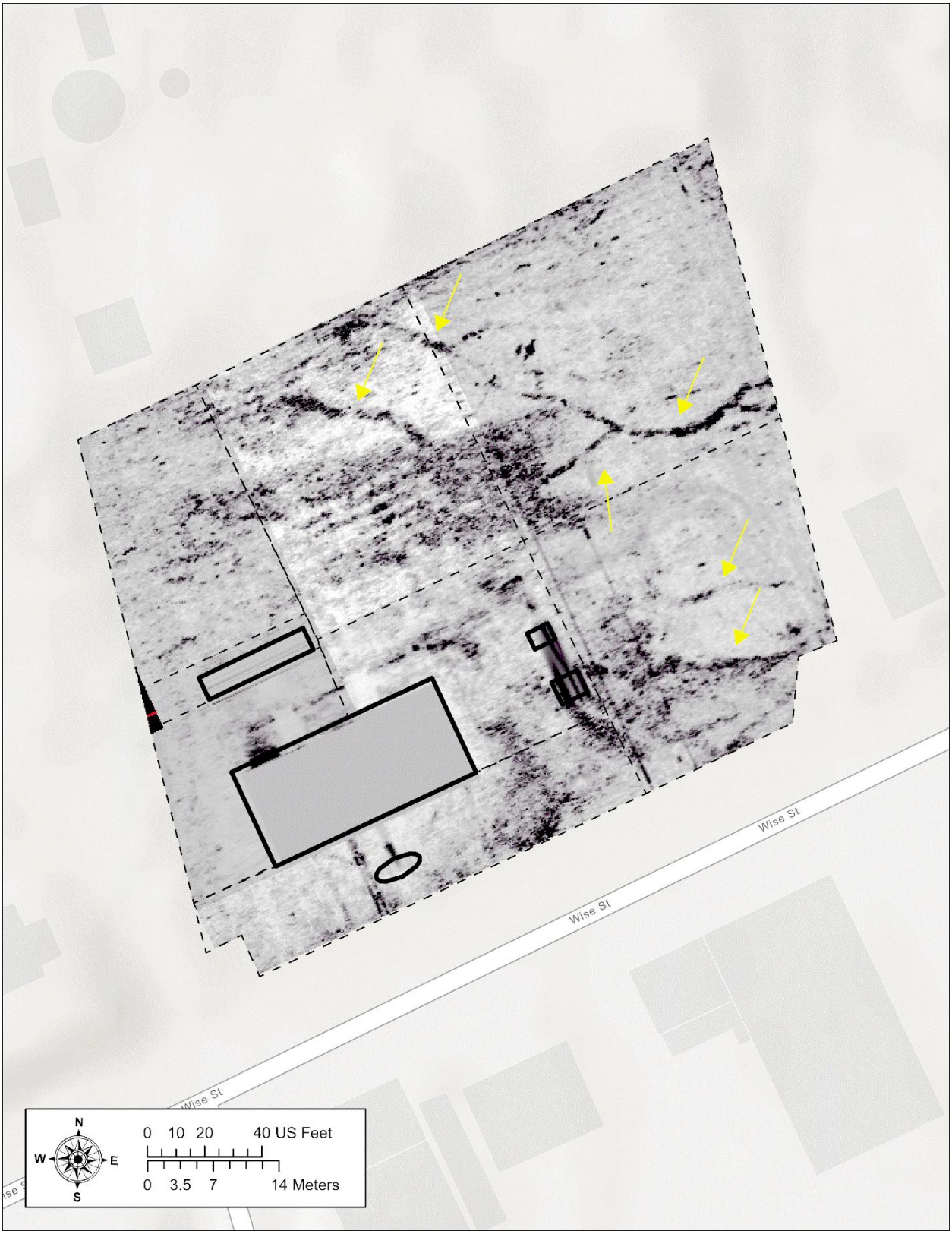

Figure 5.2. The network of groundhog tunnels beneath the site (yellow arrows).

