

Parker's Revenge Archaeological Project Minute Man National Historical Park Lexington, Massachusetts

Final Report for the Friends of the Minute Man National Park



Fired musket ball.

ARPA Permit No.: 2014.MIMA.01

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"Parker's Revenge is one example of many small acts of heroism on the first day of the Revolutionary War."

Robert Morris, President, Friends of the Minute Man National Historical Park

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Management Abstract

Margaret S. Watters of Visual Environment Solutions, LLC has completed the Parker's Revenge Archaeological Project (PRAP) in the Minute Man National Historical Park (MIMA) located in Lexington, Massachusetts. This project was contracted by the Friends of the Minute Man National Park (FMMNP) and was conducted in collaboration with the Minute Man National Historical Park (MIMA) and the National Park Service (NPS) Northeast Regional Archaeological Program (NRAP) under the Archaeological Resources Protection Act (ARPA) Permit No.: 2014.MIMA.01.

The Parker's Revenge battle was a point of interest for MIMA, the FMMNP, and citizen support organizations in the region for many years. Very little was known of the Parker's Revenge battle with only a single reference (Phinney 1825:38) to its location by Nathan Monroe made 50 years after he fought with the Lexington militia against the British Regular army on April 19, 1775; the first day of the American Revolutionary War. PRAP began in 2012 with discussion and planning between MIMA, FMMNP, NRAP and the Lexington Minute Men. Watters was contracted and PRAP archaeological research and investigations began in the autumn of 2013 to identify the location of the battle and if possible, interpret the action of the battle.

Following extensive archaeological research including comprehensive archival research, field survey, geophysical surveys, metallic surveys, excavations, and an integrated military tactical review event PRAP recovered and mapped new evidence that revealed the location of the battle and proposed tactical scenarios engaged during the fighting between the Lexington militia and British Regular Army on April 19, 1775. The main goals of PRAP were achieved through an integrated approach that defined the historic landscape and land use, applied KOCOA battlefield methods for site analysis, and actively engaged with the local community to interpret the new evidence recovered through archaeological investigations in context to the diverse resource of ecological, landscape, military, historical, and archaeological expertise available for consultation.

This project resulted in the first battle evidence identified and interpreted in MIMA. Not only did it identify the battle it provided insight to the integrity of the battlefield and as a result, opened a new future for research in MIMA. The product of this investigation presented a series of testable hypotheses for tactical strategies engaged by the British and Colonial forces. These hypotheses can be addressed in future investigations to better define the tactics engaged by both sides on the first day of the American Revolution within MIMA. PRAP has developed an adaptable research design and project framework for continued investigations in MIMA and that can be utilized in other National Parks.

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“The story of Captain Parker and Parker’s Revenge is an important part of the story of April 19th that has been largely lost, forgotten to history. It is a story that completes the story of April 19th and the National Historical Park’s story. It is a component that has been missing and it is exciting to have the collaboration of all these people to bring this project to such a wonderful point. I won’t say a conclusion, because like any good project, it opens areas that need more investigation and more work.

What we have done here has created a model for collaboration, cooperation, and partnership.”

Nancy Nelson, Superintendent, Minute Man National Historical Park

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"Such, fellow citizens, imperfectly sketched in their outline, were the events of the day we celebrate; a day as important as any recorded in the history of man. It is a proud anniversary for our neighborhood. We have cause for honest complacency, that when the distant citizen of our own republic, when the stranger from foreign lands, inquires for the spots where the noble blood of the Revolution began to flow, where the first battle of that great and glorious context was fought, who is guided through the villages of Middlesex, to the plains of Lexington and Concord. It is a commemoration of our soil, to which ages, as they pass, will add dignity and interest; till the names of Lexington and Concord, in the annals of freedom, will stand by the side of the most honorable names in Roman or Grecian story."

Edward Everett, Massachusetts Representative in Congress, Concord, MA April 19, 1825

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Overview and Project History

April 19, 1775 marked the first battle of the American Revolution leading to the birth of the United States. Every school child in America has heard of the action on the Lexington Green and at Concord's North Bridge. The Parker's Revenge Archaeological Project (PRAP) was the first archaeological research in the Minute Man National Historical Park (MIMA) to search for evidence of fighting on the first day of the Revolutionary War at the little known battle site called Parker's Revenge. Captain John Parker and the Lexington militia first faced the British Regular force on the Lexington Green earlier that morning where eight of the militia were killed and ten wounded¹ by fire from the Regulars. Following this action, Captain Parker rallied his men and later that day led them to the boundary of Lexington along Bay Road, today's Battle Road. Captain Parker and the Lexington militia intentionally positioned themselves in a strategic location with a clear view west down Battle Road where they could see, and hear, the British Regular column approach. It is not known how many men were lying in wait that day, nor their intent; but as a result of this investigation, the battle was revealed.

A long-time focus of MIMA and the Lexington Minute Men, and other local, community-based re-enactment organizations, the location and details of this battle were not known despite the robust body of historical research on the first day of the war. This project specifically engaged archaeological investigations in an attempt to find evidence of the battle. In 2012 MIMA, working with members of the Lexington Minute Men and the Friends of the Minute Man National Park, developed a preliminary research proposal and shared it with the NPS NRAP archaeological division. Regional Archaeologist James Kendrick contacted Meg Watters of Visual Environment Solutions, LLC to propose she lead PRAP. Watters was engaged by the FMMNP in the autumn of 2013 as the project archaeologist to develop a research plan and lead the archaeological investigations to locate and interpret the Parker's Revenge battle.

From its inception, PRAP combined best practices in archaeological investigations, commitment to public engagement, and strategic planning for site access and preservation. The framework of PRAP was built upon strong collaborative efforts engaging local communities, academics, and dedicated descendant and re-enactment groups that engaged local resources, professional archaeologists, and State and Federal agencies. The project fostered community collaboration using archaeology as a gateway to fully incorporating the inherent science, technology, engineering, and mathematics (STEM) principles of this discipline in field research, planning for outreach programming, and site rehabilitation.

The approach to this project was founded in a dynamic interplay between archaeologists, historians, and other related specializations. PRAP is a project where the skills, experience, and methods of contributors combined to creatively, yet based in scientific method; pursue the discovery and telling of the story of the battle that took place between Captain John Parker and his Lexington militia and the British Regular column returning, under fire, to Boston on April 19th, 1775.

¹ Two individuals from Woburn became casualties that morning. One was killed and another wounded, while 7 Lexington men were killed and 9 wounded.

PRAP research design was established in the autumn of 2013 (Watters 2013); archival research and documentary review were concluded in the spring of 2014 (Watters 2014). Investigation of the site and preliminary historic landscape studies began in the summer of 2014. Methods engaged for landscape reconstruction included pedestrian surface surveys and feature mapping, terrestrial laser scanning, geophysical surveys, ecological studies (Forman 2015a, 2015b), and archaeological investigations. In November 2014 the first of three week-long metallic surveys was conducted; the second was conducted in June 2015 and the third in November 2015. The final field component of the project was the Military Tactical Review event that engaged a broad spectrum of expertise to consider and begin to interpret the Parker's Revenge battle using the archaeological evidence obtained during PRAP and existing primary and secondary sources. The final report was submitted in October 2016.

This report presents the archaeological research undertaken by the FMMNP and MIMA. The report is not a historical account of what happened during the Parker's Revenge battle. While the robust body of historical research contributes to the interpretation of the archaeological evidence, this report focuses on the new evidence that PRAP discovered and presents the story that the artifacts tell.

"Artifacts do not have opinions."

Dr. Douglass Scott, NPS Archaeologist, Retired; Historical & Conflict Archaeologist

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The archaeological component of PRAP was conducted on a project area of approximately 60 acres (Figure 1) with permission of the United States Department of the Interior in compliance with the primary federal laws governing protection of cultural resources including the National Historic Preservation Act (NHPA) of 1966, as amended and the **Archaeological Resources Protection Act (ARPA)**
Permit No.: 2014.MIMA.01.

The archaeological component of PRAP was conducted on a project area of approximately 60 acres (Figure 1) with permission of the United States Department of the Interior in compliance with the primary federal laws governing protection of cultural resources including the National Historic Preservation Act (NHPA) of 1966, as amended and the **Archaeological Resources Protection Act (ARPA)** **Permit No.: 2014.MIMA.01.**

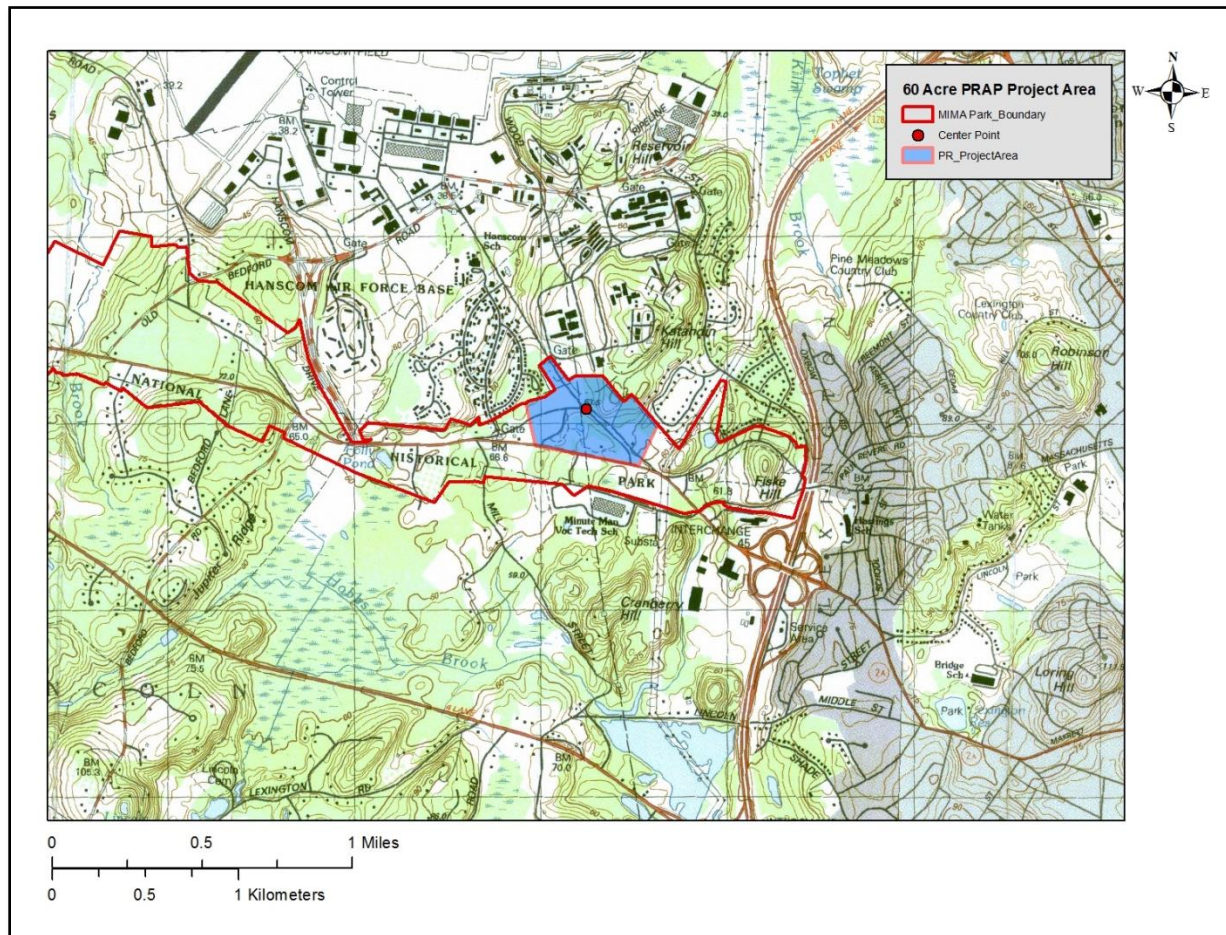


Figure 1 60 acre PRAP study area.

A corridor of property running along Airport Road and through the center of the study area belongs to the Massachusetts State Highway (Figure 2). Archaeological investigations took place in this zone with permission from the Massachusetts Historical Commission State Historic Preservation Officer (SHPO) in compliance with Massachusetts General Laws, Chapter 9, Section 26-27C (950 CMR 70), and MEPA (301 CMR 11) under a **State Archaeologist's Permit #3522**, and a research permit from the **Massachusetts Department of Conservation and Recreation (DCR), Permit number R-74, r.**

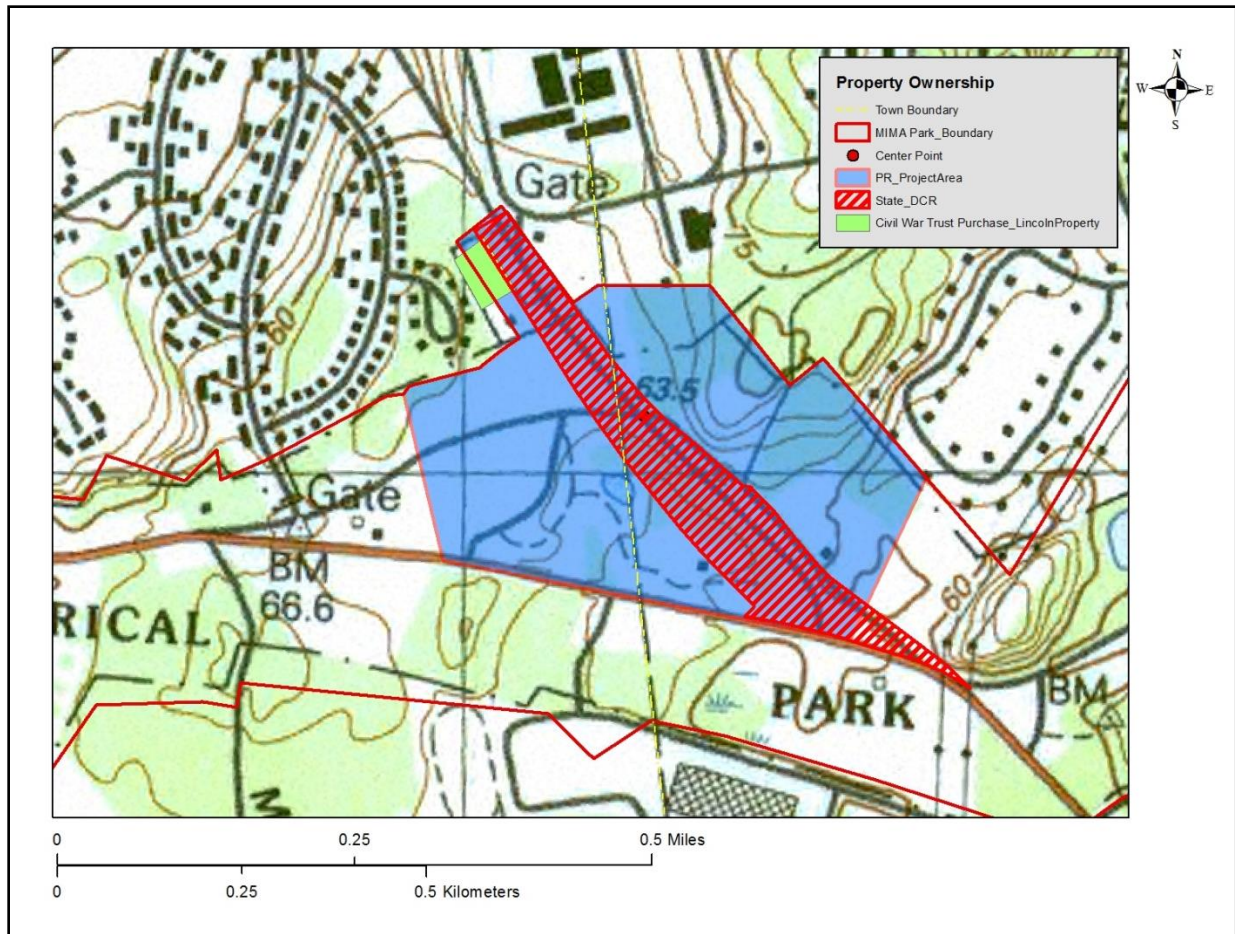


Figure 2 Property ownership in PRAP study area. The blue area is federally owned, the red striped area is State owned.

To enable metallic surveys in the wetland area located within the site boundary, selective vegetative hand-clipping was conducted over an 11 acre area (Figure 3) with permission from the Conservation Commissions of the town of Lincoln under the **MassDEP File #:203-0891 Order of Conditions**, and the town of Lexington **Mass DEP File #:201-1001 Order of Conditions**.

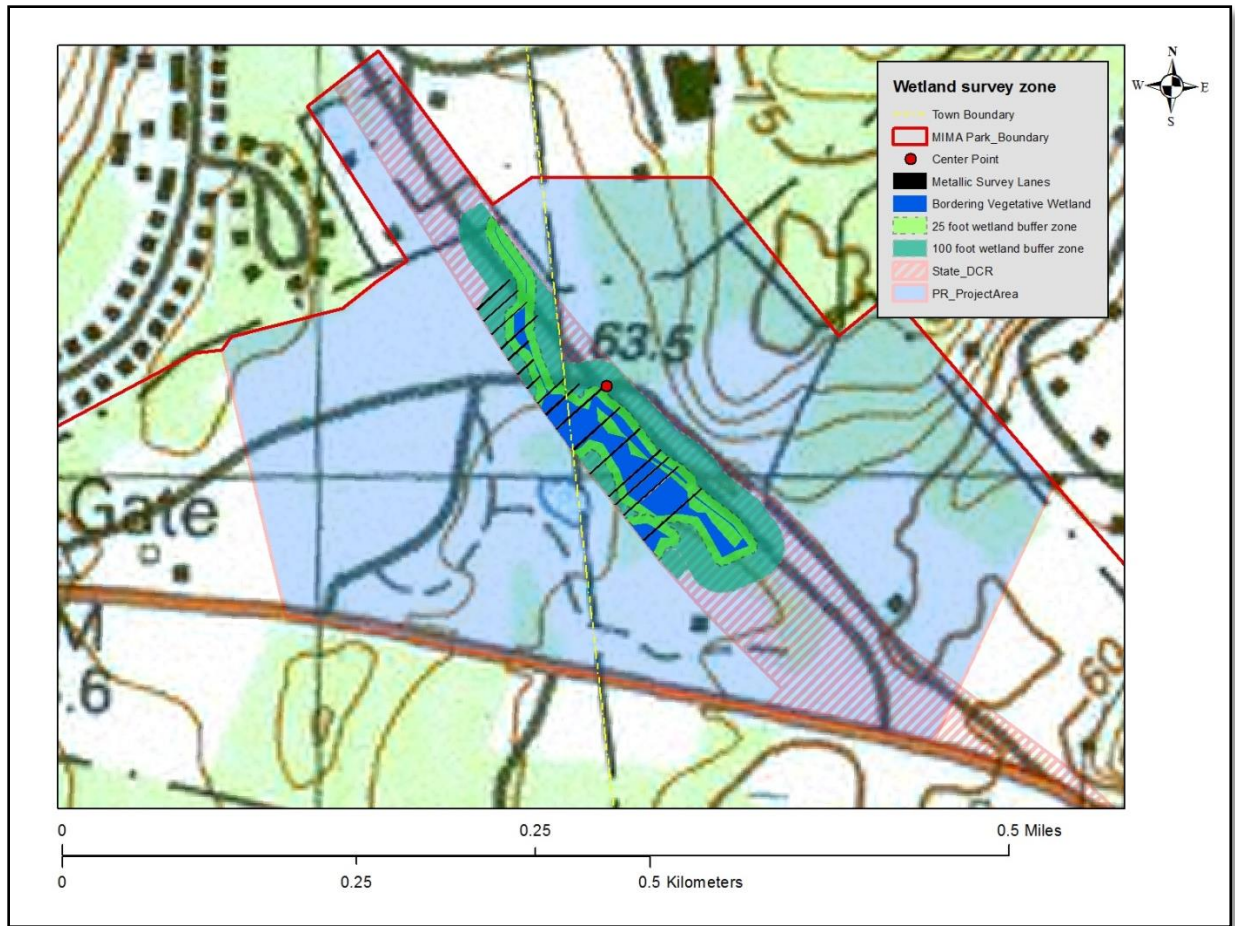


Figure 3 Wetland boundary (green and blue) and metallic survey lanes (black lines within wetland boundary) in PRAP project area.

Chapter 1 Project Structure and Goals

Project Structure

The roots of PRAP grew through relationships between MIMA, the FMMNP, the NPS NRAP archaeology division, and a dedicated corps of volunteers that lent a broad spectrum of professional backgrounds and shared passion for American history. PRAP management committee included Mr. Robert Morris, President of the FMMNP, Ms. Nancy Nelson, Superintendent of MIMA, Dr. James Kendrick, Regional Archaeologist NPS NRAP, and Dr. Meg Watters, Project Archaeologist, Visual Environment Solutions, LLC.

The FMMNP sponsored the project through aggressive and successful fundraising that enabled Watters to engage a broad spectrum of traditional and technological approaches to map and reconstruct the historic landscape, identify and retrieve battle related artifacts, and collaboratively achieve the most comprehensive interpretation of the Parker's Revenge battle to date.

MIMA and the NPS NRAP archaeological department provided significant support, guidance, and historic and archaeological expertise in each phase of this project. NPS personnel and dedicated volunteers participated in every stage of the project from planning to implementation and interpretation.

A vital component of the project was the active local Revolutionary War community-based re-enactment organizations. Over the course of the project volunteers from twelve different re-enactment groups representing both Colonial and British forces helped prepare the site for archaeological investigations and mapping of the historic battlefield.

A core team of volunteers formed PRAP archaeological team and included: Bill Rose, Bill Poole, Corrine Rose, Joel Bohy, and Ed Hurley. This team assisted Watters in all components of the project and received training in GPS survey, geophysical surveys, metallic survey, artifact processing, and X-ray fluorescence analysis of musket balls.

The local academic, professional, and archaeological community contributed significantly to the project including Barbara Donohue (archaeologist), Holly Herbster (archaeologist), Richard T.T. Forman (ecologist), Brian Donahue (environmentalist), Robert Gross (historian), Robert Thorson (geologist), Brucker (X-Ray florescence manufacturer), Feldman 3D (survey), and many others. The successful integration of all of these resources to PRAP results included over 1,500 volunteer hours.

The framework of PRAP has enabled the first focused archaeological research on the fighting on the first day of the American Revolution in MIMA since it was established in 1959.

Goals

Two goals were set for PRAP:

- (1) Could the location of the Parker's Revenge Battle be identified?
- (2) Could any of the action, or tactics, used during the battle be determined?

Key Personnel

PRAP survey team

William Poole (Lexington Minute Man, MIMA volunteer, President of the Lexington Historical Society), Ed Hurley (Lexington Minute Man, MIMA volunteer), William Rose (Lexington Minute Man, MIMA and Home Base volunteer), Corrine Rose (MIMA volunteer), and Joel Bohy (Captain John Brown's Company, MIMA volunteer) contributed hundreds of hours of work through every phase of this project. They have been trained in archaeological metal detecting, site survey, and have assisted with the geophysical surveys and archaeological excavations. In addition to site work, they have all contributed significantly to establishing a robust historically accurate context of the battle including archival research and expertise in 18th century Militaria material culture and details on the men who fought in this battle, both British and Colonial.

Archaeology

Dr. Bill Griswold, Regional ARPA Coordinator with NRAP, worked closely with Watters throughout the extent of the project contributing to project research development and permitting. Griswold worked as part of the PRAP survey team contributing to site, geophysical, and metallic surveys.

Herbster from Public Archaeology Lab, Inc. (PAL) was co-principal archaeologist for the field excavations and metallic surveys. All archaeological protocols were developed between Watters and Herbster under consultation with NRAP. Artifacts were processed and catalogued by PAL and all artifacts are curated at MIMA. PAL prepared the archaeological report (Appendix 1) and artifact catalog (including finds from metallic surveys) for excavations (Appendix 2).

Barbara Donohue was the lead archaeologist for the Hanscom Air Force Base (HAFB) archaeological investigations (2007, 2010.) Dr. Donohue provided access to her original research, reports, and led a site walk identifying areas she investigated and their research potential for PRAP.

MIMA Interpretation

James Hollister, Park Ranger, Education Coordinator, and Historic Weapons Supervisor, provided historical background and a breadth of knowledge regarding not only the fighting on April 19th, but the historical context within which the fighting took place. Hollister contributed significantly to project development and final interpretations.

Leslie Obleschuk, Chief of Interpretation and Education, consulted during project development on outreach, interpretation materials, and strategies for the most effective integration of the PRAP archaeological methods and results into MIMA interpretation and outreach programming in the park.

Environmental Study

Dr. Richard T.T. Forman, landscape ecologist from Harvard University contributed significantly to the understanding of the environmental evolution of the study area, in particular in the development of the existing wetland.

Dr. Brian Donahue, American Environmental Studies at Brandeis University provided information on the 18th century historic landscape and ecology; and contributed to interpretation of the battlefield landscape.

Site Control and 3D scanning surveys

Stephen Wilkes, 3DSurvey Director, Feldman Land Surveyors, Inc., oversaw the establishment of the site control and conducted the 3D laser scanning survey of the battlefield landscape.

Metallic Surveys

Dr. Douglas Scott, Jo Balicki, and Dr. Sheldon Skaggs trained the metallic survey team and contributed to artifact and battlefield analyses.

Wetland Permitting

Richard Kirby of LEC Environmental, Inc. led the efforts to obtain permits with the Lincoln and Lexington Conservation Commissions.

X-Ray Florescence

Rick Rainville and Bruce Kaiser from Bruker manufactures helped analyze a selection of musket balls from the PRAP collection.

PRAP Management Committee

Nancy Nelson, Superintendent MIMA, Robert Morris, President, FMMNP, Dr. James Kendrick, Regional Archaeologist, NRAP NPS, and Dr. Meg Watters, Project Archaeologist Visual Environment Solutions, LLC functioned as the PRA Management Committee and as such strategized, directed the development of the project, and kept the focus of PRAP on identifying and mapping the Parker's Revenge Battle through archaeological investigations.

Report Structure

This report is designed to introduce the history of PRAP, key project partners and participants, outline the research design, present results of investigations, interpret the Parker's Revenge battle, and discuss potential for testing of new research hypotheses in the Park. The first chapter presents the framework, participating partners, and management of the project; also included are the project goals and key personnel. Chapter 2 introduces the research design that was used to gather information, discover new evidence of the battle, and to interpret the battle. The third chapter discusses the background research and site taphonomy reviewing archival research and identification of the focus area of interest for investigations. Chapter 3 also includes a historiography of the oral and written history of the location of the Parker's Revenge battle. Chapter 4 reports on site survey that included surface (pedestrian) survey, geophysical surveys to characterize any remaining battle related buried archaeological features and artifacts (metallic surveys); and archaeological excavations. Chapter 5 discusses impacts on the battlefield landscape and reconstructs the historic landscape and land use for 1775. Chapter 6 presents

the metallic survey engaged to locate and recover battle related artifacts including a discussion of survey methods and results. Chapter 7 outlines the findings of the Military Tactical Event, the final discussion and interpretation of the Parker's Revenge battle based on documentary and new archaeological evidence. The final chapter, Chapter 8, discusses the project and identifies a number of research paths that have developed as a result of this project; and presents new and testable hypotheses for better understanding and interpreting the first day of the American Revolution in MIMA.

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“...it was deeply moving to find & hold musket balls that had been fired 240 years ago by provincial militia men or British Regulars. Each time [I found a musket ball] my first thought was of the individual who had last touched the ball. Who was he? What was he feeling?”

Ed Hurley, PRAP team member, MIMA volunteer

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Chapter 2: Archaeological Research Design and KOCOBA Battlefield Analysis

The Parker's Revenge Archaeological Project sought to re-construct the 1775 historic landscape, identify remaining archaeological resources, and discover historic artifacts that would provide evidence to locate and better understand the military activities of the Parker's Revenge battle that took place on the first day of the American Revolutionary War; the 19th of April, 1775. This investigation focused on an area of approximately 60 acres situated along Nelson Road, Airport Road, and Marrett Street (historic Battle Road, old Concord Road) in Lexington and Lincoln, Massachusetts (Figure 4). The area of interest was determined based upon information derived from historic documents, archaeological investigations, and landscape assessments (Donohue 2010; Herbster 2005; National Park Service Cultural Landscapes Inventory 2012; Sabin 1987; Snow 1969; Towle and MacMahon 1986) summarized in the *Parker's Revenge Narrative Report: Phase I* (Watters 2014).

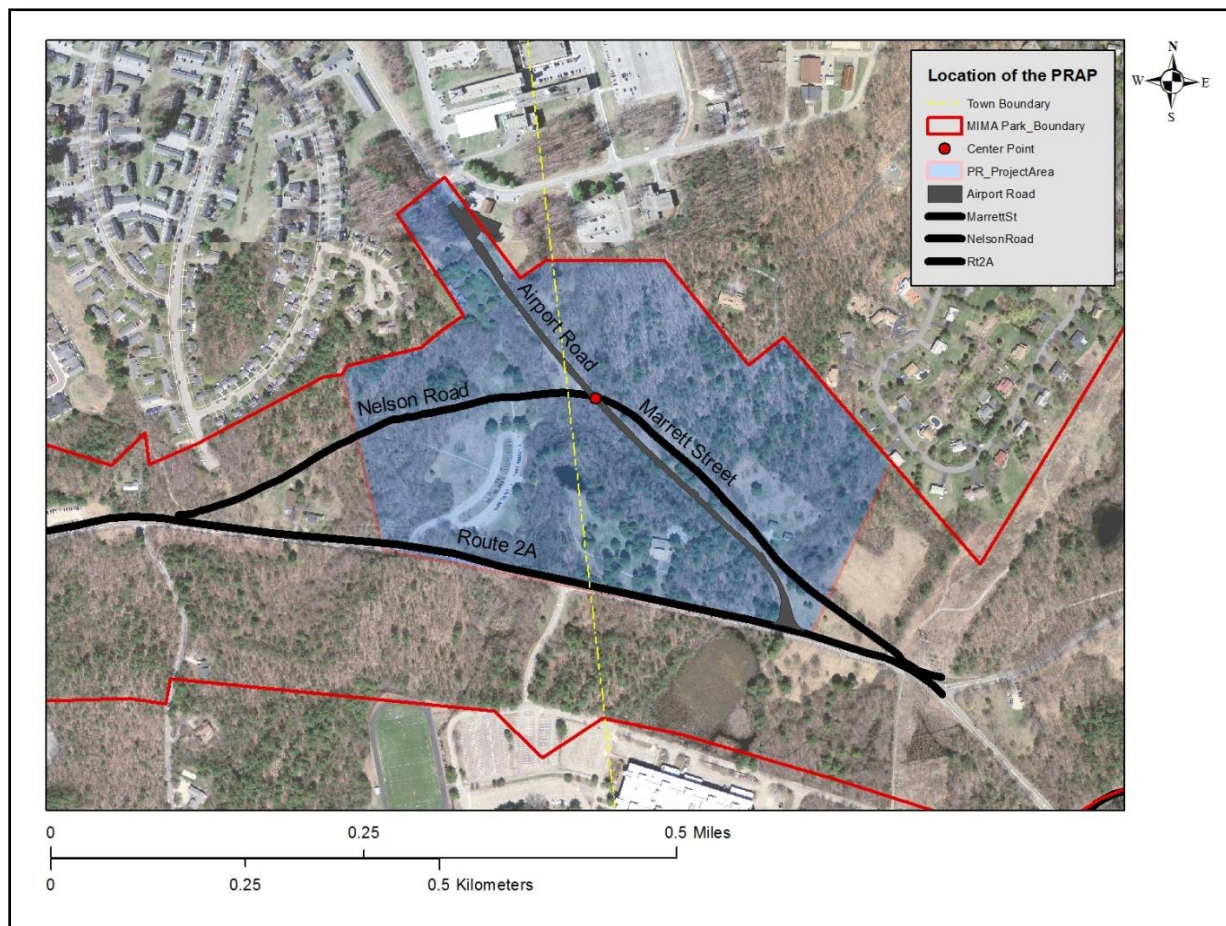


Figure 4 Location of PRAP. The study area is in blue and MIMA Park boundary is the red outline.

The purpose of this investigation was to examine the archaeological record that may identify the (1) location of the Parker's Revenge battle and (2) provide additional information on military tactics related to the fighting along Battle Road. This section introduces the research methods used by PRAP and how

they were integrated to most effectively explore the Parker's Revenge battlefield, discover new information, and develop new hypotheses for the tactical engagement between the British Regular column and Captain John Parker's Lexington militia. Each stage of research is discussed in greater detail in the following sections of this report.

The results of the PRAP archaeological investigations will be presented through new interpretive programming as part of the interpretive programming at MIMA. Exhibit and outreach materials are being developed that will not only present the artifacts and interpretation of the battle but will also focus on engaging the public in the underlying STEM inherent in archaeological research methods. In addition, MIMA plans to work with the NPS Olmsted Center for Landscape Preservation to refurbish the core area of the Parker's Revenge battle to better represent the 1775 landscape providing a more realistic visual historic battlefield experience for the public. (Figure 5)

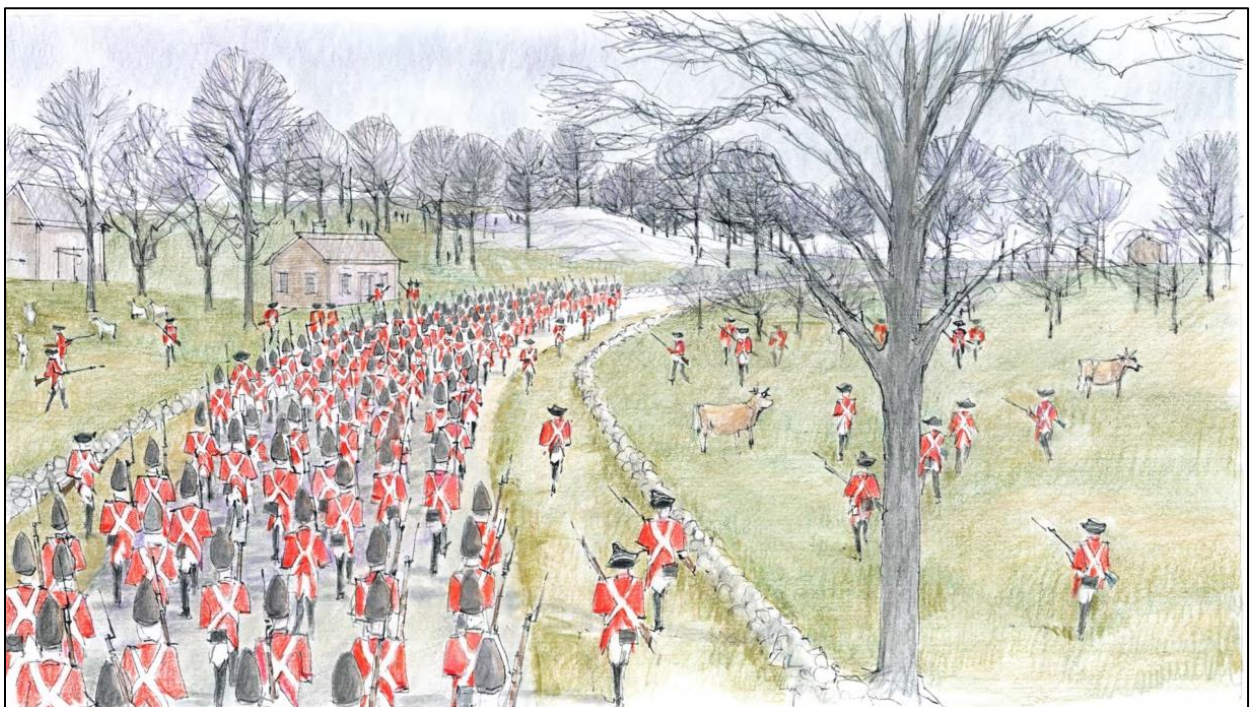


Figure 5 Artist rendition of the British Regular Column approaching the Parker's Revenge battle site. Image courtesy of Kyle Zick Landscape Architecture, Inc.

Research Design

The archaeological investigations combined multiple methods for exploring existing documentation, landscape features, archaeological resources, and environmental changes over the last 250 years. Results were combined to develop the historic 1775 landscape and land use, and evaluate the military actions that took place in the focus area using KOCO, or the US military developed "Military Terrain Analysis," used by the NPS American Battlefield Protection Program. Data for this project were collected through a multi-method approach that combined desk based assessment, archaeological pedestrian surveys, non-invasive remote sensing for site mapping, limited excavations, and metallic surveys.

Archival Research

Thorough examination of existing historic and contemporary documentation relating to the landscape area of interest, its occupants, and the battle of April 19, 1775 was undertaken in the first phase of PRAP. This work included archival research into original land transfer documents, deeds, and tax information as well as examination of historic maps and historic aerial photograph series. A review of existing primary and secondary historical accounts of the first day of fighting on April 19, 1775 is presented in the following section (*Background Historic Research*). Also included is an exhaustive review of existing research reports and resource documentation for work conducted in MIMA regarding the historic landscape, cultural heritage, and environmental assessments of the area. The bulk of the desk based research was completed in the spring of 2014, but archival and historic research continued throughout the project until submission of the final report. (Figure 6)



Figure 6 1830 Plan of Lexington. Image courtesy of the Lexington Department of Public Works.

Historic Landscape Reconstruction

The historic 1775 landscape and land use was recreated using archival research, and the work conducted by Joyce Malcolm (1985) and Dr. Brian Donahue (*personal communication*). (Figure 7) A significant component of the existing wetland and modern day landscape evolution was based upon the work of Dr. Richard T.T. Forman (2015a, 2015b). Consultation with Dr. Robert Thorson (University of

Connecticut) helped establish a base comprehension of the dating of existing stone walls in the study area.

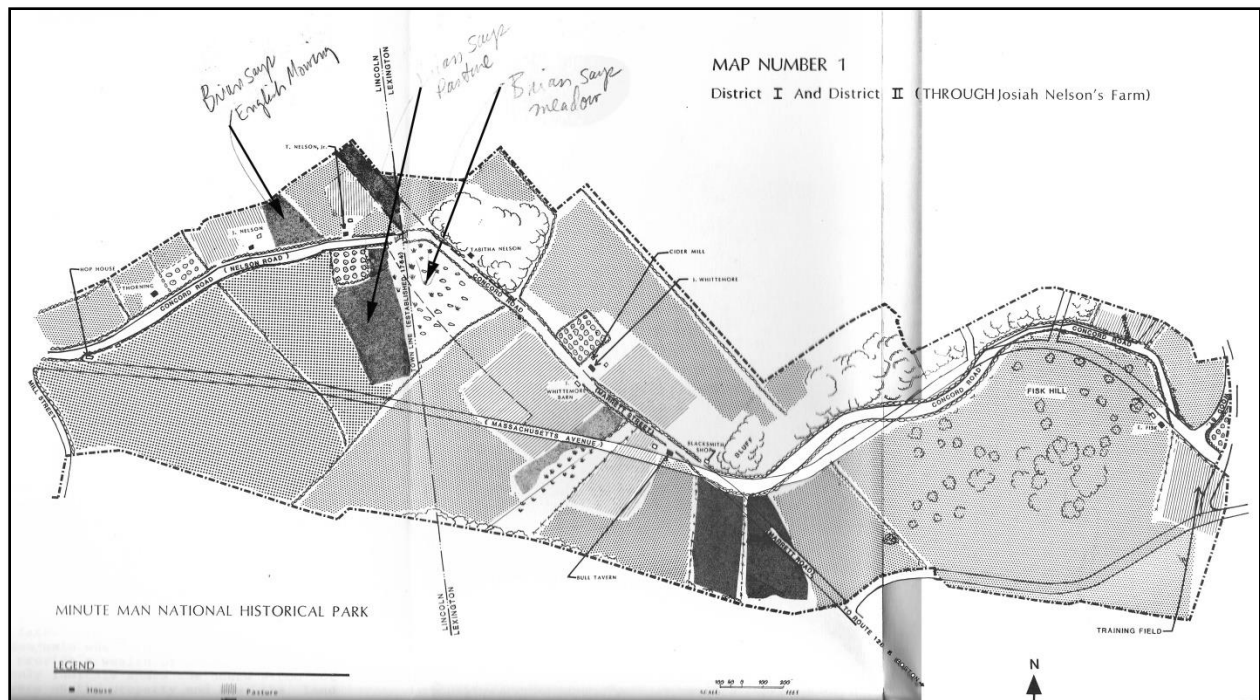


Figure 7 Hand edited (Donahue, n.d.) historic land use map of the Nelson farmstead area (Malcolm 1985.)

GIS and data acquisition

Organization and analysis of project spatial data such as historic and contemporary maps and aerial photographs, airborne and terrestrial LiDAR, existing landscape features, archaeological features, and artifacts were enabled through a comprehensive Geographic Information System (GIS) project design. Building the GIS included data not only from archival research but from active, on site, data acquisition on site involved the establishment of a permanent site control and a site walkover to map existing features both contemporary and historic. 3D laser scanning was utilized within the core research area. Targeted geophysical surveys were used to identify and map the Tabitha Nelson / Thomas Nelson Sr. house, barn, and any related out buildings. The investigation also involved limited excavations to ground-truth both geophysical survey results and archival research. Metallic surveys were carried out to identify, map and retrieve potential battle related (and all historic) artifacts. PRAP research and field work provided information for consideration during the military tactical review that led to the final interpretation of the Parker's Revenge battle. (Figure 8)

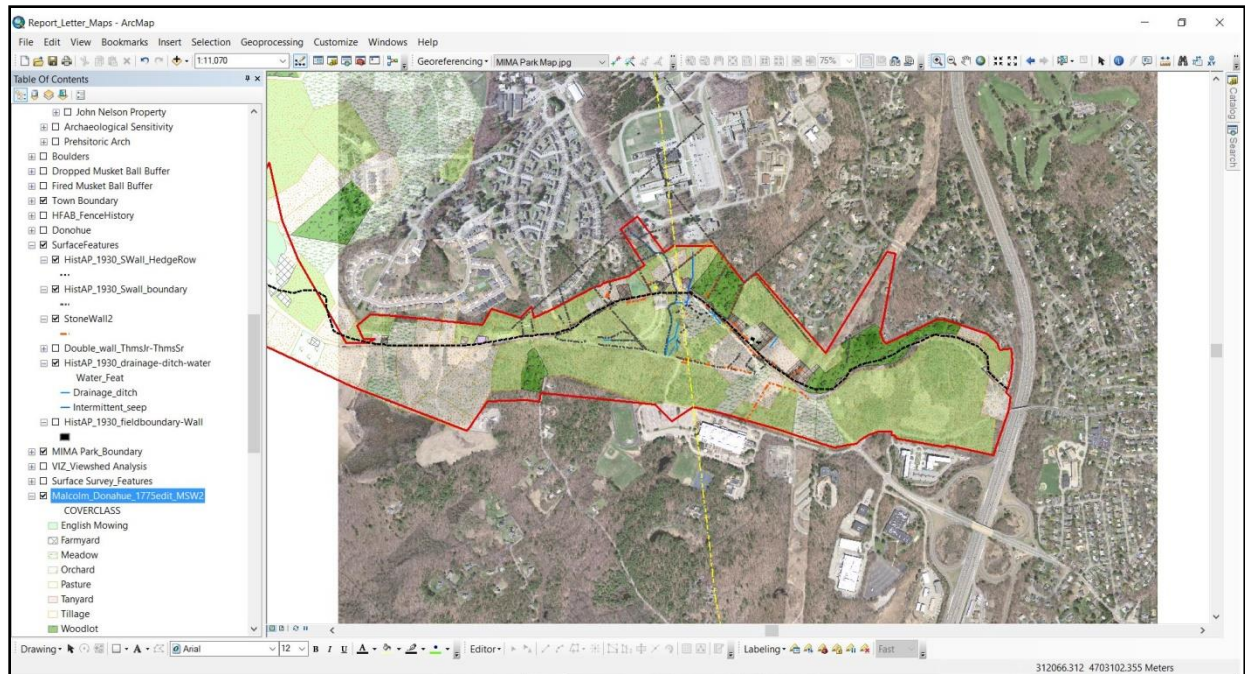


Figure 8 Example of a PRAP GIS project screen capture.

Beginning with the desk based assessment and continuing throughout the project spatial and temporal data were combined to map, analyze, and interpret the evidence that contributed to the interpretation of the Parker's Revenge battle. Watters conducted the GIS project development and data analyses. Joseph Nigro, archaeologist and NASA GIS specialist assisted with final KOCOA data analyses and GIS reporting.

The main sources for data acquired for the GIS include (but are not limited to): the USGS map store (http://store.usgs.gov/b2c_usgs/b2c/start/%28xcm=r3standardpitrex_prd%29.do), MassGIS, Office of Geographic Information (<http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/>), Harvard Geospatial Library (<http://calvert.hul.harvard.edu:8080/opengeoportal/>), archived GIS projects at MIMA, and new data acquired as part of PRAP.

KOCOA Battlefield Analysis

The research design for PRAP was based upon the American Battlefield Preservation Program's (NPS) strategic approach to examining historic Battlefields (ABPP 2008), KOCOA, which refers to five categories of topographic, landscape, and cultural features of significance within a battlefield:

Key Terrain (K),
 Observation and Fields of Fire (O),
 Concealment and Cover (C),
 Obstacles (O), and
 Avenues of Approach and Egress (A).

KOCCOA was a constant theme running throughout the project. The key factors of KOCCOA were taken into consideration during the development of the research design as well as the analysis of project materials including primary and secondary documentation, contemporary historical and tactical interpretations, archaeological evidence, and spatial analyses of the historic landscape.

Analysis through KOCCOA was based on locating features that defined a battlefield through pinning battle events to certain identifiable locations in the landscape. Identifying and mapping structures, historic roads, walls, topographic and landscape features mentioned in historic accounts contributed to the identification and definition of the battlefield. A component of including KOCCOA analyses in PRAP investigations was to try to identify the location of the “core” and “edges,” or the extent, of the battlefield. Being able to identify the entire historic landscape of the battle contributed to consideration of tactics used by the British and Lexington militia during their confrontation.

Many times KOCCOA is used in large landscape applications to identify and target the location of a battlefield for archaeological investigation. In the case of Parker’s Revenge, while we did not know the exact position of the battle, existing resources identify an area of high likelihood for the location of the battle. In the case of PRAP, the approach with KOCCOA was finely tuned to examine and assess the core research area of approximately 40 acres. This approach to examination of the landscape and battle related artifacts was key not only in our approach to site exploration, but also for interpreting the action of the Parker’s Revenge battle during the Military Tactical Review and analysis of final data. (Figure 9)

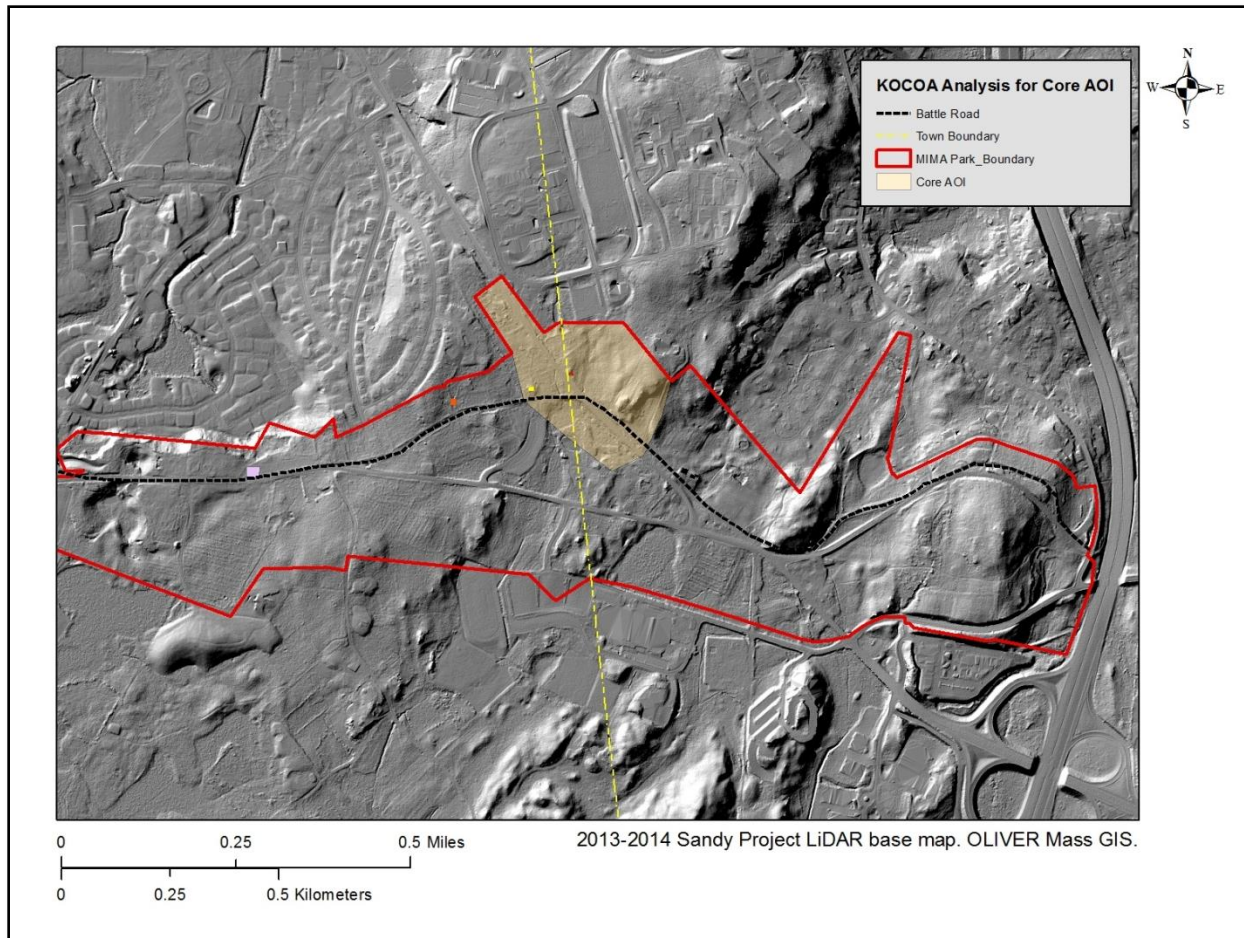


Figure 9 PRAP core battlefield area of interest (AOI) on LiDAR base map.

Report Structure

Upon completion of the field work and GIS project development a series of analyses were conducted using the KOCOAnalysis premise to explore the relationship between new archaeological information and the historic landscape. Analyses included (but were not limited to):

- view shed analyses to establish what could, or could not, be seen in the lead up to the battle,
- musket ball type (British or Colonial),
- musket ball distribution, and
- historic documentation and known tactical practices.

This report includes details of each stage of the research design in greater detail and proposes two new tactical scenarios that identify not only the location of the Parker's Revenge battle, but describe the action of the battle itself. Conclusions and recommendations discuss new testable hypotheses and propose related research that will contribute further information to the continuing investigation of the first day of fighting of the American Revolutionary War.

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"This project is a great way for park volunteers to participate in trying to discover their own history with their own hands. The end result to be a meaningful way to make the first days of our U.S. history alive for the current generation to embrace and to keep alive the ideals we stand for ...we provided a voice for those who can no longer speak for themselves."

Bill Rose, Retired private equity investor, Colonial history researcher, and MIMA volunteer

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Chapter 3 Background Research & Site Taphonomy: Parker's Revenge Battlefield

In the autumn of 2013, Watters met with a variety of individuals to discuss the project and be introduced to the site. Over the first few months, which involved a number of site walks, it became apparent that there were several strongly held opinions concerning the location of the battle and just how it may have unfolded. It was also obvious that all were aware that there was very little primary evidence to prove their theories.

This chapter follows the path taken by Watters to best research and comprehend the sometimes confusing yet enormous body of work that exists relating to the historic landscape and events of the first day of the Revolutionary War. This was the base from which the archaeological field investigations were launched. The first step was the examination of primary references and eye-witness accounts of the Parker's Revenge battle followed by a review of historical documentation and accounts of the battle from the 18th century to present day.