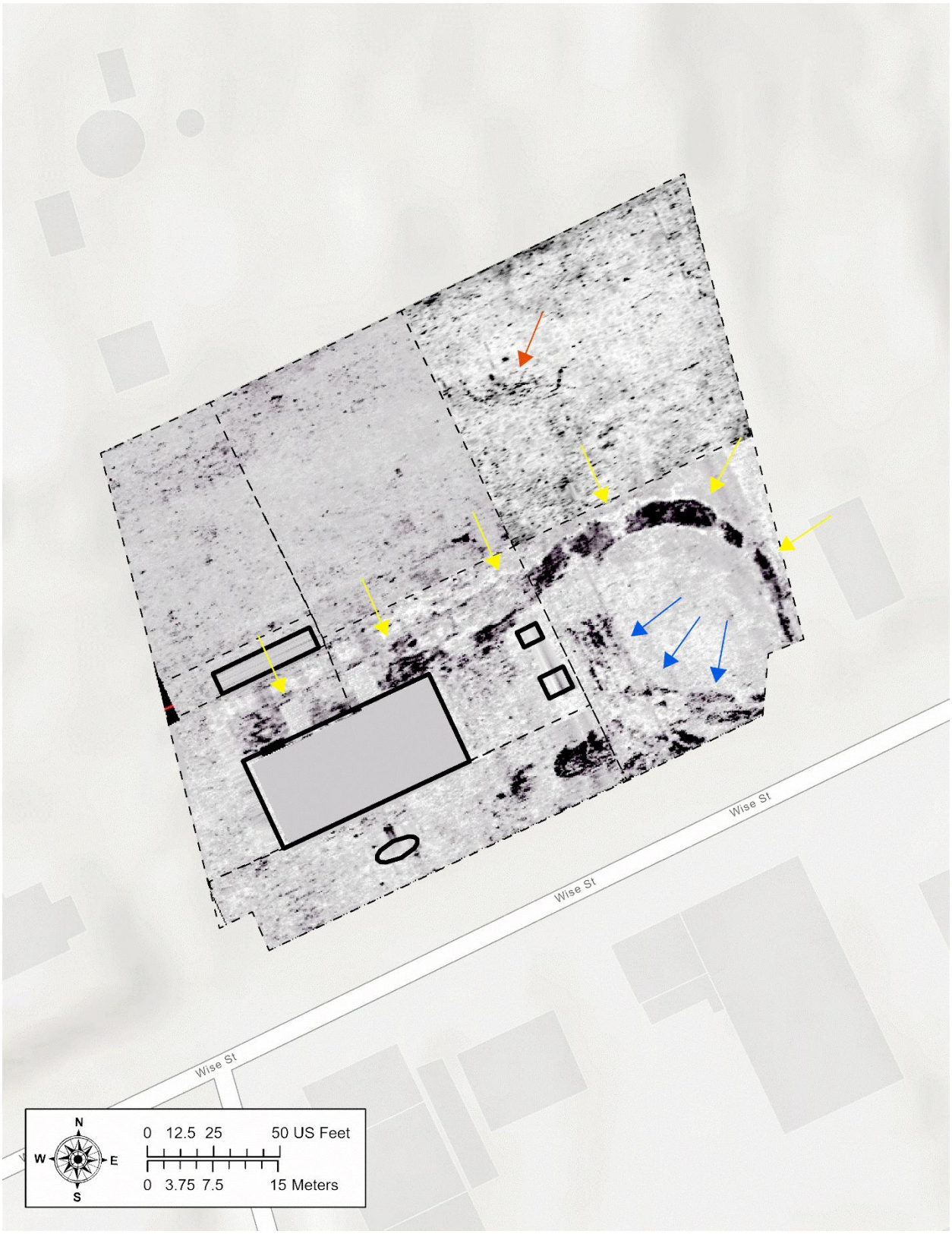

Figure 5.3. High-amplitude surfaces indicate the entrance road (yellow arrows), an impromptu road (blue arrows), and a near-surface example of articulated tree roots (red arrow).

Near-Field Data

The near-field perspective, or surficial GPR readings, revealed natural and anthropogenic features. During the survey, an intense scatter of shallow, high-amplitude targets was visible in the zone directly beneath the antenna and within a few inches of the ground. Subsequently, data interpolation and filtering rendered the targets into two separate natural phenomena. Firstly, a network of articulated roots emanating from the vegetation, primarily trees, to the west, north, and east of the project area was scattered throughout the survey area, and from two trees in Grid 1 (see Figure 4.3).

A second articulated pattern observed in the near-field data was attributed to rodent activity. A dense network of burrows and warrens was also noted, likely attributed to a groundhog (*Marmota monax*), with activity restricted to the first 2 ft of data. The articulated network of tunnels was relatively shallow, ranging in depth from 0.10 ft to a maximum of 2 ft. Many of the tunnels were hollow, creating a noticeable phase shift in the electromagnetic waves of the GPR as the signal speed accelerated through the air voids of the passageways (Figure 4.2).

Also visible in the near-field view was a shallow (approximately 0.51 ftbs), high-amplitude surface of the entrance road sweeping from the lot's southeast corner and running behind the substation. An additional high-amplitude surface was noted from the same corner and appears to terminate on the western side of the two transformers west of the substation. There was no surficial evidence for the latter road near the transformers, and the road may represent an impromptu construction surface for installing the transformers (Figure 4.3).

On rare occasions, the sensitivity of the GPR data can image the very shallow portions of a grave shaft incision and subsequent subsidence in a cemetery context. This is possible through filtering and “thin slicing” the data just below the surface (0.20 ft). The 1857 Manchester Municipal Cemetery data set was an excellent example of this type of forensic evidence in geophysics. Thin-slicing Grid 1 revealed probable burial shafts correlating to the underlying potential coffin, clothed, or shrouded burial (Figure 4.4).

Gridded GPR Survey

During the analysis, anomalies representing marked or unmarked graves were identified as “probable” or “possible” interments. In this report, probable burial indicates greater certainty in identifying interments than the latter.

Assigning the term **probable** to an interment involves evaluating multiple lines of evidence and geophysical analysis. Surficial observations (e.g., grave markers, slumping of grave shafts, and ground cover) are closely compared with the GPR reflectance profiles and three-dimensional interpolations. Two-dimensional profiles may reveal forensic evidence of grave shaft incision, slumping stratigraphy, and depth to the coffin or remains. Rendered amplitude maps can also provide spatial patterning indicating rows of individual burials, vaults, coffins, or casket remnants.

Assigning the term **possible** to a burial means that one or more pieces of forensic evidence are missing. Possible unmarked burials may also involve interments within severely decayed coffins or those buried within a shroud, resulting in poorly reflective targets or surfaces. Anomalies marked as possible burials may also represent other features, such as a tree throw, rodent dens, or a buried, faintly reflective geologic object. Disinterments are also common in cemeteries, and the geophysical signatures of these events cannot always be distinguished from those of burials in which coffins have degraded significantly.

Figure 5.4. Location of Grid 1 (bottom, yellow outline) and the near-field imaging (less than 0.20 ft) of probable burial shafts (top, left) and the subsequent probable burials (top, right) encountered at between 2.70 - 3.61 ft.

Potential disinterments can sometimes be identified when historical documentation of the event is compared with survey data, as surrounding graves exhibit features such as minimal disturbances and well-preserved coffins.

The maps and other graphic data provided within this section of the report are intended to illustrate the findings of the GPR survey. Separate annotation maps of these GPR amplitude maps in the plan view are also included. Select relevant, two-dimensional reflectance profiles of probable and possible burials are annotated to provide examples of interpretations of the morphology of marked and unmarked graves.

For the entire survey, gridded GPR survey collection began in the most convenient corner to maximize the survey lines within the complicated area of the fenced lot. Field conditions were challenging due to trees and existing structures (i.e., the substation, transformers, a shipping container, and telephone poles). When possible, observed surficial features were subsequently mapped at the end of the study for comparative analysis with the collected GPR data.

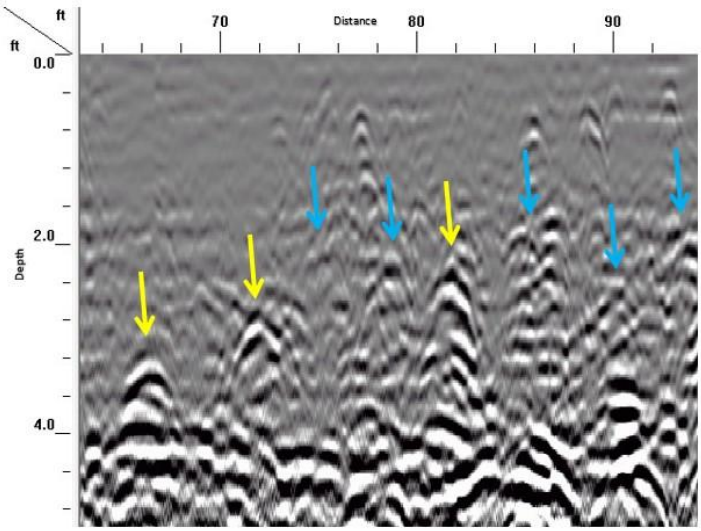

Figure 5.5. A reflectance profile from GPR Grid 1 shows strong and weak reflectors likely representing intact (yellow arrows), partially decayed, or fully decayed coffins (blue arrows).

The two-dimensional reflectance profiles, three-dimensional interpolations, plotted grave markers, and mapped subsidence areas were closely inspected to map each interment. The GPR profiles within the survey area exhibited forensic evidence of weak and strong reflectors associated with potential coffins, decayed coffins, shrouded burials, and pit burials. Like the prospection, evidence of incisions, probable and possible coffins, burial vaults, and exceptionally intact interments was visible in the two- and three-dimensional interpolations (Figure 4.5).

Single human interment in a defined cemetery or burial ground involves the excavation of a grave shaft, the committal of the individual into the excavated trench, and subsequent backfill. The process notably impacts the near-surface (within the first 0.75 ft) homogeneous parent subsoils, as more profound and often denser soils are scattered around the grave. The resulting discombobulation creates a subtle compositional contrast to the surrounding natural stratigraphy, which creates a thin layer of “ejecta.”

Under the right conditions, the sensitivity of GPR can detect discrete changes in near-surface soil densities with contrasting dielectric characteristics in a controlled, tightly spaced survey and subsequent interpolation of collected data. This ejecta pattern can provide researchers with an additional forensic tool in spatial and, in some cases, temporal burial patterning within a cemetery context.

Several areas of ejecta were noted throughout the survey grids, particularly in areas where profiles indicated forensic evidence of graves but failed to produce three-dimensional amplitude maps, and filtering was unsuccessful in isolating individual interments.

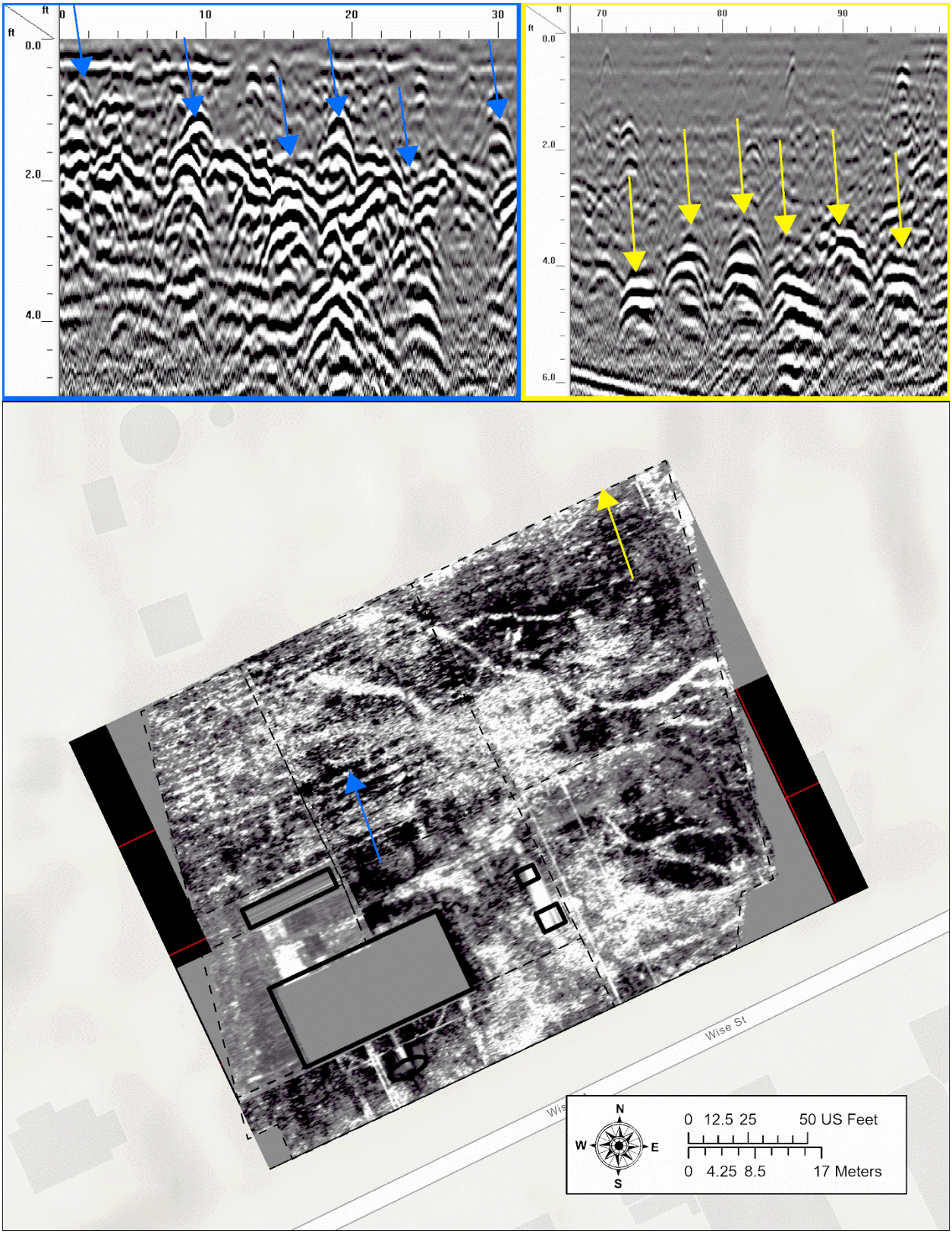

Figure 5.6. Planview of two transects (bottom) and corresponding reflectance profiles (top). Shallow graves, some only 0.54 ftbs (top, left) can be seen on the slope near the shipping container (blue arrow). Deeper, intact graves, approximately 3.5 to 4.2 ftbs (yellow arrow) can be found in the northwest corner of Grid 1 (top, right).

Figure 5.7. Thermal drone imagery of the 1857 Manchester Municipal Cemetery. Note the series of defined trenches visible in the northern portion of the lot.

Figure 5.8. DEM of the 1857 Manchester Municipal Cemetery derived from drone imagery. Note the exceptionally faint rows of potential subsided graves shafts in the northern half of the DEM.

A random selection (n=20) of the probable unmarked graves in what appears to be relatively intact portions of the lot (specifically Grids 1 – 3) ranged from 1.87 ft to 4.56 ftbs, averaging 3.65 ft to the top of the observed interment. In the lower elevation portions of the site (i.e., near the substation, on the slope where the container is located, and south of the substation), the soil appears to have been stripped or altered for construction purposes. In these areas, where probable grave signatures were noted, depth to the surfaces of the interments was much shallower, with some observed at just 0.54 ftbs (Figure 4.6).

Typical cemeteries exhibit rows of burials, but the temporal nature, often a long period between burials, frequently results in the graves being only arrayed in loosely aligned rows. One notable, unique feature of the probable graves at the 1857 Manchester Municipal Cemetery was the clarity of the data set and the long, nearly perfectly straight rows of interments. This was evident in the GPR data set and the thermal drone imagery collected by TerraSearch (Figure 4.7) but was faintly visible in the DEM rendered from the same data set (Figure 4.8).