Understanding the perception of the Parker's Revenge battle and landscape from the viewpoint of today's Lexington Minute Men added a layer of "local lore" and set the scene for digging down into historic tax records, land conveyances, deeds and maps related to the area of interest. The final section of the chapter includes a review of the technical reports from research undertaken by MIMA that discuss the cultural landscape, the environment, and past archaeological investigations focused in the area of the Nelson property, presumed to be the location of the Parker's Revenge battle.

Site Location – Area of Interest

The extent of the proposed PRAP research focused on approximately 60 acres of MIMA at the eastern end of the Park in Lincoln and Lexington, Massachusetts. This area was identified as having the highest likelihood for remaining archaeological evidence for the Parker's Revenge battle including key structures and landscape features for use in the strategic analysis of the battle (Sabin 1987, Watters 2014). The area of interest (AOI), an area of approximately 40 acres, is centered on the intersection of Nelson Road and Marrett Street (and modern day Airport Road) at the boundary between the towns of Lincoln and Lexington. MIMA is administered and curated by the National Park Service. Twenty nine acres of the proposed PRAP project area were located on Federal land; an additional 11 acres of the proposed project area lie within the boundary of State property owned by the Massachusetts DCR (Figure 10.)

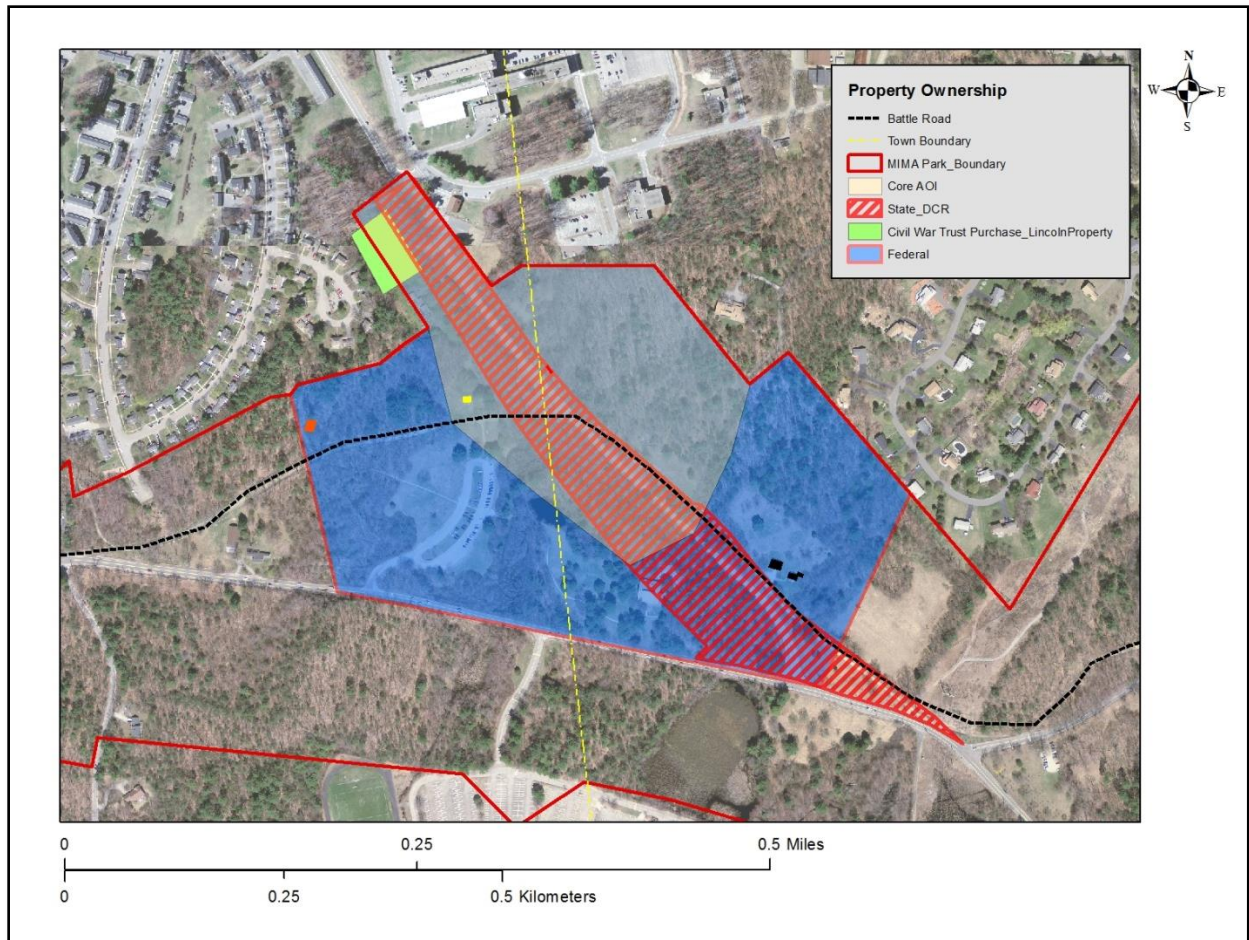


Figure 10 Property ownership and PRAP AOI.

The Nelson farm area, the location of PRAP investigations, is part of MIMA and straddles the town boundaries of Lincoln and Lexington, Middlesex County, sixteen miles northwest of Boston, Massachusetts. MIMA was established in 1959 with the intent of preserving the site of the April 19, 1775 Battle of Lexington and Concord. The park is divided into four units (Battle Road, North Bridge, Wayside, and Barrett's Farm). The 123- acre Nelson farm area is in the largest of the park units that preserves the beginning of the route the British Regulars followed back to Boston under fire from the Colonial militia (Figure 11.)

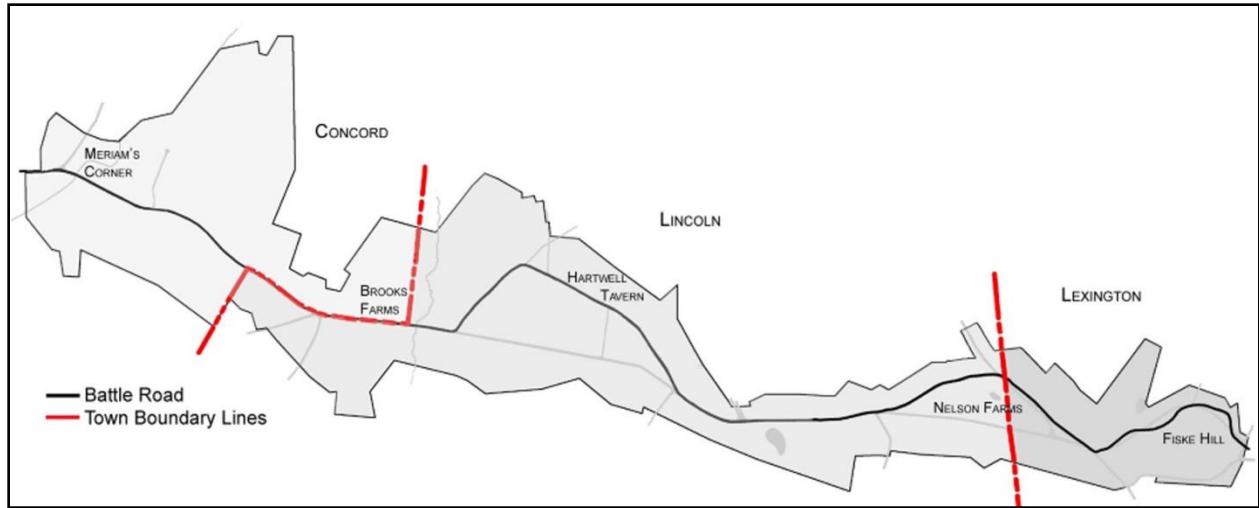


Figure 11 Map of the Battle Road Unit 1754. Image adapted from Olmsted Center for Landscape Preservation.

Today, Battle Road runs along present-day Lexington Road (Concord), North Great Road (Lincoln), and Massachusetts Ave (Lexington); parts of this route are also designated as State Route 2A. This area underwent significant change between 1775 to 1959 with the most intensive development in the early to mid-twentieth century when the Concord-Lexington area became part of greater Boston's commuting community. Since the creation of MIMA, many of the structures from this period of suburbanization have been removed (Diedrich-Smith 2005) (Figure 12) resulting in a partial re-creation of the rural scene of 1775 with intent to provide a backdrop for the existing historic resources related to the Battle of Lexington and Concord (National Register Documentation (NRD), 2002). (Figure 13)

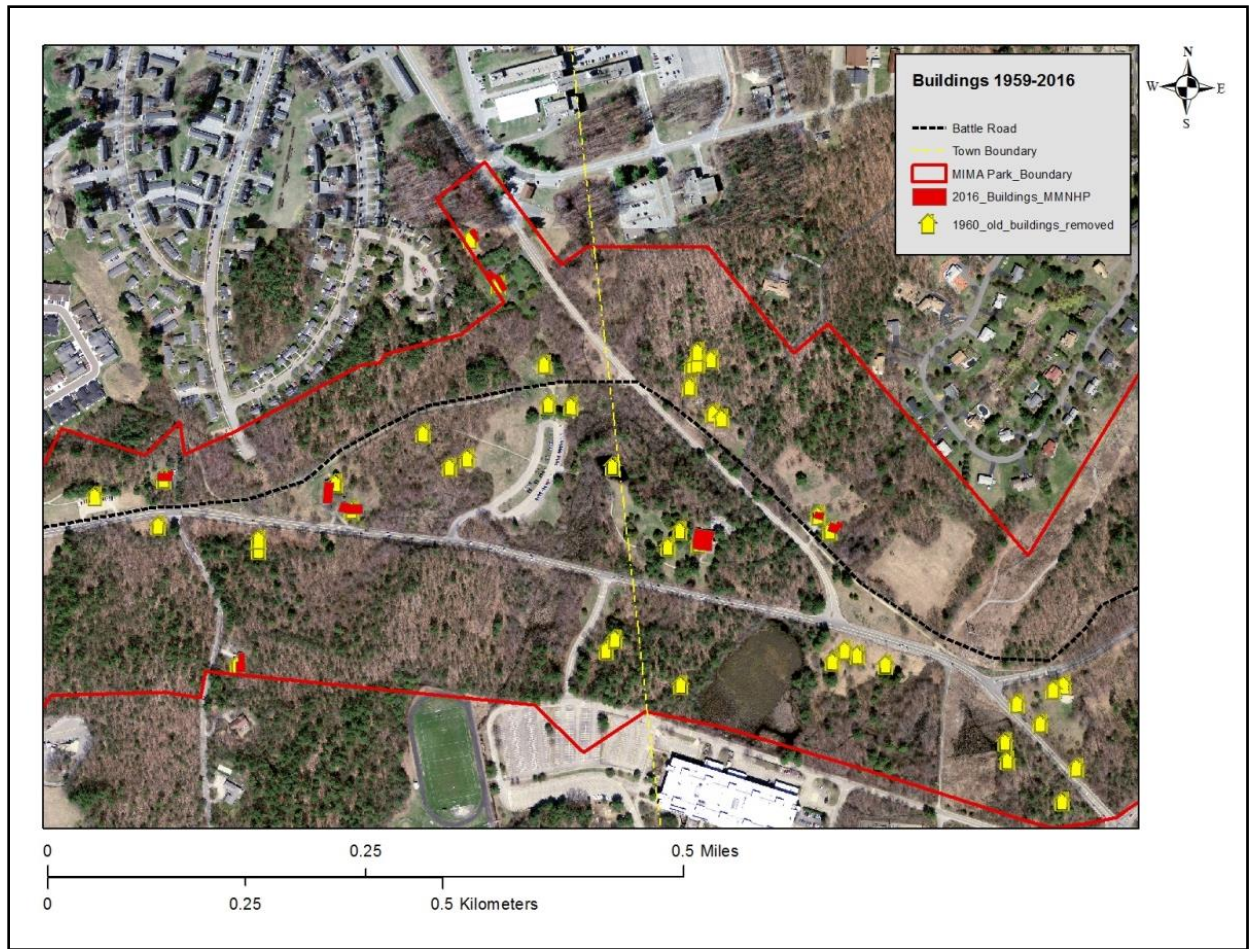


Figure 12 Early 20th century buildings removed from MIMA after 1959 (yellow).



Figure 13 A view east toward the Thomas Nelson Jr. house foundations along Battle Road.

Modern day Nelson Road and Marrett Street both follow the path of the historic Battle Road, a landscape that reflects remnants of the area's agricultural past. Some stone foundations remain of the Nelson family residences, a blacksmith shop, and a hop house. These remnants are set within a modern day landscape of meadows, wetland, and woodland areas with old stone walls lining Battle Road and demarcating historic field boundaries. (Figure 14)



Figure 14 Historic stone wall in PRAP study area.

The only modern structures remaining in the project area are the Minute Man Visitor Center (built in 1975), a parking lot, and a small amphitheater. The northern area of Nelson Farm in particular has been impacted by development associated with the HAFB that abuts MIMA. A strip of woodland stands between the historic Nelson Farm landscape and the modern military base providing a valuable backdrop to the view along Battle Road to the north. (Figure 15)

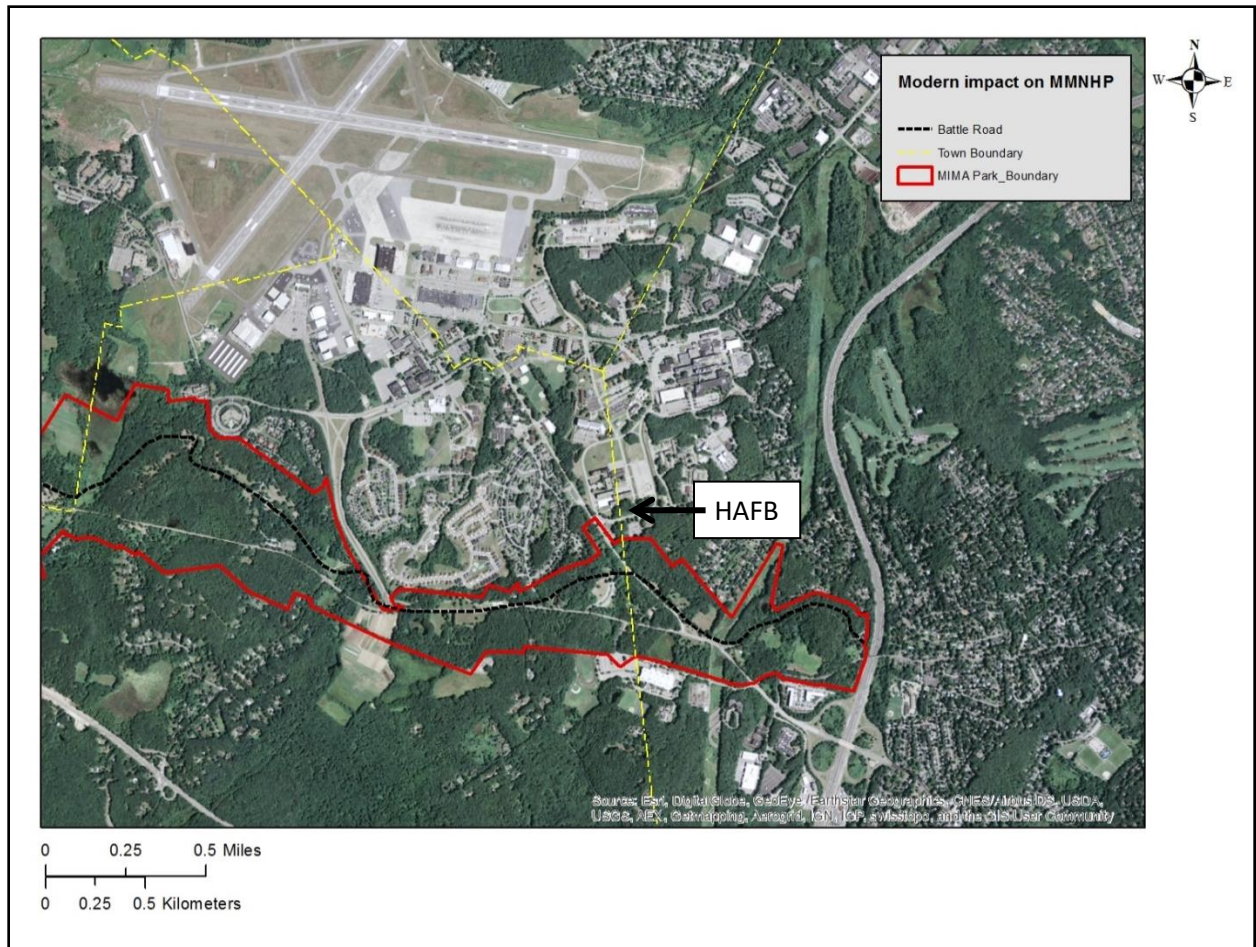


Figure 15 MIMA boundary (red outline) with HAFB adjacent to the north.

Lead Up to “Parker’s Revenge”

According to Sabin (1987 Part I:30-35), shortly after Paul Revere had alerted Hancock and Adams concerning the movements of the British, the bell in the bell tower on Lexington Common rang out the town’s first alarm in the late evening of April 18, 1775. The Lexington militia under Captain Parker’s command and numbering between 130 and 144 men (Coburn 1921: 31-32; Phinney 1825: 18) assembled on the Common with their weapons. Most likely because of the cold weather and lack of response from scouts sent out on the road to Boston, Parker dismissed his men around 2:00 am with the instructions to reassemble when they heard the beat of a drum. While not recorded, it is believed that some men returned home, others retired to the Buckman Tavern (Phinney 1825:18). Concerned by the failure of his scouts to return, Parker sent out a final scout who evaded capture and returned to report that the British were on the road headed toward Lexington. Around 5:00 am Captain Parker ordered William Diamond to beat his drum, sounding the second alarm in Lexington.

Captain Parker ordered Orderly Sergeant William Munroe to form the responding members of the company into two ranks on the North side of the Common (Phinney 1825: 34) facing, but not blocking, the road from which the British would appear. Some historians have suggested that 77 men responded to the second muster (Sabin 1987 Part II:1). Due to lack of primary documentation this is an estimate. (Figure 16)



Figure 16 Don Troiani's painting of Captain Parker and the Lexington Militia early morning of 19 April 1775. Image courtesy of Don Troiani.

The British, led by Major Pitcairn, rushed onto the Common to confront the still gathering militia. Both forces with loaded muskets now stood face to face. It is not known who fired the first shot(s) on the Green that morning but, as a result the British fired a crushing volley into the ranks of the militia.

Captain Parker, members of his company and other witnesses in sworn depositions testified as to the event on the Common. These depositions gathered just six days following the battle (Shattuck 1835:343-344), attributed the first shot(s) to the British. Still fresh from battle, they may have been wary about appearing too aggressive or provocative; instead wanting to prove that the British were the aggressors and fired first while the militia was dispersing. Fifty years later however, not entirely happy with the passive role portrayed of the Lexington citizens, depositions taken from veterans of the Lexington Common battle suggest a more aggressive role in the battle on the part of the Lexington militia (Phinney 1825:39). Examination of Amos Doolittle's engraving *The Battle of Lexington* (Figure

17); created shortly after the battle depicts the Lexington militia retreating in the face of the British fire. Doolittle obtained background for his engraving by visiting the scene and interviewing Lexington residents within about 10 to 14 days following the engagement. Understanding the events as they unfolded and their outcome on the Lexington Common early on the morning of April 19, 1775 is fundamental to the discussion and interpretation of the Parker's Revenge battle.



Figure 17 "The Battle of Lexington, April 19th, 1775" Sidney L. Smith after original engravings by Amos Doolittle. Image courtesy Concord Museum.

Historiography of the Parker's Revenge Battle site

The focus on the Parker's Revenge battle evolved over time. As with many events that occurred in the past, primary accounts and artefactual evidence present a base from which interpretations are generated to tell the story of what we believe happened. In reconstructing the Parker's Revenge battle personal experience, emotional ties, and pre-conceived ideas both past and present contribute to navigating the story line. Before introducing the archaeological evidence, it is good to be aware of the evolution of the story, or the historiography, of the Parker's Revenge battle.

An existing robust body of work tells the story of the first day of the American Revolution that includes clues to reconstructing the Parker's Revenge battle. Some of these accounts beginning in the 18th century set the stage for our interpretations. The following sections were compiled through consultation with Jim Hollister, Lou Sideris (retired historian and interpreter, MIMA), and Bill Poole.

Primary References

In his work *We were there!* (1974), **Vincent J.R. Kehoe** aptly discussed the nature of researching American History, "it has been a failing of some authors to refer in footnotes to certain 'authorities' to prove or substantiate a point without checking the source..." While perhaps on some points researchers fact check, "[they] often come to the accepted version of the story which has unfortunately been based on oft-told tales, town anecdotes, and interviews with very ancient inhabitants, and such. This evidence should often be classed as hearsay and not fact." (p. ix)

Importantly Kehoe reminds us to treat depositions taken from the residents of the towns the battle raged through, and participants in the battle only a few days after April 19th 1775 carefully because, "The depositions were made at a time when politically -- even more than morally -- it was necessary to prove that the British soldiers were the aggressors..." He ended the introduction of *We were there!* with, "...one should remember that a patriot is a rebel that wins the war for his cause, but a rebel that loses is dubbed a traitor!" (1974:ix-x.)

With Kehoe's advice in hand an examination of the primary and secondary historical sources was conducted with the end goal to collect information that most accurately represented the battle of Parker's Revenge.

In a report to General Gage in March 20, 1775, **Ensign DeBerniere** reported (*American Archives, IV Series, Vol. I:1268*), "The road [from Concord] continued very open and good for six miles, the next five a little enclosed, (there is one very bad place in these five miles) the road good to Lexington..." showing that the British were aware of not only the condition of the road from Boston to Concord, but that they were aware of the location of potentially challenging tactical areas along that road. **Captain William Souter**, Light Infantry Company, Marines stated (Hargreaves 1968:222), "On our leaving Concord we were immediately surrounded on every quarter, and expected to be cut off every moment. Sometimes we took possession of one hill, sometimes of another; at last it was determined to push forward to Lexington which we did through a plaguy fire, when we were joined by Lord Percy with the first Brigade..." While we are not certain if the Parker's Revenge battle location is described within this statement, it does characterize the type of resistance with which the Regulars were met.

It is important as well to consider that today we think of distinctive battle sites as characterizing the first day of the war: Meriam's Corner, Bloody Angle, Parker's Revenge, Bloody Bluff, and Fiske Hill. The way we conceive of these as separate and distinct engagements may be influenced by our contemporary attention to detail, to the ferreting out of statements in the primary documentation and examination of the terrain along Battle Road. We must always keep in mind, the fighting on that day, while perhaps to some, a long time coming, was rather spontaneous. It was not a well ordered set-piece battle; we

simply have no evidence of tactics engaged, of lines of communication, or of any substantial chain of command on the Colonial side.

As such, one might consider the fighting of that day a single long and exhaustive running battle. Certainly the distance between Meriam's Corner, Bloody Angle and Parker's Revenge isolate those locations for concentrated fighting (though with continuous firing by the Colonials all along Battle Road). However, Bloody Bluff is only 500 meters from Parker's Revenge and Fiske Hill another 500 meters from the Bluff. The fighting at this point along the Battle Road was for the Regulars getting desperate; they were running out of ammunition and were fast becoming exhausted while the Colonial militia, in hot pursuit, continued to fire upon them relentlessly while fresh militiamen joined the fight all along the way. The "plaguy fire" referred to by Souter may refer to the Parker's Revenge battle itself, or the span of fighting beginning with Parker's Lexington militia and ending just beyond the Lexington Common where the expeditionary force was met by Lord Percy and the first Brigade.

The only primary reference that referred to the location of the Parker's Revenge battle site was by **Nathan Monroe**, a veteran of Captain Parker's company. On December 22, 1824 Monroe stated, "About the middle of the forenoon, Captain Parker, having collected part of this company, marched them towards Concord, I being with them. We met the regulars in the bounds of Lincoln, about noon, retreating towards Boston. We fired on them, and continued so to do until they met their reinforcements in Lexington." Nearly 50 years after the battle, Monroe's statement (Phinney 1825:38) identified they met the Regulars "in the bounds of Lincoln," along Battle Road, and continued fighting them until they reached the Lexington Green.

Until September 2016, no other known reference was made to the Parker's Revenge battle, a topic discussed in detail during the Military Tactical Review event at the conclusion of PRAP fieldwork. On September 10th, 2016 Dr. Robert Gross shared his discovery of the only known recorded reference to this fight. On September 12, 1835 during a speech at the bicentennial celebration of Concord's incorporation, Ralph Waldo Emerson stated, "...at Lexington [British troops under Lt.-Col. Smith] had fired upon the brave handful of militia, for which a speedy revenge was reaped by the same militia in the afternoon." (Emerson 1835:34.)

Secondary References

The earliest secondary account of the battle was by **Elias Phinney** in 1825 in *The History of the Battle at Lexington*, where he and an appointed committee collected and published a document based on depositions and interviews with veterans of the first day of fighting (including Monroe's statement above). In this document Phinney stated, "In Lincoln they were met by the Lexington Company under Capt. Parker, who had collected most of his men, and was proceeding to Concord. Capt. Parker turned aside into the fields, and, as the enemy passed, they were exposed to a most galling and deadly fire from his greatly exasperated men." (p. 25) This statement is followed closely by **Erza Ripley** in *A History of the Fight at Concord on the 19th of April 1775* (1827), "From this time there was a General though not entire cessation of firing, until the enemy had entered the bounds of Lexington, when Captain Parker's company attacked the British on the south of the road." (p. 31) These statements locate Parker's company in fields adjacent to battle Road in Lincoln and according to Ripley, on the south side of Battle

Road in Lexington, but at this point neither mention any distinguishable features in the 18th century landscape other than the road itself. (Figure 18)

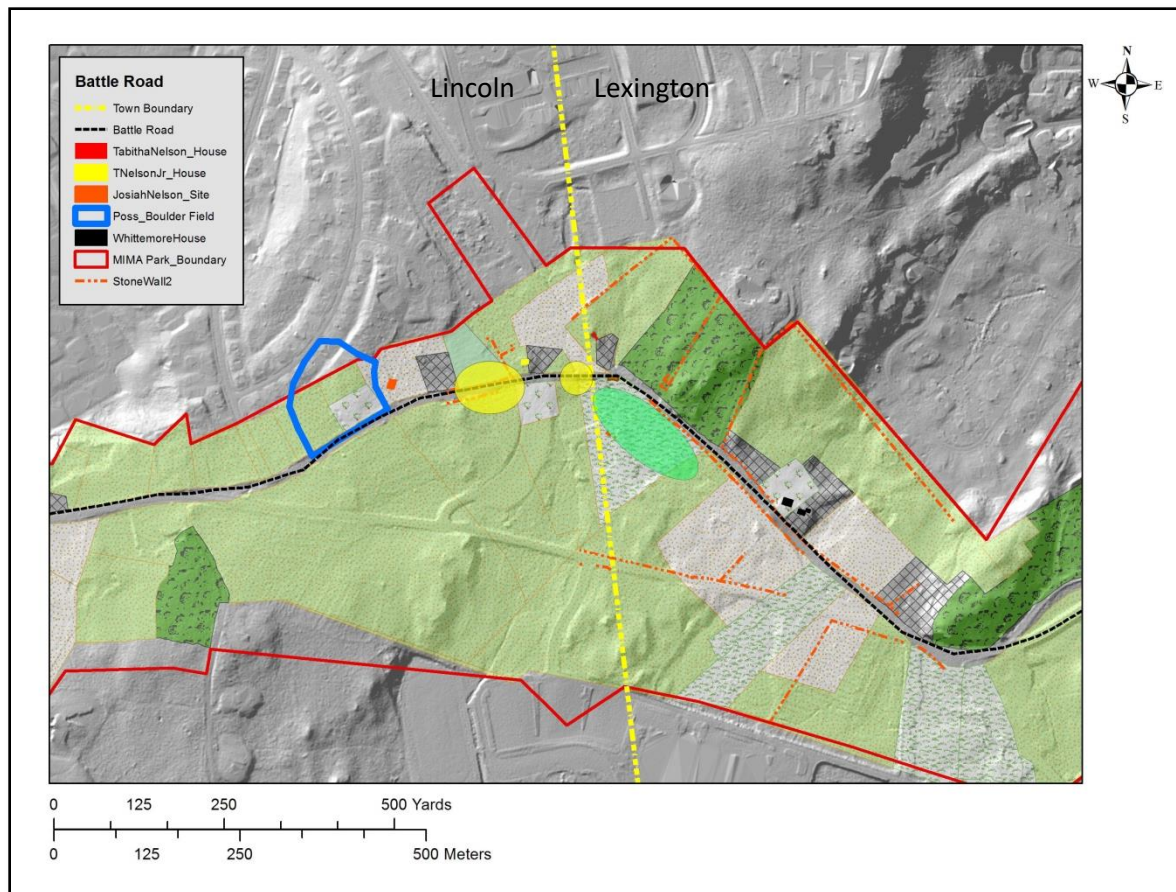


Figure 18 Phinney (yellow) and Ripley (green) proposed battle locations.

In the first quarter of the 20th century a number of authors included mention of the Parker's Revenge battle in their texts. **Ellen Chase** states (1911:78), "Near the line [Lincoln/Lexington] Captain Parker and his men met the British and fired briskly from woods on the south side of the road, and from the opposite hillside... At the time he [Francis Brown] was hit he had just stepped from behind a rock in Lincoln, near the boundary, when three Regulars fired, the ball passing under his ear." (p. 78). Based on this account, Chase separates the Lexington militia to three areas including firing from the hillside and from a field across from it, south of Battle road. If the hillside is today's rocky ledge, well within the bounds of Lexington, Brown would be at a third position further to the west on the Lincoln side of the town boundary. (Figure 19)

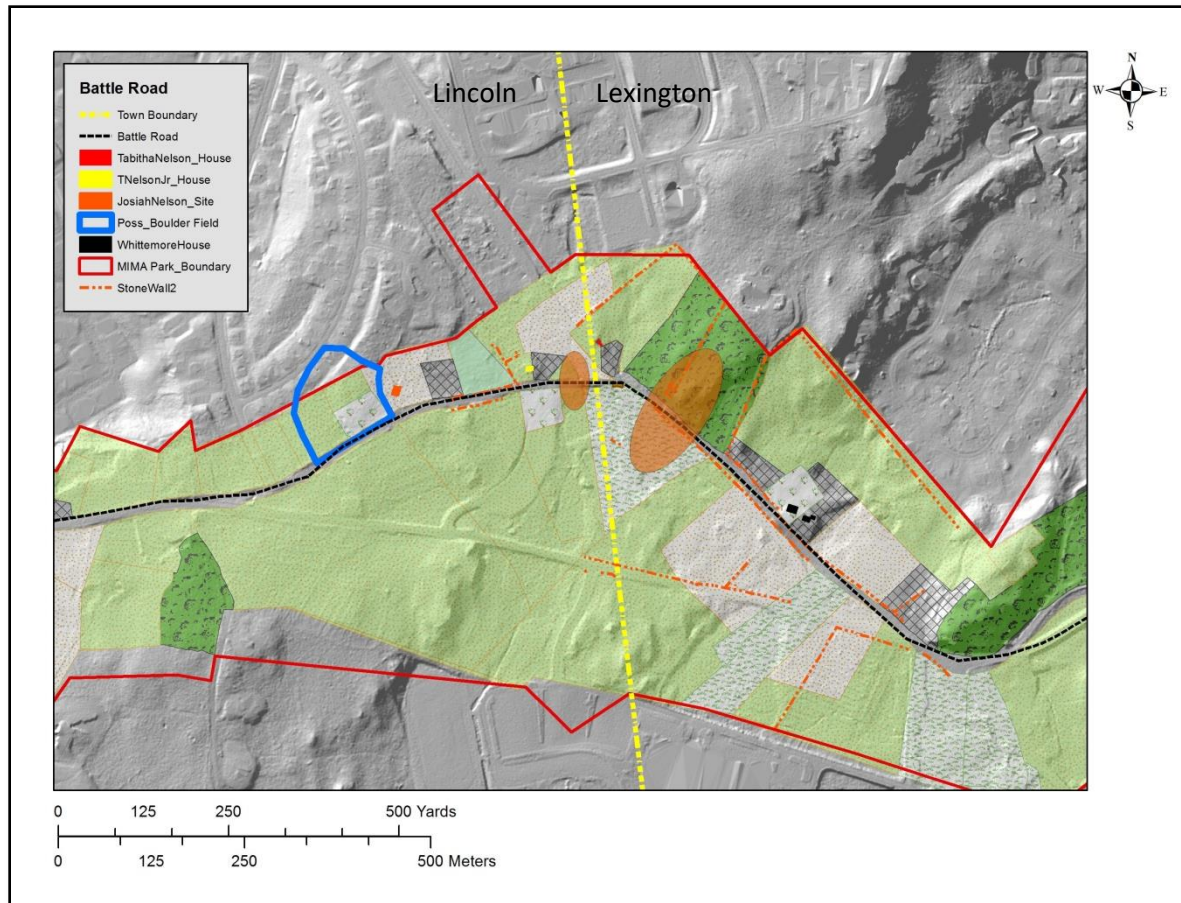


Figure 19 Chase proposed battle locations.

In 1912 **Frank Coburn** first mentioned the granite “ledge” outcrop as an ideal location for the Lexington militia to have been positioned and introduced the first tactical scenario for the battle itself, “It was in Lincoln that Captain Parker’s Lexington Company, numbering in all one hundred and twenty men, again went into action, probably not far from the Nelson and Hastings homes...” (p. 104)

“As the British forces again invaded Lexington soil undoubtedly they looked for vengeance from the hands of the little band that stood before them in the early morning. If they did anticipate as much they were not disappointed, for as we have stated Captain Parker and his men had come out into the edge of Lincoln to meet them... Just over the line into Lexington, and a few rods north of the road, the land rises about fifty feet rather abruptly and with a ledgy face. This little summit commands a grand view up and down the road, for quite a distance, and therefore was an ideal location for the minutemen.” (p. 105)

“Many were there awaiting the passing of the British, and when they were opposite, poured down on them a volley.” (p. 106.)

Coburn also described two artifacts found in this location as evidence of the battle, a fired musket ball at the base of the ledge and a sword from the vicinity. While the musket ball *may* be related to the battle, Coburn’s claim of an officer being buried at the site where he was shot and killed as evidenced by the

sword was unfounded. Coburn assumed the sword was carried by an officer but without seeing it, there is no way to know for sure as sergeants, grenadiers, and some musicians also carried swords. Additionally, without understanding the context within which the sword was found, it cannot be considered a viable piece of evidence.

Coburn's tactical approach to considering the terrain and identifying the ledge as an ideal position for the Lexington militia presented the most descriptive and comprehensive argument for the location of the battle thus far. (Figure 20)

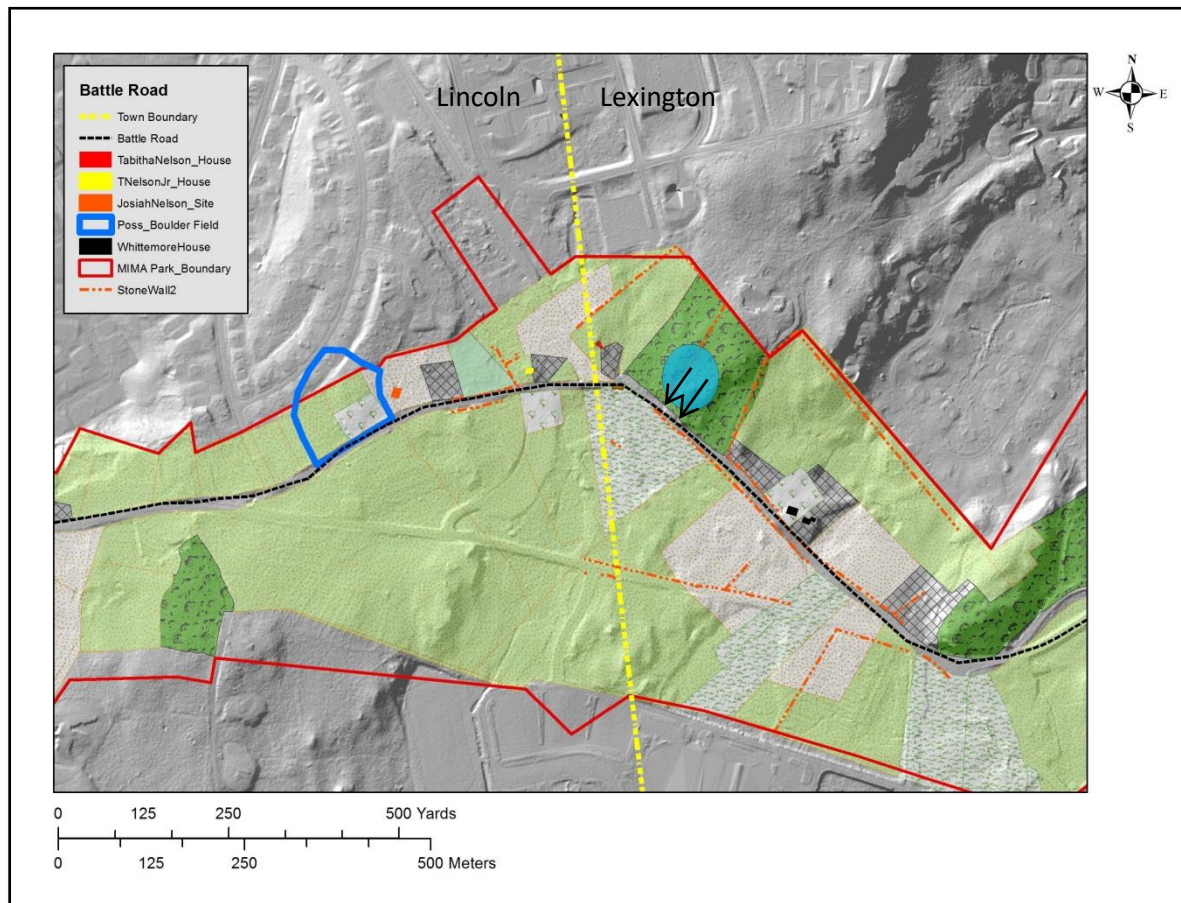


Figure 20 Coburn proposed location of Lexington militia on the ledge with arrows showing Colonial fire upon the British Regular column as it passed opposite their position.

Charles Hudson (1913:166) placed the Lexington militia in Lincoln, "In Lincoln also, Captain Parker, who had collected most of his men, came up with his company, and taking a position in the fields, poured into the retreating enemy a galling and destructive fire as they passed." Nearly 10 years later, **Allen French** (1925:223) put the militia back into Lexington but with no particular location, "It is satisfactory to believe that here, within the bounds of Lexington, among those who defeated the attempt to rally the British, were the men of that town. Scattered in the morning, a high proportion of their number killed or wounded... But meeting again under their captain, they marched down the Concord road to take their revenge." (Figure 21)

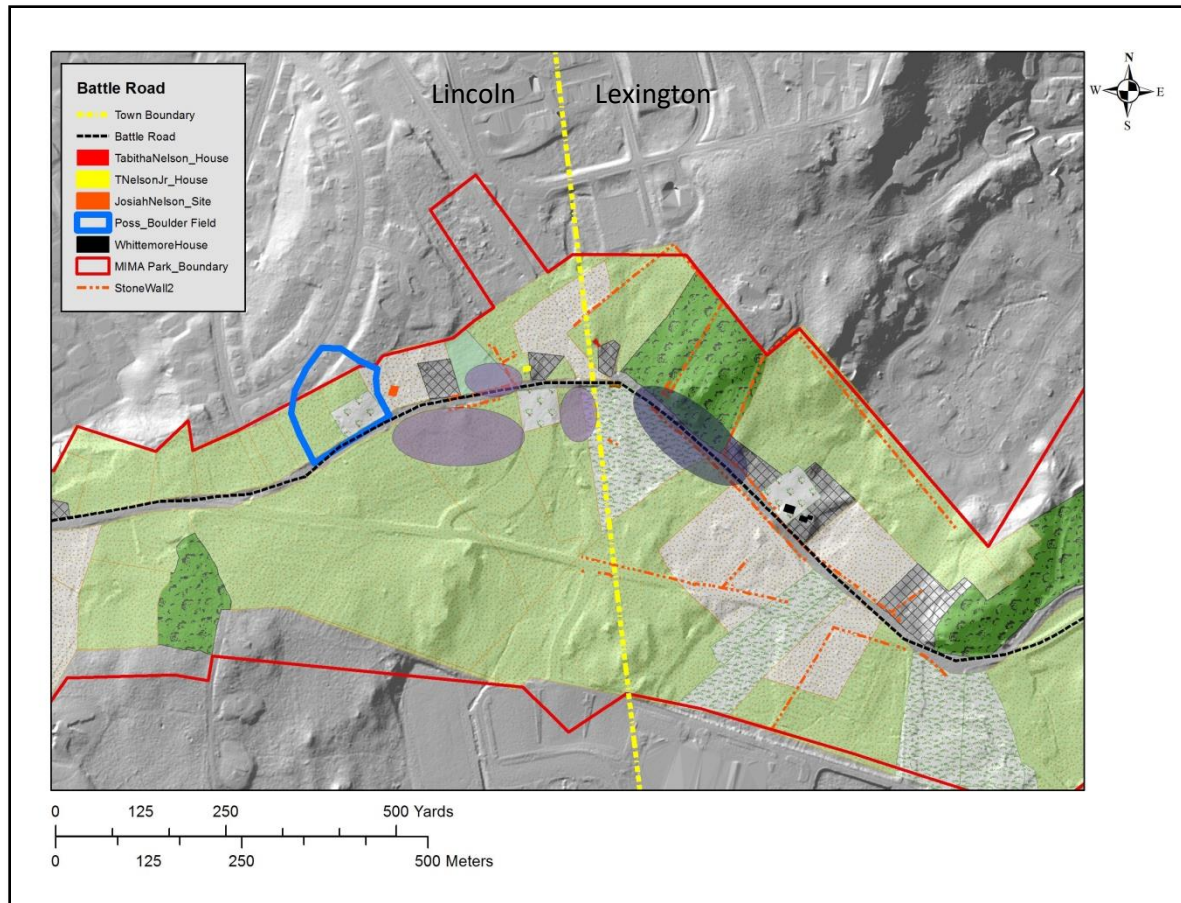


Figure 21 Hudson (lavender) and French (navy blue) proposed battle locations.

In 1959 the **Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road** was published and contained a detailed narrative of events of the first day of the American Revolution as they unfolded within the proposed bounds of the Park. This narrative placed Parker's men in two locations along Battle Road. "It was probably along the roadside walls between the Nelson and Hastings homesteads that some of Parker's men now went into action again, with the help of a Cambridge company under Capt. Samuel Thatcher." The author states, "That Minute Men were posted around the Hastings dwelling is certain, for a British soldier who strayed from the column to plunder the house was severely wounded by an American bullet as he emerged and stood on the doorstep. He was found and carried into the house when the family returned later in the day..." (p. 49). Though it was true that a wounded British soldier was found at the Hastings house later that day, there was no evidence that it was one of the musket balls fired by the Lexington militia as part of the Parker's Revenge battle; he could have been wounded at any point in the fighting from North Bridge in Concord and finally succumbed to his wounds at the Hastings house.

The second location for the Lexington militia followed Coburn's lead on tactical landscape features, "Just over the line from Lincoln, the land rises sharply at a bend in the old road and an outcrop of ledges on the north side forms a hillock, perhaps 50 feet high, that commands the road in both directions for half a

mile. There many of Captain Parker’s men who had not already gone on into Lincoln gathered in the early afternoon and waited for vengeance. As the sorely pressed Regulars came into sight and finally drew opposite their advantageous position, the Lexington men poured down a resounding volley. The British returned their fire in desperation, but without aim or effect.” (p. 50) (Figure 22)

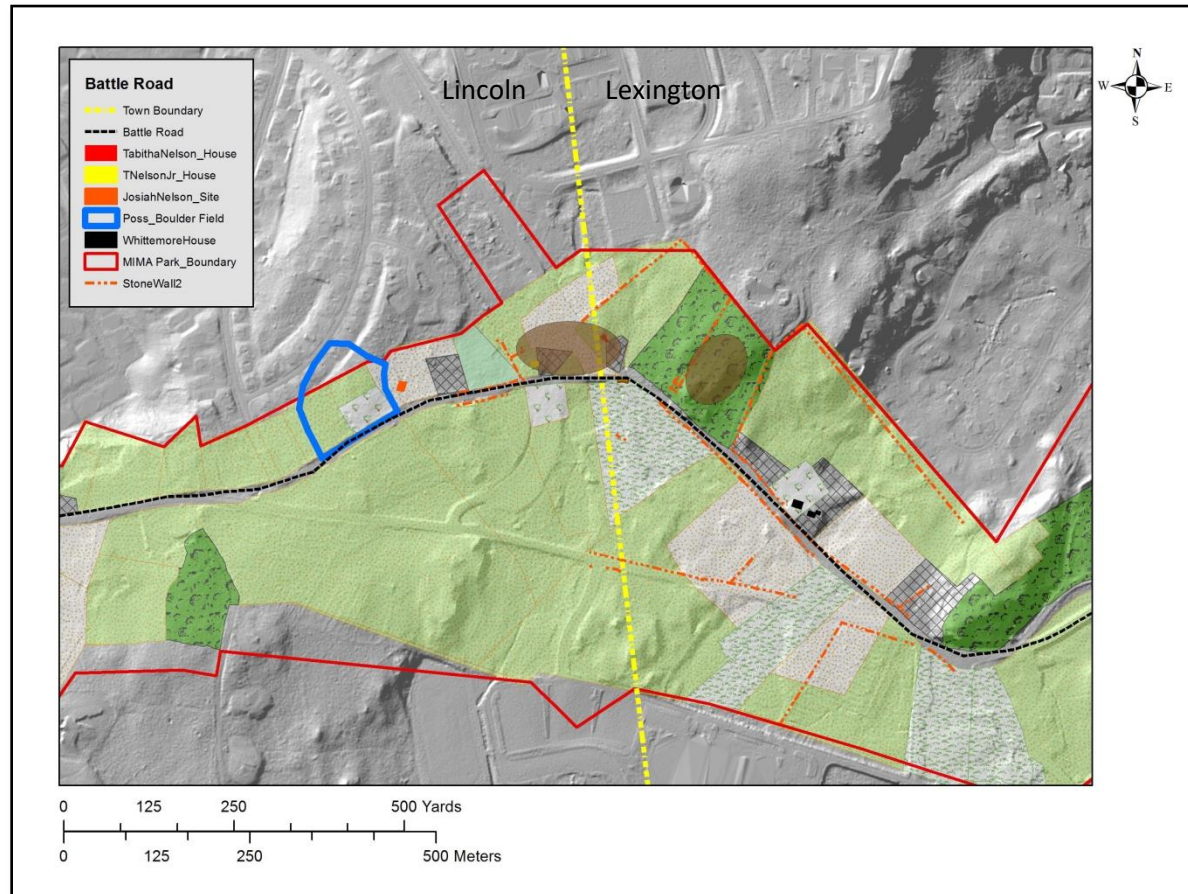


Figure 22 Interim Report of the Boston National Historic Sites Commission proposed battle locations.

The first in-depth account of the battle was presented by **John Galvin** in *The Minute Men, The first Fight: Myths and Realities of the American Revolution* (1989). This account included consideration of the tactical landscape from a military viewpoint. Galvin was an experienced soldier, and among a number of posts was NATO’s Supreme Allied Commander for Europe. Galvin used his own experience to fill in gaps in the account of the battle. While he provided a very vivid account of the Parker’s Revenge battle he did not provide references for his interpretation, instead he gave a military account of the battle.

“Parker selected the hill east of Nelson’s Bridge as his ambush position. It was the first hill inside the Lexington line...The hill would provide him a clear view of the regulars as they came down the road, while at the same time concealing his men. The slope of the hill was quite abrupt, spotted with outcroppings of the ledge, and covered by trees and tangles of brush. The approaches from the west and from the south were across 200 yards of open fields, and to the north Pine Hill rose 100 feet above the road, making any attempt to flank his position quite

difficult and slow....He placed his men, upwards of 100... on a line about halfway up the slope..." (p. 181).

"The redcoat column continued its headlong pace toward the hill where the Lexington men waited, muskets cocked and aimed at a spot in the road just over the Nelson Bridge and directly in front of their position. Parker's troops watched the left flank guard on the north side of the road come up over a little rise behind the Nelson's farmyard and turn away to engage the provincials in the field of boulders²." (p. 182).

"The first of the Redcoats to come over the Nelson Bridge was Captain Parsons with the ragged remains of his company... Behind them Battier's company with its three wounded lieutenants came across the bridge, followed by the light infantry of the Royal Welch Fusiliers, who were providing the flankers out to the right [south], and then Captain Laurie's 43rd Regiment company..."

"Parker let the British come right up to his position and start to pass before he opened fire with a volley that swept across the first three or four companies from their left side. Lieutenant Colonel Smith was struck in the thigh and unhorsed, Captain Parsons was hit in the arm, and a number of the soldiers went down under this first fire. Major Pitcairn rode up and took over, organizing a return fire and bringing up grenadier companies from the rear of the column to circle to the north and attach Parker's right flank. On the south, the British flank guard turned in through the fields and crossed the road to come in on the left [south] of the Lexington Company's position."

"...the companies of regulars began to pack tightly into this section of the road as the pressure on the rear built up. Parker's veterans kept firing as fast as they could as the grenadiers and the light infantry closed in on them."

"The regulars drove Parker back, first to the top of the hill, then down the east side, where his men were finally forced to scatter in the woods." (p. 183).

Galvin's interpretation, based in KOCOA, most closely reflects the conclusions of the battle as determined by PRAP. His vivid account was based entirely on his interpretation of the terrain and the most likely engagement of forces demonstrating the importance of landscape analysis. (Figure 23)

² There is no present day evidence of a boulder field at this location. Galvin may be referring to the boulder field to the west of Josiah Nelson's house further west along battle road where William Thorning was reported to have engaged the column and flankers shooting from behind large boulders and concealing himself in drainage ditches. (*Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road*, 1959; Ripley 1827.)

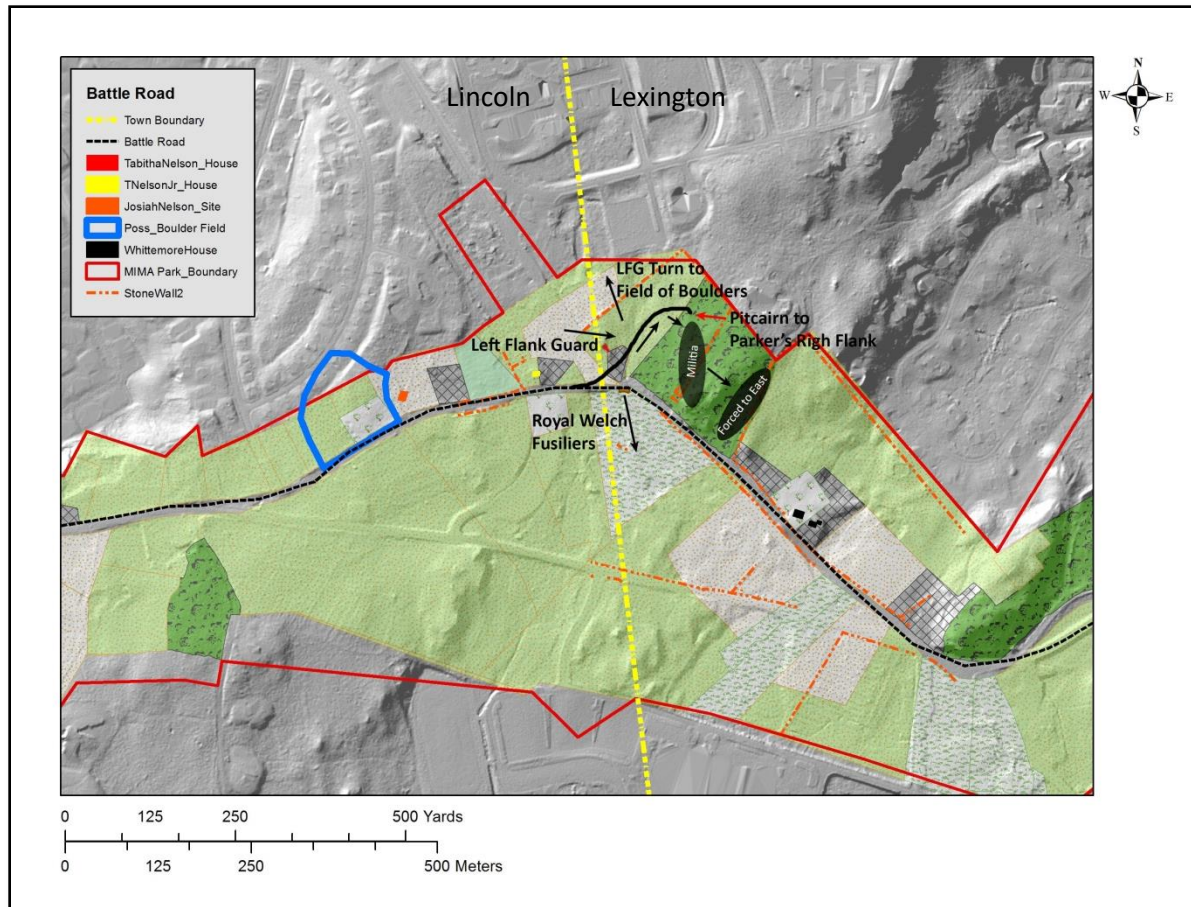


Figure 23 Galvin's depiction of the battle.