Additional inspection of each grave within the rows revealed a deviation of only 0.40 ft between the top of the observed probable coffin within the trench. This forensic data may suggest mass individual burials within trenches that span the length (W-E) of the lot (and likely outside the bounds). In addition to the trenches, a series of geometric features (rectangular) were noted in at least two areas of the cemetery. Two- and three-dimensional interpretation of the features indicates that these may be potential burial pits for bodies or portions of bodies. Typically referred to as “limb pits,” it was also clear that subsequent burials superseded the potential pits (Figure 4.9).

Two- and three-dimensional geophysical targets representing probable coffins, decayed coffins, clothed remains, or shrouded remains were assigned a representative two-dimensional shape. The resulting spatial data set provided additional supporting forensic information about the location of probable and possible graves (Figures 5.10 & 5.11). The synthesis of the collected forensic data (geophysical and thermal drone imagery) identified over **472 probable** and **270 possible** graves within the bounds of the lot. An accurate count of graves within the fenced-in area was difficult due to natural (i.e., groundhog tunnels and dens) and anthropogenic disturbances (i.e., roads, previous construction activities, lot grading) likely obscuring many more. It should be noted that it is clear from the geophysical data and the drone imagery that graves likely exist outside the bounds of the lot.

In addition to the enclosed area survey, TerraSearch conducted a limited high-resolution GPR survey of approximately 300 ft (W-E) of Wise directly south of the lot. Although the data was exceptional in identifying utilities in the street (e.g., trenches, boxes, pipes, and gas lines), only **two potential interments** or remnants of graves were identified (Figures 5.12 & 5.13). The amount of disturbance and interference from the pavement, utilities, repair trenching, and utility boxes precluded assigning the term probable or possible for either geophysical target (Figures 5.14 & 5.15).

Additional Anthropogenic Features

Two non-funerary features were found in the 1857 Manchester Municipal Cemetery. Two deeply-buried, circular features were located in Grids 2 and 3 (Figure 5.16). In the two-dimensional reflectance profiles, the features exhibit clarity at around 5.70 ftbs, showing forensic evidence of potential well or night soil (privy) shafts and subsequent subsidence. Where the profile is clearest at around 6 ftbs, both shafts appear to be approximately 4 ft in diameter. Possible evidence for a lining and significant subsidence of stratigraphy can be seen in both profiles, but is most evident in the shaft in geophysical Grid 2 (Figure 5.17). Potential interments appear to cut the stratigraphy for the features, suggesting they were in use before the Cemetery.

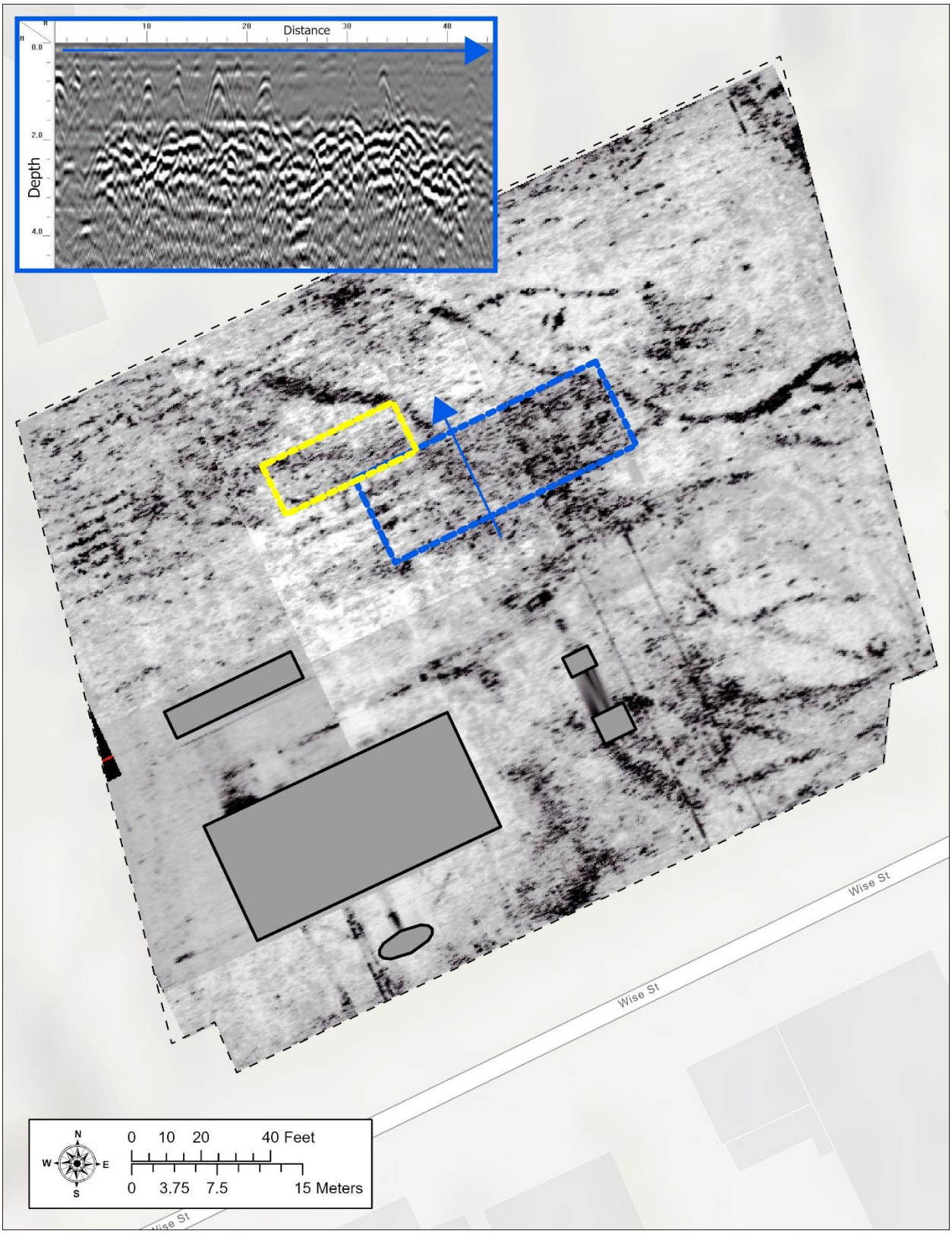

Figure 5.9. Potential pit features (blue and yellow rectangles) superseded by probable graves. The blue arrow represents the corresponding reflectance profile (inset) from the GPR transect.

Figure 5.10. Three-dimensional interpolation map of potential burials at the 1857 Manchester Municipal Cemetery at 3.50 ftbs (1 ft slice thickness), non-annotated.

Figure 5.11. Annotated three-dimensional interpolation map of potential burials at the 1857 Manchester Municipal Cemetery at 3.50 ftbs (1 ft slice thickness) showing probable graves (black outline) and possible interments (white outline).

Figure 5.12. MALA HDR GPR interpolation map of potential burials in Wise Street (yellow and blue arrows).

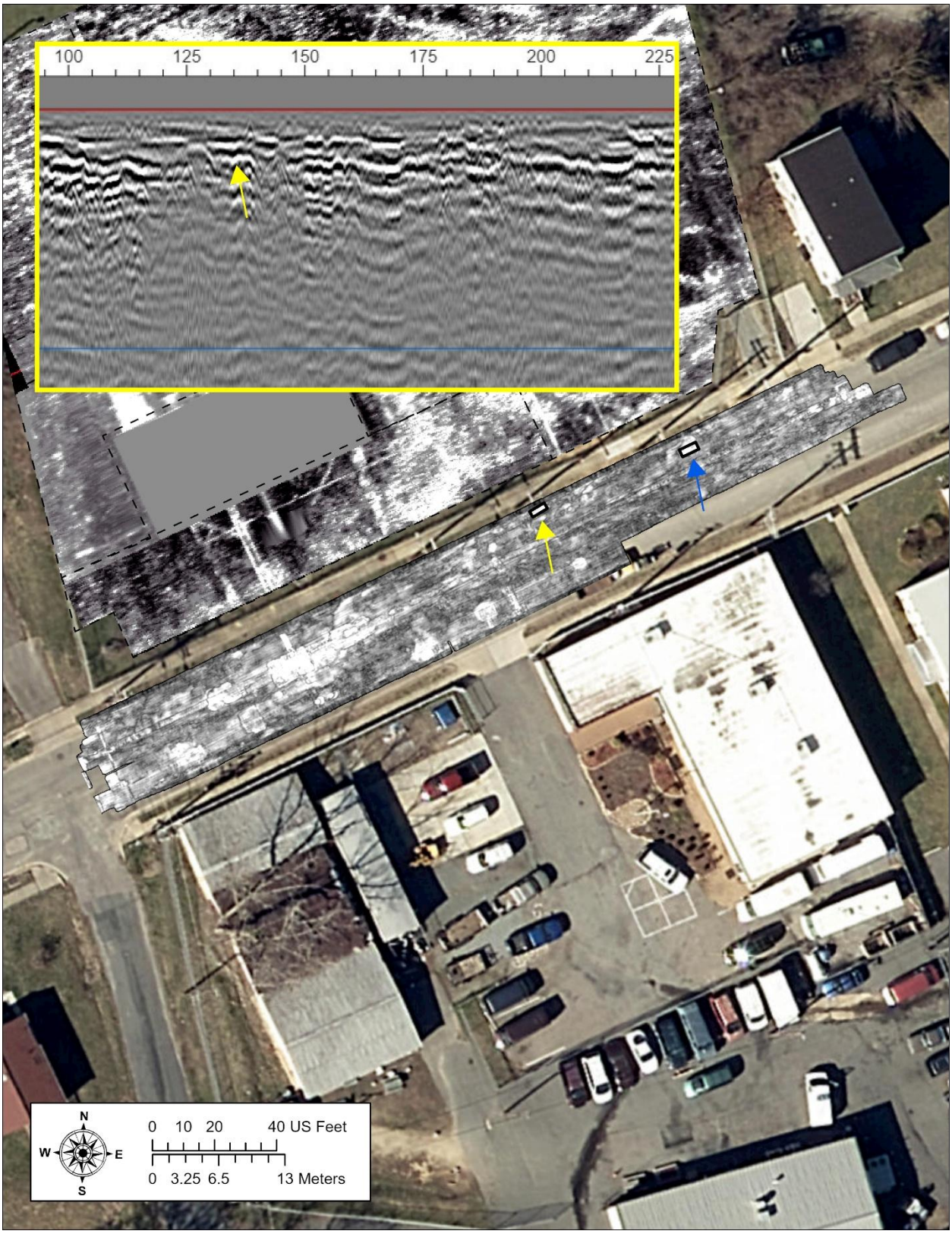

Figure 5.13. MALA HDR GPR interpolation map of potential burials in Wise Street annotated (yellow and blue arrows) and the corresponding two-dimensional reflectance profile showing the target (inset).

Figure 5.14. MALA HDR GPR interpolation map of utilities beneath Wise Street (2 ft interval slice).

Figure 5.15. Annotated MALA HDR GPR interpolation map of utilities (dotted yellow lines) beneath Wise Street (2 ft interval slice).