Douglas Sabin one of the original Minute Man National Historical Park historians, commented in his *Historiographical Study* that "While Mr. Galvin's book contains some imaginative interpretations, much of the detail he provides is not supported by the sources he has cited" (1987:6). Echoing Kehoe's sentiment, Sabin commented, "What has always been lacking in the historical accounts of the Battle of April 19, 1775, is an objective detailed account of the entire battle. Too often the historical works related to the battle have been either too brief or were written by amateur historians from a local point of view." His *Historiographical Study* sought to provide a "more complete and objective view of the entire battle" (p.6.)

Sabin's simple statement in regard to the Parker's Revenge battle summed up the existing resources, "Due to the lack of detail and conflicting accounts concerning the location of the Lexington Company when it entered the battle in the afternoon, it is perhaps best to say only that the ambush occurred near the Lincoln-Lexington line. After opening fire on the British, Captain Parker and his men were forced to withdraw by the pressure applied against his force by the flank guard, which was probably reinforced for the occasion." (1987, Part VI "Meeting with Percy" 1985:2)

The work of **David Hackett Fischer** in *Paul Revere's Ride* (1994) combined existing historical resources to present a colorful account, both in telling the story of Parker's Revenge and in detailed endnotes sourcing and discussing the formation of his narrative. As a historian Fischer worked through the variety of scenarios previously presented incorporating tactical terrain analysis, Sabin's account, and historic landscape interpretations (Malcolm, 1983),

"The column was now approaching the boundary between Lincoln and Lexington. To the south, the terrain was low and wet. North of the road was a pasture studded with large granite boulders. Beyond it was a steep rocky hillside, part of a five acre woodlot that belonged to the farm of Tabitha Nelson. The road headed directly toward the hill, then veered south around it." (p. 228)

"Waiting on the hill was a band of Yankee militia with a score to settle... He [Captain Parker] led his men westward to the Lexington-Lincoln line, and some of his company took positions in the granite-strewn pasture on the north side of the road just within the town of Lincoln. They found cover in drainage ditches and large stone outcroppings, alongside the Lincoln militia. As the British column approached, the New England men fought stubbornly from behind the great gray boulders. Lincoln's William Thorning...opened fire from a drainage ditch... killing two Regulars. A British flanking party cleared the ground..."

"Just ahead, Captain Parker and the rest of his Lexington company waited on the rocky hill where the road entered their town...They knelt grimly on their steep wooded hillside behind large granite boulders as the Regulars approached."

"The Lexington men held their fire until the van of the British column came very close to their position. Then, as Colonel Smith himself rode up, Parker ordered them to fire. Smith tumbled out of the saddle, painfully wounded in the thigh. Captain Parsons, the last unwounded officer of the 10th Foot, was hit. So great was the shock of this attack that the British column stopped for a moment, compressing on the road. Major Pitcairn came galloping up, and sent the British infantry charging forward up the rocky hillside, driving Parker's militia away from the road...The American ambush was cleared..." (p. 229) (Figure 24)

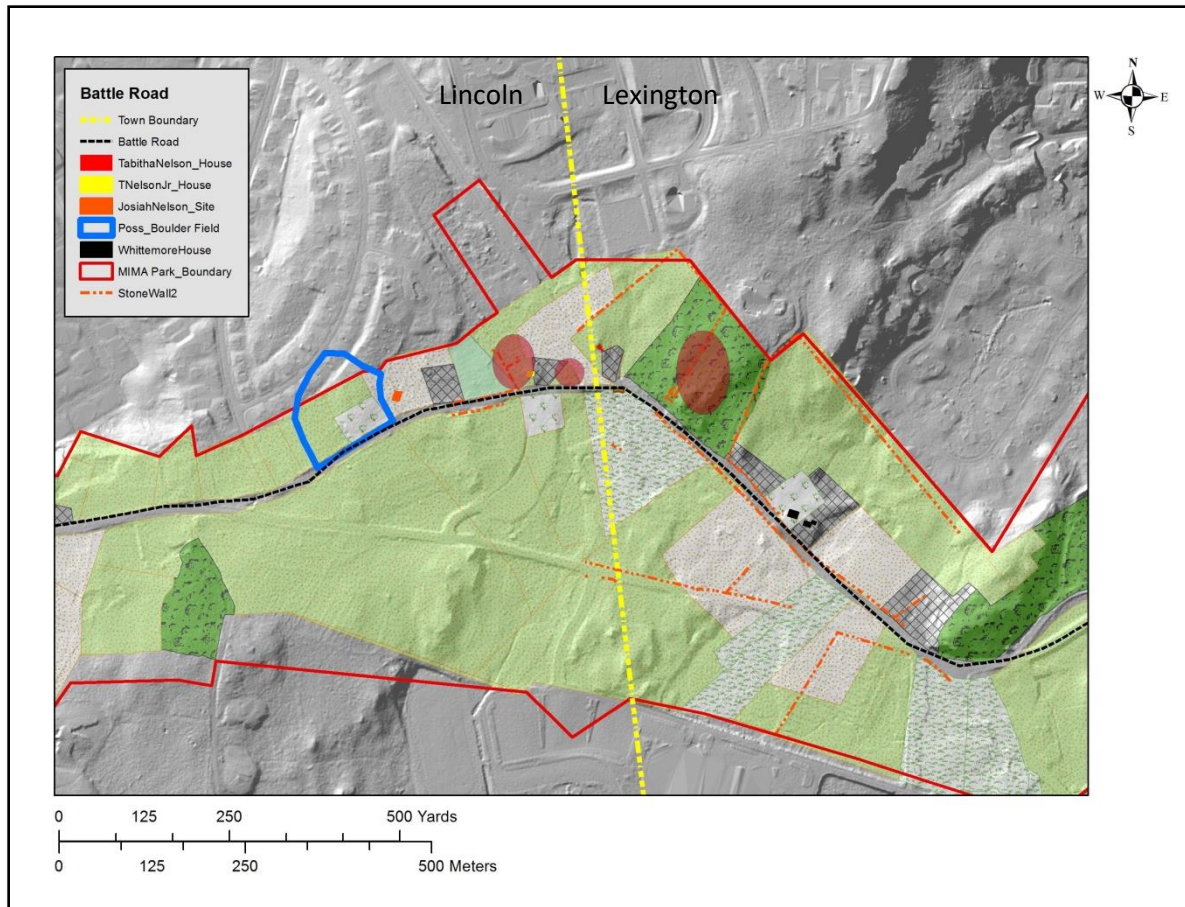


Figure 24 Fischer's representation of the battle.

Fischer's population of the landscape echoes that of Galvin, making similar assumptions as Galvin. Both authors engaged in active consideration of the landscape in their accounts of the battle. The reference to the boulder field by both, where Thorning is reported to have shot two Regular soldiers was likely further west along the road likely just to the west of the Josiah Nelson house (*Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road*, 1959; Ripley 1827), remnants visible in a 1930 aerial photograph as is highlighted in red (Figure 25). A minor detail but with potential tactical impact.

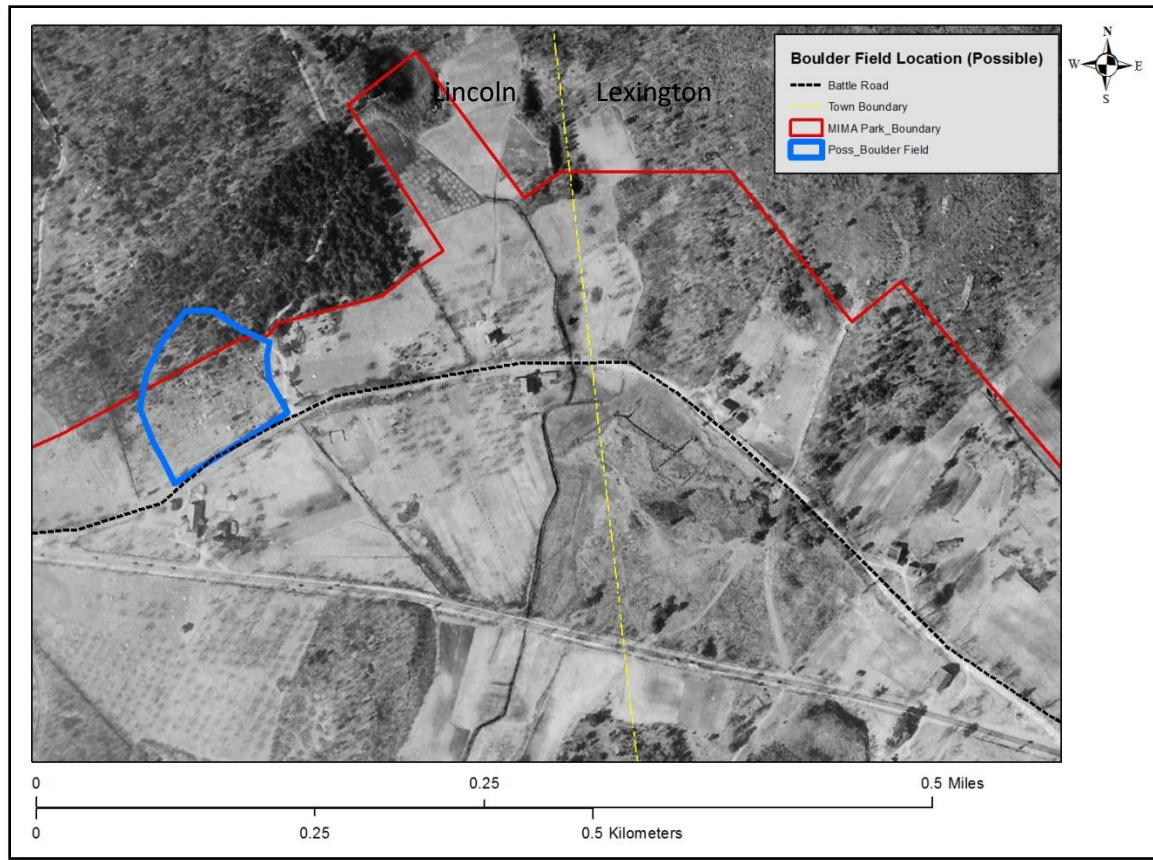


Figure 25 1930 aerial photograph showing the likely location of the boulder field (outlined in blue) where Thorning shot two Regular soldiers. Photo courtesy of the Lexington Department of Public Works.

A review of these accounts provided interesting insight to the evolution of the Parker's Revenge battle and demonstrated the lack of primary sources to identify the location of the battle. With consideration of the landscape and from a military perspective Galvin and Fischer proposed scenarios that in the end, were similar, if a bit elaborate, to that discussed in Chapter 7, the PRAP battle interpretation.

Best said by Sabin, "Due to the lack of detail and conflicting accounts concerning the location of the Lexington Company when it entered the battle in the afternoon, it is perhaps best to say only that the ambush occurred near the Lincoln-Lexington line." (1987, *Part VI "Meeting with Percy"* 1985:2)

In 1996 **Lou Sideris**, Chief of Interpretation MIMA led the effort to develop and install 25 wayside interpretive signs for the five-mile Battle Road Trail. At this time Sideris said, "it was generally accepted at the time that the granite outcrop was the most likely site occupied by the Lexington militia," citing Galvin and the 1959 *Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road*. Sideris also made a point that "there is only one contemporary account [of the battle site] and it is very vague." (*personal communication*) However, he and MIMA felt it important to recognize and commemorate the battle with a wayside and thus chose the most agreed-upon place in existing documentation.

Lexington Minute Men

The modern-day Lexington Minute Men company came together in 1910 with the intent to honor the memory of the original residents of Lexington and men who fought as part of Captain John Parker's militia on April 19, 1775. They are dedicated to educating future generations about the individual militia men and their bravery as they fought for American independence.

In 1976 to celebrate the bicentennial of the Revolutionary War, the Lexington Minute Men company began annual re-enactments of the battle of the Lexington Green for the public which continues to today. Beginning in 2010 at the instigation of Lexington Minute Man Alex Cain, the group began to commemorate the fighting at the Parker's Revenge site along Battle Road in MIMA. The initial event fired three musket volleys to commemorate the action of the battle. This transitioned in 2012 to a re-enactment of the Parker's Revenge battle. The scripted re-enactment is centered on the ledge outcrop along Battle Road at the boundary of the towns of Lexington and Lincoln.

Locating the actual Parker's Revenge battle re-enactment on the ledge outcrop was based in part on the interpretation of the landscape as well as the generally accepted location in historic resources (Galvin, Fischer, Sideris, etc.). While fully aware that there was no conclusive evidence for the battle being centered on the outcrop, it was an ideal and safe "staging" area for the battle with over 100 re-enactors on foot and mounted.

"They [Lexington Militia Men] stood there for an idea larger than any political or economic ideology. Their determination was borne of an understanding of justice and freedom. It is the responsibility of each of us in the Lexington Minute Men Company to carry on the ideals for which they sacrificed. We owe them that and so much more." (<http://www.lexingtonminutemen.com/>, 7/4/2016.) (Figure 26)



Figure 26 The Lexington Minute Men company.

"I joined in this archaeological investigation with the goals of attempting to determine where the Lexington militia made their stand, to make real their experience and to honor their courage, determination and commitment...and I have been rewarded beyond measure in having been part of the wonderful team that has brought this about."

Bill Poole, Descendent, Past Captain Commanding of the Lexington Minute Men, President of the Lexington Historical Society

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Site Taphonomy

In addition to the historical interpretations of the Parker's Revenge battle discussed above, significant research was conducted on behalf of MIMA since its inception in 1959. A variety of reports and documents exist that detail the historic development of the environment, landscape, and history of the Battle Road Unit (Forman 2015a, 2015b; Thorson 2015, 2002; *Cultural Landscape Inventory* 2012, further referred to as CLI; Donohue 2010, 2007; James-Pirri 2009; Dietrich-Smith 2005; Herbster 2005; Donahue 2004; Sabin 1987; Towle and MacMahon 1986; Malcolm 1985.)

The *National Park Service Area Cultural Landscapes Inventory Report: Nelson Farm Area, Minute Man National Historical Park* provided a very detailed chronology of land use, land ownership, development, and impact upon the Nelson Farm area from 10,000 BC to AD 2007 (CLI 2012:39-51). An expanded narrative of the development of this region can be found in Dietrich-Smith's *Cultural Landscape Report for Battle Road Unit, Minute Man National Historical Park, Volume 1* (2005:13-118) that presented a robust site history development of land use from the Pre-Colonial period (to 1634), the Colonial Period (1635-1783), the Rural Economic period (1784-1899), to the early – mid 20th century suburbanization (1900-1958) of the area, and establishment of the Minute Man National Park (1959-2005).

An in-depth description of the region and emergence of agriculture and Colonial husbandry was found in Brian Donahue's (2004) *The Great Meadow, Farmers and the Land in Colonial Concord*. Donahue not only discussed the geological formation of the region, but focused on the evolution of the different phases on the use of the landscape in the Concord area. Though not specifically detailing the area of the Parker's Revenge battle, this work clearly defined the landscape and features inherent to the region during the Colonial period.

These documents were important with respect to the features PRAP looked for to help characterize the 1775 landscape such as cattle watering holes, stone walls, tilled fields, barns and the organization of farm buildings. The extent of the Tabitha Nelson / Thomas Nelson Sr.³ farm structures and their position on the landscape was explored since they played a central role in the events of the Parker's Revenge battle.

Numerous historic maps, deeds, land conveyances, and tax records were used to reconstruct the landscape and the Nelson farm area in some detail. *Land in the Park (the Nelson Properties)* by Robert Ronsheim (1968) presented a detailed history of the ownership of the Nelson Farm property and provided insight into the moving and changing boundaries of the Nelson properties (Thomas Jr., Josiah, Thomas Sr. and Tabitha Nelson / Thomas Nelson Sr.) from the 17th to the 19th centuries. Barbara Donohue (2010: 26-39) thoroughly analyzed the Tabitha Nelson / Thomas Nelson Sr. property combining primary documentary evidence with secondary sources in an attempt to establish not only the boundaries of the property (and their changes) but also to better understand what happened on the farm, the number of animals the Nelsons owned, for example, and how this might be reflected in the barn structure and the potential for additional outbuildings.

³ The original Thomas Nelson Sr. property that his daughter Tabitha Nelson inherited upon his death is referred to throughout this document (and project) as the "Tabitha Nelson / Thomas Nelson Sr." property (house, barn, etc.). By 1775 Thomas Nelson Sr. had died and Tabitha Nelson was the owner and resident of the property.

From these documents and through a review of original archival materials, the changing boundaries of towns and individual properties were better understood and mapped when relevant. The Hosmer map of 1758 depicts the town line between Lincoln and Lexington and the location of the Nelson Bridge on “Country Road” just within the bounds of Lexington, a key feature in the battlefield landscape. (Figure 27)

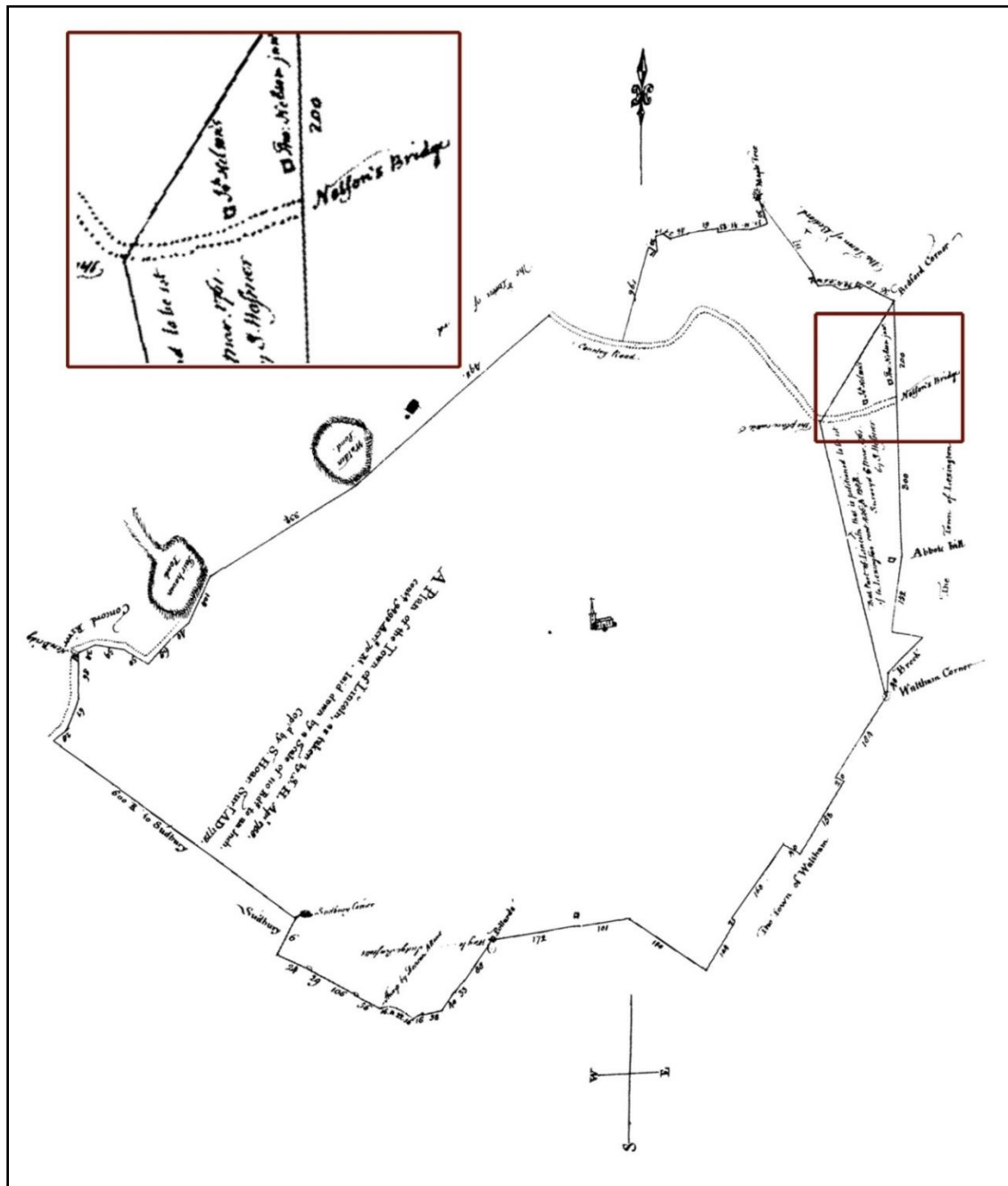


Figure 27 Lincoln map by Stephen Hosmer April 1758, copied by Samuel Hoar in 1772. Courtesy of Lincoln Historical Room, Lincoln Public Library. The Nelson Bridge annotation is highlighted in the inset map window.

Archaeological Background

Archaeological investigations in the focus area of the Battle Road Unit at the Minute Man National Historical Park began in the 1960s. *The Archaeological Overview and Assessment Minute Man National Historical Park* publication by Herbster (2005) presented a thorough overview and assessment of the archaeological investigations conducted in the Parker's Revenge skirmish area. This document described and assessed the known and potential archaeological resources of the park, evaluated previous archaeological studies and presented a series of archaeological sensitivity maps with an emphasis in particular on the Battle Road unit focusing on four main themes: the first, the Prehistoric period is shown in Figure 28 A; the second through fourth, comprise the historic period and include April 19, 1775, the colonial period and nineteenth-century agricultural and daily life as shown in Figure 28 B. The *Archaeological Overview and Assessment* was conducted to record and manage archaeological sites as well as identify potential for unknown archaeological resources.

The Prehistoric sites identified in this map mostly consist of only a single stone flake, sometimes perhaps up to several stone flakes (James Harmon, NRAP Archaeologist *personal communication*). This characterizes the ephemeral nature of the Prehistoric archaeological record in this region. PRAP recovered an additional two lithic flakes in the area of the Tabitha Nelson / Thomas Nelson Sr. house site during excavations. (Prehistoric sites include: Thomas Nelson Jr. Farm P2 ASMIS ID: MIMA00018, State ID: 19-MD-684; Thomas Nelson Jr. Farm P1 ASMIS ID: MIMA00019, State ID: 19-MD-685; Jacob Whittemore Farm Prehistoric Site ASMIS ID: MIMA00021, State ID: 19-D-688)

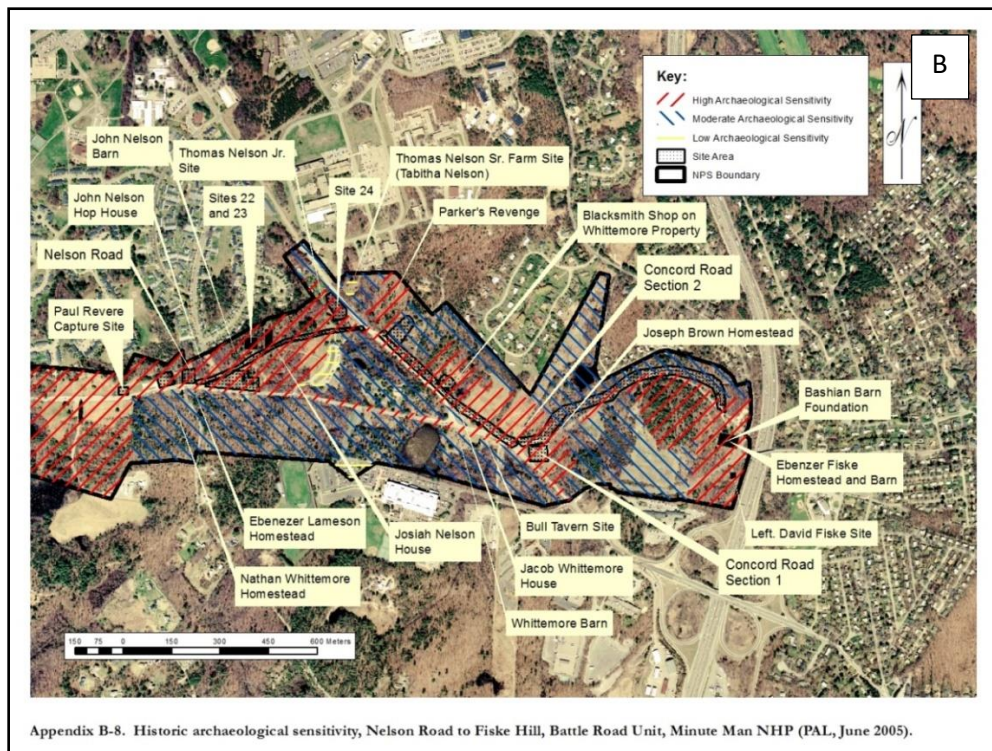
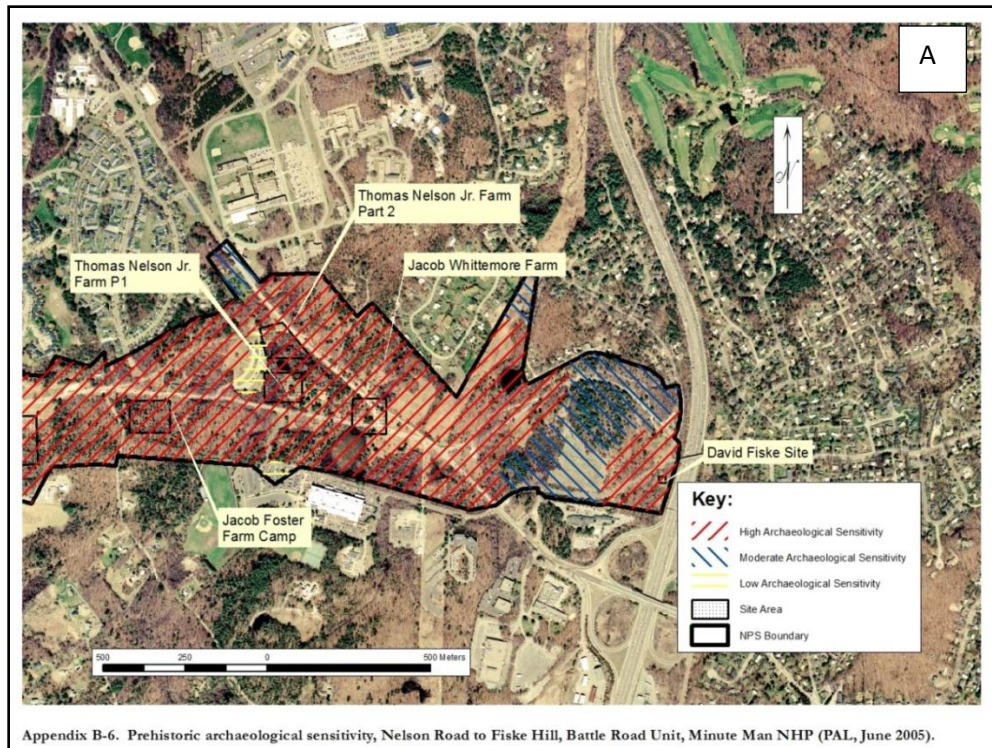


Figure 28 A Archaeological sensitivity for Prehistoric sites. B Archaeological sensitivity map for Historic sites. Image adapted from Herbster 2005.

Historic sites related to the first day of fighting in the core research area included: Site 22 (ASMIS ID: MIMA00029, State ID: LIN-HA-9), Site 23 (ASMIS ID: MIMA00027, State ID: LIN-HA-7), Josiah Nelson House (ASMIS ID: MIMA00028, State ID: LIN-HA-8), Thomas Nelson Jr. site (ASMIS ID: MIMA00026, State ID: LIN-HA-6), Tabitha Nelson / Thomas Nelson Sr. farm site, and Parker's Revenge battlefield (ASMIS ID: MIMA00060).

A second vital document was the *Archaeological Collections Management at Minute Man National Historical Park, Massachusetts, Volume 2*, (ACMP) written by Towle and MacMahon (1986) that presented results of an inventory and analysis of the archaeological collections at MIMA. The scope of this research included analysis of the collections and evaluation of site interpretations which was significant in helping re-construct the 1775 historic landscape and integrate the material record into the analysis of the landscape. This document contributed information to help identify and map (1) structures such as the Tabitha Nelson / Thomas Nelson Sr. house and barn, and (2) military related artifacts associated with the events of the Parker's Revenge battle.

The main properties within the area of interest (Figure 29) were part of the Nelson farmstead, the houses of Josiah, Thomas, Thomas Sr. and Tabitha Nelson. Site investigation and archaeological excavations were undertaken on all of these properties over the past 50 years (Abel 1966c, 1967; Abel and Snow 1966; Abel, Fitzell, and Glumac 1998; Griswold 1996, 2011; Mead 1999; Pendery, Mead and Griswold 1996; Pendery and Cooney, 2003; Snow 1969, 1973a, 1973b; Syenenki 1984, 1990; Tremer 1974).

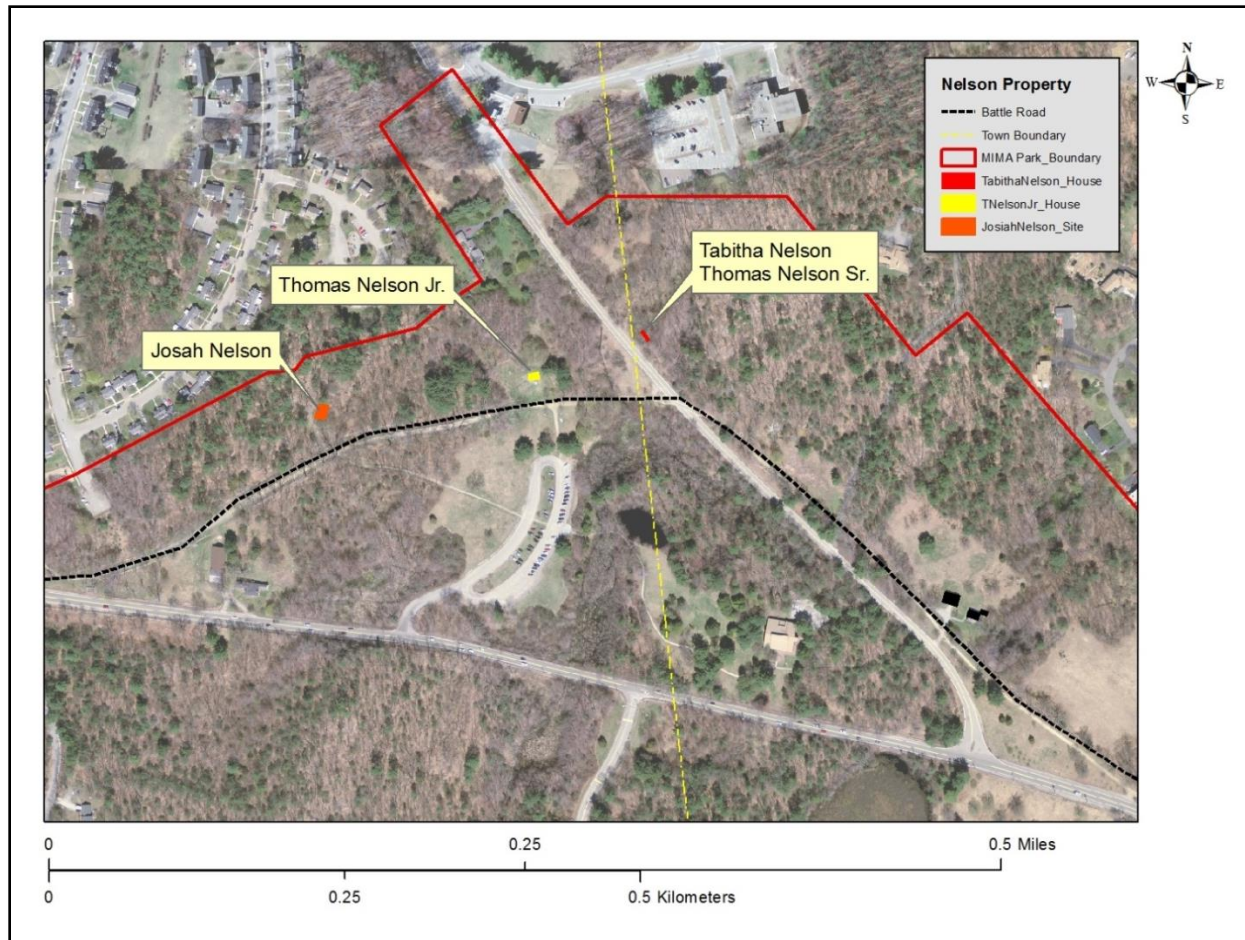


Figure 29 The Nelson house properties.

The archaeological record contributed accurate spatial information to the historic recreation of the 1775 landscape. Features included in consideration of site mapping were historic stone walls, ditches, culverts, bridges, houses, barns, and other out buildings or modifications of the landscape over the past 250 years. These physical features all had potential to contribute to the KOCO analysis and interpretation of the Parker's Revenge battle.

After review of original archaeological site reports, the Towle and MacMahon (1986), and Herbster (2005) reports, the Tabitha Nelson / Thomas Nelson Sr. farm site emerged as the focus for PRAP investigations. In the late 1960s David Snow conducted excavations at the Tabitha Nelson / Thomas Nelson Sr. house site (Snow 1968). A review of Snow's report by Towle and MacMahon (1986) confirmed he located a cellar hole (Figure 30) that most likely represented the original location of the Tabitha Nelson / Thomas Nelson Sr. house. Their review stated that, "There were certain gaps in the record of the Thomas Nelson Sr. excavations and in the artifact collection itself. These data problems influence the integrity of the collection and thus its value for future research and interpretive purposes." (p. 77)

They recommend that if there was a future interest in this property, "...it might be possible to locate some relatively undisturbed areas. These would include areas to the northeast, east, and southeast of Snow's excavations, and possibly to the west of Airport Road. These locations have not been systematically studied, and may have escaped the severe ground disturbance which other areas of the site have suffered." (p. 96)

The foundation and stone culvert of this structure were badly damaged by 20th century construction of Airport Road in the 1940s. The small section of a basement foundation discovered by Snow was the only intact portion, the rest were destroyed by a road utility trench. The field stone walls were found adjacent to bedrock ledge that extends from the foundation to the northeast forming a visible ridge in what would have been the farmyard area. Snow interpreted remnants of a possible fire hearth and chimney, disturbed by the road construction. Evidence from the excavations, despite the faulty recording methods, identifies an occupation period of this structure to the 18th century. This combined with deed and tax records enable the identification of this structure as that purchased by Thomas Nelson Sr. and owned in 1775 by Tabitha Nelson.

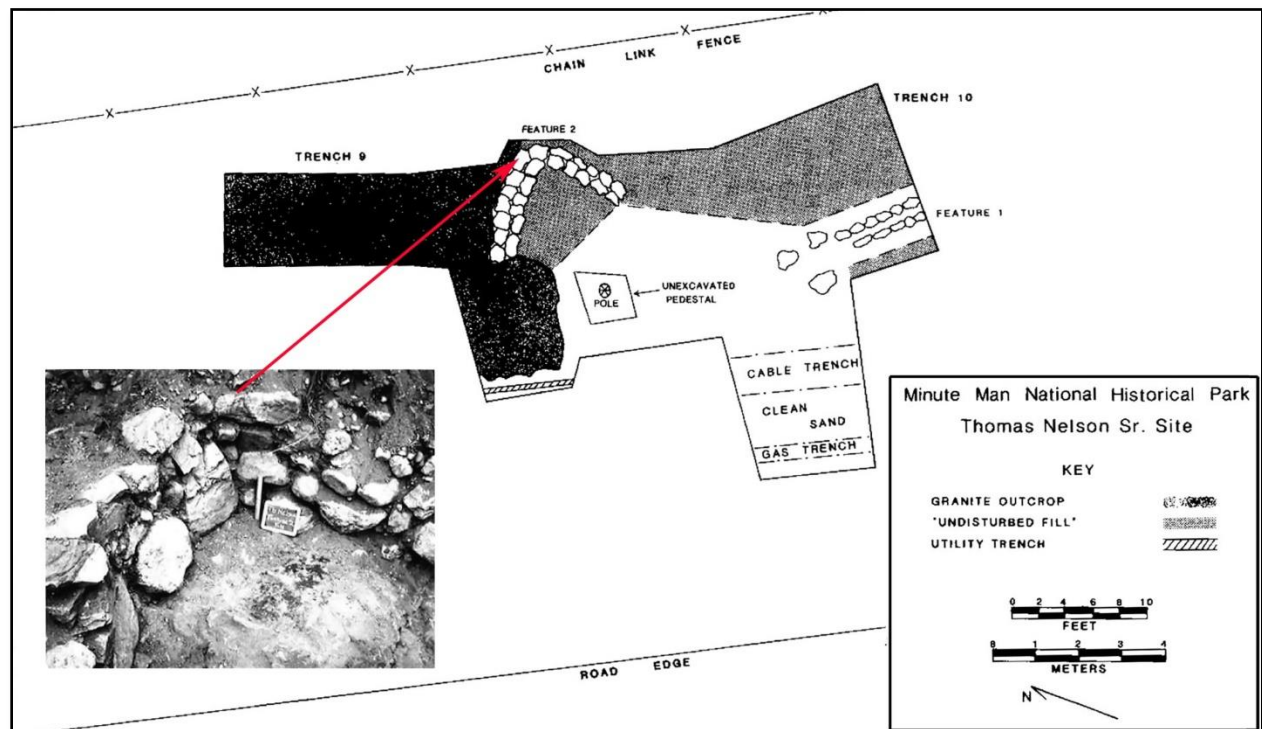


Figure 30 The Tabitha Nelson / Thomas Nelson Sr. basement excavation with inset photo. Adapted from Snow 1969.

Late 19th century photos (Figure 31), deeds, and excavations at the Thomas Nelson Jr. site (Snow 1973) identify the original Tabitha Nelson / Thomas Nelson Sr. house was moved and attached to Thomas Jr.'s house after Tabitha died in 1778. (Figure 32)



Figure 31 The Hastings house with what is likely Tabitha Nelson's house on the left, late 19th century. Image courtesy of SPNEA, Boston Athenaeum.

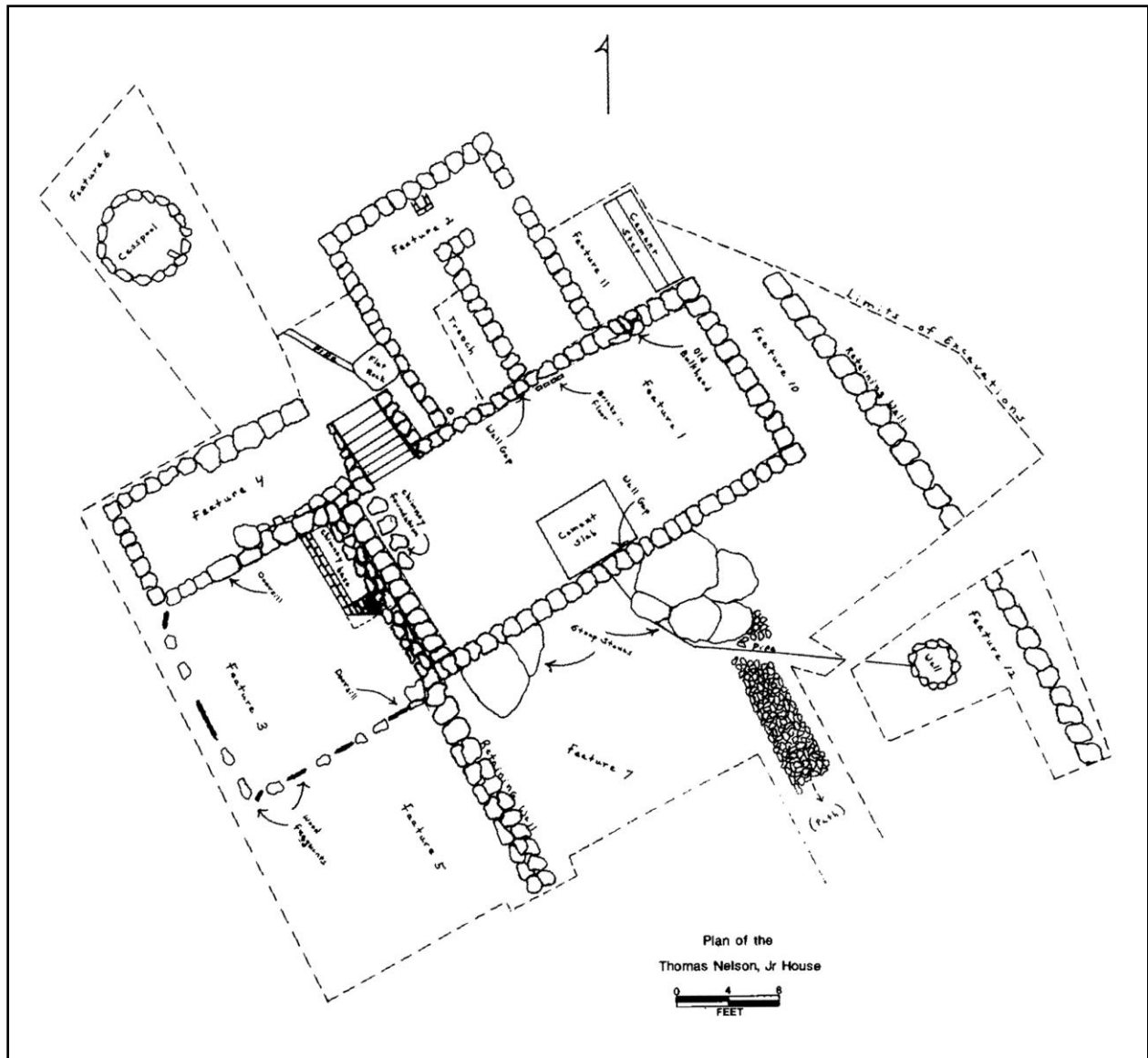


Figure 32 Excavation plans of the Thomas Nelson Jr. house. Adapted from Snow 1973: Figure 2.

A review of the artifact assemblage (Towle and MacMahon 1986) for the Nelson farm area identified a total of sixteen “Weaponry/Accoutrements” artifacts that were recorded from the Thomas Nelson Jr., Site 22 and 23, and Bull Tavern excavations, located within the boundaries of the Minute Man National Historical Park. These artifacts were reviewed by Dr. Doug Scott, consulting Conflict archaeologist. Dr. Scott determined they were not related to the Parker’s Revenge battle. (Figure 33)

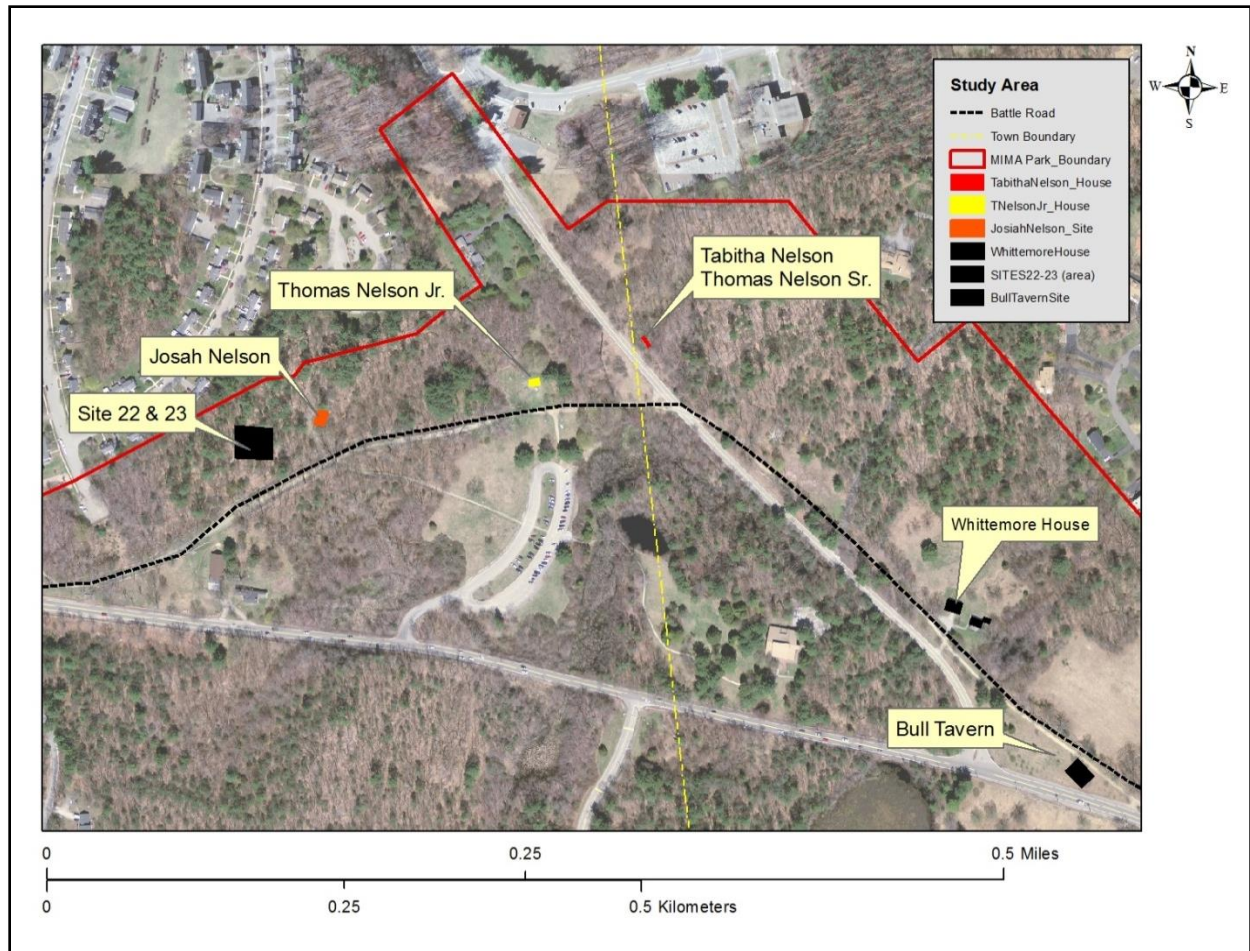


Figure 33 Sites in the study area.

The excavations, geophysical surveys, and metal detecting surveys conducted by Donahue (2010, 2007) identified 12 historic artifacts, six interpreted as associated with the Battle of April 19, 1775: three musket balls, a musket ball bullet mold, a gun fitting, and a cuprous shoe buckle. Donahue suggests that while the location of these artifacts were not in the area currently identified as the Parker's Revenge ambush site on Battle Road, the area where they were found may have been a waiting area (Donahue 2010). Subsequent analysis of these artifacts and the findings of PRAP include the three musket balls in the Parker's Revenge battle. The musket ball bullet mold may date to a later period (Bohy, Scott *personal communication*). The gun fitting and shoe buckle, while perhaps dating to the mid to later 18th century cannot be definitively identified as associated with the battle, given the continuous occupation and use of the landscape.

Based upon review of existing documentation PRAP developed a research design to further investigate the project area and gather evidence to reconstruct the historic 1775 landscape. The following chapter presents the methods used for site investigations and how their results contributed to interpretation of the historic 1775 landscape and use of the land at the time of the Parker's Revenge battle.

“Whizzy.”

Bill Rose, Retired private equity investor, colonial history researcher, and MIMA volunteer

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Chapter 4 PRAP Field Work

Reconstructing the historic landscape for the PRAP project area was a fundamental task necessary to establish a base from which to analyze recovered archaeological evidence and interpret the tactics involved in the battle between the British Regulars and Lexington militia. This process relied heavily upon integration of existing information from (1) original property deeds and tax records; (2) the historic landscape research by Joyce Malcolm (1985), Brian Donohue (2004), and Barbara Donahue (2007, 2010); and (3) new research and interpretations on landscape development by project participants and specialists.

Site survey

A number of survey methods were used to effectively and accurately map the historic landscape, existing archaeological resources, and natural and human impact upon the landscape over time. These included a master control survey to establish a site grid, 3D laser scanning for site modeling, surface survey mapping to identify historic and contemporary surface features, and geophysical surveys to map possible remaining buried archaeological features and evidence related to the battle.

Control Survey

The first step for these surveys was to establish a permanent site control grid to tie in all subsequent work. Because all of the project work was accurately mapped (Figure 34), it was able to be integrated into the project GIS for analysis and interpretation. Feldman Land Surveyors was sub-contracted to establish the site control that tied in previous survey work contracted by MIMA with Nitsch Engineering (2011).

One of the most important aspects of site mapping was the ability to return to the site and locate with ease any area of interest or mapped feature on the ground surface. This was not solely for project management but was intended to provide a valuable resource for site management and preservation use in the future.

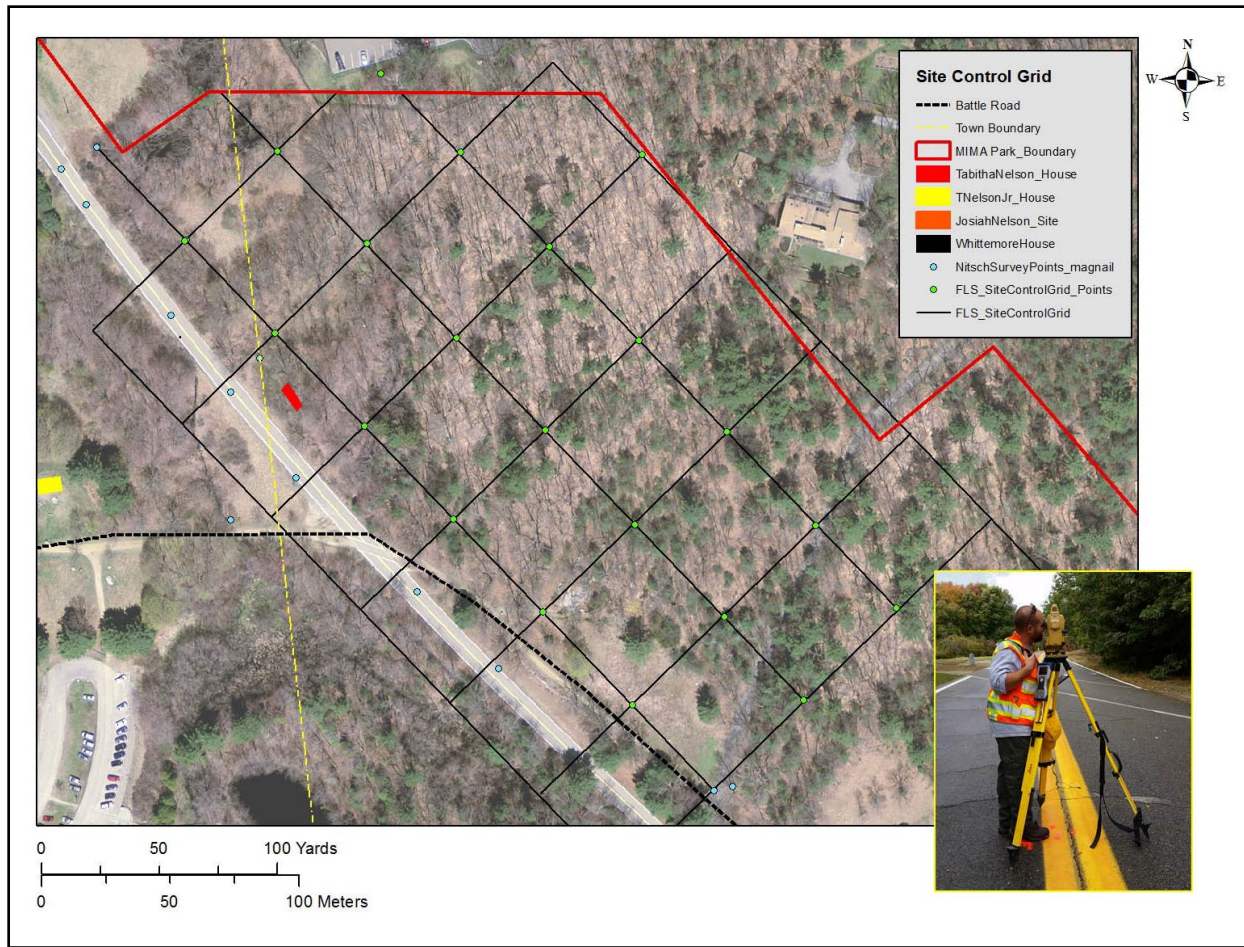


Figure 34 Site Control Grid with Sokkia total station inset.