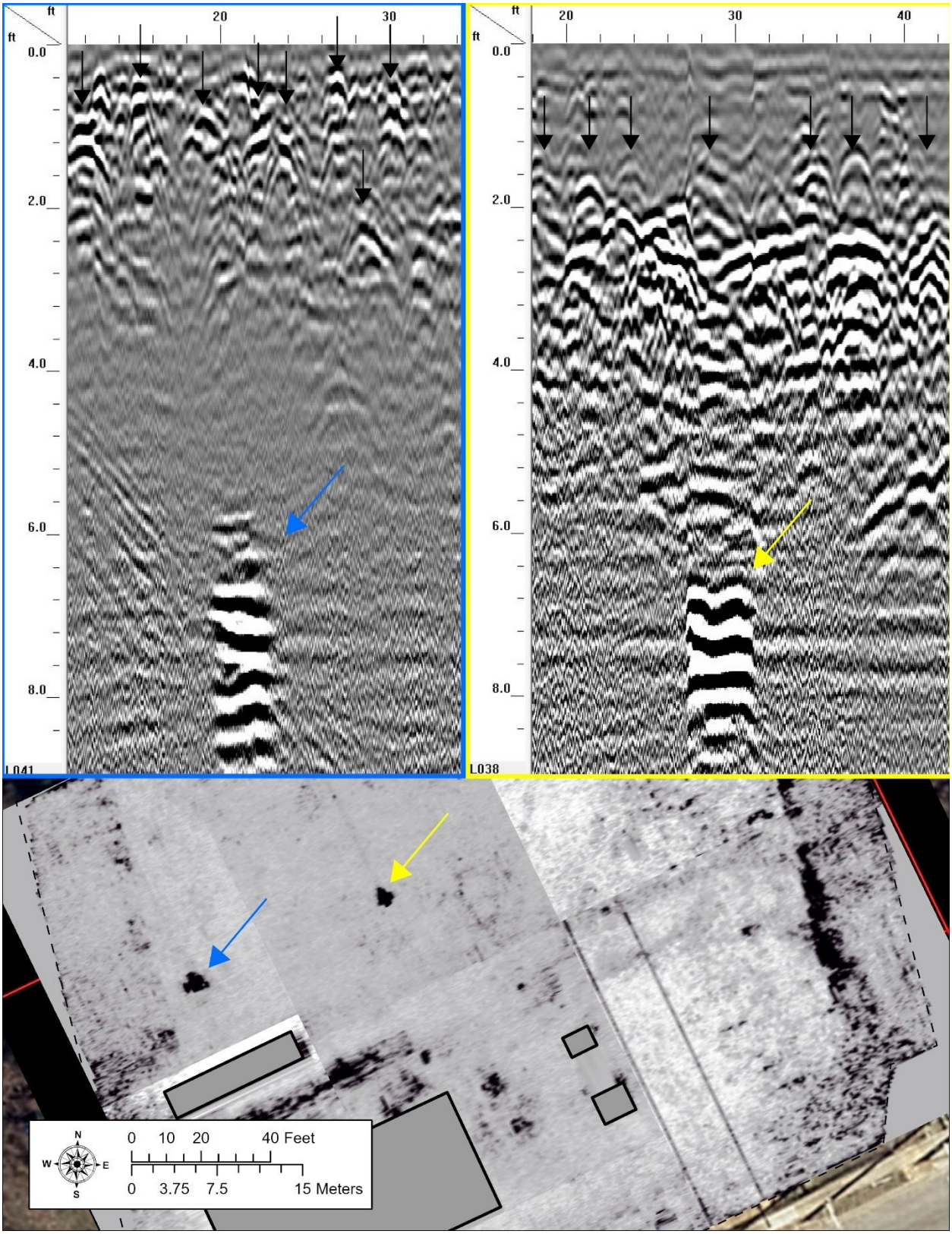

Figure 5.16. Two potential wells or night soil depository (privy) shafts (bottom, yellow arrows) in GPR Grids 3 (top left, inset) and Grid 4 (top right, inset). Black arrows represent potential interments.

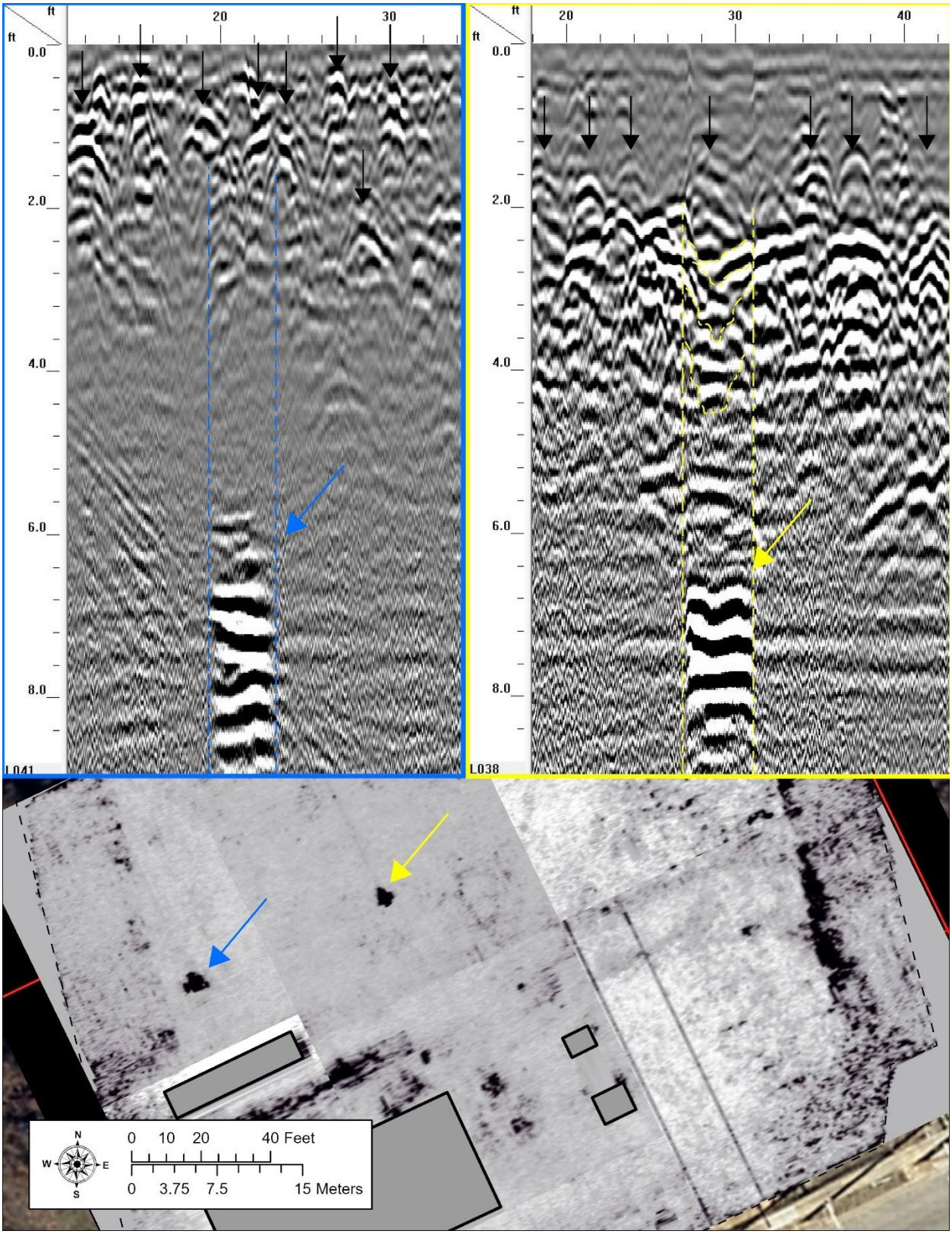

Figure 5.17. Annotated potential wells or night soil depository (privy) shafts (bottom, yellow arrows) in GPR Grids 3 (top left, inset) and Grid 4 (top right, inset). Note the slumping stratigraphy towards the top.

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

TerraSearch Geophysical, LLC (TerraSearch) conducted a ground-penetrating radar (GPR) survey of approximately 1.28 acres of the 1857 Manchester Municipal Cemetery, located at 2313 Wise Street, Richmond, Virginia (-77.4545595°W, 37.51600004°N), in March 2025. The survey included geophysical prospecting, documentation, mapping of the cemetery, and a comprehensive GPR survey comprising nine geophysical grids.

While comprehensive, the 1857 Manchester Municipal Cemetery GPR survey does not likely represent all potential graves within the gridded survey area. Although many of the probable and possible interments exhibited relative clarity in the geophysical analysis, the density of the burial pattern within the cemetery made absolute identification of all burials nearly impossible. Additionally, several reflectance profiles displayed evidence of burials that superseded each other – a common occurrence in burial grounds used over a long period or intensively, making the complete detection of each interment challenging.

Despite these challenges, the synthesis and analysis of the geophysical data and the collected forensic information identified over 472 probable graves and 270 possible graves in the cemetery. The total number of identified graves (n = 742) far exceeds the number listed in the *South Carolina Hospital Aid Association in Virginia: 1861 – 1862, list of deceased* (n = 163) suggesting that the cemetery was in use either before the available burial records, or after the documented interments, later in the Civil War. The preliminary investigation, prospection, and rendering of three-dimensional amplitude maps and thermal imagery suggest that graves extend into the adjacent lots to the west, north, and east. Additionally, the MALA high-definition radar interpolated imagery indicates the potential for graves beneath Wise Street.

The geophysical work at the 1857 Manchester Municipal Cemetery demonstrates the value of ground-penetrating radar in identifying archaeological features, specifically forensic evidence related to human interments. The work also exhibits the power of geophysics combined with UAV photogrammetric imaging in delineating cemeteries. The data collected at the 1857 Manchester Municipal Cemetery has identified intact and sensitive resources, and any future ground disturbance should be avoided if possible. If ground disturbance is unavoidable, it is recommended that a qualified archaeologist monitor those activities within the bounds of the lot and beneath Wise Street.

Finally, in the cemetery's GPR survey, every effort has been made to identify features of interest through geophysics and the analysis of the collected data. As with any geophysical survey, these methods are not foolproof and should be ground-truthed to verify the interpretations, if possible or warranted.

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CHAPTER VII: APPENDIX

Figure 7.1. Three-dimensional amplitude map at 0.00 ftbs (slice thickness 1.00 ft).

Figure 7.2. Three-dimensional amplitude map at 0.50 ftbs (slice thickness 1.00 ft).

Figure 7.3. Three-dimensional amplitude map at 1.00 ftbs (slice thickness 1.00 ft).

Figure 7.4. Three-dimensional amplitude map at 1.50 ftbs (slice thickness 1.00 ft).

Figure 7.5. Three-dimensional amplitude map at 2.00 ftbs (slice thickness 1.00 ft).

Figure 7.6. Three-dimensional amplitude map at 2.50 ftbs (slice thickness 1.00 ft).

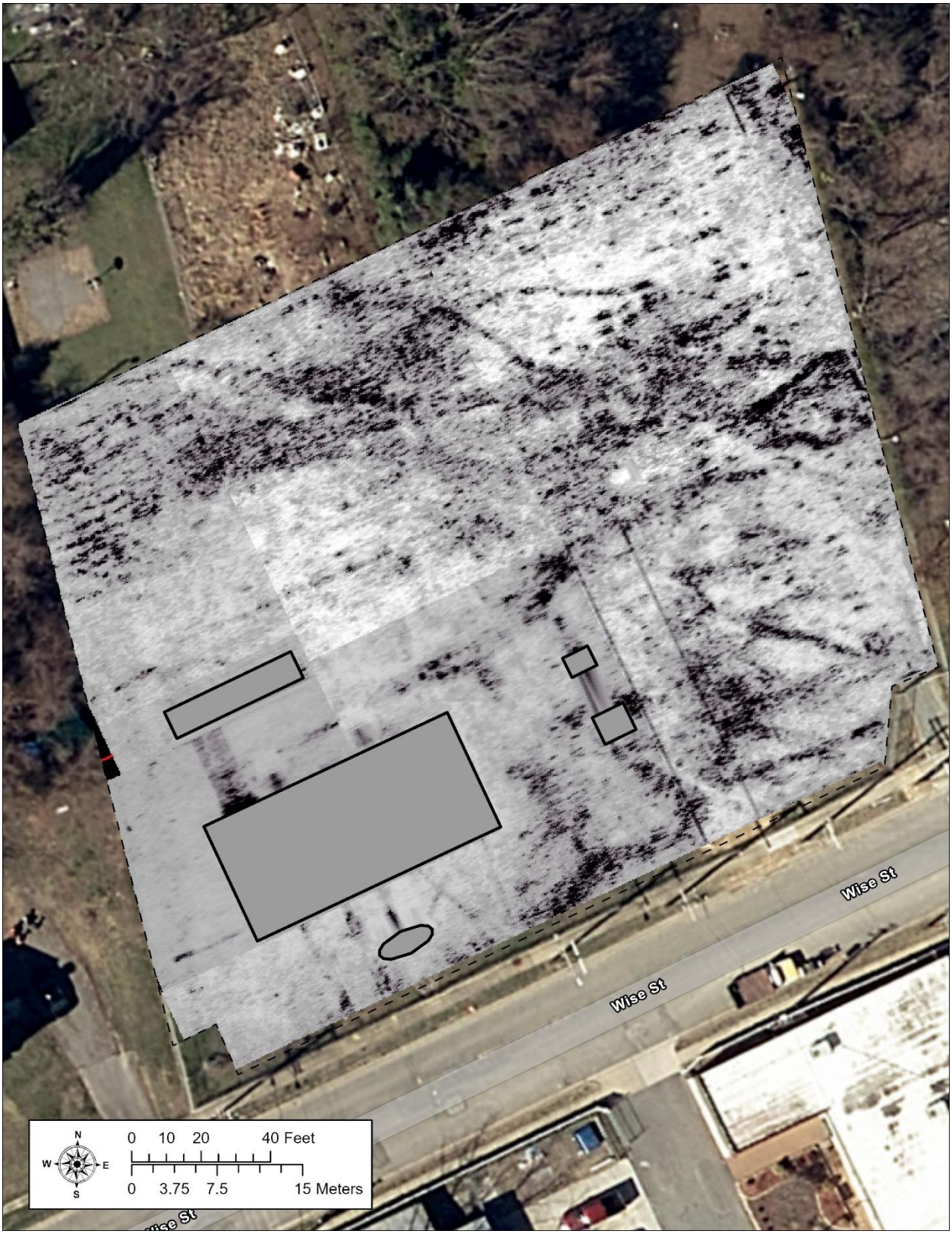

Figure 7.7. Three-dimensional amplitude map at 3.00 ftbs (slice thickness 1.00 ft).