Site focal area 3D laser scanning

Two days of 3D laser scanning was conducted on site by Feldman3D as part of the Feldman Land Surveyors 3D Services pro-bono program. A series of scans was collected to construct a 3D visualization of the core study area from the intersection of Nelson Road, Airport Road and Marrett Street north to the stone wall along the boundary of Hanscom Airforce base, east to the stone wall marking the boundary of MIMA and south to include the ledge outcrop. (Figure 35) This provided not only a high resolution topographic map of the landscape, but also offered a virtual experience for the viewer to move through the landscape from the perspective of a British Regular or member of the Lexington militia. The 3D laser scan data were used for site analysis, Park interpretation, and outreach resource development. (Figure 36)

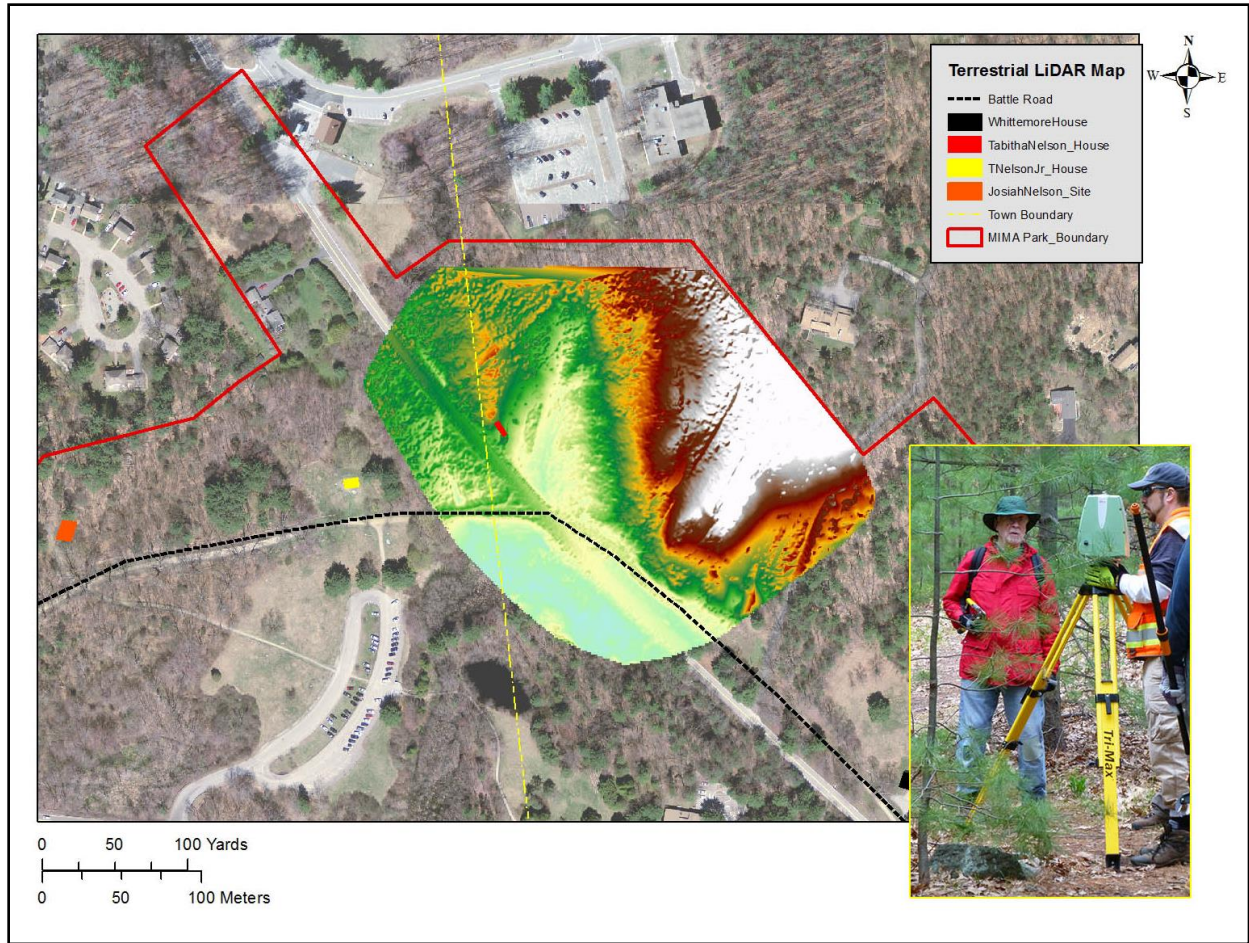


Figure 35 Terrestrial LiDAR survey coverage with Leica 3D laser scanner inset.



Figure 36 Screen captures from the 3D site fly-through. (Top: from the top of the ledge outcrop looking northwest toward Nelson Road, Bottom: from Nelson Road east toward Airport Road and Marrett Street.)

Scan data, 3D site fly-through, and screen captures of 3D scan data were included in report external drive and are curated at MIMA.

Surface feature survey

In October 2014 PRAP conducted a surface survey that mapped visible features on the site. Bill Griswold from NRAP worked with Watters and survey team members Rose and Poole recording features with Trimble GeoXT and GeoXH series 6000 GPS handheld receivers with extension hurricane antenna.

(Figure 37)



Figure 37 Site surface survey with Trimble GeoXT and GeoXH series 6000 GPS. (From the left: Rose, Poole, and Griswold.)

The modern landscape in the area of interest was wooded (mostly new growth since the 18th century), with wetland running through the project area. The landscape was populated by historic stone walls, depressions, ditches, drainage features, piles of stones, large boulders (erratics deposited by glaciers), modern debris including a cement platform with barbeque, fencing materials, modern roads, historic tracks, and much more. The job of PRAP was to extract the historic 1775 landscape from what was visible today. The historic landscape was impacted by natural wetland development and human interventions such as farming, construction of roads Route 2A and Airport Road, 20th century suburban development, and other processes.

Investigation of Tabitha Nelson-Thomas Nelson Sr. tactical landscape

Archival research and past archaeological investigations identified structures of the Nelson family that were present in the mid to late 18th century landscape. Property deeds dating to 1724/25 identify Thomas Nelson Sr. as the purchaser of a house and barn with 30 acres (Middlesex Deeds 27:365). The location of these structures was investigated in the late 1960s by David Snow from Brandeis University (Snow 1969). Snow's excavation identified partial remains of a cellar hole with a related stone culvert interpreted as the foundation of the Tabitha Nelson / Thomas Nelson Sr. house. Unfortunately, he did

not accurately map the position of the structure and in subsequent years the exact location was lost. Though he searched for it, the barn was not identified during investigations. (Figure 38)

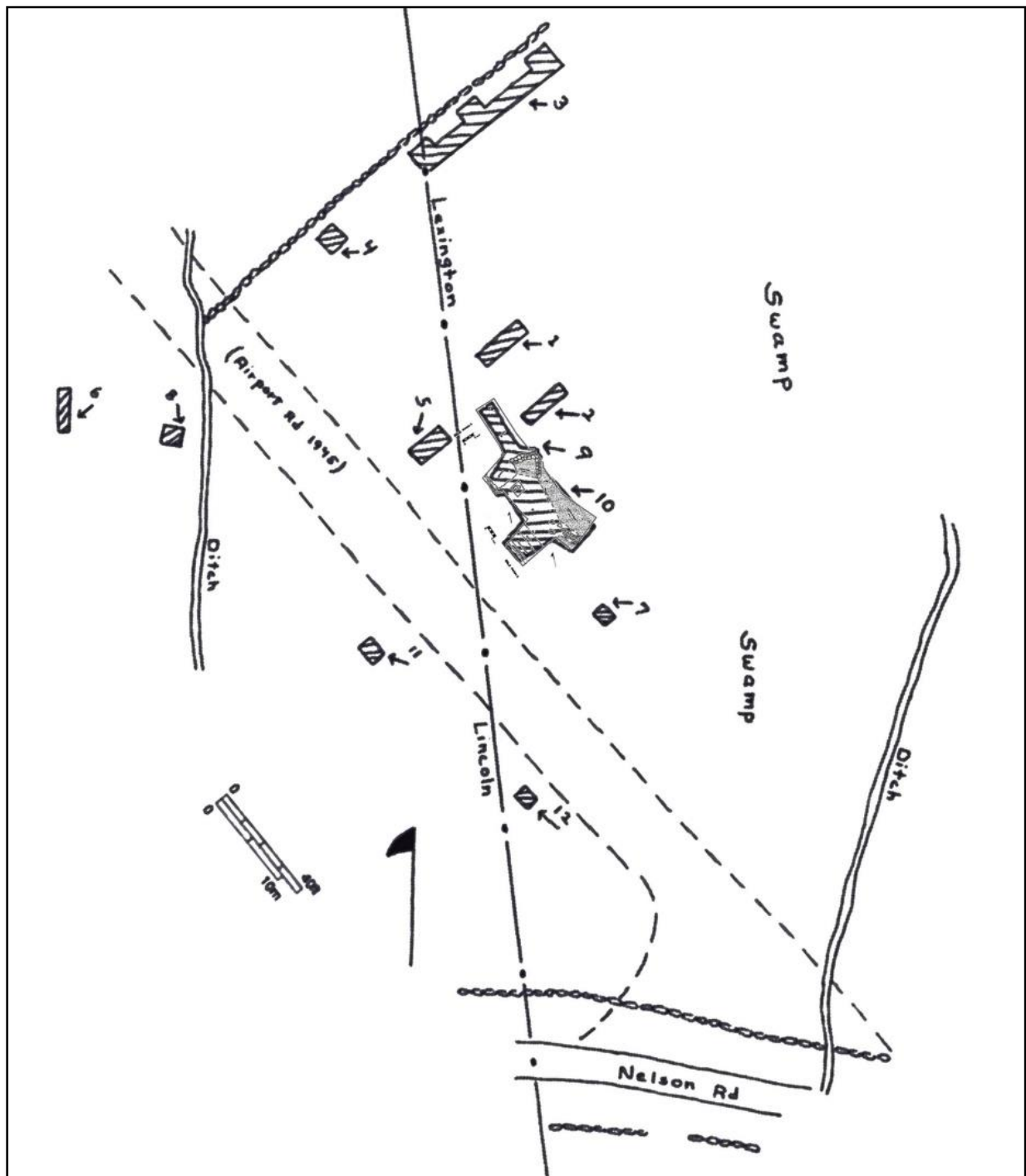


Figure 38 Snow excavation units from 1968. Number 9 identified the location of the house basement foundation and 10 identified the stone culvert. Adapted from Snow 1969.

One of the main landscape reconstruction goals of PRAP was to identify and map the Tabitha Nelson / Thomas Nelson Sr. house and barn structures. These structures were key features in the tactical landscape during the Parker's Revenge battle. They potentially provided strategic cover or were obstacles during the exchange of fire. The predicted location of the house foundation was completely overgrown with sapling trees, thorny underbrush, and a dense mat of poison ivy. Proposed geophysical surveys and metallic surveys in this area to help identify the house and barn structures had to be conducted on obstacle-free terrain. A monumental effort by dedicated park volunteers and personnel from 12 local re-enactment groups hand cleared this and other areas investigated to enable geophysical and metallic surveys. (Figure 39)



Figure 39 Local Minute Man group volunteers, October 2014. Image courtesy of MIMA.

Geophysical Surveys

Geophysical surveys were conducted in the Parker's Revenge project area to identify the location of the Tabitha Nelson / Thomas Nelson Sr. house, barn, and additional anthropogenic and landscape features that would contribute to the reconstruction of the historic 1775 landscape. A basic description of geophysical survey methods is included in Appendix 3. Geophysical survey areas were determined using information from past excavations (Snow 1969), archaeological studies in the park (as discussed in the earlier section on Site Taphonomy), and historic aerial photos of the study area. Trees, stone walls, trash deposits, and other surface features presented a challenging survey area. (Figure 40)

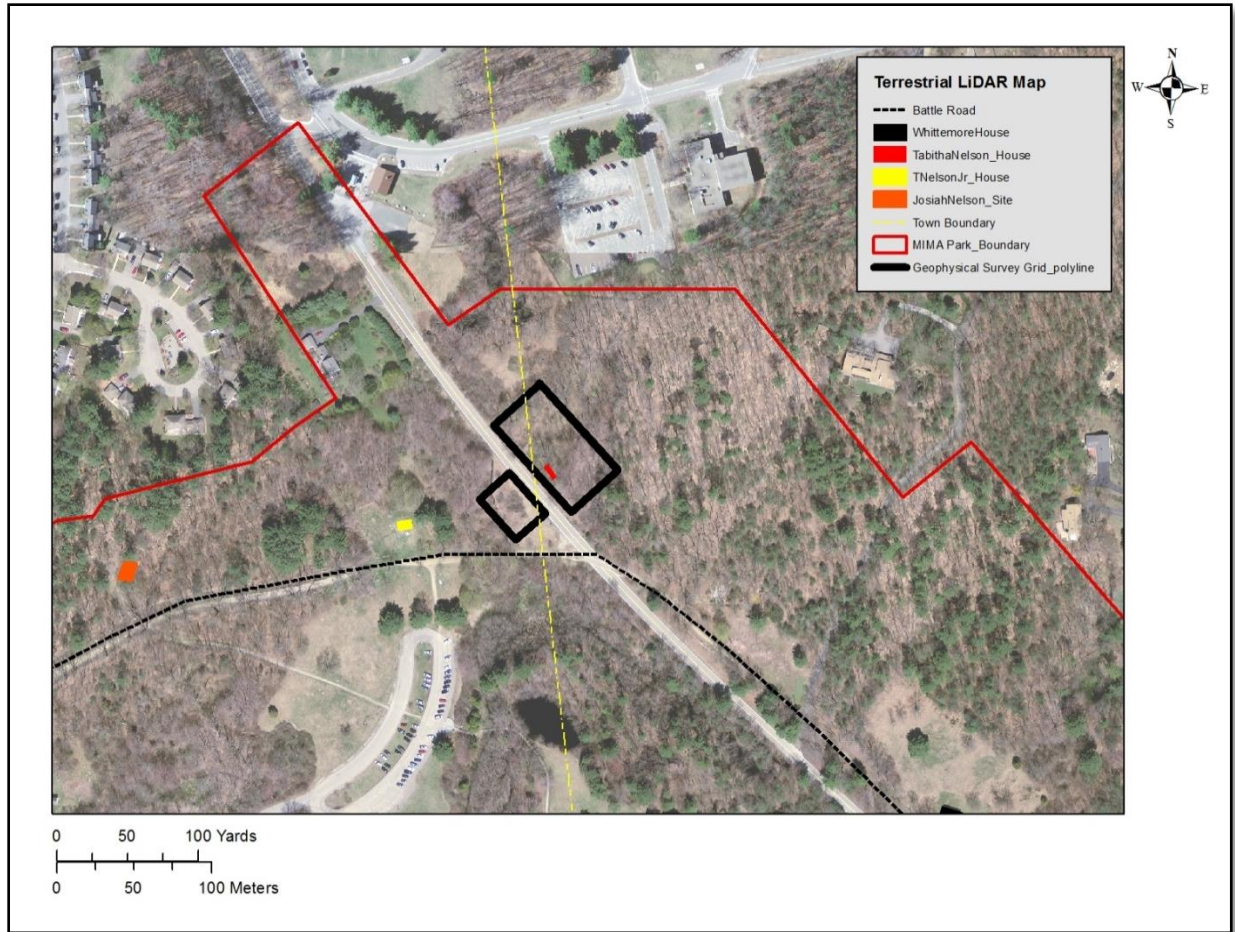


Figure 40 PRAP Geophysical survey grid location.

Two main areas were surveyed using a combination of ground penetrating radar, magnetic gradient, conductivity, and magnetic susceptibility survey methods. Geophysical surveys were conducted over approximately one acre of the focus area. Plastic pin flags were placed at 2 m intervals through the survey area and were used as visual (distance) guides during data collection. Data were collected over the course of 8 days with full coverage of the area to the east of Airport Road with all three methods and the area to the west of Airport Road with ground penetrating radar. Data were processed in dedicated software, integrated into the project GIS, and interpreted. (Figure 41)



Figure 41 Geophysical survey equipment and pin flag grid. Bartington Grad601 fluxgate gradiometer (Watters), GSSI ground penetrating radar (Rose with Poole on flags), and the GSSI Profiler conductivity (Griswold).

Generally, the magnetic gradient and conductivity / magnetic susceptibility survey results showed larger geological trends in the sub surface and were very “noisy” as a result of high concentrations of historic and modern metallic (and other) artifacts and trash (as confirmed through later metallic surveys in the survey area). (Figure 42) While single anomalies from the Donohue 2007 magnetic surveys were investigated through excavations, the complexity of these magnetic and conductivity maps, and the clear demonstration of intensive surface trash precluded point anomaly excavations. The PRAP geophysical surveys targeted buried structural remains with a specific focus on the Nelson house, barn and any related out buildings or landscape modification. The geophysical survey area was included in the metallic survey coverage, thus the focus on structural remains.

These surveys identified the remnants of the HAFB fence line (Figure 42, red arrow) as well as buried utilities and what turned out through surface investigations to be random concentrations of metal debris such as coiled wire and a concentration of metallic trash. These surveys also identified a few broader geological and environmental anomalies, such as the wetland related signature in Figure 42 (green circle.)

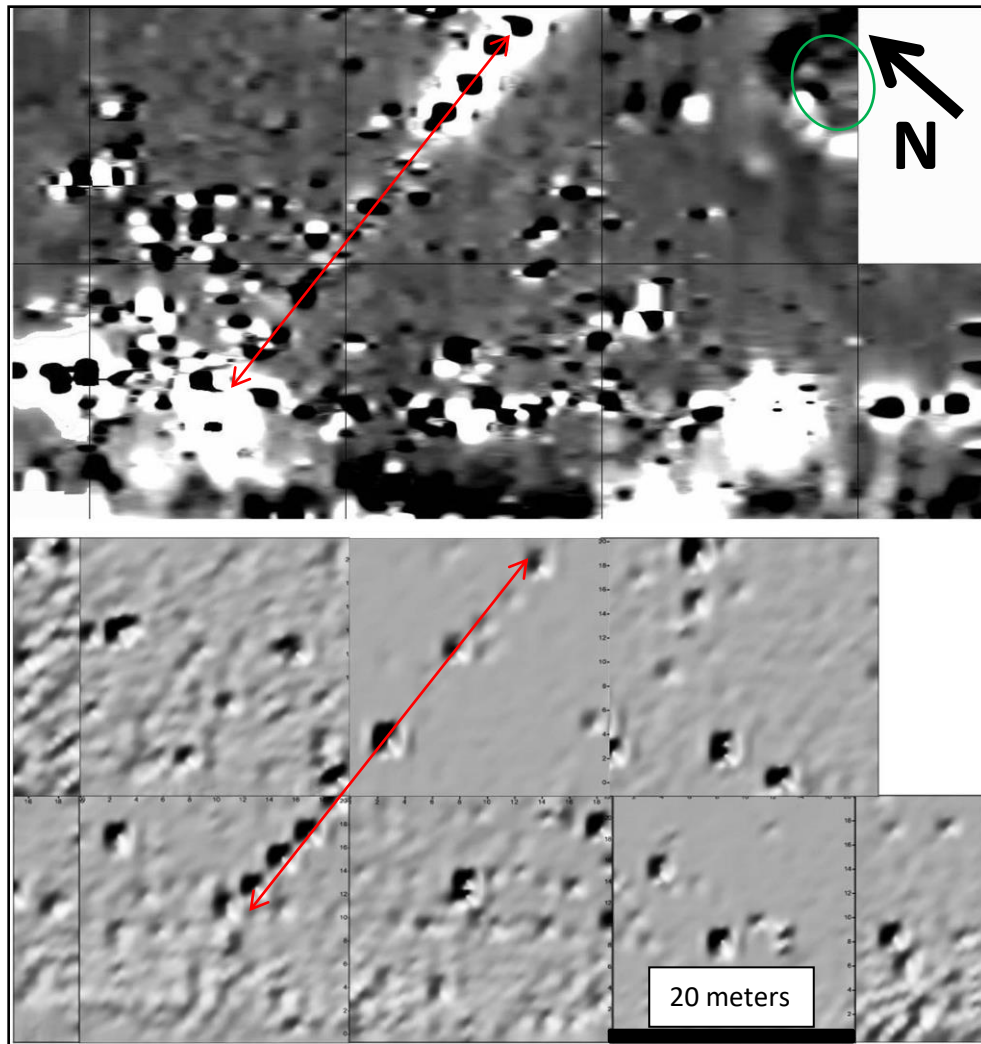


Figure 42 Magnetic gradient (top) and conductivity (bottom) survey results. The red line identifies the remaining fence post bases from the HAFB fence line. The green circle identifies a wetland related anomaly.

GPR survey, not as susceptible to metallic debris as the other survey methods, mapped features related to the basement foundation and the stone culvert identified by Snow (1969) (Figure 43). Ground-truthing excavation confirmed the location of the Tabitha Nelson / Thomas Nelson Sr. house foundation. No other ground-truthed anomalies (excavation units or shovel test pits) revealed any evidence of structural remains in the geophysical survey area. GPR clearly mapped the North-South trend of the granite ledge that is adjacent to the Tabitha Nelson / Thomas Nelson Sr. house foundation. This provided good information on the geological nature of the site, identifying bedrock across the Nelson farm area. The GPR survey also mapped the utility trench and utility pipes from the 1940s disruption of the Tabitha Nelson / Thomas Nelson Sr. foundations.

Excavation confirmed GPR mapped stone features (the basement walls and culvert). If the barn was a significant structure with traces of stone foundations remaining in the ground, these should have been mapped. Consideration of the barn structure and possible remaining evidence included the potential for

stone foundations, or 4 corner stones, or a simple compacted hummic enhanced soil lens. Thus, either the remnants of the barn are located outside of the survey area or the barn did not have a significant stone foundation. Possibly, the stone foundation may have been destroyed, or the survey techniques were unable to map the perhaps, more ephemeral soil change properties that might identify the barn foundation (given in particular the high concentration of surface metallic trash).

Figure 43 presents a plan view of GPR data at 0.5m depth (top) and interpretation of buried features (bottom). On the north side of Airport Road the yellow polygon identifies the Tabitha Nelson / Thomas Nelson Sr. basement feature and associated debris. The red line shows the location and extent (in the GPR data, this was not ground-truthed) of the buried stone culvert. The green polygon on the northern edge of the GPR grid identified an anomaly that may have identified buried remains of a structure. Excavation did not find any structural remnants in this area. A large burrow hole was visible within a few meters of this anomaly; it is possible that animal activity may have disturbed the soil contributing to this anomaly. The brown polygon to the south of Airport Road was mapped at 0.5 m deep. This layer, or interface in the GPR data was ground-truthed and identified as a layer of fist sized cobbles (stones) that is indicative of continued agricultural activity (plowing). The dark blue value in the radar image generally shows bedrock. When interpreting the results, this signature was present at different depths and identified the depth, location, and north-south trend of the bedrock ledge adjacent to the Nelson house foundation.

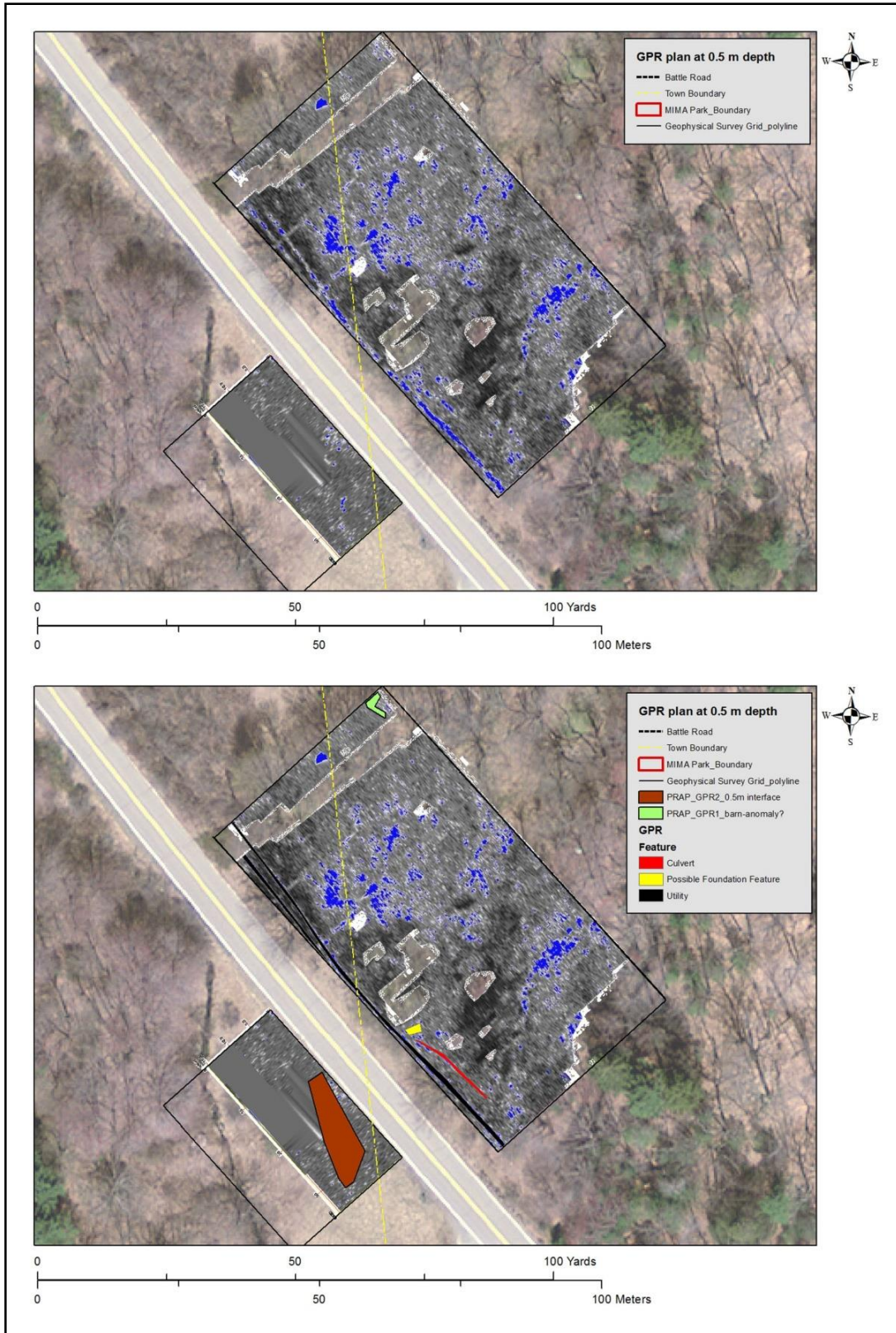


Figure 43 GPR survey results (top) with interpretations (bottom).

Archaeological Excavations

Archaeological field work and laboratory tasks were conducted by the Public Archaeology Lab (PAL) from October to December 2015. Methodologies for these investigations were developed by Watters and PAL staff and field work conducted with the assistance of PRAP metallic survey team volunteers. The goal of the excavations was to investigate six geophysical survey anomalies and selected landscape features in the core area of investigation to identify archaeological features associated with the Tabitha Nelson / Thomas Nelson Sr. site.

The PAL Archaeological Report is included in Appendix 1. Appendix 2 contains an edited index of artifacts curated from PRAP investigations. Excavations identified the remaining corner of the Tabitha Nelson / Thomas Nelson Sr. basement feature and confirmed the historic agricultural use of the field north of the intersection of Nelson and Marrett Streets. A circular rock lined pit and field stone foundation were identified on the final day of excavations. Excavation was conducted to the surface of these features; they were mapped, drawn, and photographed then covered with a tarp and re-buried for future investigations. Two lithic flakes were also recovered during excavations, likely related to the Thomas Nelson Farm P2 site (ASMIS ID: MIMA00018, State ID: 19-MD-684).

Methodology

The location of the excavation units and shovel test pits was mapped by Watters based on geophysical survey interpretations and archival research. Shovel test pits (STPs) measuring 0.5 x 0.5 m and 1 x 0.5m, and excavation units (EUs) 1 x 1 m were excavated. Larger EUs were arranged in configurations of 1 m x 0.5 m units. STPs were identified by site name Tabitha Nelson / Thomas Nelson Sr. (TN), area of interest such as Barn 1 (B1), and STP or trench (T) number. For example a STP in Barn 1 area would be TN-B1-STP1. An EU in the House area would be identified as TN-H-T1. (Figure 44)

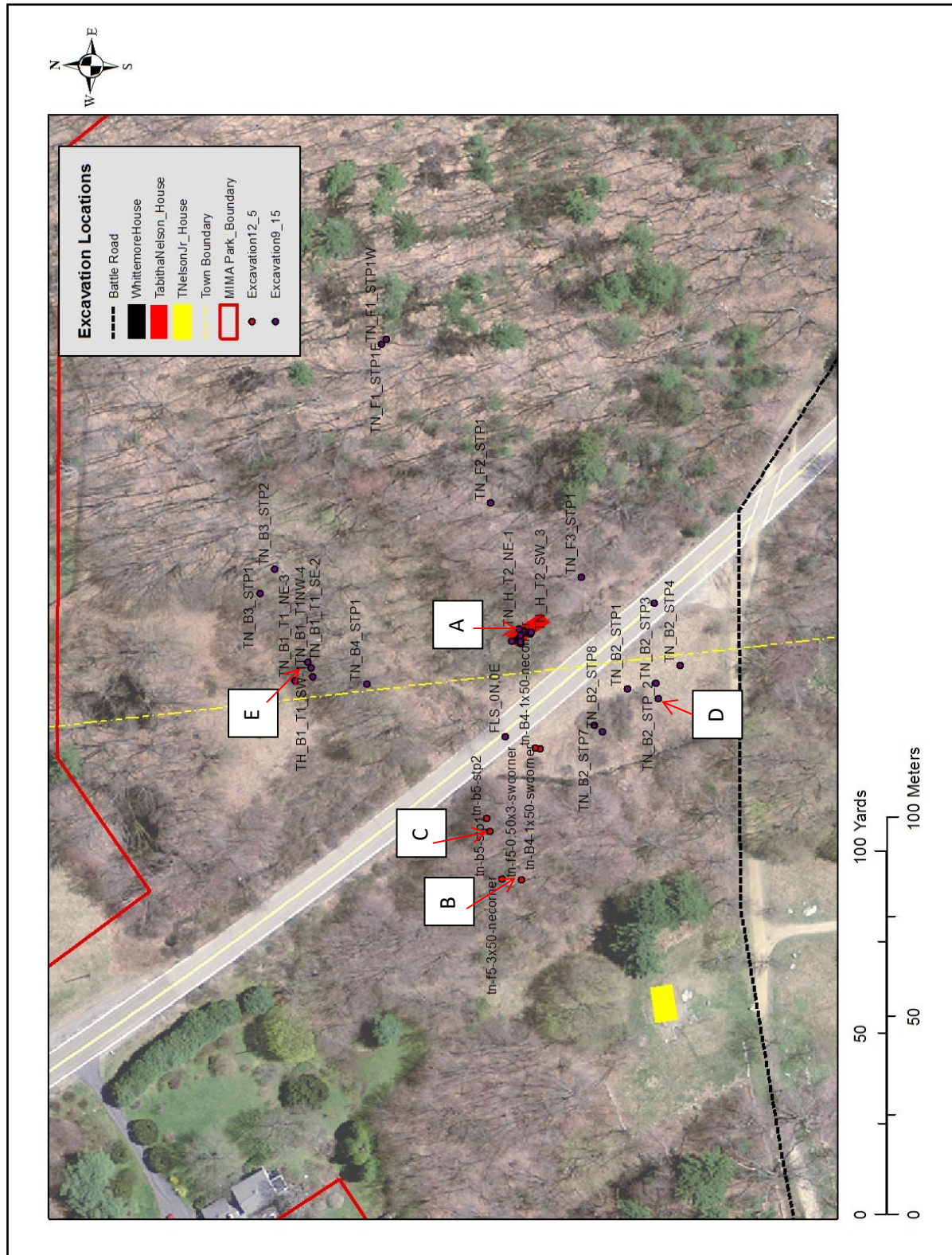


Figure 44 Location of excavation units and shovel test pits for November and December 2015 investigations. The Tabitha Nelson / Thomas Nelson Sr. basement foundation is at A, a stone lined ash pit at B, a field stone floor or foundation at C, and D and E are both locations of rhyolite chipping debris.

All units were hand excavated in 10 cm levels to sterile subsoils or to a depth where significant features were exposed. Soils were screened through ¼ inch hardware mesh. Cultural materials were bagged and labeled with provenance information and representative samples of debris including brick and glass were collected with percentages recorded on field forms. Plans and profiles were drawn for all features and field notes recorded on standard PAL forms; soil profiles were drawn for every EU and STP, and the site area and cultural features photographed. All archaeological features were identified and numbered during excavations.

Results of Fieldwork

The excavations at the Tabitha Nelson / Thomas Nelson Jr. house site resulted in 14, 50 x 50 cm shovel test pits, 2 0.5 x 1 m STPs and 4 EUs of varying size (Figure 44). 547 artifacts were collected from 15 of the STPs and all 4 of the EUs. For a detailed description of each excavation unit and resulting artifacts see *3043 Parker's Revenge Tabitha Nelson Excavations 2016* in Appendix 1.

TN-H-T2, 1 x 2 m EU (Figure 44 A) was placed based on Snow's excavation plans (1969) and geophysical survey results with the intent to intercept the corner of the Tabitha Nelson / Thomas Nelson Sr. house foundation. At approximately 0.2 m depth the northeastern house, or basement (as interpreted through the more extensive excavations by Snow), feature was exposed. Excavations continued to a 0.5 m depth around the foundation. (Figure 45) The fill in this excavation unit was interpreted as backfill from the Snow excavations with primarily domestic and structural debris that included redwares, bottle glass, and several clay pipe stem fragments.



Figure 45 Northeast corner of the Tabitha Nelson / Thomas Nelson Sr. basement. Image courtesy of PAL.

A 0.5 x 3 m EU, TN-B5-T1, (Figure 44 B) was placed across a double linear mounded soil feature outside of the geophysical survey area. This feature was initially interpreted as a possible extension of the stone wall to the east across Airport Road. Watters and Donahue (*personal communication*) discussed the potential for the double linear mounds 0.4 m high spaced approximately 2 m apart to be a possible field boundary delineated by a wooden fence with remnant mounds of field debris on either side; or simply field debris with no fence line at the boundaries of cultivated fields.

EU TN-B5-T1 was oriented to bisect the two linear mounds and the depression between. The EU was excavated to a depth of 0.3 m to the A/B soil interface where a feature consisting of two linear piles of fieldstones contained within an ashy fill lens (Figure 46). 50 pieces of cultural material were collected in the plow zone; the majority being glass fragments. Due to time constraints, this feature was not investigated further. A tarp was placed in the bottom of the trench after it was mapped, photographed and drawn and the EU was backfilled pending future investigation.



Figure 46 TN-B5-T1 3 x 0.5 m trench over double mound feature. Excavated stone lined ash lens.

TN-B5-STP1 (Figure 44 C) approximately 20 m east of TN-B5 T1, to the south of Airport Road, revealed a course of worked stone that suggested the floor or foundation of a structure (Figure 47). The last STP on the final day of excavation, this feature was not investigated further. It was recorded, mapped and a tarp was placed at the bottom of the STP and the feature re-buried for future investigation.



Figure 47 Field stone floor or foundation feature in TN-B5-STP1

The artifact assemblage from the excavations contained predominantly domestic items with 40 percent of the assemblage being ceramic sherds with redwares (including lead glazed, plain/unglazed, and

slipware) being the most common. 23 percent of the assemblage was glass and included flat (window, mirror, undetermined), curved (bottle, jar, lamp), and other (glass bead, 1 cut jewelry stone) types.

Included in the predominantly historical artifact assemblage are two pieces of rhyolite chipping debris collected between 0 and 0.10 m in the upper A/A_{pz} horizon (one from TN-B2-STP2, Figure 44 D and one from TN-B1-T1, Figure 44 E). While no additional evidence of pre-contact cultural features or other Native American artifacts were identified, these artifacts support the previous PAL (2005) characterization of this area as having high potential for Native American occupation.

The results of the excavations successfully identified and mapped what is interpreted as the northeast corner of the remaining Tabitha Nelson / Thomas Nelson Sr. house basement foundation walls. While excavations did not confirm the location of Tabitha Nelson / Thomas Nelson Sr.'s barn, they have identified where the barn was *not* located. Combined with excavations by Snow⁴ (1969) and Donohue (2007), we can identify areas of the site where the barn was not located. (Figure 48) Continued investigations for identifying the barn location should begin with further excavations targeting the two features identified on the last day of PRAP study.

The purple polygons in Figure 48 represent areas that Snow excavated, the red squares identify the STPs that Donohue excavated in 2007, and the red and black points map PRAP excavations.

⁴ Spatially accurate geo-referencing of Snow's sketch maps was challenging. The map in Figure 48 best represents the areas investigated during his 1968 excavation.

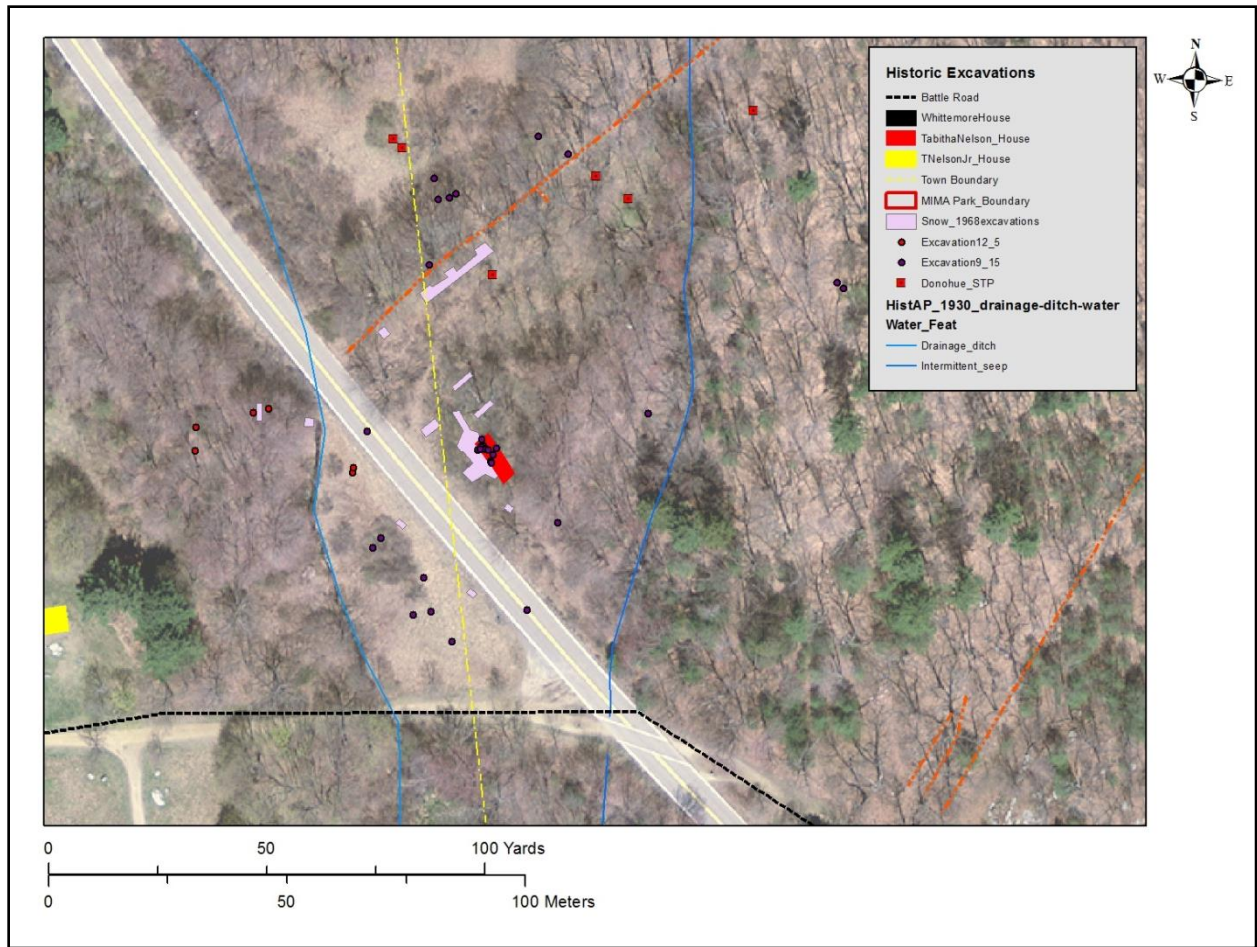


Figure 48 Excavation in the Tabitha Nelson / Thomas Nelson Sr. farm area. Snow excavations are purple polygons, Donohue STPs red squares, and PRAP excavations red and black points. (Please note the Snow excavation units are not spatially accurate; hand drawn maps from 1969 were rectified as best as possible.)

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“Battles may fundamentally alter the relationship of the community to the land, it may become associated forever with an historic event, but the landscape doesn’t freeze in time. It continues to change and grow, leaving behind shadows of the past.”

NPS American Battlefield Preservation Program, 2008:3

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Chapter 5 1775 Historic Landscape

All of the investigations conducted as part of PRAP contributed to reconstructing the historic 1775 landscape. This reconstructed landscape was used as a base from which KOCOA analysis and consideration of the battle took place. A significant contribution to the historic reconstruction was a result of the analysis and research of the study area by Dr. Richard T.T. Forman, a historical environmentalist from Harvard University (Forman 2015a, 2015b).

Forman studied the area of interest between 2014 and 2015 and lead a number of site walks to inform project members of the ecological and environmental changes in the site over time. (Figure 49) Forman worked with Watters, integrating previous historic land use research by Malcolm (1985) and Donahue (*personal communication* 2014, 2015), historic rainfall analysis (Forman 2015a), and early twentieth century suburban expansion to define the evolution of the present-day wetland. A number of important factors from this study combined to contribute significantly to the understanding of the Nelson farmstead and surrounding property to present the most likely environmental scenario for April 19, 1775.



Figure 49 Dr. Richard T.T. Forman leading a site walk (2nd from left).

Present-day wetland

Forman began his analysis with an assessment of today's wetland that runs through the site. He concluded that the wetland was a result of 20th century activities, describing the wetland as an "area with water at or above the ground surface for some 2 to 6 months most years." (Forman 2015a:1) Forman presented the evolution of the wetland based on historic rainfall analysis and the impact of occupation and development of the landscape from the 18th century to present day.

The five-year period from 1769-1773 had the most severe drought of the century from 1710-1801 (Figure 50), based on Boston dendrochronological analyses (Cook et al., 2008; NOAA National Climatic Data Center, 2014, www.ncdc.noaa.gov/paleo; Neil Pederson, *personal communication* with Forman). Forman discussed the Palmer Drought Severity Index (PDSI) numbers in those five years and explained that typical drought in this area may have dropped the groundwater water table by a few feet, severe drought by several feet. The latter depth was unlikely to be restored within a year or two (Weider and Boutt, 2010). He argued that if there would have been a wetland, drainage ditch, or livestock pool (Donahue, 2004) in an intermittent-flow gully, the ground surface would most likely have been dry following such a drought. Forman did however state that Battle Road was most likely wetter and muddier in some areas in contrast to adjacent pastureland and woodland due to soil compaction by animal and vehicle traffic (Forman 2015a).

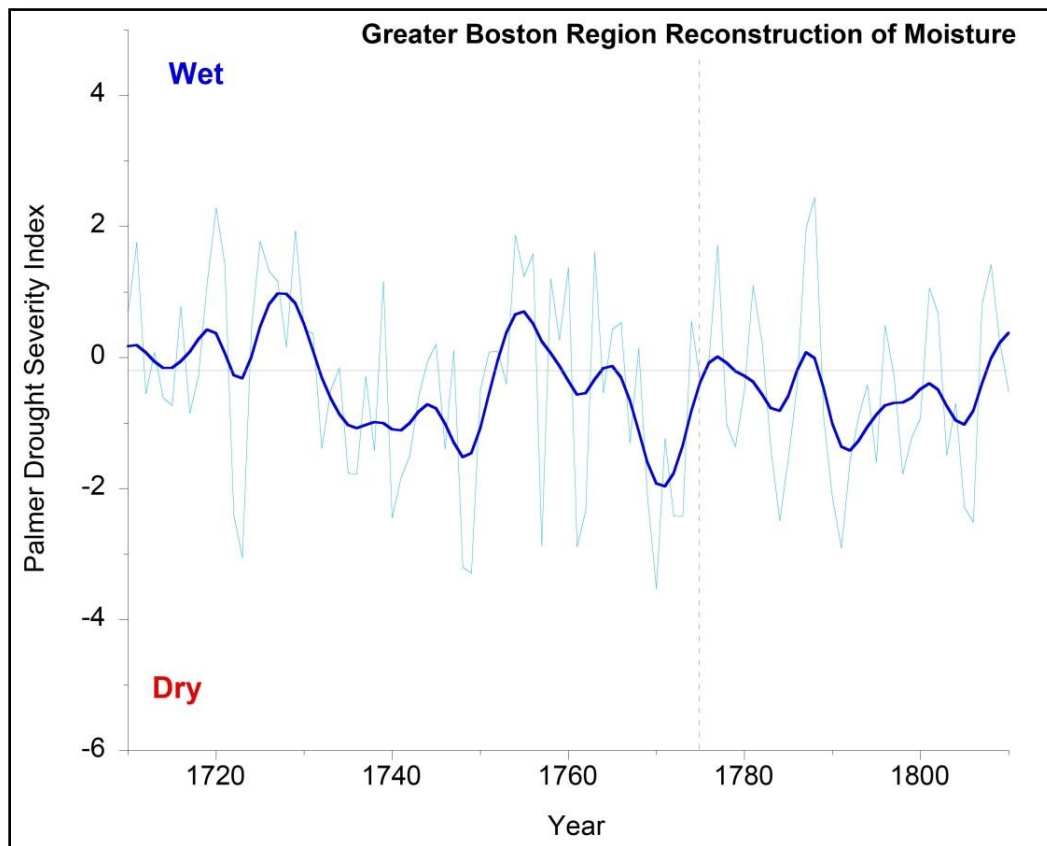


Figure 50 Drought history graph demonstrating dry conditions from 1769-1773. (Adapted from Forman 2015a.)

First laid out between 1802-06 for horse, wagon, carriage, and cattle drive traffic (Dietrich-Smith 2005) and upgraded in the 1890s, the construction of Route 2A impacted and raised the water-table in the area between Route 2A and Battle Road (Forman 2015a, 2015b). Continued improvement and formalization of Route 2A in 1930 further impacted the developing wetland and contributed to a higher water table and related surface wetland conditions in the area of Battle Road where Nelson Road and Marrett Street merge near the ledge outcrop. (Figure 51)

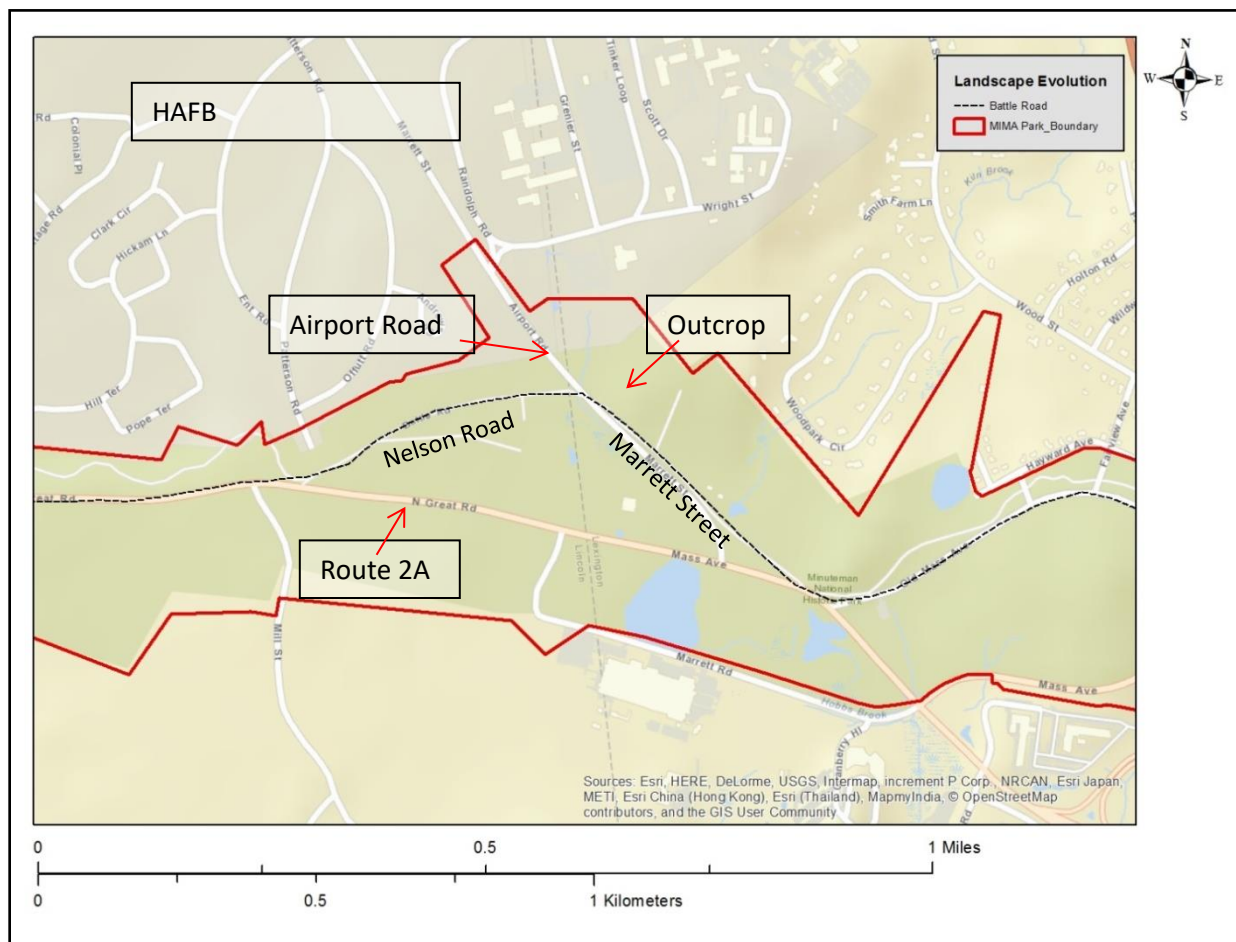


Figure 51 Landscape evolution study area.