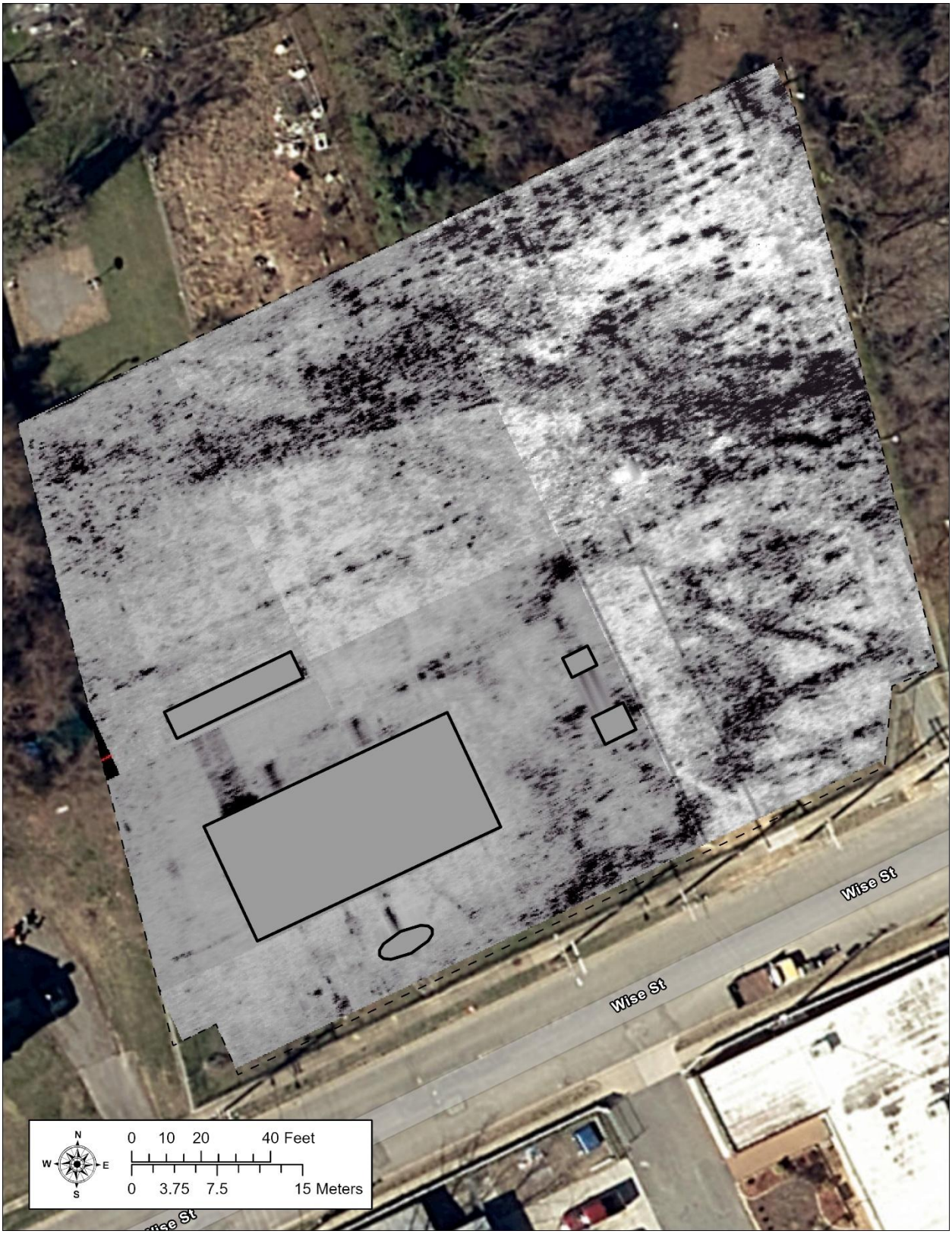

Figure 7.8. Three-dimensional amplitude map at 3.50 ftbs (slice thickness 1.00 ft).

Figure 7.9. Three-dimensional amplitude map at 4.00 ftbs (slice thickness 1.00 ft).

Figure 7.10. Three-dimensional amplitude map at 4.50 ftbs (slice thickness 1.00 ft).

Figure 7.11. Three-dimensional amplitude map at 5.00 ftbs (slice thickness 1.00 ft).

Figure 7.12. Three-dimensional amplitude map at 5.50 ftbs (slice thickness 1.00 ft).

Figure 7.13. Three-dimensional amplitude map at 6.00 ftbs (slice thickness 1.00 ft).

Figure 7.14. Panoramic view of the survey area looking southwest.

Figure 7.15. Panoramic view of the survey area looking southeast.

Figure 7.16. Panoramic view of the survey area looking northwest.

Figure 7.17. Panoramic view of the survey area looking northeast.

Figure 7.18. Panoramic view of GPR Grid 8 using the UtilityScan 350 MHz HS looking northeast.

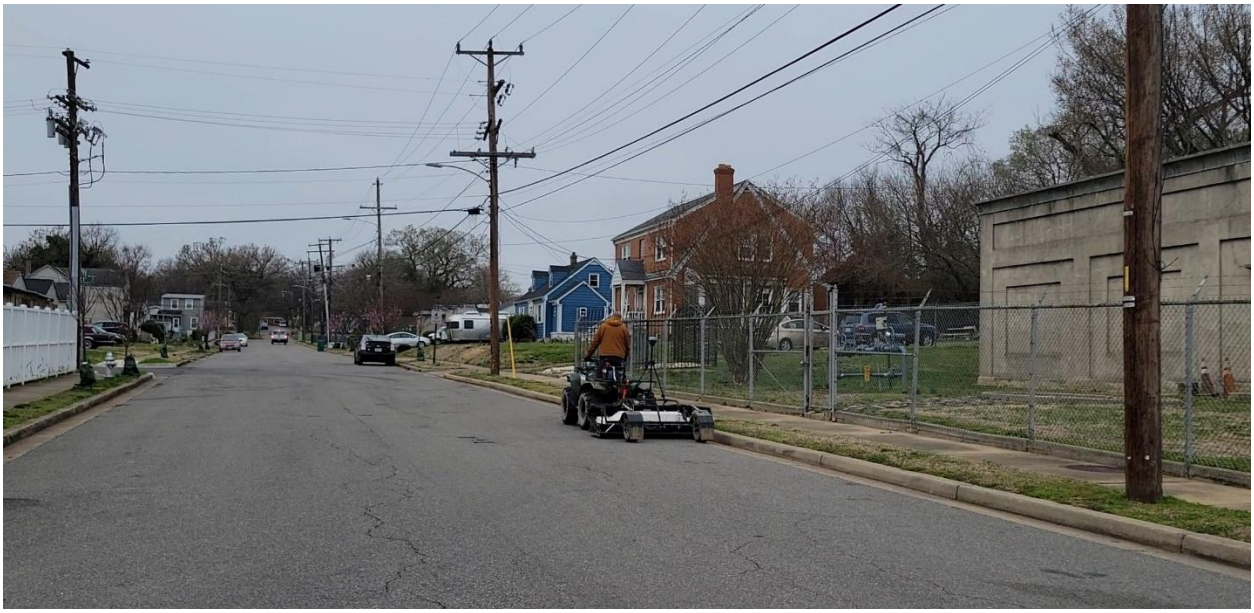

Figure 7.19. Panoramic view of the MALA MIRA HDR survey of Wise Street looking northwest.