The development of the HAFB and the construction of Airport Road in 1946 (Dietrich-Smith 2005) combined with the construction of MIMA Visitor Center and parking lot significantly impacted the existing landscape resulting in the pitted and ditched form of the wetland today. Soil disturbance and extraction during this period of development most likely lowered the ground surface level in this area thus extending the duration of surface water.

Forman cites two factors that might reduce the increase in today's wetland conditions compared to 1775. Since the mid-18th century, total forest cover has increased from approximately 10 to 70+ percent which increases more water evapo-transpiration to the air (Forman 2015a; Donahue, n.d.; Dietrich-Smith 2005). He also discussed the geological seep that is located between the Tabitha Nelson / Thomas

Nelson Sr. farmyard and the ledge outcrop. The outcrop on Battle Road is the southern tip of Katahdin Hill. The base of a large hill or mountain with a distinct break in the slope is a common location for a seep. This is where groundwater from the hill seeps out onto the ground surface. Forman stated that the seep that borders the Nelson farmyard provided water to the valley-bottom gully, but not during drought conditions and that most of the Katahdin Hill groundwater likely flowed elsewhere to the southeast, east, north and west (Forman 2015a), thus this seep would not have been a robust water feature in the historic landscape.

Forman also presented evidence that suggested wetter soil conditions today than in 1775. Today two pipes coming from the HAFB may add a small amount of water to the drainage of the area. During heavy rainfall, excess water drains south from a set of depressions north of Airport Road adjacent to the HAFB that contribute to the main wetland. Additionally, a pond constructed in the 20th century between the Visitor Center and its parking lot has a water surface level 1 to 3 feet above the adjacent wetland and brook; with no outlet, water from this pond seeps into the soil contributing water to the wetland and brook (Forman 2015a).

Forman suggested that in the early 17th century forest groundwater from the Katahdin Hill above the outcrop flowed southward past today's Visitor Center and Route 2A. The only surface water in this area would have been intermittent wetland flow in the valley-bottom gully and today's brook area just east of the parking lot. In 1775 this area, perhaps 10% wooded (Malcolm, 1985; Donahue, n.d.; Dietrich Smith, 2005), was composed of pastureland, meadows, cultivated fields, farmsteads, drainage ditches, stone walls and rock piles from field clearing, and the Battle Road. A map drawn of Lincoln (Lincoln map by Stephen Hosmer April 1758, copied by Samuel Hoar in 1772, Lincoln Public Library, Figure 27) included a bridge on the Battle Road just at the town boundary line of Lincoln and Lexington. The bridge is located on the Lexington side of the boundary. Based upon landscape investigations, Watters proposed this bridge would have facilitated crossing the narrow intermittent wetland flow from the seep (a known geological feature that existed in the 1775 landscape) from Katahdin Hill and provided a sturdier road surface in an area that soil compaction due to traffic may have been muddier than the adjacent fields.

An alternative position for this bridge could have been slightly to the west of the seep, along Battle Road over a historic drainage ditch. The construction and size of this bridge is unknown but it is worth considering that this was the main road between Boston and Concord, and as such would have seen regular animal and vehicular traffic.

The effect of 20th century construction and manipulation of the landscape resulted in lowering the soil surface adjacent to Battle Road (i.e. Airport Road and the existing wetland area) and raising the groundwater level (Forman 2015a). Forman's report (2015a) continued to discuss recommended educational features for future site interpretation including information on trees, stone walls, and water related features. He also included ecological considerations discussing existing wildlife and terrestrial and surface-water-related habitats within the larger picture of MIMA landscape and adjacent properties (Forman 2015a).

Suburban Expansion

The core research area was heavily impacted through continuous occupation from historic times to 1959 when the property was purchased and MIMA established. By the late 1800s the original Thomas Nelson Jr. / Hastings house was removed and by the early 1900s a new house built on the site with an associated barn (Dietrich-Smith 2005). In the early 20th century any remnants of the Tabitha Nelson / Thomas Nelson Sr. house and barn were gone from the landscape.

George Nelson's hand sketch from 1902 (MIMA document) (Figure 52) details the historic house sites of the Nelson farm area including the houses of Josiah Nelson, Thomas Nelson Jr. (also known as the Hastings house), and Thomas Nelson Sr. The exact location of the Thomas Nelson Sr. house was not known but oral tradition identified an old cellar hole in an area of dense vegetation labeled as the Thomas Nelson house site on Nelson's map. (Figure 53)

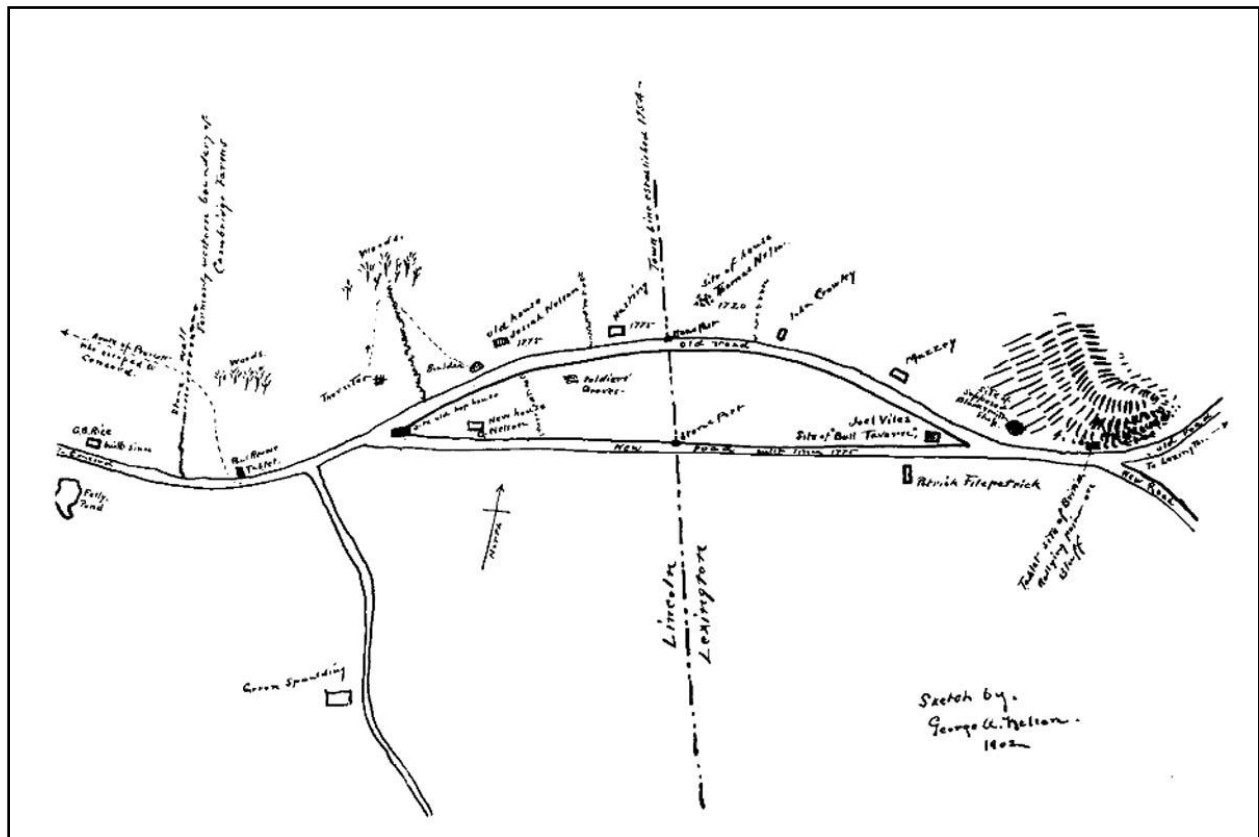


Figure 52 Sketch map of the Nelson property on Battle Road by George Nelson, 1902. Image courtesy of MIMA.

The impact of 20th century suburban development was evident in the core study area that contained nearly 20 buildings (houses, garages, barns, out buildings, etc.) By 1930 the Lennon house, garage and related outbuildings were established just south of the ledge outcrop. (Figure 53 A) By the end of the 1940s the Sweet property was established north of the ledge outcrop with a house, henhouse, three recorded sheds, and still on site today – a concrete platform with a brick barbeque (Figure 53 B) In the

1960s MIMA removed hundreds of structures within the park boundary; the Lennon and Sweet houses and related out buildings were removed from the study area at this time.

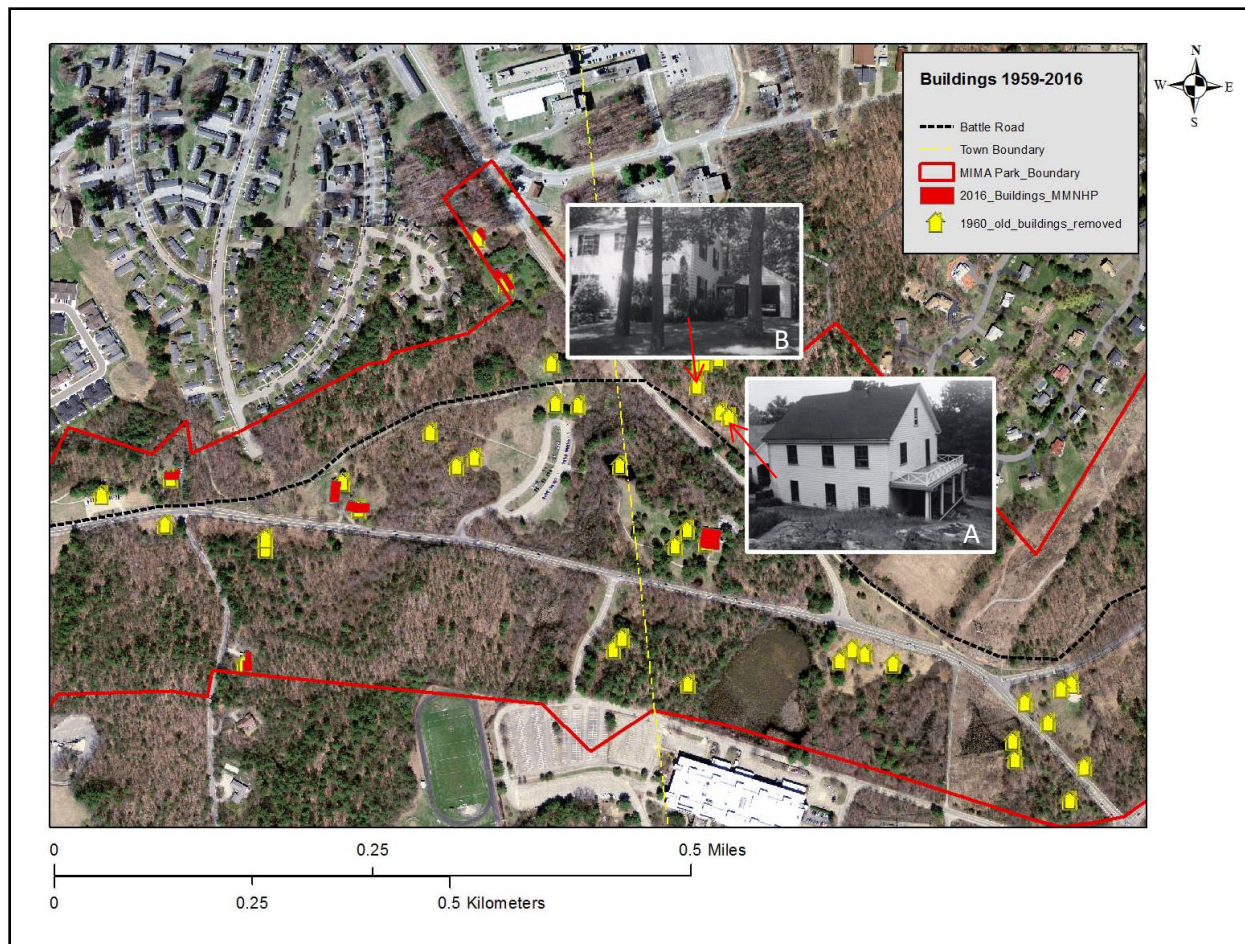


Figure 53 20th century suburban development with the Lennon (A) and Sweet (B) homes inset. Photos courtesy of MIMA.

During the 18th century the study area was mostly cleared and developed into a series of meadows, pastures, tilled fields, farm yards, English mowing, orchards, woodlots – all according to the typical needs and use of the landscape by the Colonial residents (Donahue 2004.) Figure 54 represents the most likely 1775 landscape based upon typical farmstead acreage and necessary use of land based upon the needs of the families that lived there. Building on the work by Malcolm (1985), Brian Donahue provides the most recent interpretation of the land use; though he states that in-depth research has not been conducted for this end of MIMA (Donahue *personal communication*.) This image identifies 18th c land use for areas within MIMA boundaries. The Malcolm (1985) and Donahue interpretations have been modified during this research to extend into the northern area of the park. In 2007 HAFB began the transfer of property to MIMA. This transferred area, currently maintained by MIMA was investigated by Barbara Donohue (2007) to identify potential archaeological resources prior to the removal of the air force fence and transfer of property to the Park. The most recent historic land use

modifications represented in Figure 54 reflect conversations with Donahue, Donohue's research (2007, 2010), archival research, archaeological evidence, and the work by Forman (2015a, 2015b).

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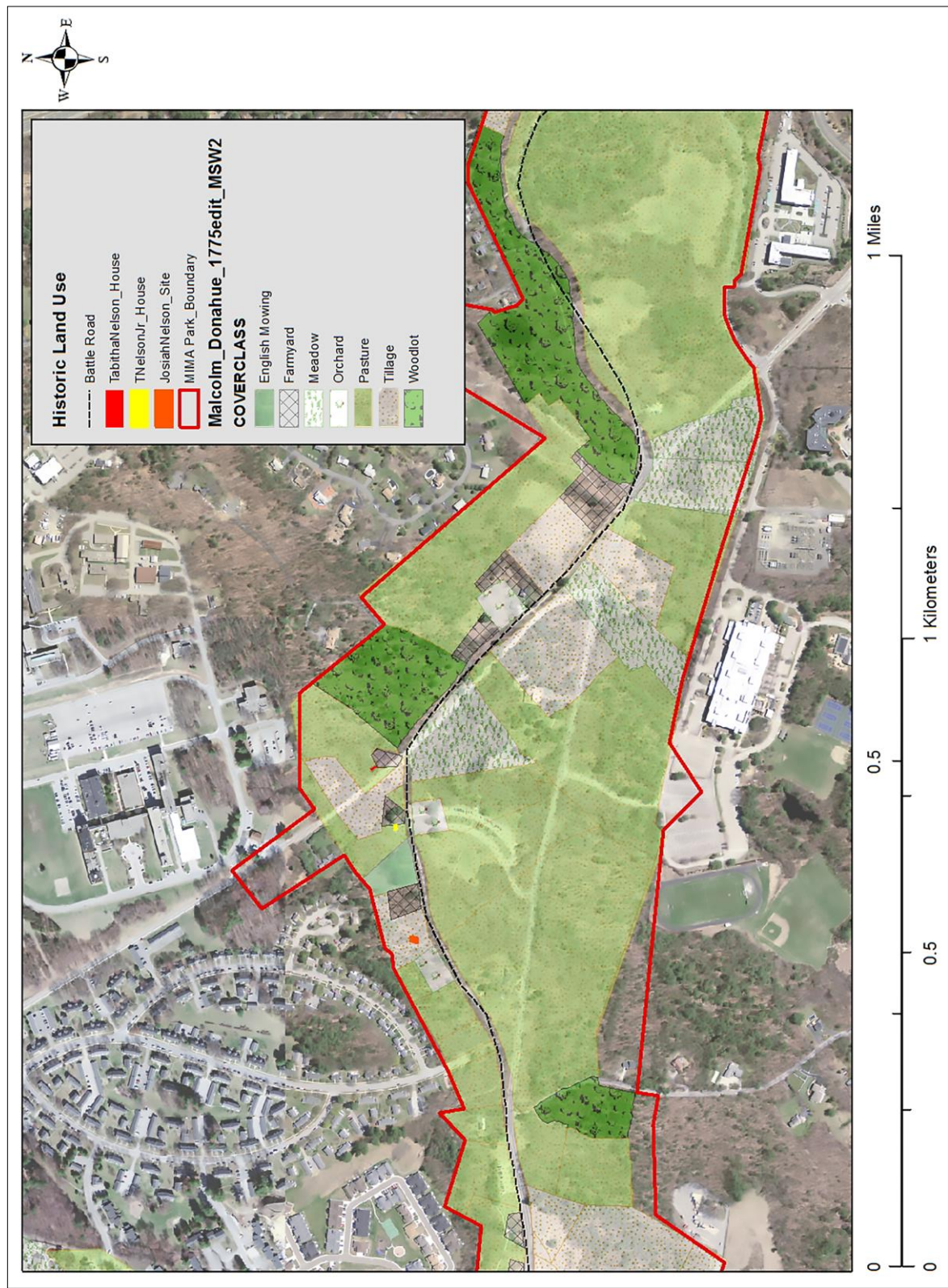


Figure 54 Historic 1775 land use.

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Numerous glacial erratics (Figure 55) are distributed across the site. Figure 56 shows the distribution of glacial erratics, or boulders, across the site. The boulders are characterized as *small* approximately 0.5-0.75 m diameter, *medium* approximately 1-2 m diameter, *short* have a 2-3m circumference but are under 1m high, and *large* approximately 3-5 m in diameter. These boulders are a key component of the tactical landscape.

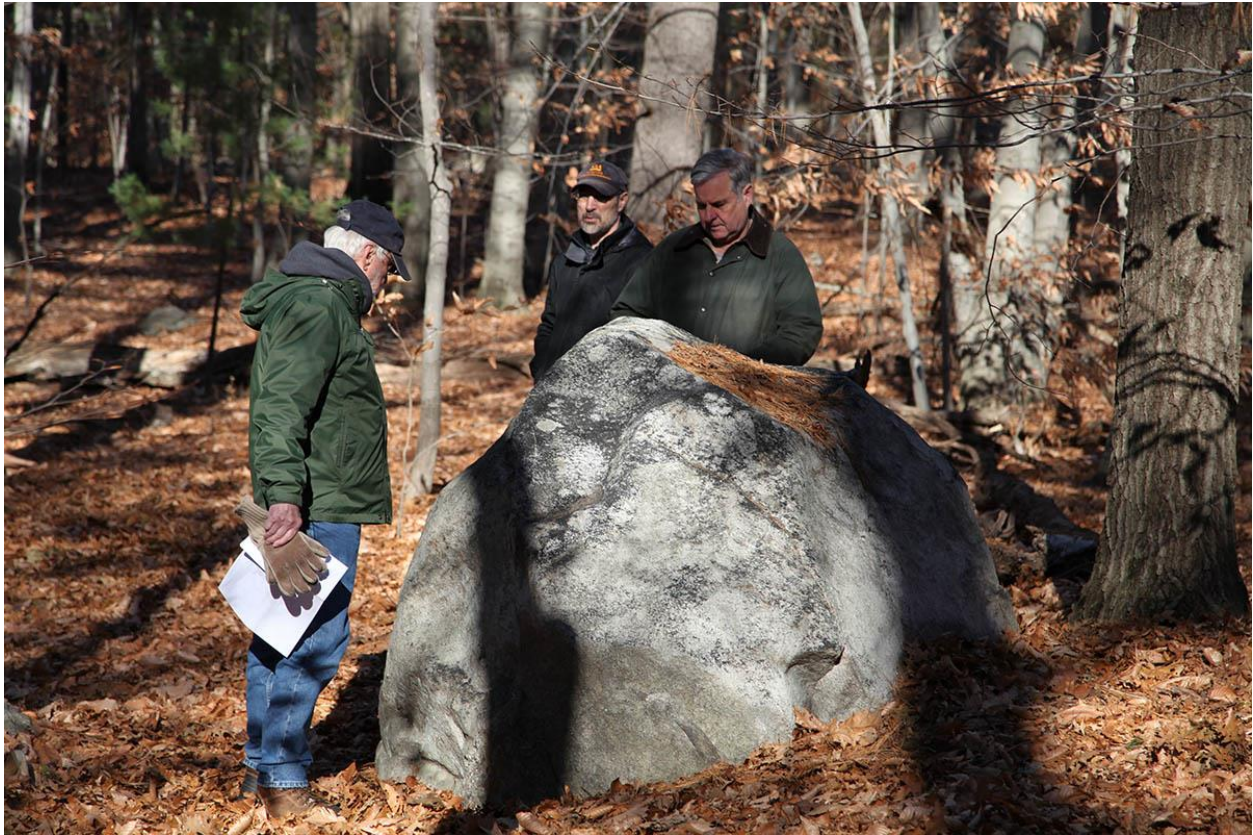


Figure 55 Glacial erratic in the battlefield. Left to right are Poole, Kendrick, and Jennings. Image courtesy of MIMA.

Boulders on the historic landscape reconstruction are represented in a grey color gradient with light grey representing small dark grey, medium and short, and black large sizes. (Figure 56) Approximately 75 boulders were scattered throughout the core area of investigation. A concentration of boulders are found in the vicinity where the Lexington militia is believed to have taken cover and waited for the return of the British Regular column from Concord. These boulders, along with larger trees in the woodlot, would have provided key cover for the militia.

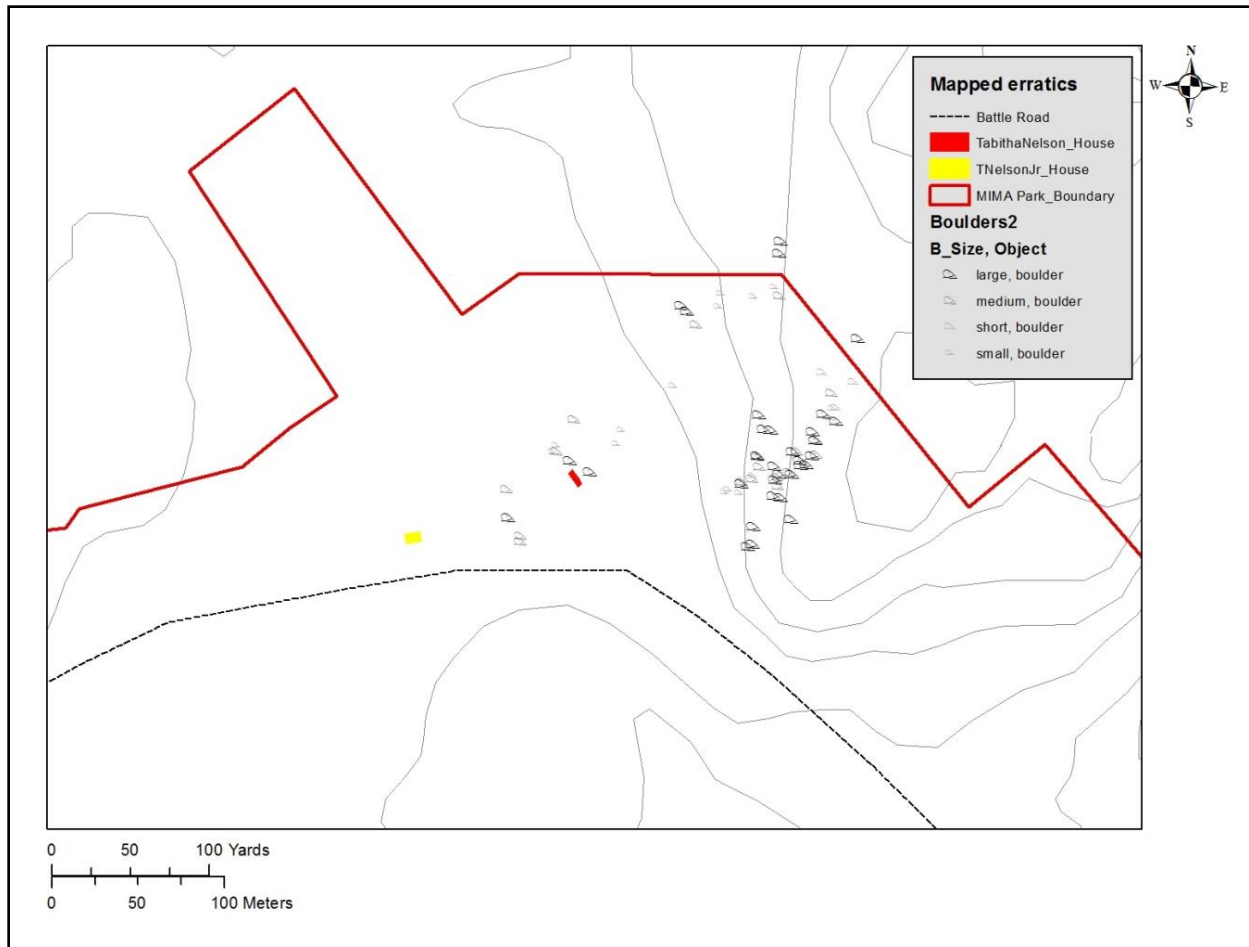


Figure 56 Erratic distribution on the battlefield.

Through consultation with Forman (*personal communication*) and Donahue (*personal communication*) it was determined that the 5 acre wooded area centered over the ledge outcrop was likely a mixed oak wood lot. The canopy species would have included oak (red, white, and black), hickory, American chestnut, ash, black cherry, and American beech with some pitch pine and white pine mixed in. On moister soils such as in the valley bottom, in addition to these there would have been red maple, ash, and American elm.

While the appearance of the woodlot is impossible to reconstruct, depending on the management of the 5 acres, we might consider it a mature wood pasture. This would consist of approximately 80 to 100 square foot/acre trees of mixed size and mostly oak. While mixed, there would be a predominance of tree trunks from 18-20 inches in diameter and 60 to 80 feet high. The underbrush would likely have been limited to lowbush blueberries and huckleberries not over 1 to 2 feet high with little dead wood.

Reconstruction of the 1775 landscape

Evidence for the reconstruction

Archival research, ground surface and sub-surface investigations, archaeological excavations, and environmental research combined to provide the base of this reconstruction. Recommendations for continued historic landscape reconstruction are included in the final chapter and propose methods for continued environmental and land use interpretation that can contribute to the final landscape refurbishment phase of the Parker's Revenge Project.

The 1775 land use characterization was derived from a combination of work by Malcom (1985), Donahue (2004; *personal communication*), Donohue (2007, 2010), Forman (2015a, 2015b), Thorson (*personal communication*), PRAP archaeological investigations, and archival research. It is important to note that the bulk of land use characterization conducted previously by Malcolm (1985) and Donahue (*personal communication*) for MIMA focused on the western section of the park. The Nelson farmyard, tillage, and woodlot for the Tabitha Nelson / Thomas Nelson Sr. property was determined by Malcolm and Donahue through standard estimates for typical farm properties of that size in that region. Continued investigations identified evidence for cultivated fields through archaeological excavations and site visits with Donahue (*personal communication*).

Landscape Features

Barbara Donohue provided an in-depth history and presented an interpretation of the evolution of the ownership, boundaries, and landscape features of the Nelson properties (2010: 28-53). The first deed transaction for the Nelson farmstead was on March 14, 1721 when Thomas Nelson Sr. received a conveyance of 23.5 acres including a house, barn and adjoining land (Middlesex Deeds 27:365). Thomas Sr. then purchased property from Samuel Ames in 1724/5 (Middlesex Deeds 27:366). From 1746, Thomas Nelson Jr. and his brother Josiah purchased a number of properties in the Lexington/Concord area. Recorded in these deed transactions were mentions of landscape features that shed light on the beginning of an organized landscape with specific boundary markers such as range ways showing some continuity with 17th century land division that was identified more through descriptions of landscape improvement than landscape marker features.

Following the 1754 incorporation of the Second Precinct as the town of Lincoln that split the Nelson farmstead, Nelson Sr. sold some of his Lincoln property to his sons. The bounds and parcel descriptions of these deeds provide insight to the nature of the mid-18th century landscape (Lincoln Library Box 1, Folder 1 006.1.7; Lincoln Library Box 1, Folder 1 006.1.10; Middlesex Deeds 3943:41.)

After Tabitha Nelson died in 1778 her property was divided between her brothers. Her house was moved to Thomas Jr.'s property (Middlesex Deeds 222:259). Thomas Jr. conveyed his right in an 8 acre parcel land that was partly in Lexington and partly in Lincoln to his brother Josiah. This conveyance included the eastern end of Tabitha Nelson's barn. Through consideration of deed research we know that the 12 acres of the Tabitha Nelson farm included a house, a house lot or farmyard, a barn, a 5 acre woodlot, 3 acres of upland pasture or mowing in Lexington and 4 acres of meadow in Lincoln.

In 1968 Ronsheim drew detailed plans of the Nelson properties based on archival research and landscape investigations. Unfortunately, these plans did not include either reliable scales or recognizable contemporary landscape features. Ronsheim's research contributed to the content and history of the Nelson property, but did not contribute to the identification of specific boundary or landscape feature mapping.

Dating stone walls in this historic landscape is difficult (Thorson 2005, 2002, *personal communication*). Stone walls depicted in orange on the reconstructed historic landscape map were likely to have been present in 1775. Additional walls were also likely to have been present that are not represented on this map⁵, such as stone walls lining much of Battle Road which were subsequently demolished due to continued occupation (i.e. mining of stones for other use) and 20th century impact on the landscape such as construction of Airport Road.

Examination of historic aerial photographs (1930, Figure 57) identified a number of landscape features including stone walls, water features, hedge rows, tracks, and drainage ditches. (Figure 58) The 1930 aerial photographs present a representation of a remnant historic landscape prior to suburban 20th century landscape modification. Some of the interpreted features from the 1930 aerial photographs were included in the historic landscape reconstruction as they provided an idea of how the land may have been modified by inhabitants in the 17th and 18th centuries.

⁵ This research focused on archaeological evidence. Continued research for the third phase of the project, landscape restoration, may continue to examine and establish historic stone wall positions in the Parker's Revenge battle area.



Figure 57 1930 aerial photograph of the study area. Courtesy of the Lexington Department of Public Works.

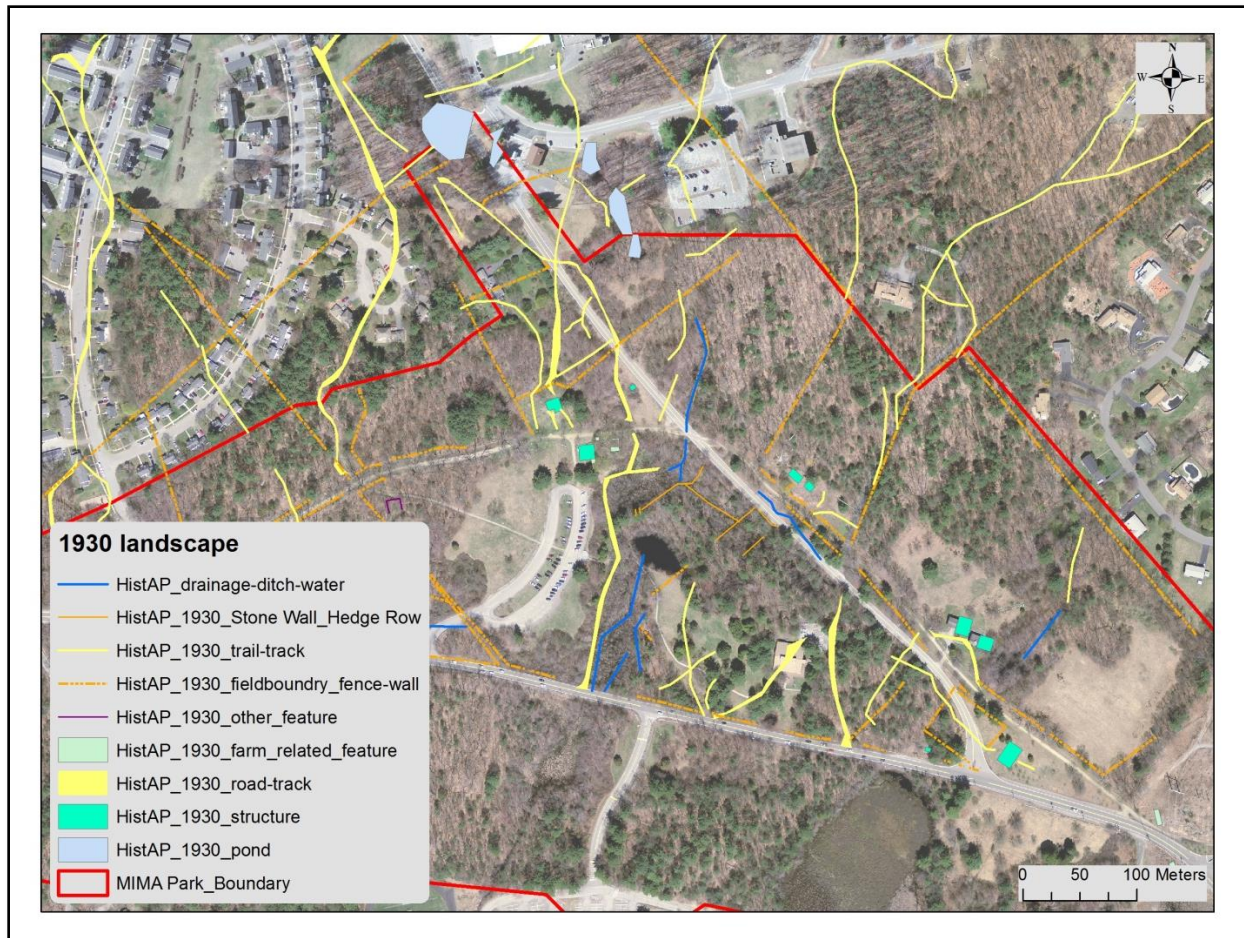


Figure 58 Interpreted historic landscape features in the 1930 aerial photo. (Courtesy of the Lexington Department of Public Works.)

The Nelson Bridge was recorded on the Lincoln boundary map surveyed by Stephen Hosmer in April 1758 and copied by Samuel Hoar in 1772. On the Hosmer map, the bridge was identified at the boundary of Lincoln and Lexington; drawn in the town of Lexington. Investigation of the area at the boundary of Lexington and Lincoln did not reveal evidence of a water feature immediately to the east of the town boundary line in Lexington (Figure 59). However, the geological seep from the Katahdin hills is less than 30 m to the east of the Lexington town boundary. This feature was present in the 1775 landscape as an intermittent water drainage feature (Forman 2015a, 2015b) and is the only known water feature in the 1775 landscape. The drainage ditch visible today 20 meters to the west of the Lincoln town boundary line was visible in the 1930 aerial photograph and Snow mentions a drainage ditch in his report (1973) on excavations of the Thomas Nelson Jr. house, but research has failed to locate any specific map information to place the Snow water feature in the landscape. A final decision was made for the purpose of these investigations to place the Nelson Bridge in Lexington (Hosmer map) over the seep (geological) feature.

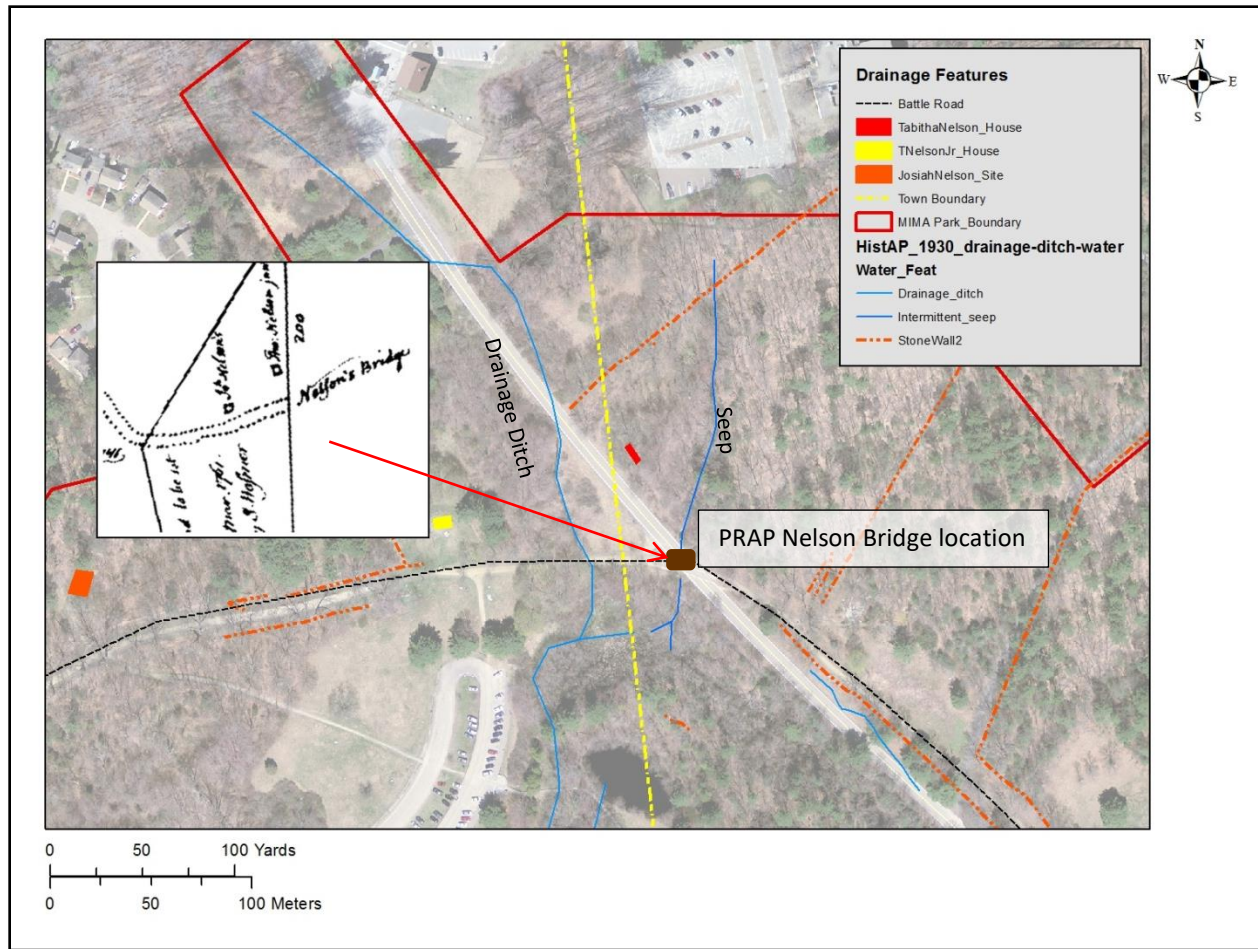


Figure 59 Site plan with the geological seep in Lexington, drainage ditch in Lincoln, and PRAP location of the Nelson Bridge. Inset of the Nelson Bridge notation from the 1758 Stephen Hosmer map copied by Samuel Hoar in 1772.

Historic 1775 Landscape Reconstruction

The 1775 landscape reconstruction map (Figure 60) presents the proposed reconstruction of the 1775 historical landscape in the project study area.

Continued investigation into landscape evolution will undoubtedly continue to build an even more detailed recreation of the landscape and land use. Figure 60 displays the land use as discussed by Malcolm (1985) and Donahue (*personal communication*) and edited based on new information and continued research. The drainage features in this map include the intermittent seep at the foot of the Katahdin hills bordering the Tabitha Nelson / Thomas Nelson Sr. farmyard and drainage ditches visible in the 1930 aerial photograph. Consideration of this map must include that some features, such as many of the stone walls (HistAP_1930_SWall_HedgeRow and HistAP_1930_Swall_boundary – both in grey) are remnants of a past landscape. The 1930 photo included stone walls that line Route 2A that was constructed during the period from 1802 to 1806; thus the map contains some later features. It is very difficult to determine (and not in the scope of this work) the age of all of the stone walls and any remaining foundations buried beneath the ground surface. This map is meant to be a representation of

the landscape on April 19th, 1775; based mainly on archival data, visible landscape features, and in-depth conversations with numerous specialists (stone walls, historic landscapes, historic ecological environments and processes, and historic archaeologists).

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“The terrain has a direct impact on selecting objectives; location, movement, and control of forces; effectiveness of weapons and other systems; and protective measures.”

US Army Field Manual No. 6-0

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Chapter 6 Metallic Surveys

Up to this point, efforts focused on reconstructing the historic 1775 landscape with the goal to identify the most likely location of the Parker's Revenge battlefield. In order to locate the battle itself, we had to increase the resolution of investigations to identify and map battle related artifacts. Using a combination of KOCOA, the reconstructed historic 1775 landscape map, and consideration of the primary and historic sources, metallic surveys were undertaken over an area of 25 acres. As with archaeological excavations, Holly Herbster of PAL was co-PI for retrieval, processing, and curation preparation for all artifacts recovered as part of the metallic surveys.

Historic Battlefields

Historic battlefields are not just isolated discrete areas where fighting took place, they are inseparable from their surrounding landscape. This landscape becomes associated with the battle and is remembered, or in some cases, lost through time. Historic landscapes are composed not only from cultural and natural features such as structures, ditches, roads, and topography but are also identified through the events that took place within them (ABPP 2008).

Over time, historic landscapes alter with subsequent occupation and use of the land, as well as historic events that may take place in the same areas. As we've seen with the Parker's Revenge battlefield, while this landscape may have been identified over the years with the battle event, it did not remain frozen in time but was impacted through continued farming, new growth woods, wetland evolution, suburban development, development of the HAFB, and establishment of MIMA.

Mapping the historic 1775 landscape related to the Parker's Revenge battle is the first step in defining the battlefield. This serves as the base for identifying potential battlefield features in order to most effectively target continued field investigations to discover artifacts related to the battle. The 1775 reconstructed landscape identifies natural and cultural features to the best of our ability. The natural features include the terrain or topography of the area, the natural seep drainage feature, the rocky ledge, a scattering of erratics, and ground cover including meadows, pastures, and woodlots.

Cultural features, or features created by the people living in that landscape, include the Nelson houses, barns, outbuildings and farmyards, drainage ditches, stonewalls, roads and trackways, and the organization of the landscape with patterns of fields, fences, and woodlots as dictated by agricultural practices. The development of these landscapes was directly influenced by the natural topography that would have impacted where and what crops would have been planted, placement of woodlots and orchards, and the distribution of structures, roads, and water management features.

The cultural and natural landscape would have influenced the movement and location of fighting as well as tactics employed by both sides. Battle Road and other less formal roadways, bridle paths, and tracks helped determine where battles took place and had an impact on the speed of not only movement of troops through the landscape, but also potential speed of communication between the Colonial forces (of which we have no record). Cultural and natural landscape features provided cover and protection with a clear line of fire, but also served as obstacles such as the boulder field and drainage ditches from which Lincoln's William Thorning is reported to have successfully fired upon the British column and

deployed flankers (*Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road*, 1959; Ripley 1827.)

Metallic Surveys

Taking into consideration the natural and cultural landscape features of the reconstructed 1775 historic landscape a 25 acre area was identified for intensive archaeological investigation. The goal of this intensive study was to discover and map battle related artifacts that would reveal the location and story of the Parker's Revenge battle.

Metal detectors

Metal detectors are part of the archaeologist's geophysical survey kit. They work in a way similar to the conductivity meter; they generate magnetic fields in the ground based on the configuration of their coil components. When this induced field interacts with a metallic target the target itself creates what is known as an eddy current. The strength of the eddy current varies with the composition and size of the metal artifact that enables some metal detectors to discriminate between different materials. The instrument records both ferrous and conductivity values on its monitor with an accompanying audio representation of the value. This enables surveyors to both listen and become familiar with audio representation and numerical values of buried metal artifacts. (Figure 61)



Figure 61 PRAP team member Joel Bohy with metal detecting kit.

The CTX 3030 instrument coil must be in motion, swinging back and forth as close to the ground surface as possible to generate and maintain an induced field in the ground. The effective depth of sensitivity and resolution of ferrous and conductivity values depends upon a variety of factors including soil type and mineral composition, soil saturation, and the elemental composition, size, depth, and orientation of a metallic artifact to the surface. Generally metal detectors have an effective sensitivity to around 30 to 50 centimeters depth for an artifact the size of a musket ball or button. Larger, denser artifacts such as cannon balls have been recovered to a depth of around 85 centimeters with good ground conditions - both ground cover and soil.

A number of metal detectors were used in PRAP metallic surveys. Minelab⁶ generously provided CTX3030 metal detectors with 11 inch coils for all of the team members for the surveys. Team members also used 6 inch coils with the CTX 3030 metal detectors. Other systems that were used during the survey included the Minelab E-Trac with 11 and 6 inch coils and the Fisher Pro-Arc (F75) with 11 inch elliptical and 5 inch round pin pointing coil and a Tesoro Vaquero system. During the final week of survey Minelab provided a GPZ 7000, a high sensitivity pulse induction system designed to detect metal objects more deeply buried than would the CTX 3030. (For a more in depth explanation of metal detecting principles see Severts, *forthcoming*.)

Different size coils have different sensitivity for pinpointing individual artifacts. The 11 inch coils were used for the reconnaissance survey and a combination of the 11 inch, 6 inch, and 5 inch coils were used during more intensive lane surveys. The smaller coils are able to focus on pinpointing individual artifacts in areas covered in significant amounts of historic and modern trash.

Expected archaeological Resources

Central to the success of PRAP was the positive identification of battle related artifacts. PRAP team was fortunate to have members Joel Bohy and Bill Rose, Revolutionary War materials experts, and historical specialists Bill Poole and Jim Hollister (MIMA) participating in the metallic surveys. Combined with the remainder of the team Corinne Rose, Ed Hurley, Sheldon Skaggs, Doug Scott, and Jo Balicki and with contributions from David Wood, Curator of the Concord Museum, a robust knowledge of the expected battle related material was accessible. Discussions prior to field work and as artifacts were discovered and processed enabled real time learning and insight to the battle as surveys were conducted.

Thanks go to Bill Rose, Joel Bohy, and Jim Hollister for providing details from their own personal research and expertise on Colonial and British fire arms, uniforms, and kit for the following sections (*personal communication*.)

The British Regular troops

The British Regular troops mostly used what is commonly called the Brow Bess musket, a smoothbore flintlock that weighed between 10 and 15 pounds and was 58 inches long with a nominal 0.75 caliber bore. When the British light infantry were first formed in 1771 they used the short land pattern musket. Many of the grenadier and battalion companies carried the pattern 1742 land service musket in an altered form, or the pattern 1769 land service musket. The musket in Figure 62 is an original 1769 land pattern and is what the flankers on the day of the Parker's Revenge battle would have been carrying.

These muskets could carry a 14 inch socket bayonet. The firing range of this musket was up to 200 yards. The effective firing range was approximately 100 yards, and some accuracy of fire would have been possible in the 50 yard range with a firing rate between three to four rounds per minute. The most common diameter of unfired ordnance British ball was around 0.69 caliber/inches and would have weighed approximately 30 grams. Some British soldiers carried carbines that fired 0.62 caliber balls. Mounted officers would have had pistols but these were not likely involved in the exchange of fire at Parker's Revenge.

⁶ A leading metal detector manufacturer.



Figure 62 Regiments in the British army would have carried the pattern 1756 land service musket. Image courtesy of Bill Rose.

In addition to musket balls and metal components from weapons, associated metallic pieces from uniform and accoutrements such as buttons, cartridge boxes, cartridge pouches, belts, scabbards, canteens, powder horns, bayonets, musket tools, haversacks, and even hobnails and buckles from their shoes would yield potential artifacts. (Figure 63) Uniforms and accoutrements would have varied for different regiments in the British army. Each regiment had its own button, belt plate, and for grenadiers, pouch plates. Regimental returns in the Public Records Office show many of the light companies organized in 1771 were issued the 1769 short land pattern while other light and grenadier companies would have used the 1742 or 1756 so called long land pattern. The light infantry had a 9 round cartridge box worn around their waist with an accompanying ball bag and powder horn worn over the shoulder or a pouch and strap.



Figure 63 5th Regiment of Foot Light Infantry Co. Pvt. 1775 and a Grenadier from the 52nd Regiment of Foot as they would have appeared on April 19, 1775. (Image courtesy of Don Troiani.)

Additional information on the weapons of the British Regular troops can be found in the De Witt Bailey book, *Small Arms of the British Forces 1664-1815* (2009).

Colonial militia

The Colonial forces primarily carried personal arms. In the late 1740s more than 15,000 French arms were liberated from Louisburg by Massachusetts troops many of which made their way to the Massachusetts Bay. A large number of fowlers were also used by the Colonial militia at this time, mainly hunting guns made for the forests and fields of New England. Fowlers, altered fowlers to accept bayonets, and American-stocked guns made with American stocks and French parts were the most common arms carried by the Colonial forces. (Figure 64) Measurements by Rose and Bohy of existing fowler barrels show the average musket ball caliber below 0.65 with some measuring 0.50 and one at 0.48.



Figure 64 Captain David Brown's fowler, used at the Battle of North Bridge, Concord. Converted from flint to percussion by his descendants. Image courtesy of Joel Bohy while gun was on loan to MIMA from the Museum of the American Revolution.

The Colonial fighters had to equip themselves for the most part. Some towns like Concord, issued cartridge boxes to the Minute Companies, but not the Militia Companies. The Colonial forces wore their own clothing. Associated potential artifacts associated with the Colonial force might include weapon related objects, swords, belt knives, musket balls, buckles (shoes, belts, straps) and clothing related buttons. (Figure 65)



Figure 65 Typical clothing and equipment of a Colonial militia man. Images courtesy of Joel Bohy.

In the *Journal of Arthur Harris of the Bridgewater Coy of Militia* (n.d.), Arthur Harris states that in 1775 Massachusetts forces were required to have with them, “A good fire arm, a steel or iron ram rod and a spring for same, a worm, a priming wire and brush, a bayonet fitted to his gun [at this time Minute Companies were outfitted with bayonets while many Militia Companies were not required to use them], a scabbard and belt thereof, a cutting sword or tomahawk or hatchet, a...cartridge box holding fifteen rounds...at least, a hundred buckshot, six flints, one pound of powder, forty leaded balls fitted to the gun, a knapsack and blanket, a canteen or wooden bottle to hold one quart [of water].” Although listed as required, it is more than likely that not every member of the Colonial militia was fully equipped with all the items on this list.

Detailed images and descriptions of the weapons, uniforms, and equipment of the British and Colonial forces can be found in Don Troiani and James L. Kochan’s book *Don Troiani’s Soldiers of the American Revolution* (2007); weapons related details in *Flintlock Fowlers: The First Guns Made in America* by Tom Grinslade, edited by Linda Scurlock (2005).

Potential Evidence

Given the participation of British Regular troops and Colonial militia, metallic surveys have the potential of mapping a variety of battle related artifacts from weaponry to uniform details, and accoutrements. Preliminary buffer analyses were performed to define areas where battle related artifacts may be concentrated. The first buffer zone scenario positioned the Lexington militia on the rocky ledge (following the Wayside descriptive panel near the battle site) with the British Regular column on Battle Road. The second scenario positioned the Lexington militia across the rocky outcrop and extended to the north along the highest contour of the hill reaching to the position of the three musket balls identified in Donohue's investigations for the HAFB (Donohue, 2007). 50 yard and 100 yard buffer zones were calculated to delineate areas that might represent higher (50 yards) or lower (100 yards) density concentrations of battle related artifacts. (Figures 66 and 67)

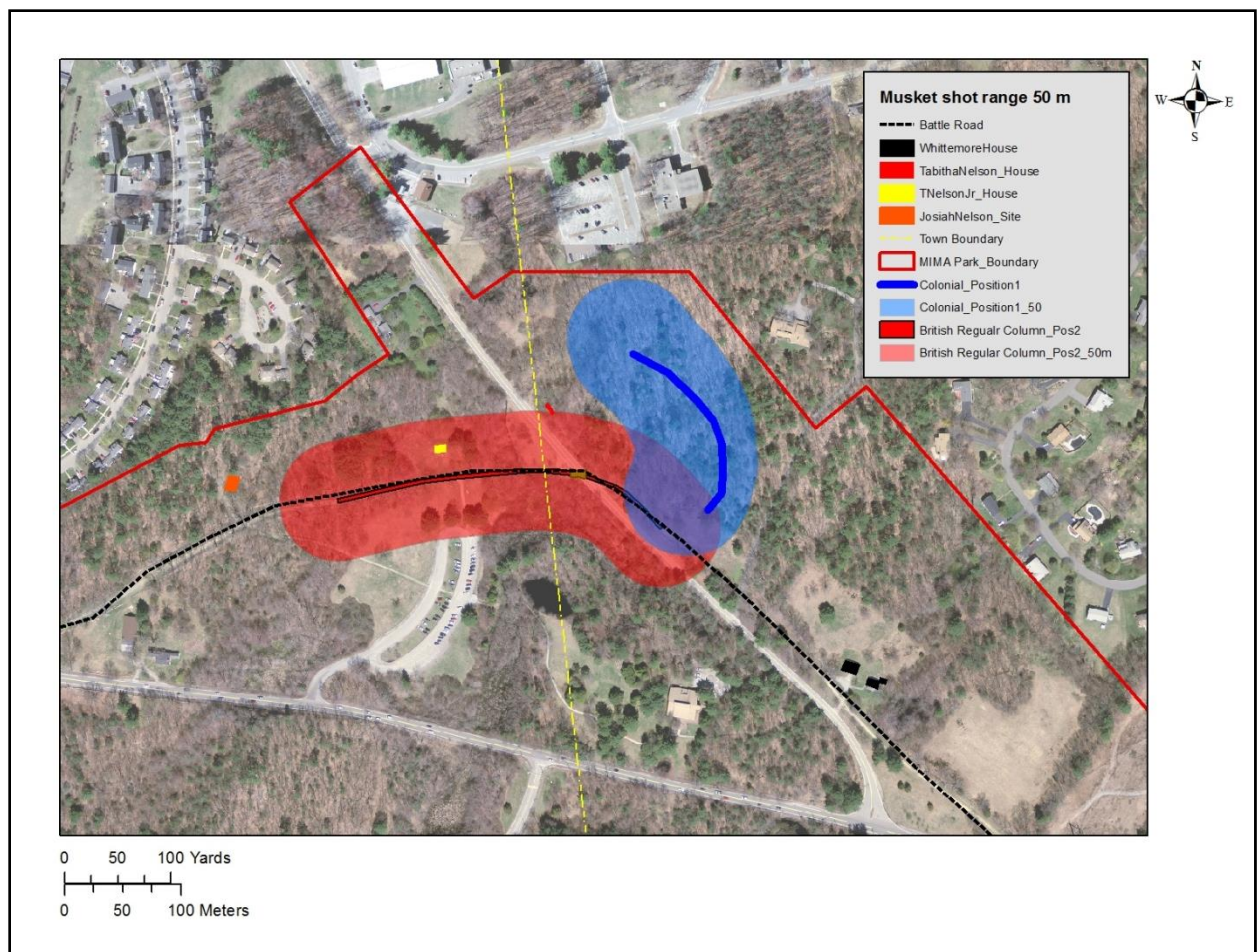


Figure 66 Buffer zone analysis, preliminary musket fire 50 m distance buffer analysis. (Blue Colonial, red British positions)

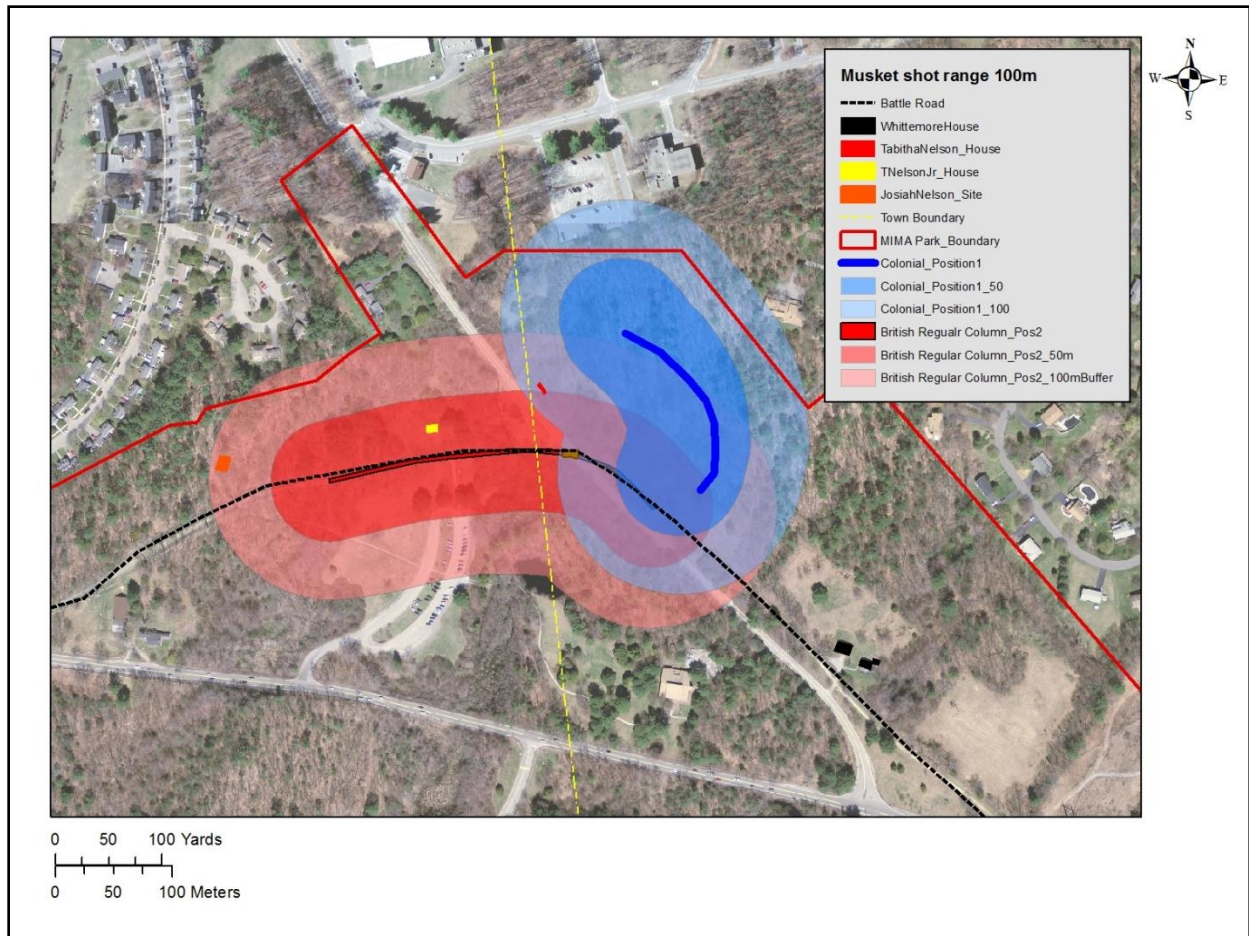


Figure 67 Preliminary musket fire 100 m distance buffer analysis. (Blue Colonial, red British positions)

It is necessary to consider that results from predictive modeling for potential artifact concentrations depend entirely on the data that are input to generate the buffer zones. The placement of troops in these models was based on discussions with project members, consulting historians, and military specialists. It became clear during this modelling process that literally no evidence existed to dictate the placement of these troops, other than the British Regular column had to travel on the Battle Road through the Nelson property. Thus, the buffer analysis was conducted more as an exercise into what patterns *may* relate to the battle versus hard data based on evidence. This was a useful exercise however, to begin to develop an approach to metallic surveys.

Methodology

The metallic survey and artifact recovery methodology was developed for PRAP with input from Doug Scott, PAL personnel Holly Herbster, Eric Fahey, Nate Orsi, and NRAP NPS archaeologists Bill Griswold and James Kendrick.

The project goal was to cover 100% of 25 acres of the core research area with metallic surveys. In order to thoroughly investigate this area, the metallic survey methodology was adapted to best suit the terrain and character of the landscape. Metallic surveys were conducted over three weeks, a total of 16 days.

The survey team was made up of long time MIMA volunteers involved in the local Revolutionary War historical and reenactment community Corinne Rose, Bill Rose, Ed Hurley, Bill Poole, and Joel Bohy. The volunteer team was trained in archaeological metallic survey methodology by Douglas Scott, Sheldon Skaggs, and Jo Balicki. Scott is a world-renowned Historic and Conflict Archaeologist who first comprehensively engaged metallic surveys for archaeological landscape mapping and battlefield archaeology at the Battle of Little Big Horn (Scott 2013). Scott, Skaggs, and Balicki are all instructors with the Advanced Metal Detecting for the Archaeologist (AMDA) course offered through the Register of Professional Archaeologists and New South Associates.

Project archaeologist, Meg Watters developed the metallic survey coverage strategy based on the historic 1775 landscape reconstruction, application of the KOCOA battlefield analysis, and consultation with archaeologists, historians, and Park interpreters. Working with PAL personnel, Watters established survey grid areas, supervised metallic survey coverage and artifact retrieval, and surveyed in all artifact find spots with metallic survey numbers (MS). Trimble GeoXT and GeoXH series 6000 GPS units were used to map positions, metallic survey numbers (MS), field specimen numbers (FS), conductivity and ferrous readings for artifact locations, and any notes on specific locations.

Survey methodology was modified with each season due to increased experience of the survey team and the survey areas covered. Surveys began for broad area reconnaissance to characterize the nature of the landscape and to better understand the signatures from trash and historic artifacts. Subsequent surveys targeted high resolution full coverage across specific areas of the site. Systematic coverage was engaged to clearly define areas of artifact concentrations and areas of no artefactual evidence to interpret the location and action of the battle. Figure 68 shows the survey areas for all three weeks of survey; it also includes the survey areas covered by Donohue in 2007. Over the course of 16 days a total of 40 acres was surveyed with metal detecting; note this is nearly twice the acreage of the actual survey area. Investigations were thorough and repeated surveys were conducted over specified areas.

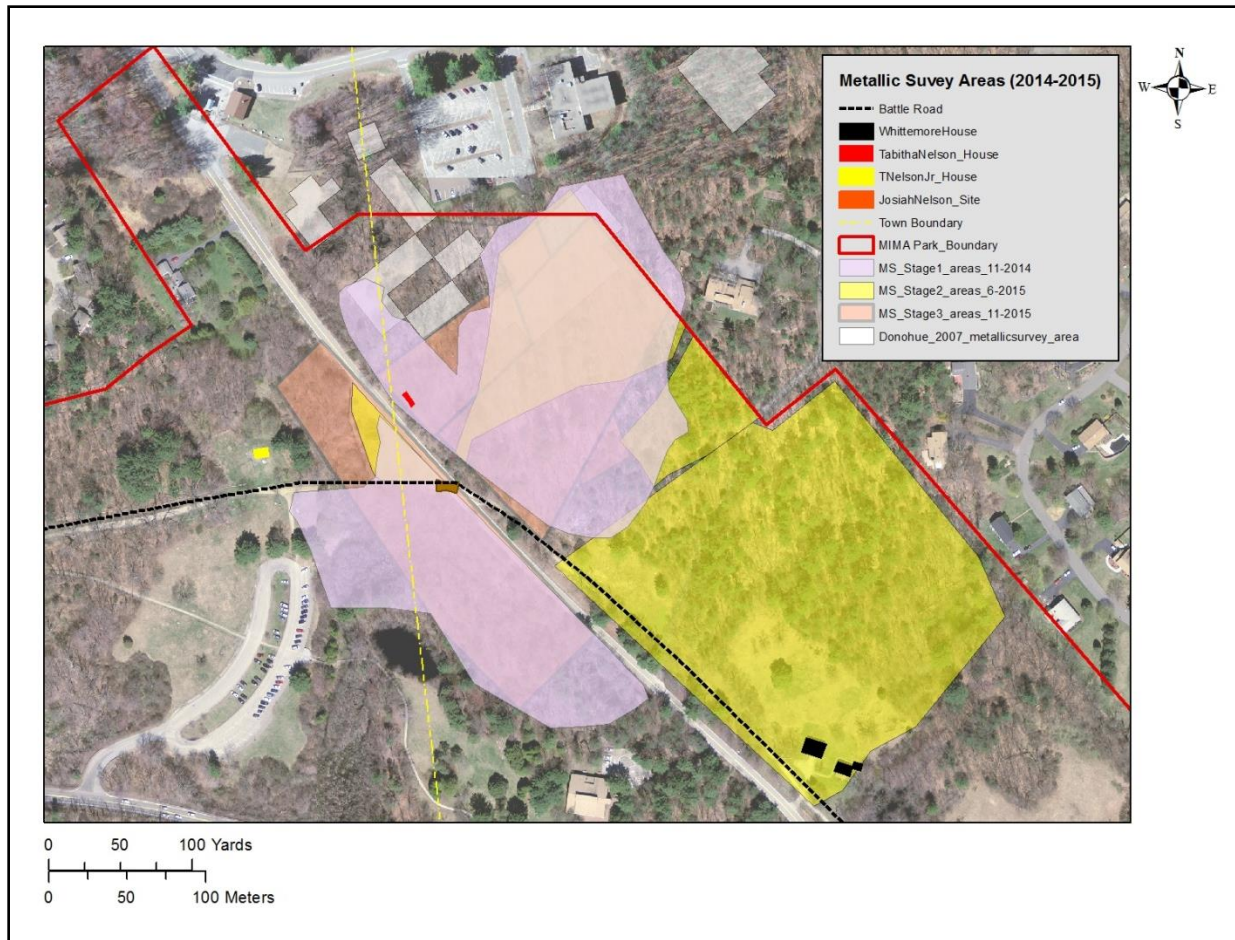


Figure 68 The metallic survey map including the three Parker's Revenge metallic surveys and the areas covered by Donohue (2007).

Site Reconnaissance Survey

Site reconnaissance survey was conducted to cover large areas to better understand the distribution of metal across the site. Surveyors walked in straight lines spaced 5 m apart scanning with the metal detector side to side. Effective coverage for each surveyor was a 2 m swath of ground on each transect. (Figure 69) When metallic hits were detected, conductivity and ferrous values taken from the metal detector screen were written on a pin flag, and the flag inserted into the ground at the position where the hit was located.



Figure 69 Bohy and Balicki conducting reconnaissance survey over a possible area of egress for the Lexington militia. Image courtesy of MIMA.

At the end of each transect the surveyors stepped to the left (grid west), turned around, and surveyed back to the beginning of each transect (grid south). When grid quadrants were completed the same survey methodology was used to cross the site again orthogonally. This method continued across accessible zones of the 25 acres within the core area of interest. In other areas such as the wetland zone to the west of Airport Road, surveyors worked through the undergrowth as best as possible flagging potential targets of interest.

The first week of survey covered 12 acres of the focus area. A sample of metallic survey hits was excavated and artifacts retrieved. Insight to artifact ferrous and conductivity values helped surveyors to identify artifacts for retrieval in subsequent surveys. It is important to remember however, that metallic survey works with fundamental geophysical principles and provides no hard qualifiers or artifact value categories. Site conditions such as soil saturation, soil properties, depth and orientation of an artifact and direction of survey over the artifact all contribute to the ferrous and conductivity properties recorded on any given day. However, given these principles PRAP metallic surveys were able to characterize lead musket with ferrous and conductivity values ranging from 9:36, 10:35, 11:36 to 12:48 (these are representative values of the musket balls retrieved from the Parker's Revenge battle site.)

During this survey a number of areas across the site were identified that included: areas of high trash (historic and modern) concentrations and relatively quiet areas (i.e. very low concentration of trash). The Tabitha Nelson / Thomas Nelson Sr. farmstead was made evident through a high concentration of metallic hits (no pattern could be seen in the mapped hits that would suggest the barn location). Figure 70 shows the area covered during the first week of metallic surveys (purple) with white representing areas of high concentrations of modern and historic metallic trash.

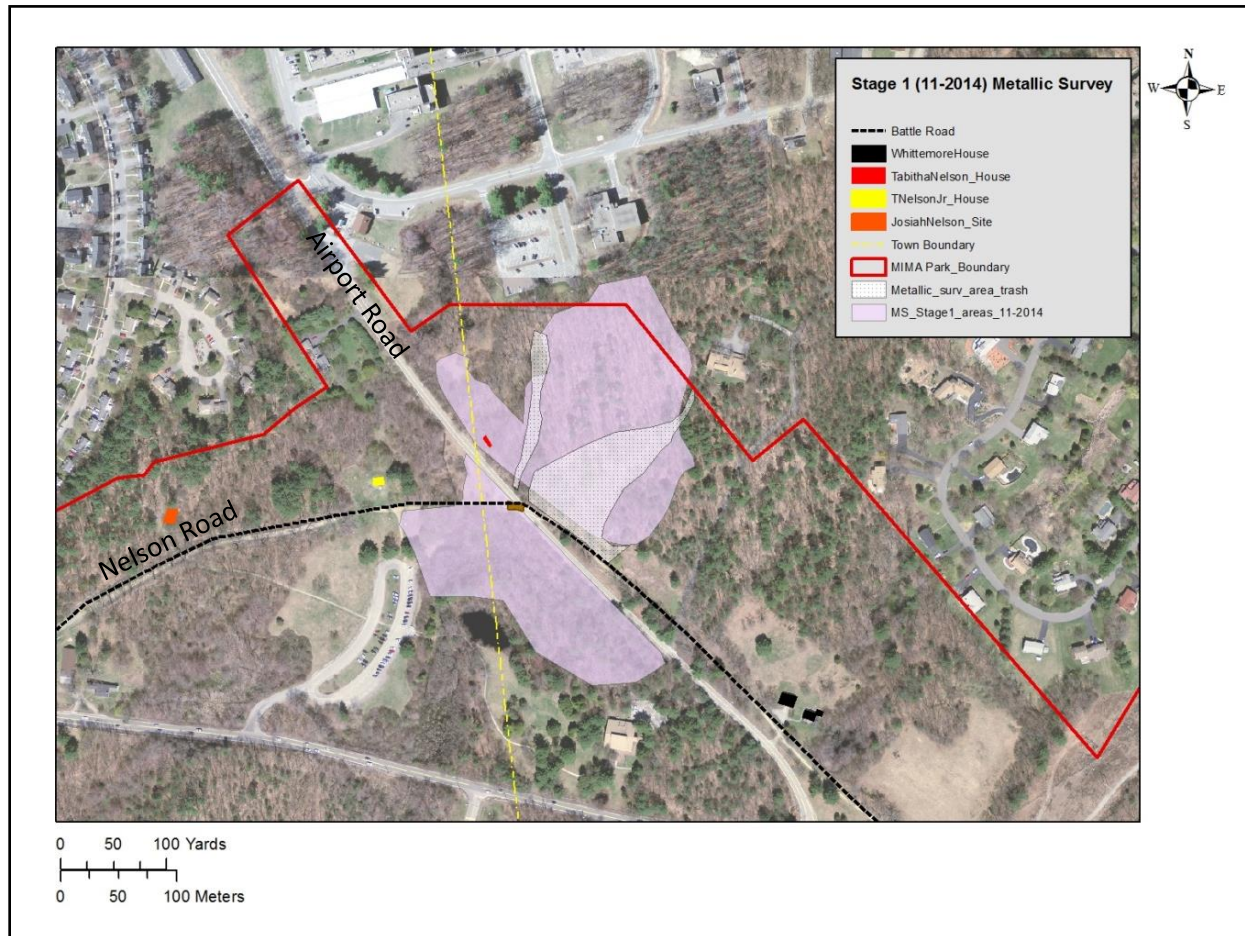


Figure 70 Stage 1 metallic survey area covered (11-2014) with areas of trash identified.

Survey Lane Coverage

The second and third weeks of metallic surveys engaged both reconnaissance survey and site coverage through following established survey lanes. Lanes were established in areas where musket balls were found during the first week of reconnaissance surveys. Yellow ropes were placed at 2.5 m intervals in areas for high resolution surveys. (Figure 71) Surveyors scanned each lane twice (up and down the lane) at staggered intervals. Lanes were then set perpendicular to the original grid of lanes and surveyed again. This method was used to ensure complete coverage of selected areas. While concentrating on areas where artifacts of interest were identified, lanes were extended along the established site grid beyond artifact concentrations to best define the extent of archaeological evidence.

This method was implemented toward the end of the first week survey and used throughout the remainder of the investigations.



Figure 71 Metallic surveys in survey lanes (yellow ropes). (Watters, left; Balicki, center; Skaggs, right.) Image courtesy of Joel Bohy.

Wetland areas

6.5 acres of the focus area fell within delineated wetland areas. During the first week of metallic surveys (June 2014) Dr. Scott and a few of the survey team worked their way through the underbrush of the wetland and flagged a number of potential metallic hits. Over the next year PRAP worked with Richard Kirby from LEC Environmental to obtain permits for partially clearing the wetland to enable more robust metallic survey coverage. Working with the Lincoln and Lexington town Conservation Commissions, a series of 1.5 m wide survey lanes was established at intervals across the wetland and permits issued for hand clipping of invasive underbrush vegetation. 16 survey lanes were positioned based on archaeological analysis of the site and located in areas of highest probability for in situ battle related artifacts. Although survey in this area was restricted due to its wetland classification and restrictions, the season (early November) and lane clearing enabled good coverage to sample the wetland zone. (Figure 72)

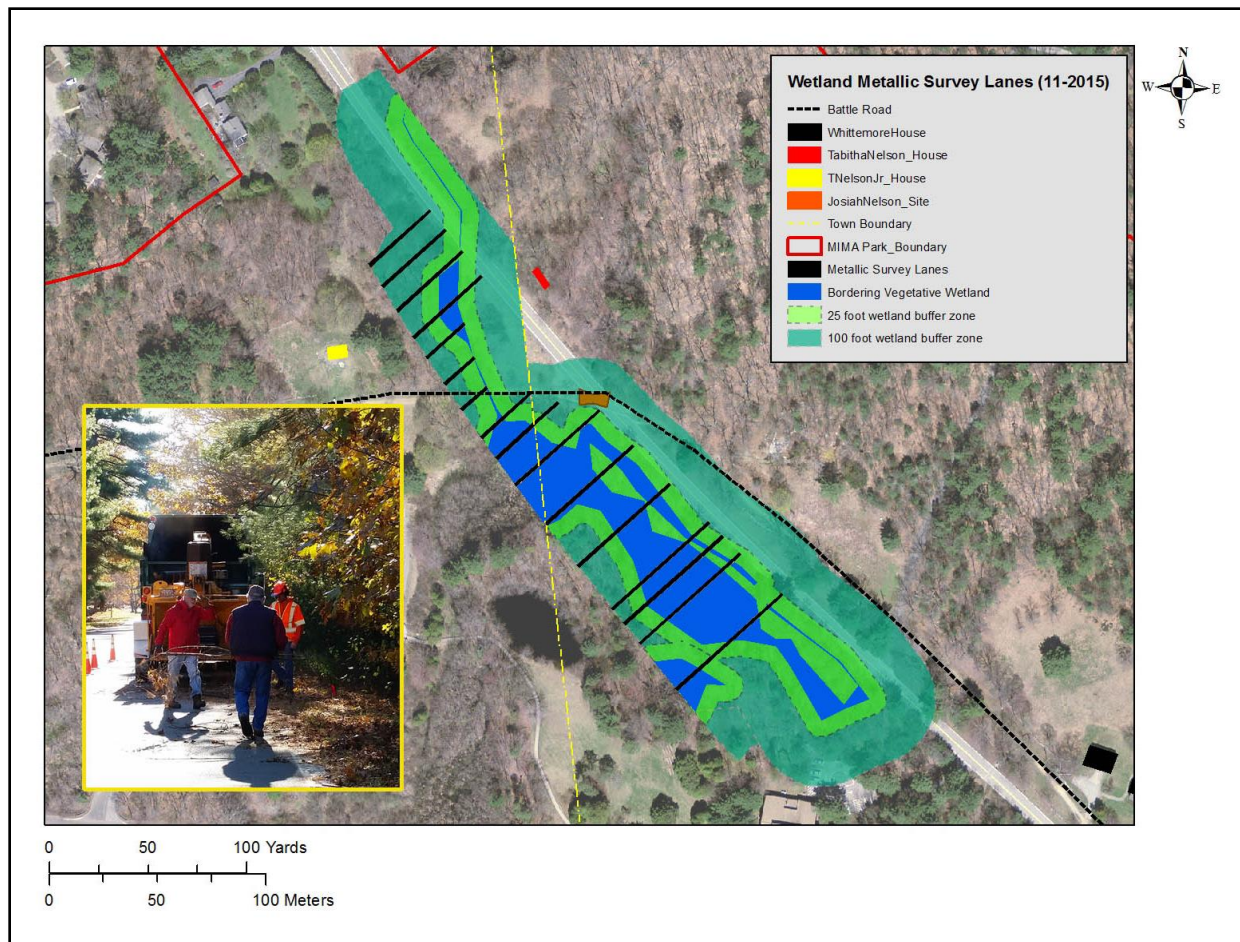


Figure 72 Wetland survey lanes with inset of clearing.

Artifact Recovery

Supervised by PAL archaeologists, surveyors excavated and retrieved buried artifacts at selected target locations identified through metallic surveys.

Recording

Once a metallic hit was identified by the surveyor, a pin flag was inserted in the location of the metallic target. The target ferrous and conductivity values were recorded⁷ on the pin flag (i.e. 10:35) along with field specimen (FS) and metallic survey (MS) numbers. Artifact recording on modified PAL profile forms and artifact paper tags that included: the metallic survey target values, metal detector type when relevant, the FS number, the MS number, depth of the artifact, the soil profile, and notes (such as find type musket ball, buckle, button, coin.)

⁷ The MineLab CTX-3030 instrument was assumed for recording purposes, except when the pin flag was marked with a different instrument and recorded on corresponding artifact forms.

Excavation

When a metallic target was identified a small square was cut in the ground surface using a shovel. A square of the surface sod or root mass was removed and placed on a small tarp square to keep it separate from surrounding soil. A pinpointter (hand held metal detector) was then used to guide the depth and width of the excavation. This enabled exact targeting of the metal object and limited not only excavation and retrieval time but also the size of the hole that was dug.

When an artifact was encountered, its depth below the surface (in centimeters) was recorded on the unit form. Any artifact older than 50 years was collected. When an artifact was removed, a numbered aluminum tag (Figure 73) was placed in the ground at the depth of the artifact to mark the location. The tag number is the assigned FS number for the recovered artifact (e.g. FS-1_001, FS-2_002. The first number recorded "FS-1" represents the 1st, 2nd, or 3rd week of metallic surveys). If more than one artifact was recovered from one location, aluminum tags representing each artifact with associated FS numbers were placed at the depth where they were located. Each FS number is recorded on the field form with a description (e.g. 1935 wheat penny; copper decorative button; dropped musket ball) and related depth in centimeters below the ground surface (cmbs) (e.g. 8 cmbs). The same information is recorded on a PAL paper tag and the paper tag and artifact are placed into a sealed plastic bag. The soil profile to the depth of excavation is also recorded on the form. The hole containing the numbered aluminum tag is then backfilled. The FS number is included in archaeological reporting and artifact curation. The aluminum tags not only mark the position of artifacts, relocatable through metallic surveys but artifact information and distribution will be immediately identifiable during any future excavations.

Any additional non-metallic cultural artifacts that encountered during this process were recorded, collected, and an aluminum tag placed in the ground to mark their position.



Figure 73 Aluminum "field sample" (FS) tag in artifact position in excavated hole.

Modern metallic trash was removed from site. This included soda and beer cans, bottle caps, metal pull tabs, and many other modern metallic objects or fragments. The location of the modern trash is not recorded.

At the end of each MS unit excavation, the total number of bags for that unit was recorded on the bottom of the unit form.

Pin flags were removed after conductivity and ferrous value recording, GPS mapping, excavation, and backfilling were completed.

Survey

The first week metallic surveys were conducted by the metallic survey team with three PAL archaeologists following them to excavate and recover a representative sample of artifacts. The volunteer metallic survey team was trained during this period on how to excavate, record, and recover artifacts according to archaeological protocol.

Watters coordinated the metallic surveys with instructors Scott and Skaggs and PAL field directors Eric Fahey and Nate Orsi. Maps and guidelines were provided to: direct survey area coverage; develop the survey method and artifact retrieval protocol; and promote effective artifact position mapping and archaeological recording. Survey began focused on the ledge outcrop area where hundreds of targets were identified and flagged. Under the guidance of Scott and Skaggs, a representative sample of targets was excavated based on ferrous and conductivity signatures. Excavated targets included large numbers of modern trash such as pull tabs, old beer cans, lead flashing, nails, wire, and a high volume of debris from the demolition of the two 20th century houses that were removed with the founding of MIMA. On the first day, a 19th century buckle was identified which provided a bit of excitement for the team. These excavated targets and subsequent surveys and excavations throughout the week provided the survey team and PAL archaeologists with a basic understanding of not only the distribution of trash across the site, but also clearly identified the farmyard area related to the Nelson house. They also offered insight to what materials (and related artifacts) could be expected based on ferrous and conductivity readings.

At the conclusion of the first week of metallic surveys a total of 11.5 acres were surveyed, 342 metallic targets identified, and 52 artifacts retrieved. The first week surveys identified and mapped three musket balls, two 19th century buckles, and a late 18th-early 19th century copper button. (Figure 74)



Figure 74 Late 18th - early 19th century copper button (top) and two 19th century buckles.

During the second week of metallic surveys an additional seven musket balls and assorted historic domestic and agricultural artifacts were mapped and retrieved. The lane survey method was used for 100% coverage of designated survey areas. Site reconnaissance survey was used to establish an overview of approximately 14.5 acres to the south of the core survey area and the ledge outcrop toward the Whittemore farmstead to explore the potential egress of Parker's militia from the battle site. Survey was restricted to MIMA property, bounded on the east by a historic stone wall and to the west by Airport Road. (Figure 75) Balicki and Bohy determined that this area was relatively trash free. They did not identify any historic artifacts relating to the fighting of April 19, 1775.

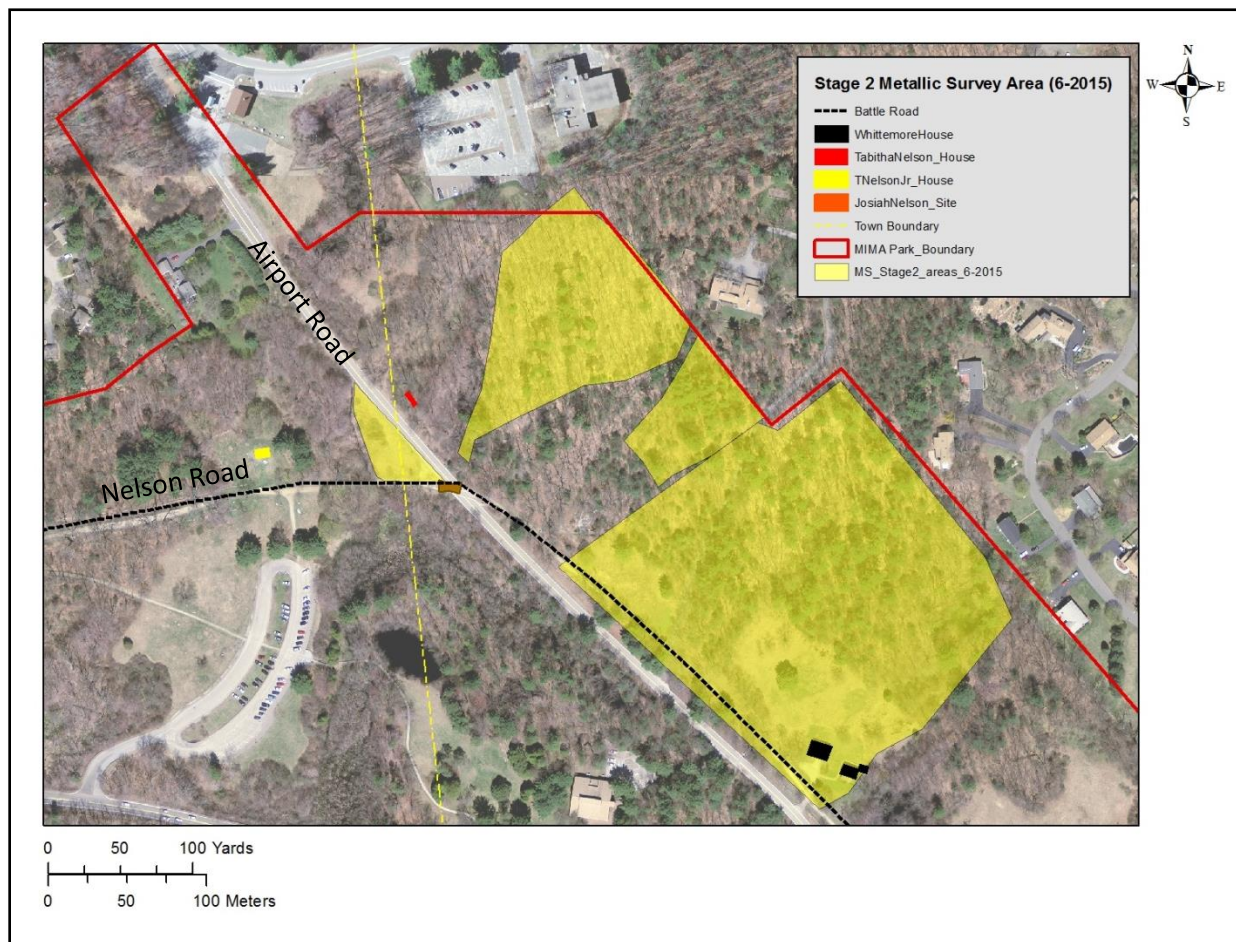


Figure 75 Stage 2 metallic survey area coverage.

During the third week of metallic surveys, the excavation methodology was modified for musket ball recovery. Gloves were used at all times when handling musket balls and a sample of soil was taken from immediately adjacent to the ball in the ground. The musket ball and soil sample were placed in the same specimen bag. This was done with the intent to enable future testing of the musket balls for potential traces of protein residue; traces of human or horse blood. While not in the scope of PRAP, the potential for protein testing can provide additional information for interpretation of the battle and

contribute to public engagement by providing evidence to remind people that this was the scene of a battle, of bloody warfare that began the American Revolution (Kirk 2016).

The final session of metallic surveys included metallic surveys in the wetland, a key component of the Parker's Revenge battlefield assessment that had great potential for Colonial fired musket balls if the Lexington militia fired upon the British Regular column. It was determined that the southern half of the wetland between the visitor center, Nelson Road, and Airport Road was heavily impacted and most excavated targets were modern trash. However, near the culvert to the south of Nelson Road an 18th century button was retrieved. Additional historical artifacts such as coins were recovered from the wetland area bounded by Airport Road and the Thomas Nelson Jr. property to the north of Nelson Road. These artifacts however, are not interpreted as related to the Parker's Revenge battle due to their location and spatial distribution.

Upon completion of the wetland survey, mid-day on Wednesday November 11, 2015, intensive orthogonal lane survey was conducted over the area where a concentration of musket balls was mapped through surveys by Donahue (2007) and the previous 2 weeks of survey by PRAP. This intensive survey identified 20 additional musket balls. (Figure 76)

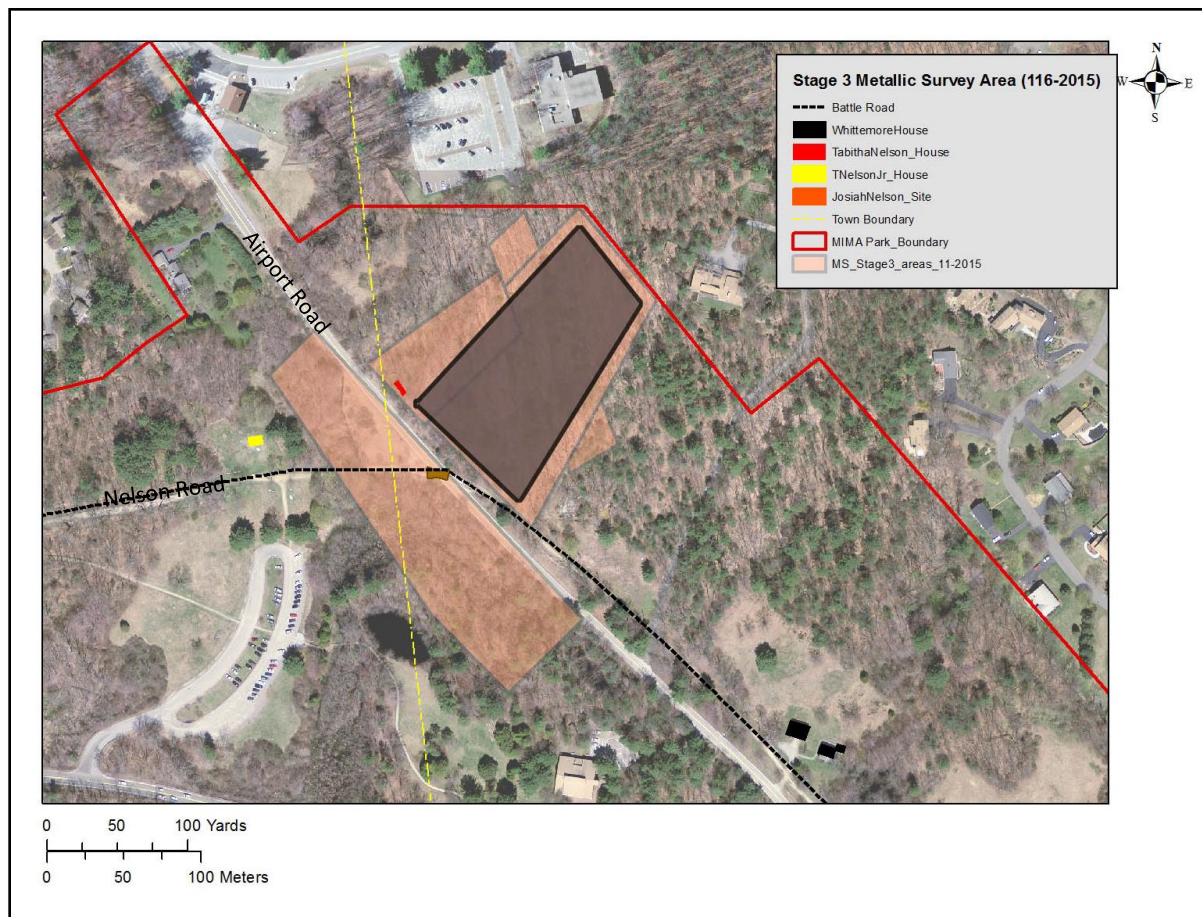


Figure 76 Stage 3 metallic survey coverage with orthogonal survey grid highlighted in grey.

Given the entire core area surrounding the distribution of musket balls to this point was surveyed the question of where to focus the remaining four and a half days of survey remained. We had clearly delineated areas of heavy historic and modern trash during reconnaissance surveys. The issue now was, could we map individual musket balls through this layer of debris or should we assume that musket ball signatures would be masked by the trash or that musket balls would be displaced or destroyed through site use? As a result should we spend our limited time elsewhere looking for evidence of the battle?

Following the research design and the methodological, scientific survey plan developed for the project Watters moved the survey team west (downhill) of the area of the concentration of musket balls. Lanes were established and the team set to surveying. At this point, Watters had asked Skaggs to search in areas he thought most likely to find a second line of fire based on the historic landscape, KOCOA analysis, and his experience. Watters also placed Scott, Bohy, and Balicki directly on top of one of the areas of dense 20th century trash previously identified. From the beginning of the survey Watters was determined to conduct as close to 100% survey coverage as possible, trash or no trash. In the end, if it is not surveyed, you cannot rule it out as a possible location for artifacts under investigation.

Around lunch time on Wednesday, Skaggs located a fired musket ball on the eastern edge of the Tabitha Nelson / Thomas Nelson Sr. farmyard, to the west of the seep water feature. Meanwhile, only minutes after Scott, Bohy, and Balicki began surveying in the trash area, Balicki hit the first of what turned out to be 14 fired musket balls in a line. By the end of the 6th and final day of metallic surveys, PRAP survey team had surveyed 11.5 acres and mapped, recorded, and retrieved a total of 29 musket balls. These musket balls clearly defined two lines of fire and were interpreted as conclusive evidence of the Parker's Revenge battle from April 19, 1775. Figure 77 shows a selection of the fired and dropped musket balls and some of the additional historical artifacts discovered during the metallic surveys.



Figure 77 Example of Metallic survey finds.

Collections Management

Once artifacts were retrieved from the field and metallic surveys completed, they were cleaned and catalogued at the PAL office according to NPS Integrated Resource Management Applications (IRMA) standards. Preliminary reports were reviewed by Watters and inspected by Gail Frace (archaeologist)

from NRAP. When reports and artifact treatment were finalized all artifacts were transferred to MIMA for permanent curation.

Artifacts retrieved from DCR property that ran along both sides of Airport Road were included in this process and were included in the master collection, part of a permanent loan agreement through Ellen Berkland (DCR archaeologist) and the Massachusetts DCR. It is the intent on behalf of MIMA Superintendent Nancy Nelson that the entire collection be curated and available for research and continued studied at MIMA curatorial facility. An edited version of the catalog is included in Appendix 2.

Artifact Analysis

As a result of archaeological investigations, a total of 32⁸ musket balls were mapped in the focus area of PRAP. Three of these musket balls were identified by Barbara Donohue as part of the HAFB investigations in 2007. Working with Scott, the metallic survey team (Figure 78) conducted an initial interpretation of the musket balls to identify fired and dropped balls and to classify British Regular and Colonial musket balls.



Figure 78 Musket ball analysis with Dr. Doug Scott (second from left).

Classification of British Regular and Colonial musket balls was a difficult job. Of the 32 musket balls, 31 were fired and one was dropped. Because the musket balls were deformed, the weight of each was used to assign the most likely caliber of the ball. Based on fire arm information discussed in the previous section on *Expected Archaeological Resources*, the higher caliber, or heavier, musket balls were identified as British Regular and lower caliber, or lighter, Colonial. Assigning the origin of musket balls is no simple task. Considering the weapons used, the materials used to make the musket balls, impact

⁸ An additional lead fragment was mapped. While it may be a musket ball fragment, until this is confirmed it is not characterized as a musket ball and thus not included as evidence in the following battle interpretation.

deformation and possible fragmentation this is a challenging task. Dan Sivilich's book *Musket Ball and Small Shot Identification: A Guide* (2016) provides a great background for considering the interpretation of 18th century musket ball origin and provides a base from which we can continue in depth analyses in the future.

Keeping in mind the deformation potential of fired musket balls, Scott weighed and examined each musket ball under a high definition microscope. The resulting classification included: 1 dropped Colonial musket ball, 8 fired Colonial musket balls, and 16 fired British Regular musket balls. The 7 remaining musket balls fell between the Colonial and British musket ball weight categories and at this point are not assigned an origin. However, based on the distribution and grouping of these "middle weight" musket balls, they are more likely to be Colonial (and are considered as Colonial in the battle interpretation in the following chapter).

PRAP worked with Brucker⁹ founder Bruce Kaiser and representative Rick Rainville to conduct a preliminary X-ray fluorescence (XRF) analysis of 12 of the Parker's Revenge musket balls. (Figure 79) The premise behind using XRF was to attempt to identify differences in the elemental composition of the musket balls to see if this would contribute to identification of their source, British or Colonial. This is a new method for investigating revolutionary war musket balls. XRF has been used successfully in an example from Palo Alto Battlefield National Historical Park to distinguish between Mexican and American ordnance (Michael Siebert *personal communication*). In this instance, Mexican musket balls had a significantly higher amount of silver in their composition than American, due to the active silver mining industry and use of silver in ordnance in Mexico at the time of the war.



Figure 79 Rick Rainville conducting XRF sampling of a selection of musket balls. (From the left: Bob Morris, Bill Rose, Joel Bohy, Jim Kendrick, Rick Rainville, Bill Poole, David Wood, Phil Lupsiewicz.)

⁹ Manufacturer of X-ray Fluorescence instruments.

Mid-18th century lead musket balls however may be difficult to categorize as only one lead mine in Virginia is known to have been active in the Colonies at that time (Burns 2005:112). Currently the source of materials for Colonial musket balls is not known. Colonial musket balls could have come from British supplies or they could have been made from lead imported from England. Alternatively, Colonial musket balls may have had a unique mix of materials based on who made them with what materials, and where or when they were made. Though not included in the scope of PRAP, XRF analysis has great potential to contribute valuable information to the categorization of the musket balls from Parker's Revenge.

“And that is it. That is Parker’s Revenge right there.”

Patrick Jennings, National Museum of the United States Army; formerly with the NPS American Battlefield Protection Program (November 19, 2015)

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Chapter 7 The Parker's Revenge Battle Interpretation

The research into the Parker's Revenge battle began with simple questions: what was the location of the battle and, if possible, what happened? This project asked fundamental questions that stimulated archaeologists and project participants from other disciplines to challenge themselves to consider ideas and aspects of the battle that they may never have considered within their own field. As a result of this, we are able to provide a more insightful historical overview of the battle, not simply, here is the evidence and the battle was fought on this spot.

Military Tactical Review

Over a 2 day period PRAP hosted a Military Tactical Review (MTR) event to discuss and interpret the Parker's Revenge battle¹⁰. The event was organized by Jim Hollister (MIMA) and Meg Watters with the intent to collaborate across disciplines and to engage with the robust local knowledge base within the communities of MIMA toward interpreting the battle. Twenty-six participants from today's military, historians representing both the British and Colonial participants in the war, conflict and historical archaeologists, ecologists, educators, and Park interpreters and rangers gathered, discussed evidence and historical records, walked the site, and defined the most likely interpretation for the Parker's Revenge battle. (Figure 80)



Figure 80 Participants in the Military Tactical Review. (From the left: Jim Hollister, Lou Sideris, Bill Poole, Bill Rose, Meg Watters, Greg Hurley (back), General Kondratiuk, Franny Sacco, Ed Hurley, Don Haigst, Joel Bohy, Howard Helfman, Doug Scott, Superintendent Nancy Nelson, Patrick Jennings, Bob Morris.) Image courtesy of MIMA.

¹⁰ November 18 and 19, 2015.

This Chapter was written based upon the discussions that took place on site and in the conference sessions during the MTR. A copy of the MTR agenda and transcripts of the discussions held during the event can be found in Appendix 4. The information discussed and battle scenarios presented below attempt to best represent the consensus of the MTR participants.

The MTR event introduced primary documentary and archaeological evidence related to the Parker's Revenge battle with the goal to develop a plausible battle scenario, or scenarios, for MIMA to use to interpret the site. Participants were given a selection of primary sources that related to the fighting on the Battle Road, the forces engaged, and tactics employed. Maps were also provided of the reconstructed historic 1775 landscape and musket ball locations.

Using the results of the archaeological study, historical evidence, and the KOCOA strategic approach to examining historic battlefield, the goals of the MTR included: (1) identify the tactical advantages and disadvantages of the landscape from British and Lexington militia perspectives; (2) establish the position of Captain Parker's Lexington Company; (3) establish the direction and development of the British attack and (4) refine the timeline of the engagement on the site from first contact to disengagement.

The morning of the first day of the event included a number of presentations that provided background information and a context for the battle. Following a welcome from Nancy Nelson, Superintendent of MIMA and Robert Morris, President of the Friends of MIMA, Jim Hollister presented an historical introduction to the battle, the time frame, and set up of the site. Meg Watters followed with a presentation on PRAP archaeology, the 1775 landscape, new evidence for the battle, and battle-related artifact distribution. A review of 1775 weapons and ballistics that were been used in battle that day was presented by Joel Bohy and Bill Rose. Doug Scott discussed the history, development, and applications of battlefield archaeology in historic and contemporary battle scenarios. The morning segment was concluded by a very interesting discussion led by Howard Helfman on observations on asymmetrical warfare. Ending on this note, the group was engaged and eager to head out to the site.

Maps in hand, the group went out to the battle site where visual markers had been placed to identify significant battle related landscape features and artifacts including musket ball positions, the boundary of the woodlot, the location of Nelson's bridge, and Tabitha Nelson / Thomas Nelson Sr.'s house. (Figure 81) The group began the site walk approaching the battlefield from the Colonial perspective; walking in the steps of Captain Parker and the Lexington Militia.



Figure 81 In-field landscape markers. Posts with pin flags and flagging represent musket ball locations.

After a lunch break the group returned to the site through the visitor center's parking lot and headed east along Battle Road toward the battle site from the perspective of the British Regular column. Fortunate to have the Commander of the 10th Regiment of Foot in the group, Paul O'Shaughnessy led a discussion of British military formation and movement. Some members of the group were put through their paces with an impromptu marching drill. (Figure 82) Immersion in not only the historical and archaeological evidence of the battle, but also in the actual battlefield landscape enabled participants to consider all of the evidence presented from different perspectives.



Figure 82 Military Tactical Review participants are put through their paces by Paul O'Shaugnessy, Commander of the 10th Regiment of Foot. Images courtesy of MIMA.

Lively discussions took place both on site and back in the visitor center that day and the following morning. The points raised and addressed during these conversations are represented in the narrative below. Any inadvertent mistakes in this representation are sole responsibility of the author.

Evidence and Staging

Tactical site features

The reconstructed 1775 landscape and land use map provides a base for tactical analysis of the battlefield area. The main landscape features that contributed to the KOCO analysis included the Thomas Nelson Jr. house and farmyard (Figure 83 A), the Tabitha Nelson / Thomas Nelson Sr. house, farmyard and barn (Figure 83 A), the intermittent geological seep feature at the base (eastern and southern edges) of the Tabitha Nelson / Thomas Nelson Sr. farmyard (Figure 83 B), the Nelson Bridge (Figure 83 C) that most likely crossed the seep feature, the ledge outcrop (Figure 83 D), the “ridge” ledge north of Tabitha Nelson / Thomas Nelson Sr. house (Figure 83 E), the 5 acre woodlot (Figure 83 F), and the concentration of sizable erratics across the battlefield area. While we have no evidence of the current day drainage ditch between the Thomas Nelson Jr and Tabitha Nelson / Thomas Nelson Sr. farms (Figure 83 G) if it was present, it would have also contributed to the tactical landscape.

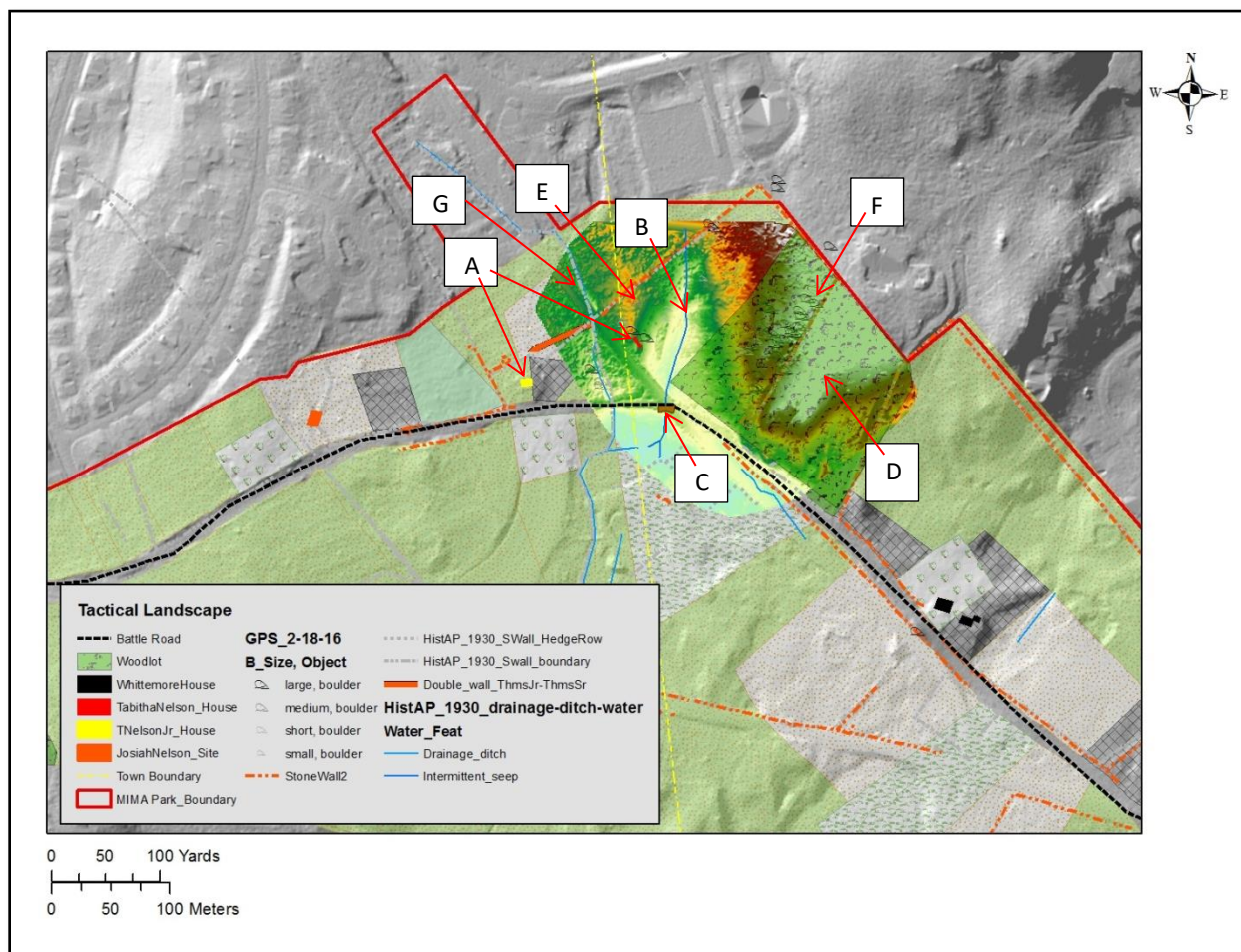


Figure 83 Plan of the tactical landscape LiDAR base map with overlain PRAP high resolution LiDAR over core battlefield location. A – Nelson houses and farmyards; B – intermittent seep; C – Nelson Bridge; D – Granite ledge outcrop; E – “ridge” ledge north of Tabitha Nelson / Thomas Nelson Sr. house; F – Woodlot; and G – possible drainage ditch between Nelson farms.

The column was moving quickly, under great pressure from Colonial companies following close behind. They were being attacked along the road from behind walls, rocks, and trees as evidenced by the account of William Thorning, a young Lincoln militia man who is reported to have, "...took his stand behind the jutting corner of a huge boulder, which amply protected his body" (*Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road*, 1959; Ripley 1827). Tradition says he killed two soldiers and held up a flanking unit in the boulder field just west of Josiah Nelson's farmyard. (Figure 25)

As they approached the boundary of the towns of Lincoln and Lexington, the British force had suffered 25 killed and now were transporting approximately 62 wounded. Accounts record that the British secured two chaises in Concord to carry their wounded, whereas who were hit along the Battle Road had to make their own way as best they could, or be left behind. Many of the dead British soldiers were buried alongside of the Battle Road where they fell. Major Loammi Baldwin, Col. Green's Regiment (2nd Middlesex) from Woburn stated, "...The enemy marched very fast and left many dead and wounded and a few tired..." (Kehoe, p. 131) In fact, a monument exists 200 m west of the Parker's Revenge battle site at the location where 2 British soldiers are believed to have been buried.

The Nelson Bridge was a significant tactical feature within the battlefield landscape (Figure 83, C). It was a point of constriction for the British force, where they would slow down and be more vulnerable to the opposing Colonial force. Bridges at Meriam's Corner and the Brooks village just west of the Parker's Revenge site were key tactical components in the landscape that the British Regular column had crossed earlier that day.

In addition to the Nelson Bridge, the buildings associated with the Thomas Nelson Jr. and the Tabitha Nelson / Thomas Nelson Sr. farmsteads would have been significant structures with potential to provide cover or pose as obstacles within the battlefield landscape. Primary tax and deed documentation identify 2 houses (Thomas Nelson Jr. and Tabitha Nelson / Thomas Nelson Sr.) and one barn. In addition to the houses and barn there were likely associated out buildings such as privies, sheds, and chicken coops – of which no written record exists; nor were mapped through archaeological methods.

While some reports relating to the first day of fighting say that the British companies were fired upon from houses, this only began at the town of Menotomy (Jim Hollister *personal communication*), well to the east of Lexington. In fact, there are no recorded instances of Colonials firing from the Hartwell Tavern or other structures along the Battle Road leading into Lexington, so it is possible that at this point the British Regulars were not "clearing" houses or other structures along Battle road using flanking parties. However, there is no record of this.

Adjacent to the Tabitha Nelson / Thomas Nelson Sr. house, a geological ledge feature creates a small ridge that would have obstructed the view from both sides of the battlefield. (Figure 83, E) The ledge outcrop to the south of the Nelson house (Figure 83, D) is the highest elevation in the area and would have been at the center of a historic 5 acre woodlot (Figure 83, F) on the Tabitha Nelson / Thomas Nelson Sr. property. Nearly 90 erratics are present, dotted throughout the battlefield. These boulders vary in size, with the large and medium sized providing good cover from musket fire.

Combined, the natural and man-made features in the core battlefield area present a detailed tactical landscape that provides clues to likely approaches for the British Regular flankers and positions for the Lexington Militia to assemble and await the arrival of the column. Together, the historic landscape and archaeological evidence present clear evidence from which battle interpretations were able to be shaped.

Battlefield Landscape Viewshed Analysis

A key component that contributes to tactical movement through a landscape is vision. This is particularly important in the fighting on April 19th, as it is likely there was limited or no communications between Colonial forces on this first day of the war. Using the land use (land cover) and known landscape features (houses, walls, etc.) a series of viewshed analyses was conducted for the core research area to better understand what people saw that day in the moments leading up to the battle and how that may have contributed to tactical movement. Viewshed analyses were done with the assistance of Joseph Nigro, archaeologist and GIS specialist. Together with information provided by Richard Forman and Brian Donahue, viewshed analyses were produced offering perspectives of the landscape from both the British and Colonial points of view.

A viewshed is an area that is visible from one specific location in a landscape. The viewshed analysis was conducted in GIS using elevation information of each cell of a digital elevation model (DEM) to determine visibility across that surface from one particular cell. The DEM used in this analysis is 1 m² resolution bare earth LiDAR data (2013-2014¹¹). (Figure 84)

¹¹ For detailed information on this flight and data source see <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/lidar.html>

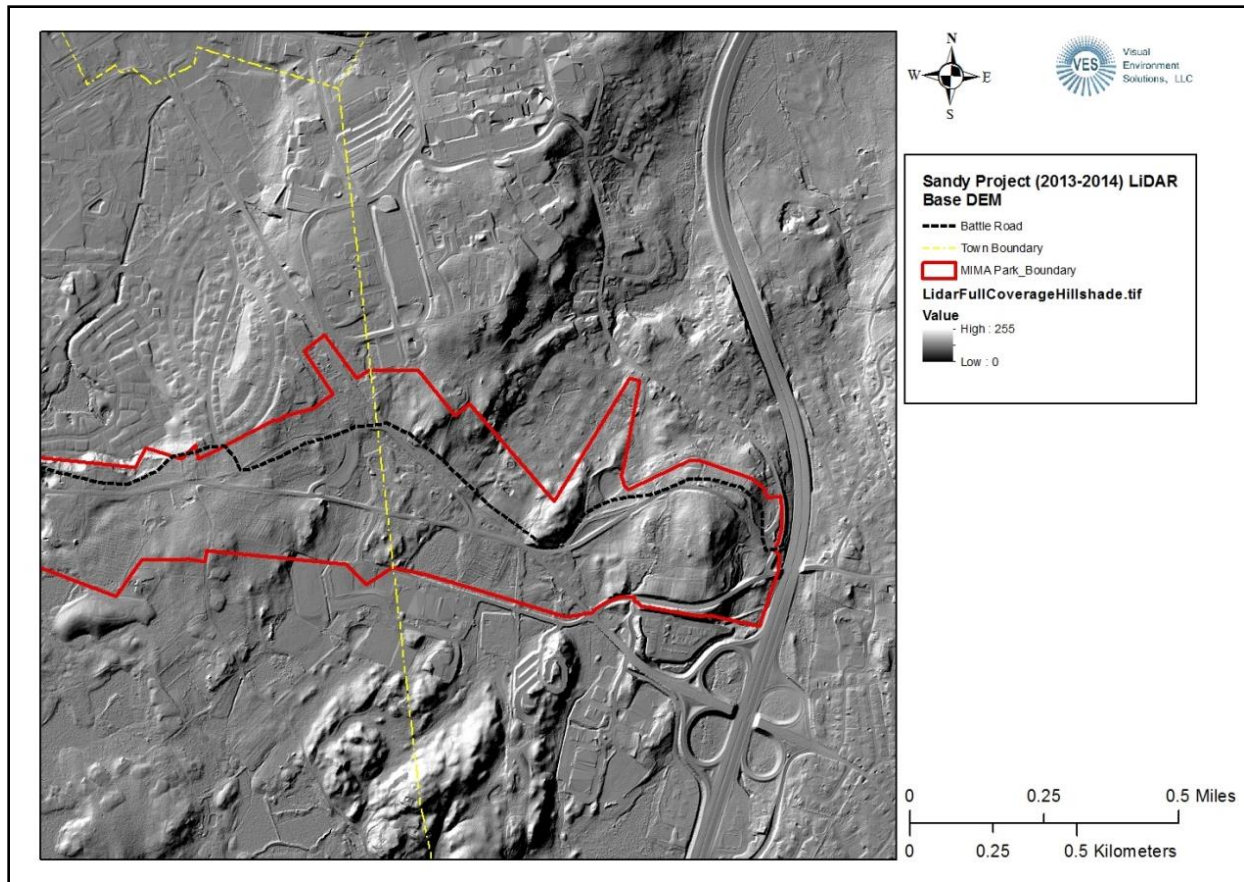


Figure 84 Sandy project LiDAR base map for viewshed analyses.

As with any historical modeling, the physical base landscape model derived from the LiDAR data is that of 2014 and clearly contains all modern landscape features including Airport Road, Battle Road, and development adjacent to the park. Historic and modern impact on this landscape discussed in Chapter 5 is taken into consideration during the construction of the landscape model and assessment of final viewshed analyses.

Historic house footprints and elevations were calculated and added to the DEM to simulate the visual obstacles that they represent. Footprint dimensions for the Thomas Nelson Jr. and Tabitha Nelson / Thomas Nelson Sr. houses were taken from the Snow (1969) excavation records; the Josiah Nelson house dimensions were estimated based on the other two Nelson House dimensions. Houses were given a height of 25 feet (7.62 m).

As the historic landscape reconstruction showed, meadows, pastures, tillage, and farmyards made up much of the landscape along Battle Road in MIMA (Figure 60). Due to the season, it is assumed ground cover was likely absent except for the orchard and woodlot on the Nelson property. It was determined that the leaf-off condition, tree trunk circumference, and tree spacing of the small orchard to the south of Battle Road facing Thomas Nelson Jr.'s house qualified this as a not-significant visual obstacle and thus was not included in the viewshed analysis.

However, the 5 acre woodlot, associated with the Tabitha Nelson / Thomas Nelson Sr. farmstead positioned over the ledge outcrop and its slopes would have been a significant visual obstacle in the tactical landscape. While no primary information exists for the exact location or composition of the woodlot it was necessary to construct the visual obstacle in the landscape model for the viewshed analyses. The structure of the woodlot depended on management practices. If it was a wood pasture, with farm animals grazing in it, ground cover would be sparse. If the woodlot was harvested within recent decades it may have been clear cut and the structure would depend upon time elapsed from when it was cut. It could be a very dense sproutwood if young, and less dense if it was 30 years old.

Under advisement of Donahue and Forman (*personal communication*) the woodlot model was based on a mature wood pasture. It was most likely a mixed oak wood lot consisting principally of red, white and black oaks along with hickory, American chestnut, ash, black cherry, and American beech. In addition, moister soils (base of the northern outcrop slope by the seep) likely had red maple, ash, and American elm. The woodlot would have been populated (possibly 80 to 100 sq ft/acre) with oak trees of mixed size dominating. They would have been predominantly 18" to 24" in trunk diameter, ranging from 60' to 80' in height and with limited underbrush consisting of lowbush blueberries and huckleberries 1' to 2' high with little deadwood.

With the DEM base resolution of 1 m², any added landscape features have a minimum resolution size of 1 m². Taking this modeling restriction into consideration, given the 18" to 24" tree diameter and the mobility of the men using them as cover (i.e. they were a moving target, sometimes visible, sometimes hidden) the woodlot model was populated with a random distribution of 200 trees ranging in height from 60' to 80'. (Figure 85)

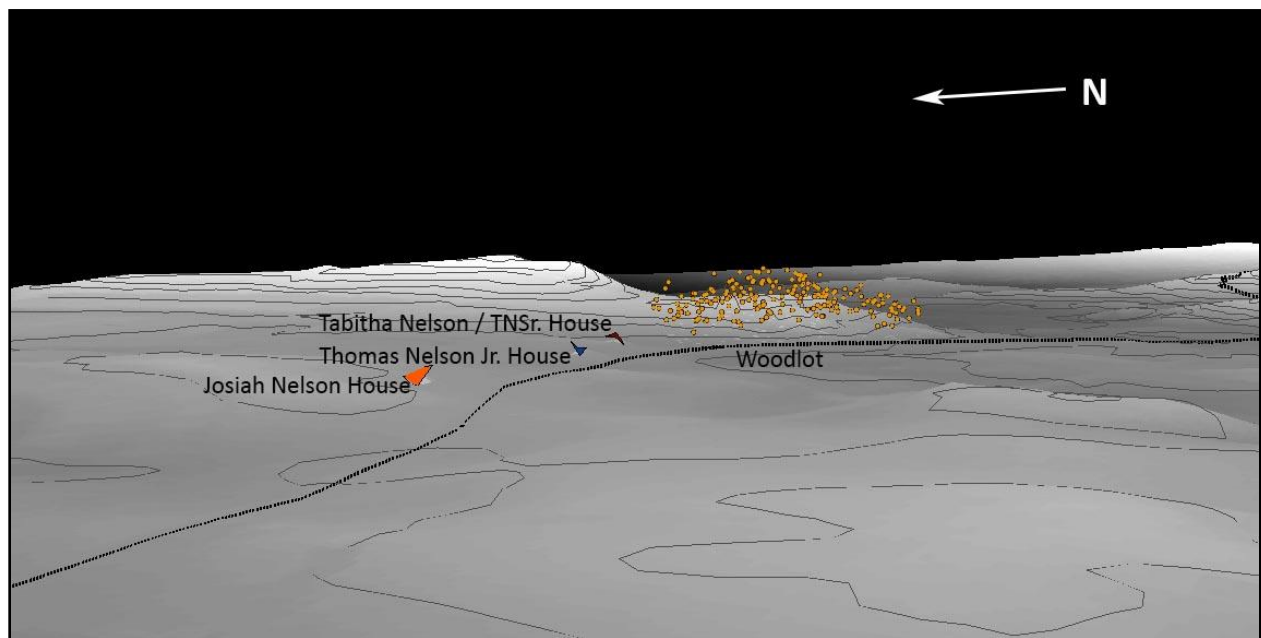


Figure 85 Viewshed basemap with Woodlot and house elevations.

Three viewshed analyses were conducted: (1) from the point of view of a British foot soldier (5.5' above ground), (2) from the point of view from a British mounted officer (9' above ground), and (3) from the point of view of a Lexington militia man on the ground. Two analyses were conducted from the Lexington militia perspective, one with trees and another without. It is likely the Lexington militia men (individually and/or as a group) were positioned in the woodlot with a clear view down Battle Road and to the ridge just north and east of the Tabitha Nelson house. It is also possible that the line of sight of the Lexington men would have been blocked by the trees of the woodlot, thus both considerations were examined.

From the perspective of the British column, viewshed analyses were conducted at 100 m intervals beginning at 1,100 m west of the Nelson Bridge (both standing and mounted heights). Animations of these viewsheds are included in the supplemental digital data submitted to the Friends MIMA, NRAP, and MIMA as part of this report.

Colonial Perspective

With tree cover included in the viewshed analysis, the visible landscape for the Lexington militia is demonstrated in Figure 86 (The viewshed, or what the men could see, is represented by the shaded areas in the following figures). Depending upon tree locations, the view of a static person in the landscape will be partially blocked. Looking from the static viewpoint highlighted in Figure 86, west along Battle Road, the first soldiers of the British column were visible at approximately 600 m from the position of the Lexington militia. When the trees are removed from the landscape the column first comes into view at the same distance, 600 m. (Figure 87)

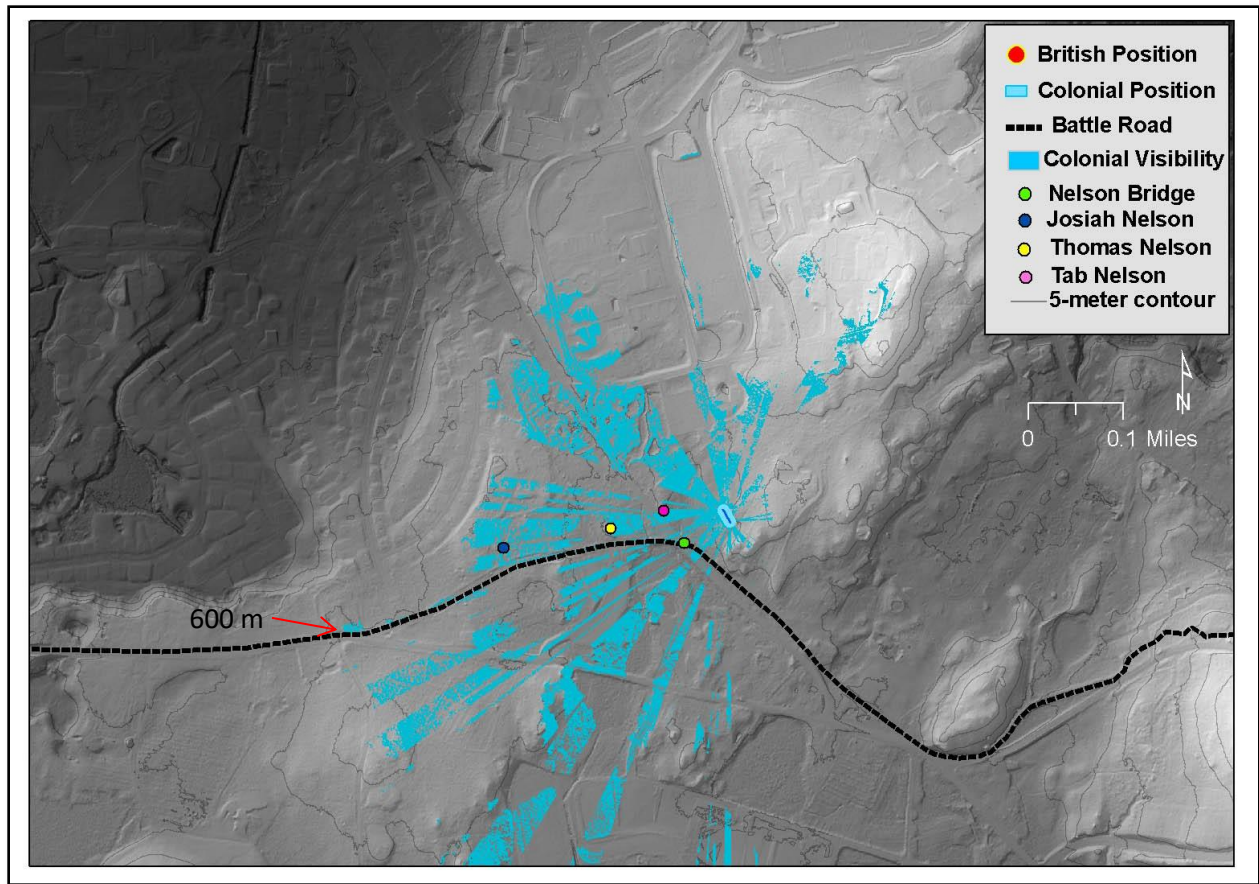


Figure 86 Viewshed analysis for Colonial position in the woodlot.

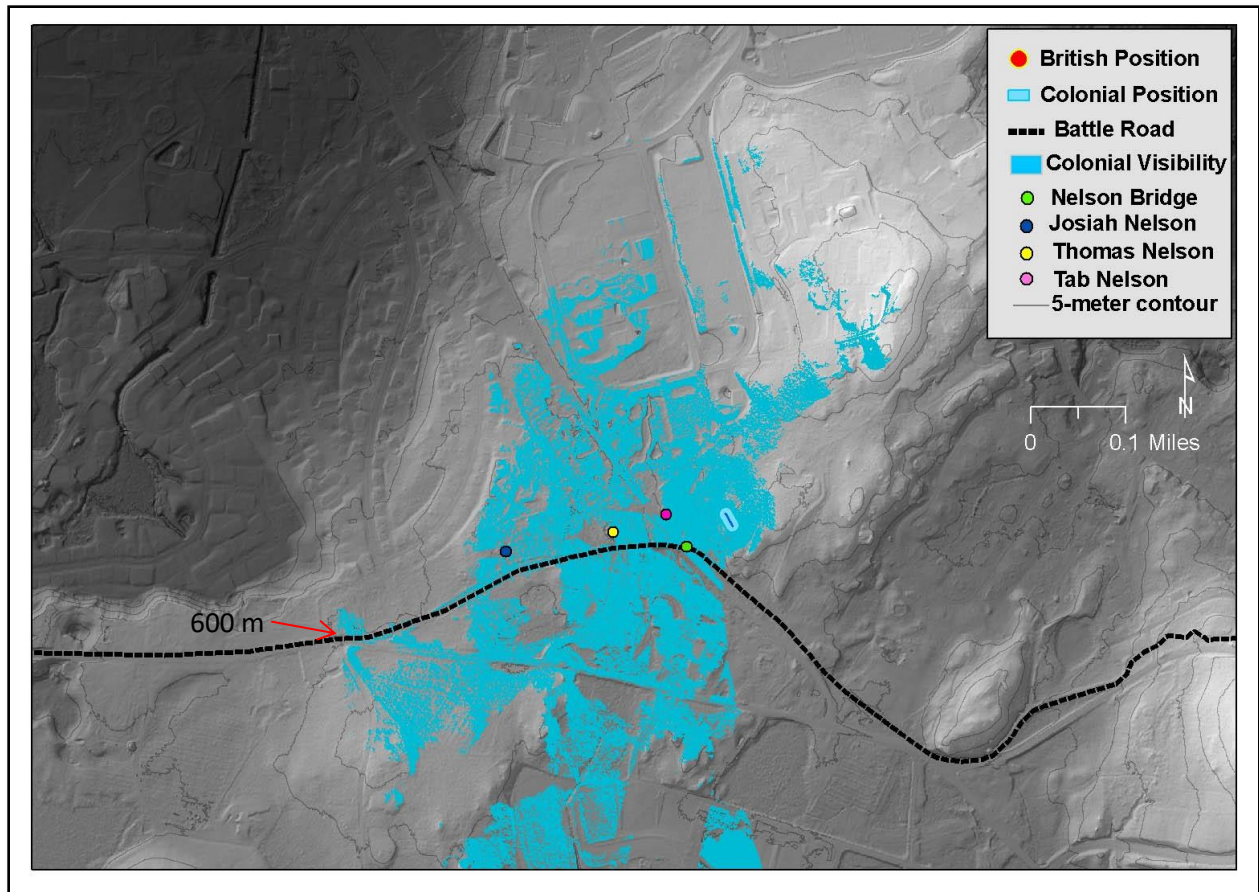


Figure 87 Viewshed for Colonial position with trees removed.

In both viewsheds there are three obvious blind spots: (labeled A, B, and C in Figure 88)

- A. an area of approximately 50 m² north of Battle Road and west of Thomas Nelson Jr.'s house;
- B. an area of approximately 20 (EW) m x 60 (NS) m directly west and north of Tabitha Nelson / Thomas Nelson Sr.'s house behind the visible ridge in the landscape;
- C. an area of approximately 80 (EW) m x 120 (NS) to the south of Battle Road and west of the field adjacent to the Lexington Visitor Center parking lot.

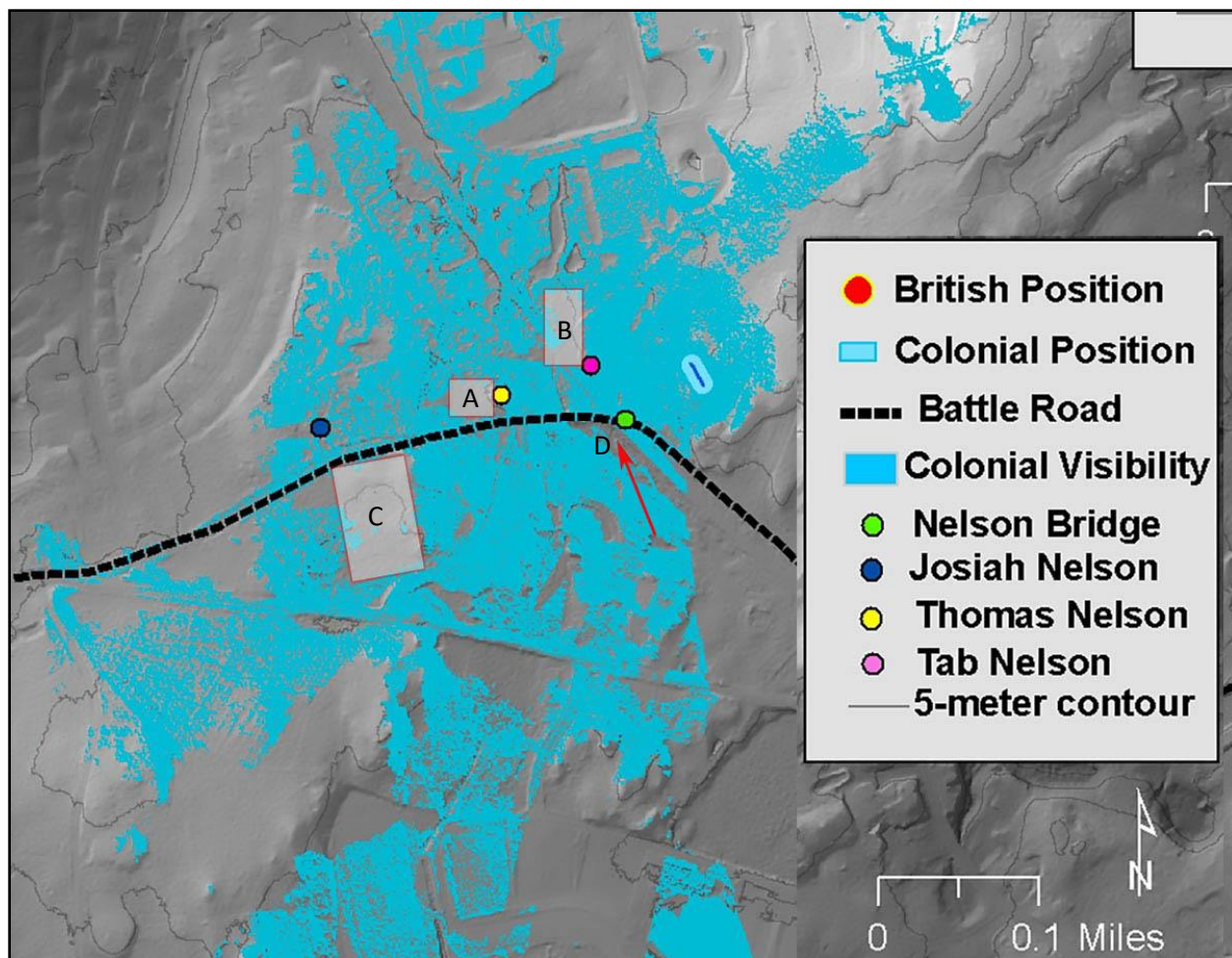


Figure 88 Illustration of blind spots for Lexington militia.

Note that the area immediately to the south and west of Battle Road as it turns at the Nelson Bridge is also not visible. This is highly likely to be an artifact of modern land impact through manipulation of today's wetland for building and the construction of Airport Road that stands at least 1 – 2 m above the probable historic land surface. (D in Figure 88)

British Perspective

While most of the British column was on foot, we know that some of the officers were mounted. The viewshed analyses for the British force included lines of sight for both mounted officers and foot soldiers. Comparing the results shows that they both saw more or less the same thing. (Figure 89) The viewsheds calculated for the Lexington militia are included in this figure in order to contribute a visual component to understand who was seeing what, and when. The point of this analysis is to better understand if the British Regular column saw the men of the Lexington militia from a distance and therefore would have made tactical decisions about how to approach and clear the obstacle. This analysis also reveals what the Lexington militia could see, which would have contributed significantly to their choosing to position themselves on the “finger” of land in the center of the northern slope of the ledge outcrop close to Battle Road and directly east of the Nelson Bridge.

At a distance of 1,100 m from Nelson Bridge the British, both mounted and on foot, could make out just the very tops of the woodlot. They cannot however, see any of the Nelson farmstead landscape (Josiah's, Thomas Jr.'s, or Tabitha's property.) The road decreases in elevation and they lose site of the tops of the trees until 600-500 m from the bridge where they again see just the tops of the trees on the ledge outcrop and north along the ridge line of the Katahdin hills. 400 m from the bridge the British come in sight of Thomas Nelson Jr.'s house for the first time and possibly Josiah's as well.

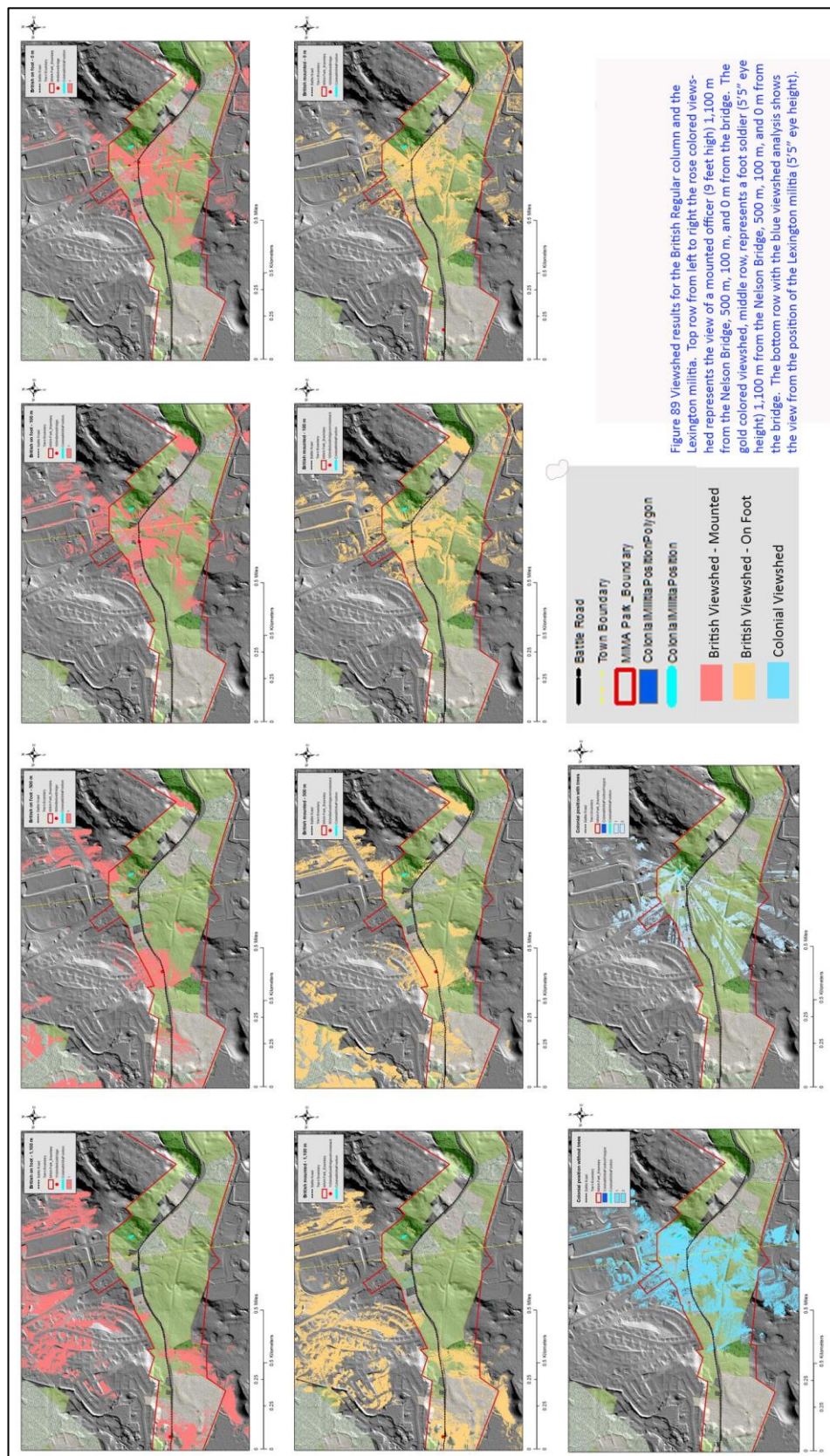


Figure 89 Viewshed results for the British Regular column and the Lexington militia.

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The viewshed analysis reveals the slight topographic undulations of this landscape showing that Thomas Nelson Jr.'s house is located at the top of a slight north-south trending ridge as is the Tabitha Nelson / Thomas Nelson Sr. house. (Figure 90 A, B) Effectively, the areas between the Nelson houses are slight depressions and remain hidden from view until the British column is nearly parallel to them (highlighted in Figure 90).

It is not until the column reaches 200 m from the bridge that they can see the field between Josiah and Thomas Jr.'s houses. But still, they cannot see beyond Thomas Jr.'s house except for the north western slope of the ledge outcrop (Katahdin hill). Figure 90 shows the visual obstacle that Thomas Nelson Jr.'s house represents in the landscape, blocking the view of the head of the column at 200 m from the bridge behind Tabitha Nelson's house. (Fig 90 C)

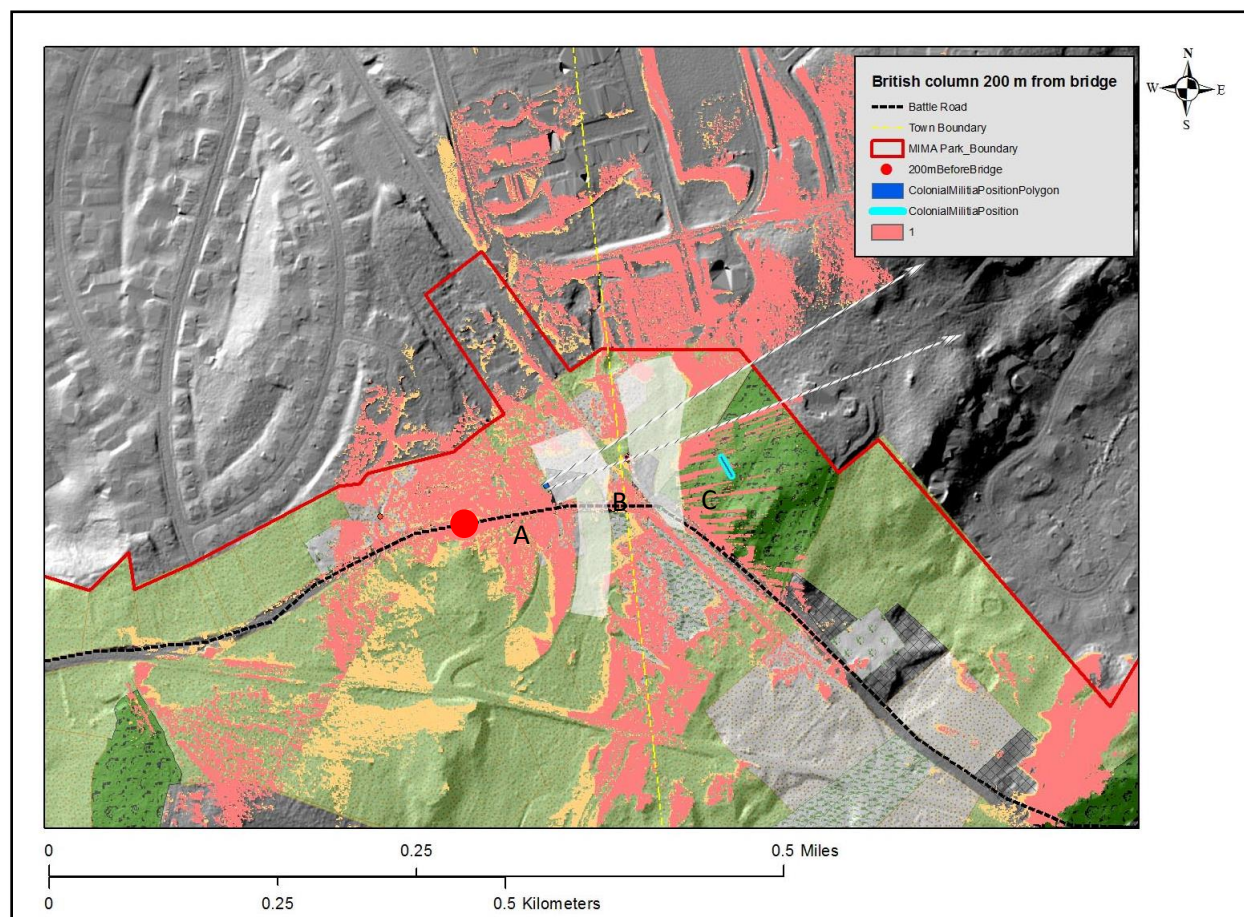


Figure 90 View of the British column 200 m from Nelson Bridge (both mounted, gold, and on foot, rose.) Highlighted areas at A and B show areas that are not visible to the British column.

At 100 m west of the bridge, the head of the British column cannot see the valley bottom and the location of the seep drainage that borders Tabitha Nelson's farmyard. (Figure 91) It is only when they are at the bridge that the head of the column can see the entire landscape of the Tabitha Nelson farm and woodlot. (Figure 92) Visibility in the woodlot is patchy due to trees, thus it is quite possible that the Colonial presence was difficult, if not impossible, to discern¹².

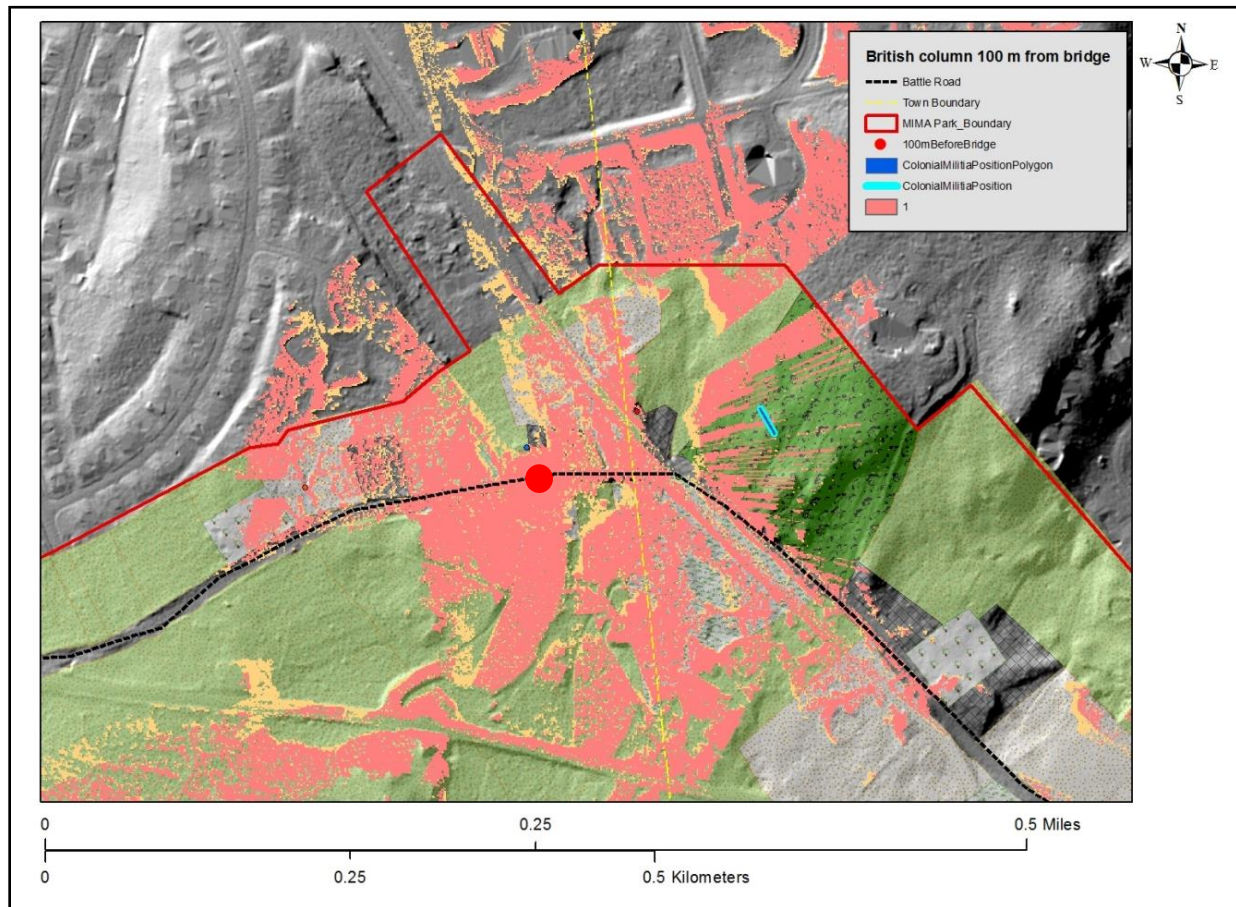


Figure 91 View of the British column 100 m from Nelson Bridge (both mounted, gold, and on foot, rose.)

¹² This statement of course, depends upon a number of assumed variables that include a mature oak wood and that the Lexington militia men were silent, still, and well-hidden or camouflaged. It also assumes the British army did not have scouts out in front of the column searching out threats from a different direction.

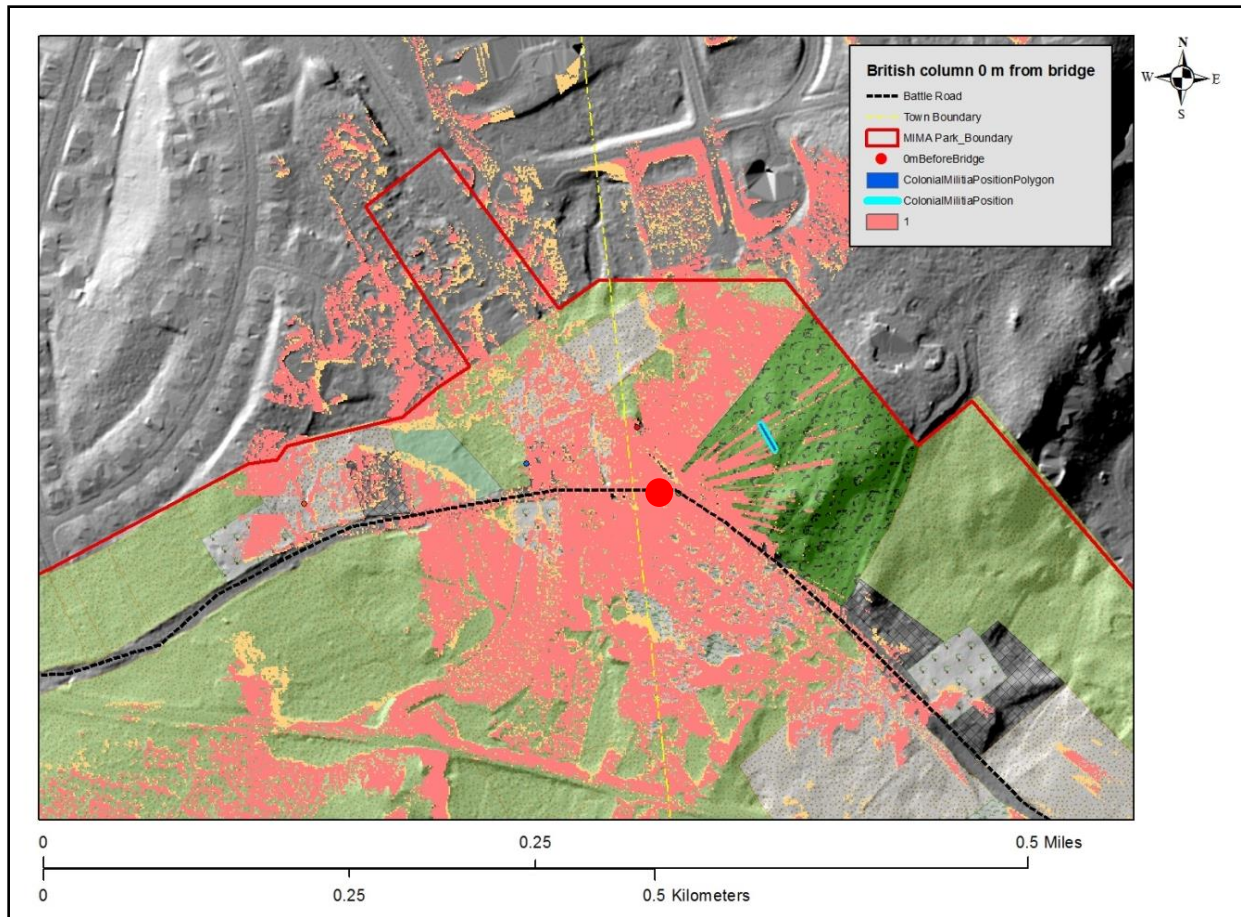


Figure 92 View of the British column at the Nelson Bridge (both mounted, gold, and on foot, rose.)

Preliminary interpretation of the viewshed analyses from both the perspectives of the Lexington militia and the British Regular column suggests that the militia had a clear view down Battle Road. Not only would the militia have heard the battle coming toward them, from their elevated position they could watch the British approach. Conversely, this analysis highlighted slight landscape contours on the approach to the Nelson Bridge from the west and demonstrated that the head of the British Column did not have clear visibility of the fields and landscape of the Nelson farmsteads as they advanced from the west. While surely they were aware of the landscape, having passed through earlier in the morning, they may well have been on high alert not only because of the tactical nature of the bend in the road with a bridge and outcrop, but also because they could not actually see the fields between the Nelson houses until they were upon them.

Archaeological Evidence

A total of 32 musket balls were recovered from the core of PRAP project area (Appendix 5 lists weight and calculated diameter for each musket ball). There is the potential for one additional partial musket ball fragment, but this small piece of lead will have to undergo further analysis to determine its origin and is not included in this assessment. Musket balls were weighed and categorized by Dr. Doug Scott and identified as British, Colonial, and Unknown; fired and dropped. (Figure 93)

	Fired	Dropped	High Velocity	Medium Velocity	Low Velocity
British	16	0	11	1	4
Colonial	8	1	1	6	1
Unknown	7	0	3	1	3
Total	31	1	15	8	8

Table 1 Parker's Revenge Musket Ball count.

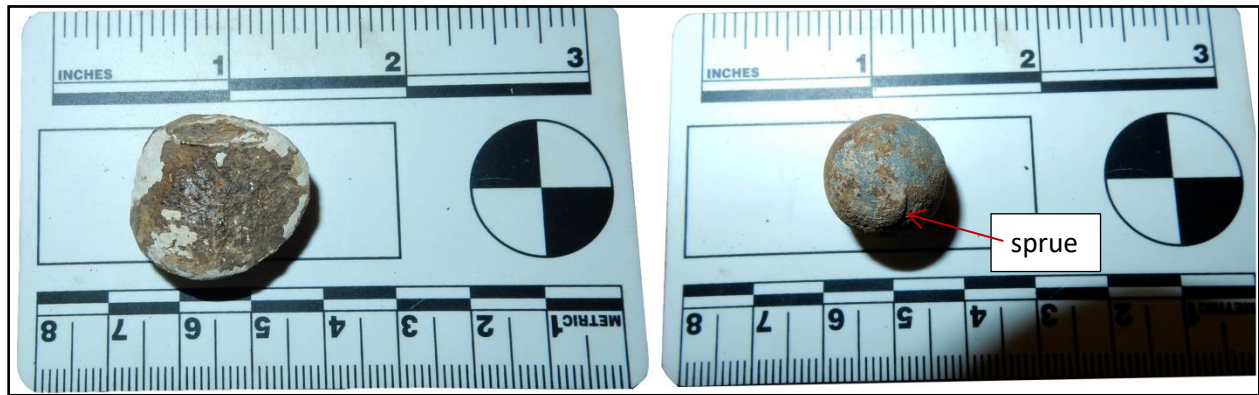


Figure 93 British fired musket ball (FS51A, left) and the Colonial dropped musket ball (FS21, right). Note the “sprue” on the Colonial dropped ball.

The following paragraphs were provided by Dr. Scott (*personal communication*) as a brief introduction to Firearms Identification:

History and Theory

“Law enforcement agencies have long used the investigative technique of firearm identification as an aid in solving crimes. Two methods commonly used by law enforcement agencies include comparisons of bullets and cartridge cases (Harris 1980; Hatcher, Jury, and Weller 1977; Heard 1997) to identify weapon types from which they were fired. Firearm identification specialists are routinely successful in matching bullets and/or cartridge case characteristics to the crime weapon simply by demonstrating that the firing pin, extractor marks, or the land and groove marks made by a rifled barrel during firing could only have been made by a certain weapon. In the event that weapons used in a crime are not recovered, trained experts can say with certainty on the basis of class and individual characteristics from recovered bullets and cartridge cases, that specific types and numbers of weapons were used in a specific event or events.

Firearm identification procedures, often erroneously called forensic ballistics, are analogous to wear pattern analysis of the archaeological profession. Firearm and tool mark identification is based on the concept of pattern transfer theory. Like wear pattern analysis, firearms identification did not spring up overnight, but has an evolutionary history. Berg (1977:535-37) provides a history of firearms identification that has its earliest known beginnings in a London murder case in 1835. A London policeman helped to secure a conviction by proving a bullet (ball) with a peculiar flaw could

have only been cast in the defendant's mold which had the same flaw. Another case of incipient firearm identification occurred in determining who caused the death of Confederate General Stonewall Jackson on May 2, 1863; an examination of the bullet recovered from the body proved it to be a type and caliber used by the Confederate Army. Jackson was killed by one of his own pickets.

Other cases followed in the ensuing years with each building on the earlier conclusions. In 1900 Dr. Albert Hall published the first truly scientific treatment on forensic ballistics and began its advancement as a common tool of law enforcement. Firearm identification, as it has become known, was used in establishing guilt in the Brownsville, Texas race riots of 1907 (Dougherty 1969). The examination resulted in the cashiering of three entire companies of the all black 25th U.S. Infantry. By 1925 the field was becoming well established, and in that year the greatest single advancement occurred to ensure a solid footing for its future. The comparison microscope was used for the first time and became the standard tool of the firearm examiner. With the publication of several textbooks in 1935 (e.g. Gunther and Gunther 1935) the field was firmly established and now nearly every major law enforcement agency has a staff firearm examiner.

Analysis of the Parker's Revenge musket balls required identification of class characteristics, and the sorting of artifacts into like groups based on archaeological adaptations of standard firearms identification techniques (Scott 1989; Scott and Haag 2009). A low power hand lens and a Dino Lite Digital Microscope (10-200x) were used to identify class characteristics. This involved handling each artifact using gloves to determine the presence or absence of tool marks (e.g. mold marks, rifling marks, etc.). Weights of the specimens and diameters of the bullets were made with a digital scale and digital micrometer. Weight was noted in grams and grains, and diameter to the nearest thousandth of an inch.

The identification of musket balls as likely British, Colonial, or unknown was based on the diameter (when measurable) and weight of the spherical lead ball. The musket ball classification and identification was based on the work and techniques of Sivilich (1996; 2009; 2016) in identifying musket balls and small shot from Revolutionary War sites."

As part of the analysis, Dr. Scott assigned velocity impact strength to each musket ball of high, medium, or low. Figure 94 shows examples of fired musket balls that demonstrate low, medium, and high velocity impact.



Figure 94 British fired musket balls: low (FS33A), medium (FS2A), and high (FS22A) velocity impact.

This count includes a total of 16 British, 9 Colonial, and 7 Undetermined (or musket balls of unknown origin). The fired, dropped, and velocity impact count is below in Table 2, and a graph of their distribution can be seen in Figure 95. While the “Unknown” musket balls cannot be definitively assigned to the British or Colonial categories, the position and clustering of the majority of these mid-range weight musket balls suggest that they are most likely Colonial fired musket balls. However, further analyses are needed for a definitive assignment one way or the other, if it is possible at all.

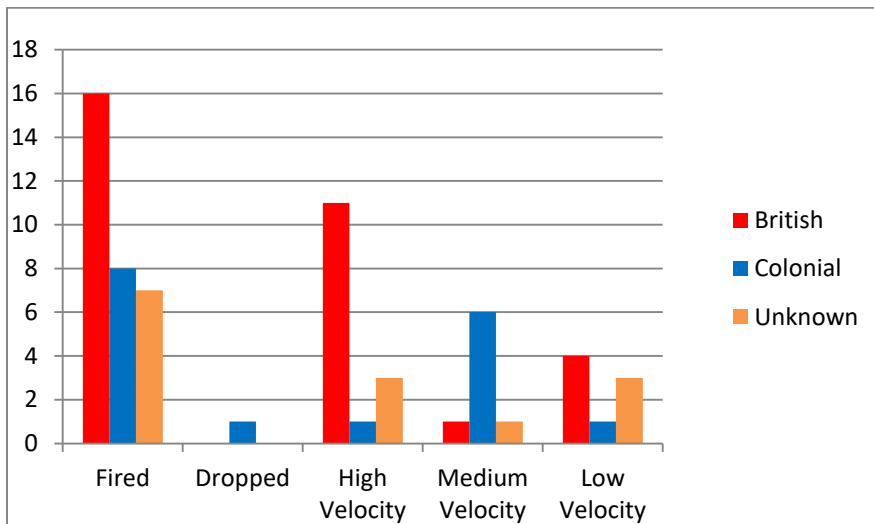


Table 2 Musket ball distribution chart.

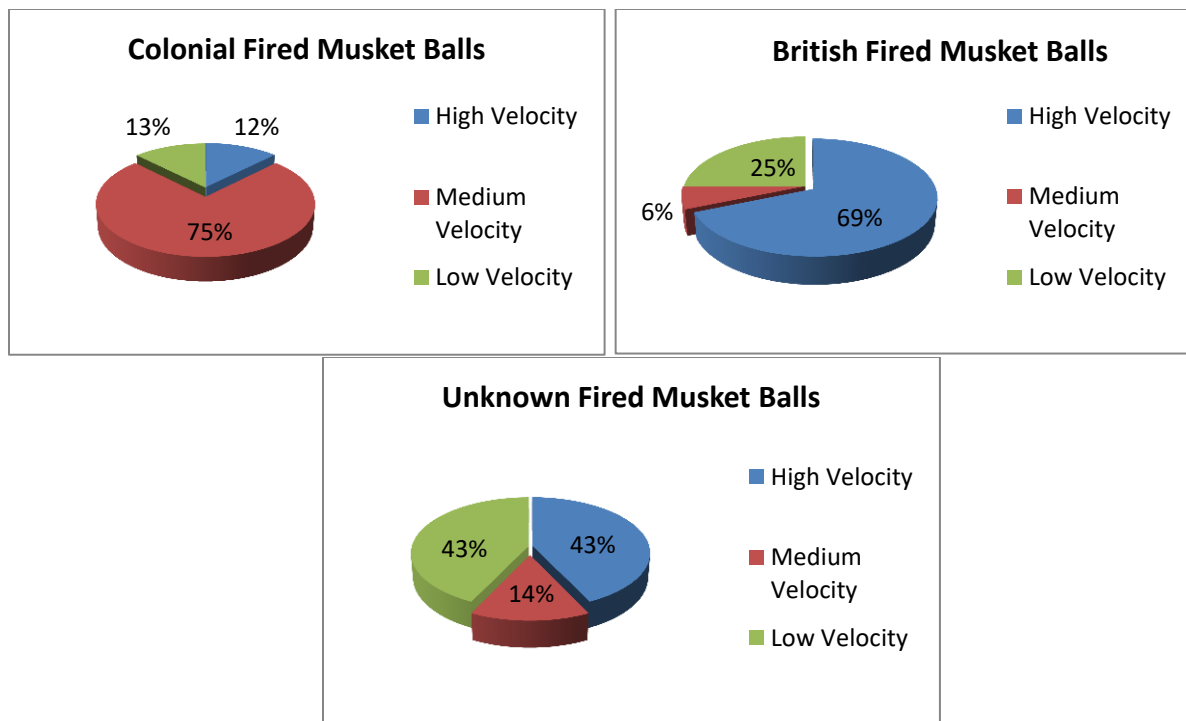


Figure 95 Fired musket ball velocity impact distribution graphs.

The musket ball evidence begins to provide some information to help tell the story of the battle. The analysis of the British and Colonial fired musket balls suggests that the British had more high velocity impact balls than the Colonial, which were more in the medium to low¹³ velocity impact range. High and medium velocity impact musket balls would have deformed in almost any media that they struck. Interpretations based on the number of fired musket balls and their velocity impact contributes to the analysis of the battle. (Figure 96)

¹³ Including Unknown musket balls.

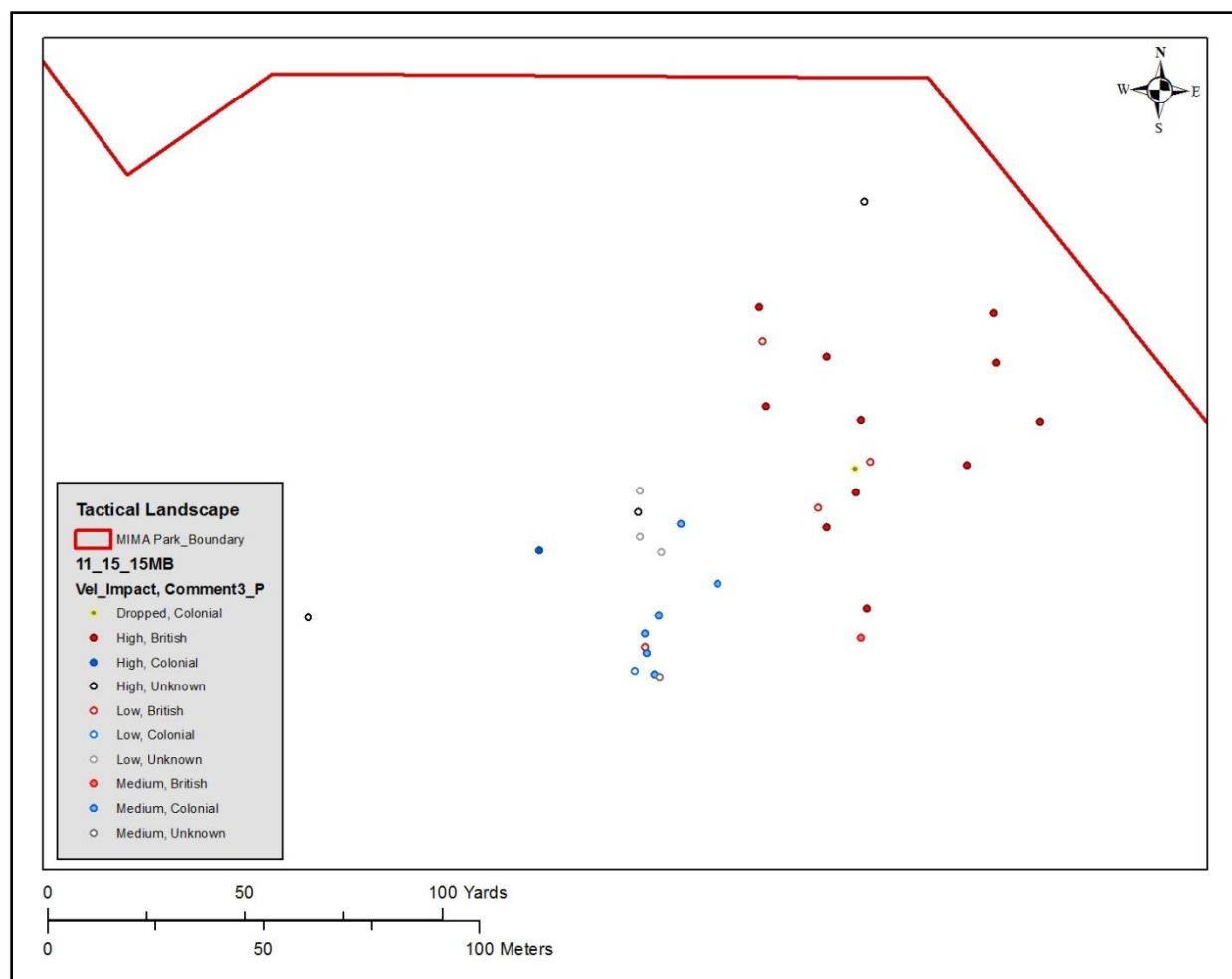


Figure 96 Distribution of musket balls with velocity impact strength.

The larger caliber and more powerful pattern 1769 land service musket (Brown Bess) used by the British Regular army required more powder and would send a ball down range at a higher initial velocity than the Colonial pieces (Doug Scott *personal communication*; Haag 2015.) It was also possible that the powder the Colonial militia was using was inferior to that of the British Regular army. The British troops were issued cartridges with a standard measure of powder and ball while the Colonial militia was personally responsible for providing their own powder and ball. Variables such as bad or wet powder, a poorly loaded gun in the heat of combat, the difference in weapon type, variation in powder measure and ball caliber likely contributed to the velocity impact as measured with the Parker's Revenge musket balls.

Velocity impact may also reflect long shots from either side, perhaps a British soldier on Battle Road firing up the slope into the battle core, or a Lexington militia man firing back toward the British flankers as he retreated. Additionally, the Lexington militia was firing down slope onto what was a softer ground surface than the slope filled with boulders that the British flankers were firing up to. Ricochets of musket balls from trees and rocks in the woodlot and direct tree or rock impact must also be taken into

consideration when looking at how velocity impact contributes to battle interpretation. Thus, velocity impact, while useful in characterizing musket balls is rather complex and should be cautiously applied in battlefield analysis.

The position of the single dropped Colonial musket ball most likely identifies the position where one of the Lexington militia men was standing and fumbled the attempt to re-load his musket, or perhaps dropped a cartridge as he was retreating.

32 musket balls have been identified through PRAP investigations. It is impossible to determine what percentage of musket balls have been recovered from the battle. The typical British flanking company would have had between 30 and 35 men, perhaps a bit fewer at this point due to casualties and fatigue. Nathan Monroe in a statement made 50 years after the battle (Phinney 1825:38) said that Captain Parker took “some” of the militia out to meet the British. How many? We just don’t know. The Lexington militia had a total of somewhat over 150 (Unpublished research by Bill Poole and George Quintal). It is thought that 77 to 81 men were on or about Lexington Green that morning and when the British column appeared. The General consensus of the MTR participants was that 35-40 or perhaps as many as 60 men from the Lexington Company would have been out that afternoon waiting to meet the British force for a second time. If all participants, including British and Colonial shot once, we would expect to find possibly 100 balls. If that is the case, we have a 33% recovery rate but more realistically, PRAP has a 10% to 50% recovery rate for the musket ball evidence of the battle (Scott *personal communication*). This estimate however, is heavily based on speculation.

In regard to the number of musket balls recovered, many reasons impact the recovery rate. Once fired, musket balls travel until they hit something (or drop after expending their energy if they do not encounter a surface.) If the musket ball hits a solid object with enough force it can fragment and in some cases completely disintegrate. Additionally the physical condition of the battlefield area and site taphonomy can significantly impact the archaeological record. Activities such as frost heave, bioturbation, agricultural activity, building, dumping, and site sedimentation and soil movement due to water and gravitational processes can bury, move, and damage objects in the ground. Continuous use of the site to present day has undoubtedly significantly impacted the integrity of some areas of the battlefield. The CTX 3030 metal detector and others used are sensitive to a depth of approximately 30 – 45 cm. Most musket balls retrieved during this investigation were at an average depth of 15 centimeters (the shallowest was found at 9 cm and the deepest at 24 cm).

During the first field survey season the southern end of the colonial fired musket ball line and the adjacent area (south, east, and west) was identified and mapped as a high metallic debris zone. It was only through careful metallic survey with 6” coils used for sharper focus to map individual targets that the southern end of this line of musket balls was discovered.

It is possible that additional musket balls and battle related artifacts may remain buried in the ground in the battlefield area. Continued frost heave, repeated high resolution survey, and ever developing technologies behind metal detecting methods may combine to reveal additional information to enhance PRAP artifact collection and battle interpretation in the future.

British Timeline and Tactics

Disposition, Movement, and Speed of the British Column

The condition of the British soldiers, their movement, tactics they used, and the speed of the British column are key factors that contribute to their reaction to and engagement with Captain Parker's militia company. By the time the British column was approaching the bend in Battle Road at Nelson's Bridge on the boundary of the towns of Lincoln and Lexington, they had been marching and/or fighting for approximately 12 hours, since leaving Boston the night before. They were under aggressive and "plaguey" fire that they did not anticipate. They were running out of water, out of ammunition, and the structure of command and control in the British column was breaking down.

Most likely describing events that took place immediately following Parker's Revenge, Ensign DeBerniere of the 10th regiment later wrote:

"...when we arrived within a mile of Lexington, our ammunition began to fail, and the light companies were so fatigued with flanking they were scarce able to act...Col. Smith (our commanding officer) had received a wound through his leg, a number of officers were also wounded, so we began to run rather than retreat in order - - the whole behaved with amazing bravery, but little order; we attempted to stop the men and form them two deep, but to no purpose, the confusion increased rather than lessened. At last, after we got through Lexington, the officers got to the front and presented their bayonets, and told the men if they advanced they should die. Upon this they began to form under a very heavy fire; but at that instant, the first brigade joined us..." (Kehoe 1974:121)

The British soldiers would have been tired, angry, and most likely frightened. They had not been prepared for the resistance they encountered. Captain W. Soutar of the Marines, Lt. Col. Smith's column described the "style" with which they were attacked:

"The Country by this time had took ye alarm, and were immediately in arms, and had taken their different stations behind walls &c. on our flanks and thus we were harassed on our front, flanks and rear...by a continual fire for eighteen miles, it not being possible for us to meet a man otherwise than behind a bush, stone, hedge or tree, who immediately give his fire and off he went. Our companies were not able to march half of its front on the open road, or more properly speaking in two platoons, the second in rear of the first. On our leaving Concord we were immediately surrounded on every Quarter, and expected to be cut off every moment. Sometimes we took possession of one hill, sometimes of another; at the last it was determined to push forward to Lexington, which we did through a plaguey fire..." (Kehoe 1974:162)

The British expedition had begun its trek from Boston to Concord, and ultimately Barret's Farm, in search of stockpiled Colonial munitions, in the early hours of the morning of April 19th. Around 6:00 am they arrived at the Lexington Green and fired on the Lexington militia killing 7 and wounding 9 Lexington men. Additionally, 1 individual from Woburn was killed and another wounded. The British arrived in Concord between 8:00 and 9:00 am and the fighting at North Bridge took place around 10:00am. After

some time in Concord, the British column started on their march back to Boston at around to 11:00am. The fighting between the British Regulars and Colonial militia and minute companies began in earnest at Meriam's Corner at approximately 12:30 in the afternoon. It is expected that the column arrived at the Nelson Bridge around 1:30 to 2:00 pm. A hard time line for the movement of the British column has not been exhaustively studied. Fischer includes a timeline of the day in *Paul Revere's Ride*, Appendix L: A chronology of the British March, April 18-19, 1775 (Fischer 1994:316-317.) Derek Beck's recent publication *Igniting the American Revolution: 1773-1775* (2015:329-332) also addresses the timing of the movement of the British column and battles on the first day of fighting.

How fast was the British column moving? Scrutiny of the timing and speed with which the British column was moving is crucial for considering the tactics employed by the British in their retreat to Boston. Continued consideration and tightening of the time line for the movement of both British and Colonial troops will contribute significant information to ongoing consideration of the tactics engaged on the first day of the war.

As previously mentioned, upon their approach to the Nelson Bridge, the British had suffered 25 casualties and may have had 62 wounded. Their movement was slowed, encumbered as they were with the wounded and as the soldiers neared exhaustion. Consideration of available time lines suggests the Column may have been moving as fast as 4 miles an hour as they approached the Parker's Revenge site. They were moving fast, under fire, and were experiencing great pressure on the rear of the column. The British soldiers were running low on ammunition; cartridge boxes would be probably more than half empty. Ensign, Henry DeBerniere wrote concerning the return of the Regulars from Concord, "When we arrived within a mile of Lexington our ammunition began to fail." (Kehoe 1974:121) From this statement, we may assume that many of the British had expended most of their ammunition. Their fire discipline also was poor. Lt. Frederick Mackenzie reported the men,

"...returned fire with too much eagerness, so that at first much of it was thrown away for want of that coolness and steadiness which distinguishes troops who have been inured to service...Most of them were young soldiers who had never been in action and had been taught that everything is to be affected by a quick firing." (Mackenzie, Diary, I:26)

They were likely anxiously considering the remaining 14 to 15 mile march back to Boston and the unknown, potential threat they would be facing.

Reports of tactics engaged by the British are not recorded for this part of the battle. According to Jim Hollister, a review of *A Treatise of Military Discipline*, "Chapter VIII, Consisting of General Rules for the Marching of a Regiment of Foot, or a Detachment of Men, where there is a possibility of their being Attacked by the Enemy" (Bland, 1727) provides a context for considering how the British column would have behaved while under attack. The *Line of March of the First Brigade from the Right by Sub Divisions* (commissioned by Lord Percy, colonel of the 5th of Foot and brigadier general under Gage, from the collection of the Duke of Northumberland) (Figure 97) depicts Percy's brigade deployed in a column of march on March 30th, 1775. The image shows the column formation with a van-guard and flanking parties in the van perpendicular to the road and a double row perpendicular to the head of the column.

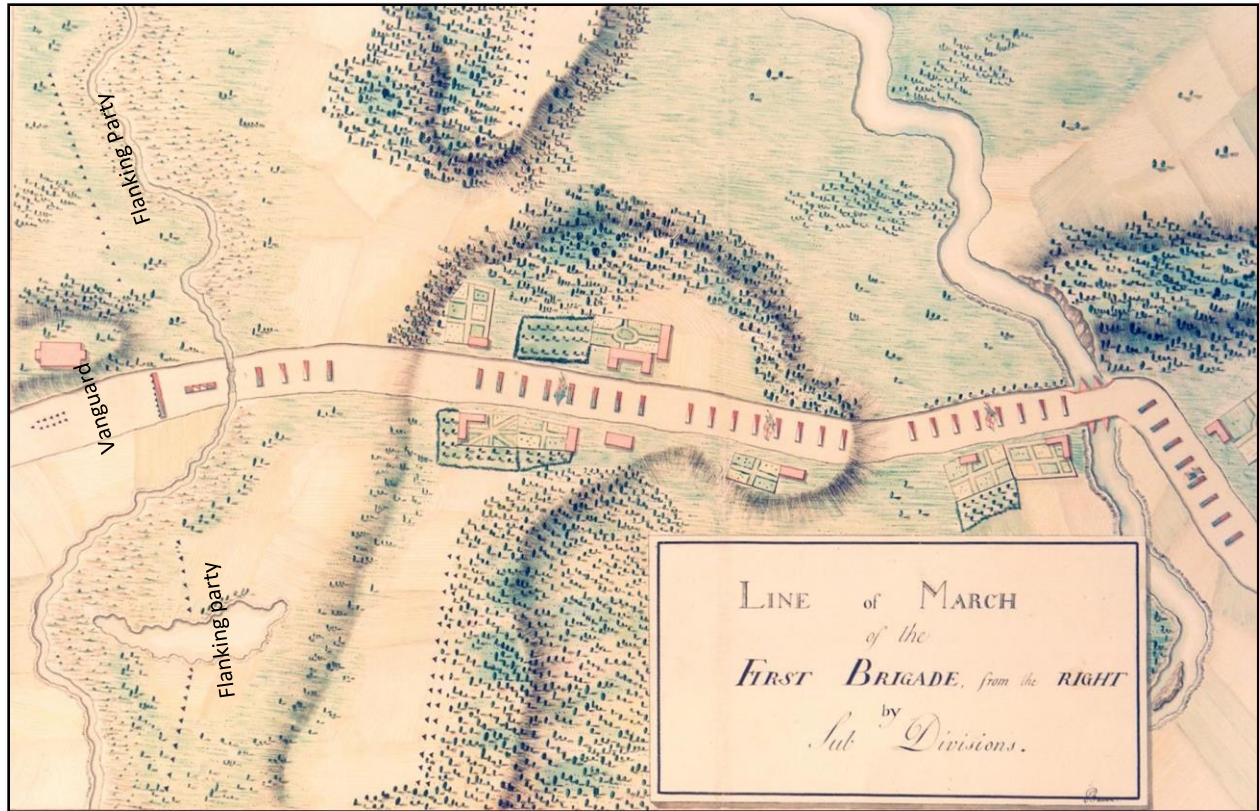


Figure 97 Line of March of the First Brigade from the Right by Sub Divisions. (Commissioned by Lord Percy, from the collection of the Duke of Northumberland.)

Under the guidance of Jim Hollister, the MTR considered how Lt. Col. Francis Smith deployed his troops to protect his column during the return march to Boston. An ongoing discussion based on the comparison of excerpts of the Bland *Treatise of Military Discipline* with primary accounts and maps from the 19th of April 1775 developed a base line of operating procedures for the British Army. In the case of April 19, 1775 the fact that Smith's column may have deviated from normal procedures marching through hostile territory was also taken into consideration.

At the end of a number of engaging discussions (see transcript, Appendix 4) it was determined that it would not have been physically sustainable for flanking companies to be constantly deployed on both sides of the British column as it returned to Boston from Concord. Rather, flankers would have been deployed as situations arose, protecting the column by sweeping away any threat from the front and sides of the moving army. In reference to fighting at Bloody Angle, Edmund Foster of Reading mentions, "...the enemy was now completely between two fires...They ordered out a flank guard on the left to dislodge the Americans from their posts behind large trees..." (Ripley 1827.) In that instance the column reacted to a situation.

The stress on the British column and speed at which it would have had to travel would rule out flankers paralleling the column for the entire march. If they did have flankers out, the eight miles from Concord to Lexington would have been spent running over rough terrain of broken fields, drainage ditches,

woodlots and orchards, scaling stone walls, rousting out chicken coops, privies and all sorts of buildings and sheds. If this was the scenario, the column would not have arrived at Parker's Revenge until much later in the day.

The first hypothesis of the MTR was that a British flanking company, or a vanguard, was positioned in front of the column that reacted to a threat; not marching in lines across the landscape sweeping the threat away. Patrick Jennings¹⁴ called this the "ball and snake" tactic. The column moved along at a fast pace, allowing for fatigue and the wounded, but under extreme pressure and constant fire from the flanks and rear of the column. As the British column advanced and encountered an obstacle or threat, they reacted to it. In the fighting leading up to Parker's Revenge, the threat was visible and did not surprise the column at both Meriam's corner and what is known today as the battle of Bloody Angle.

Lexington Militia Timeline and Tactics

Captain Parker and the Lexington militia was first Company to have time to choose the ground on which they would engage the British. They were hidden in the Nelson's 5 acre woodlot among a scattering of trees and erratics that provided good cover. While having a clear view down Battle Road at the approaching British column, they would likely have been nearly invisible until the lead van of the column reached Nelson Bridge.

In the early morning of the 19th, members of the Lexington militia had been assembled on the Lexington Green to safeguard their town and its residents. In the lead up to this day political events were building up to the, perhaps inevitable, conflict that broke out on April 19th, 1775. The residents of Lexington, many members of the militia company, farmed, went to church, and were increasingly upset with the developing situation with England. A strong voice in this community was Reverend Jonas Clark who whipped up support for resistance and may have engendered a faith inspired reason to pursue the British that day. As MTR member Dan Fenn said, "Don't forget Jonas Clark's impact...they were living in a psychological world of support that may make a difference on their willingness to go out and face the British column."

While we will never know what the residents and the militia of Lexington were thinking, the political, religious, and domestic environment in which they lived had an impact on their actions. Questions discussed as part of the MTR included: how did Captain Parker rally and assemble the remainder of the Lexington militia and head out to face the British army? How many men went out with him, and what was their intent - to observe or to engage? They had ample time to select the location for their stand, and how or why, did they choose their location?

Captain John Parker, the elected commander of the Lexington militia rallied his men on the morning of April 19th. They had just encountered a barrage of fire from the British column leaving dead and wounded; a devastating loss within that small community. How did Parker rally the men? What was their plan when, "About the middle of the forenoon, Captain Parker, having collected part of his company, marched them towards Concord..."? (Nathan Monroe, Phinney 1825:38) Much of the MTR

¹⁴ At the time of the MTR Patrick Jennings was working with the NPS Battlefield Protection Program. He is currently the curator for the National Museum of the United States Army.

discussion on this topic centered on the concepts of (1) the intent primarily to watch the British Regular army and safeguard the town of Lexington, or (2) Parker, as an officer and leader rallied his troops to take back some control, even if that meant firing just one shot at the enemy – demonstrating that while they may have been defeated in the morning, they were still in the fight.

Captain Parker lead “part of the company” out from the Lexington Green to what we now know is the border between the towns of Lexington and Lincoln. Middle of the forenoon would have been around 10:00 (9:30-10:30); the fighting at North Bridge was about 10:00am; the British column marched out of Concord around noon, arriving at Meriam’s Corner at 12:30. Captain Parker and his men would have marched out to the bounds of Lexington and possibly been in their position not much after the British had left Concord and become engaged at Meriam’s Corner.

A significant piece of information in considering not only the intent of the Lexington militia, but also the tactics used by the British and Colonial companies, is communication. What kind of communication network existed on the Colonial side of the battle? Was Captain Parker aware of the battle at the North Bridge? Unlikely. However, as evidenced by the call to arms the previous night by Paul Revere, Samuel Prescott, and William Dawes, a communication network was clearly established, enabling Minute and Militia Companies from many of the neighboring towns to take action. By the end of the day on the 19th, nearly 4,000 men had responded. Was this line of communication open and active during the first half of the day on the 19th? We don’t know.

What we do know was that no fully coordinated strategy was in place to fight the British Regular army on that day. It is reasonable to assume that Parker knew his job, and that as the Captain of the Lexington militia he was responsible for the protection of his town. It is likely that Parker, being an officer and a leader decided to take a stand at a strategic point in the landscape with the obligation to protect Lexington, but with no intention to go much further since he would expect other town companies were on the move throughout the countryside. Regardless of how, or if, Parker was informed of the increasingly vicious conflict that was developing that morning, he eventually heard and saw signs of the battle as it moved toward his position.

Captain Parker led the Lexington militia to the boundary of the town of Lexington. Familiar with the landscape, one can assume they would have identified the most strategic position to set up and await the arrival of the British column. The musket ball distribution, as presented below, confirms this assumption.

"We have evidence."

Dr. Doug Scott

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The Battle of Parker's Revenge Interpretation

Much of the discussion in the preceding two sections is based on our understanding of what may have happened, the influences that may have impacted decisions made and the intent of the Lexington militia in the lead up to the Parker's Revenge battle. As a result of the archaeological investigations, for the first time, we have evidence. Combined with the primary documents and robust historical resources written about the first day of the Revolutionary War, the artifacts provide physical, tangible remains from the Parker's Revenge battle. Analysis of these remnants of the battle provides insight to the tactical engagement of the battle; where the companies were positioned and the action of the battle.

Figure 98 maps the archaeological evidence of the battle. As discussed previously, the 32 musket balls have been divided into three groups: British, Colonial, and Unknown. Of the 32 musket balls 31 were fired and 1 was dropped. Nearly as important as the artefactual evidence is the landscape within which the battle took place. The following interpretation of the battle is based on the material discussed in previous sections of this report: the historic 1775 landscape, the artefactual evidence, and the historic record (primary and secondary documents).

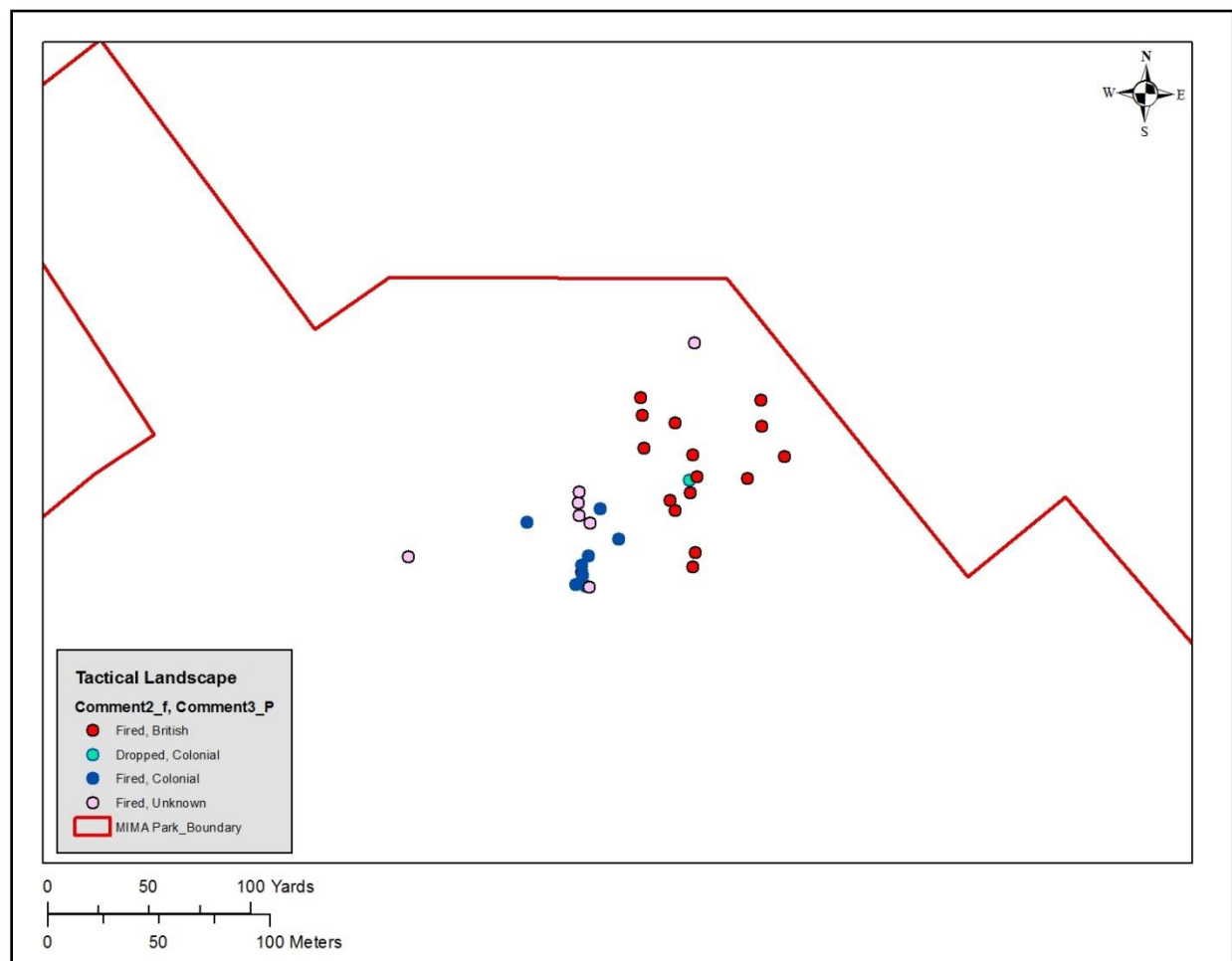
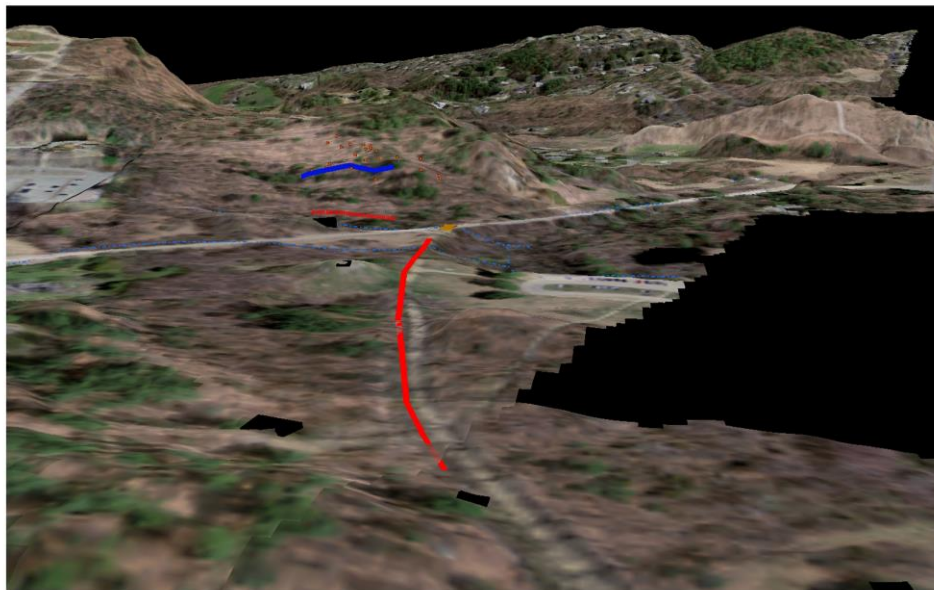


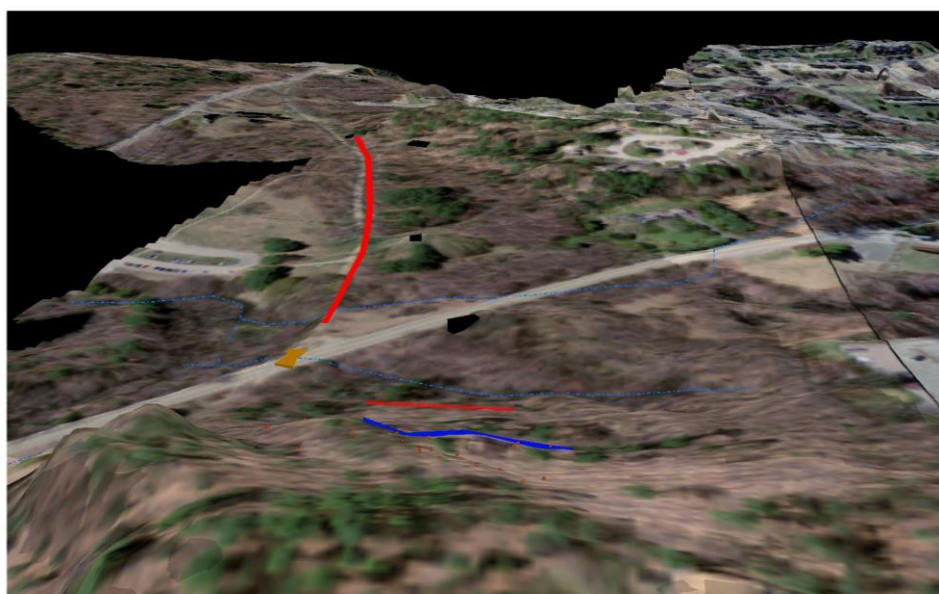
Figure 98 Parker's Revenge battle musket ball distribution.

Figure 99 highlights the landscape in which the battle was fought with the British at the bottom of the “valley” along the seep feature and the Lexington militia at an elevated position, half way up the slope. The images both have the Nelson house locations represented in black, the Nelson Bridge in brown, and the mapped erratics in orange.

Two lines of battle were clearly defined by the musket ball distribution. The British position is located along the seep feature identified by an alignment of 14 closely spaced fired musket balls, 8 Colonial, 1 British, and 5 Unknown. The position of the Lexington militia was defined by a more dispersed pattern of 18 musket balls, 16 British fired, 1 Colonial dropped, and 1 Unknown fired. (Figure 100)



British Viewpoint from the west.



Colonial Viewpoint from the east.

Figure 99 Battle site topography. The approach from the west (top) as the British Regular vanguard and column would have neared the turn in Battle Road. The militia point of view from the east looking west down Battle Road (bottom.)

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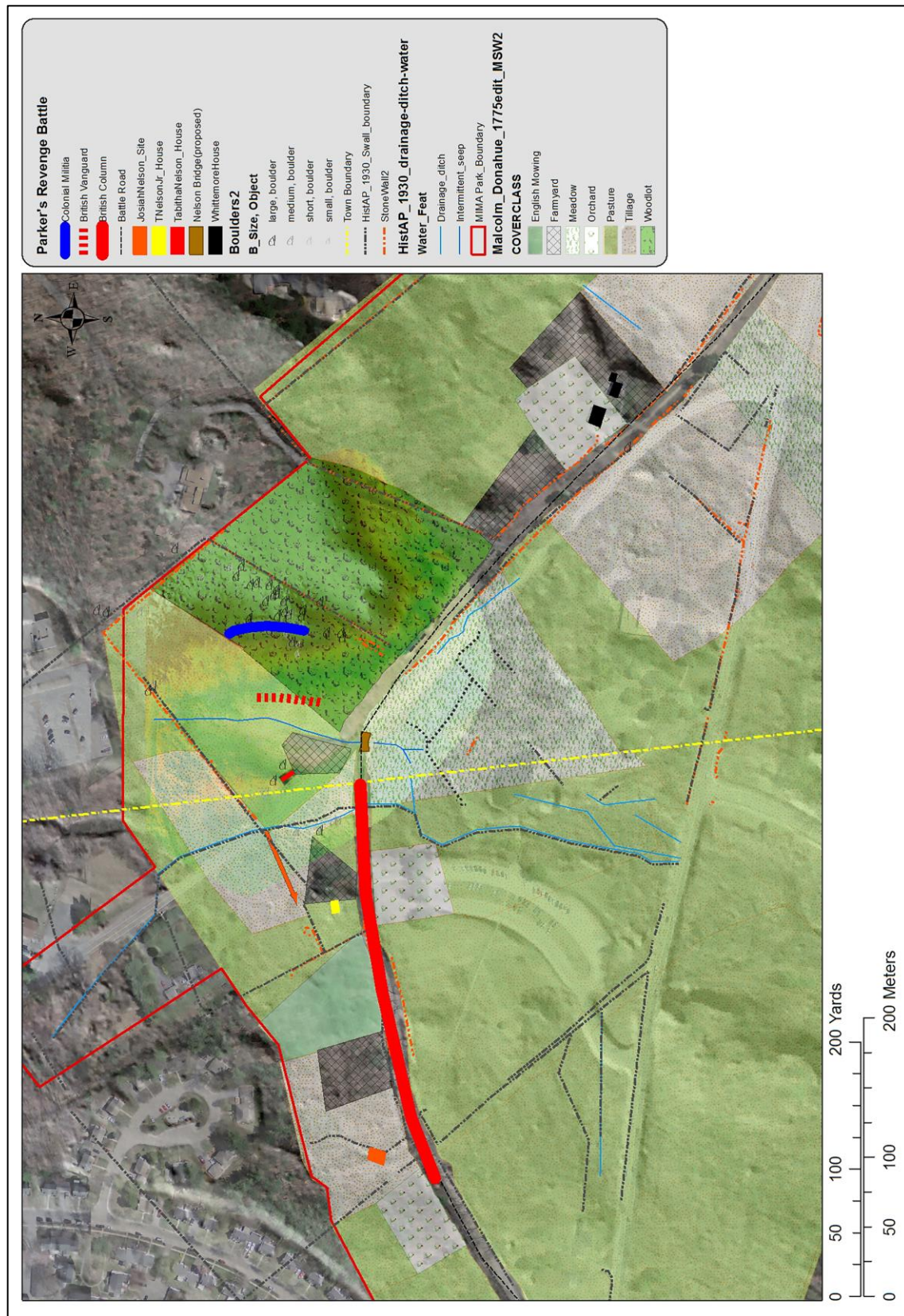


Figure 100 Colonial and British Regular positions based on musket ball distribution.

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The Lexington militia was positioned on the “finger” of land just north of the ledge outcrop. They were not located on the top of the outcrop as suggested on the park wayside marker. The top of the outcrop provided a good view to the west down Battle Road but was not a good tactical position. The Lexington militia would not have positioned themselves on a terrain feature that would not only highlight their position (light from behind), thus offering themselves as good targets, but also the sheer drop on the south face of the outcrop would not provide an acceptable line of retreat. If they had to retreat, they would have to drop down a precipitous incline and run across flat ground, again giving the British flankers easy targets.

The Lexington militia chose a place with a good tactical advantage. In the middle of the slope on the northern side of the outcrop the position provided them a clear view west down Battle Road and of the Nelson farmstead. From the position an easy route of egress ran along the hillside then south so that they could once again engage the column 500 m down the road at Bloody Bluff and Fiske Hill as stated by Nathan Monroe, “We fired on them, and continued so to do until they met their reinforcements in Lexington.” (Finney 1824)

The topography sloped down from the militia position to a level area on both sides of the seep with gently sloping ground to the north meeting the ridge north of the Tabitha Nelson / Thomas Nelson Sr. house. The form of this topological feature “caught” the fired musket balls, preserving the story they had to tell. Standing on elevated land, the Colonial force angled their guns down to effectively target the British flankers. Balls that did not hit a target impacted and embedded in the ground. Conversely, the British were firing up hill to strike the men of the Lexington militia. Those musket balls, if they did not find their mark or strike a tree or rock, ended up embedded in the earth. If the battle had been fought on an open field, musket balls may have traveled up to 200 yards or more without encountering any obstacle.

The musket ball distribution identified and mapped the two lines of fire; they also revealed the action of the battle. The 14 Colonial fired musket balls defined the British position and were clustered in a line 40 m long, suggesting a small compact target. The more widely distributed British fired musket balls show that the British force was firing at a more disperse target spread out over a broader portion of the site.

While the physical evidence recovered by this project has engendered a number of plausible alternatives, an interpretation of the battle can be made with the presentation of two scenarios. The first needs to be discussed as it is plausible, but is the weaker of the two. Earlier in this chapter there was a discussion about the tactical movement of the British column through hostile territory. The “ball and snake” response to threats would have enabled the column to keep moving at a brisk pace, just over 4 miles an hour. However, we do not know for a fact that flankers did *not* go out to clear the farm yards and houses along Battle Road. It is possible, that knowing they were approaching a constriction in the movement of the column (Nelson Bridge) and suspecting there might be a fight at the bend in the road, as had happened at Meriam’s Corner and Bloody Angle, they may have deployed flankers at the Thomas Nelson Jr. property and had them sweep through to Tabitha Nelson / Thomas Nelson Sr. ’s property across the ledge outcrop from the north and west.

If flankers were deployed and swept through the Nelson farmyards, they may not have seen the Lexington militia hidden in the woodlot mid-way up the slope on the “finger” of land. If the flanking company had 30 or 32 men (this is a supposition based on standard flanking company deployment, allowing for wounded and casualties), the line would extend for approximately 45 meters (if they kept 1.5 m spacing), they could have swept through the farmyards and by the houses at a distance approximately 25m from the road and under protection of the column. However, because of the nearly right angle bend in the road, the flankers at the furthest end of the line would have had to run at top speed to stay in front of the column as they swept across the landscape.

While a plausible tactic, the artefactual evidence does not entirely support this scenario. The Colonial fired musket balls are clustered in a line along the seep close to the road and Nelson Bridge. If the flanking company was coming across the Nelson farmyard, the pattern of musket ball distribution would most likely have spread out and aligned with the seep more to the north and east. If the flankers were able to maintain their alignment as they ran through the Nelson property, they would have been more or less evenly spread out when they faced the Lexington militia and exchanged fire. The resulting artifact distribution would have looked different with the British fired musket balls coming from a slightly different direction and angling more south and east.

The physical evidence tells a different story. Leading with the musket ball positions and considering the tactical landscape, the most likely scenario for the Parker’s Revenge battle is as follows. The Lexington militia came out to the boundary of the town of Lexington and focused their attention on the bend in the road at Nelson’s Bridge. The constriction point of the bridge, the nearly right-angle bend in the road, the 5 acre woodlot, and the elevated position on the “finger” of land to the north of the ledge outcrop was the best tactical position within that landscape. They arrived on site at least an hour before the British column. Hidden in the woodlot behind trees and boulders they waited and watched Battle Road facing west. In the distance they saw the smoke rising from firing muskets and heard the sounds of battle. The Lexington militia was prepared to face and fire upon the British column. Their position in the landscape gave them clear views of both the road with the advancing column, and if flankers were deployed and sweeping through the Nelson properties, clear vision across the Nelson farmyard.

The British column had just come through the Battle of Bloody Angle and had sustained casualties from William Thorning and other militiamen in a field full of boulders to the west of Josiah Nelson’s house, less than half a mile from the Nelson Bridge (*Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road*, 1959; Ripley 1827.) Being familiar with the road, they would know they were approaching a potentially dangerous location. While we do not have evidence of the size of the ranks on this day, the Doolittle prints seem to indicate an 8 man front, or a half company front, as they marched.

Given that the British Regular army was using an 8 man half-company front; a company would be made up of two ranks of 8 men, spaced closely (0.5 m), with the second half of that company, another 2 ranks of 8 men positioned 1.5 m behind them. Assuming 24 companies, there would have been 768 men in the column, with some casualties and wounded at this point. Considering spacing between companies

as well as the casualties and wounded at this time, the British Regular column is represented in the interpretive maps as 8 m across and 300 m long (represented on map images).

A vanguard was likely located out in front of the column. As the van reached the vicinity of Nelson Bridge they likely caught sight of the Lexington militia on a hill amongst the trees to the east of the road¹⁵. The vanguard rushed over the bridge and was given orders to deploy into flanking formation using a designated point or feature in the landscape as an end target. The alignment of Colonial fired and unknown musket balls suggests they may have been ordered to line up on the seep feature. The van was clustered together as they crossed the bridge and was beginning to deploy, closely spaced, offering an excellent target for the Lexington militia. (Figure 101 A)

The Lexington militia waited, concealed in the woodlot on the side of the hill. They watched the British column advance. Once the vanguard crossed the bridge, and before it could complete its deployment, the militia opened fire. At a range of no more than 40 m, they fired most likely one shot. (Figure 101 B) Knowing the British flanking tactic of fire and advance with bayonets and receiving return fire, the militia turned and ran¹⁶. They retreated in a line along the middle contour of the slope to the northeast. Moving at different paces¹⁷, the line of the retreating Lexington militia stretched across the slope and then disappeared over the top behind the protection of the ledge outcrop.

After receiving fire, the British van completed their flanking deployment, turned, and fired upon the retreating members of the Lexington militia. (Figure 101 C) This is evidenced by the wide distribution of British fired musket balls. They most likely would then have swept up the slope to confirm the retreat of the opposing force, returned to the column, and continued on their march back to Boston. (Figure 101 D)

¹⁵ Whether the soldiers in the vanguard saw members of the militia before or after the bridge, most likely they crossed the bridge before deploying. The position of the militia on the “finger” of land is approximately 135 m from the Nelson Bridge.

¹⁶ One of them dropped a musket ball!

¹⁷ As Patrick Jennings commented, “The young guys would have taken off fast while the older fat guys would have taken more time to get their things together and move.”

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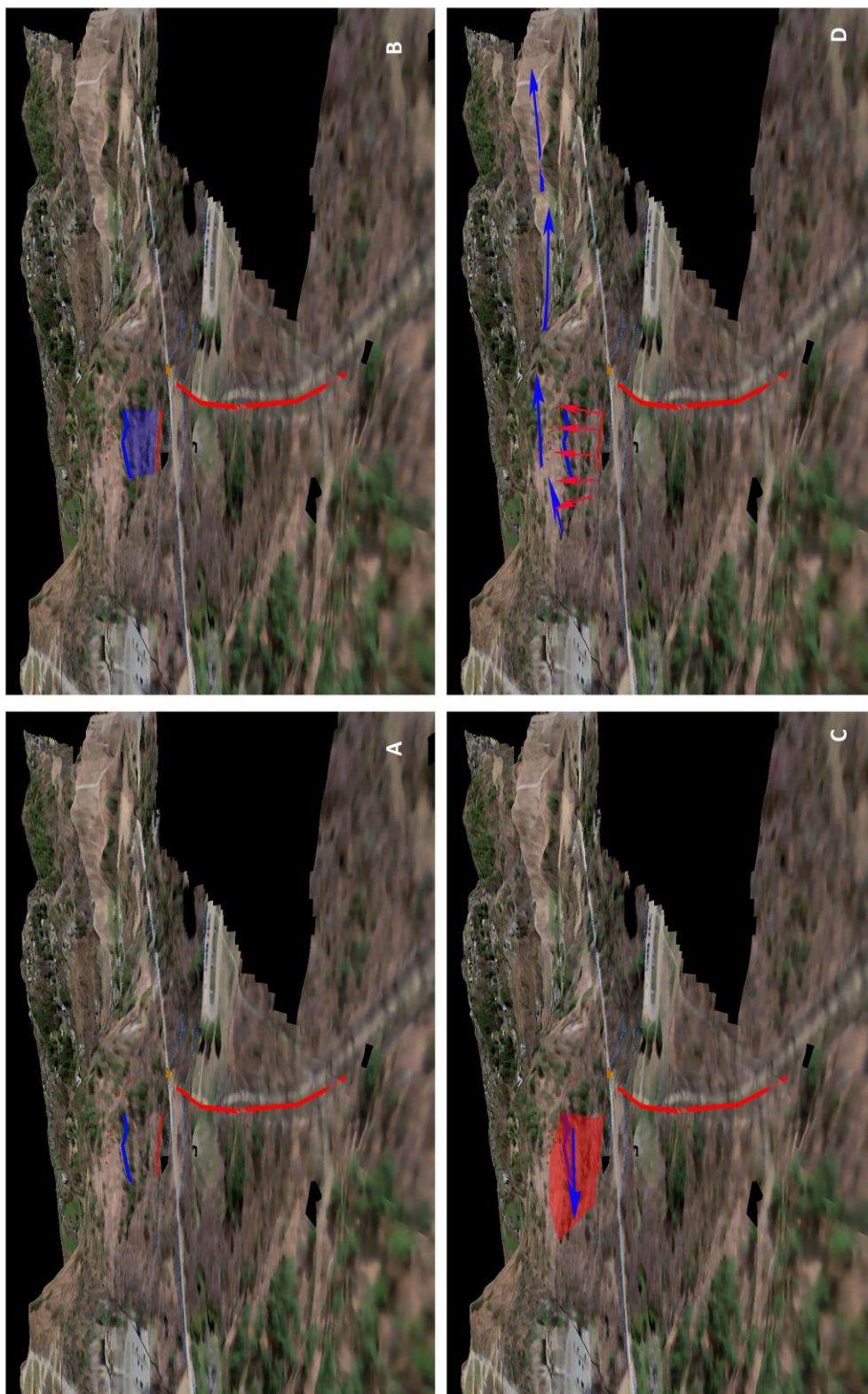


Figure 101 Figure 101 Battle Scenario 2 - Final Interpretation. Colonial militia hidden on hillside. British Regular column with vanguard flanking over Nelson Bridge (A). Colonial fire on deploying flankers (B), British flankers return fire on retreating militia (C), militia retreats under cover of the outcrop while flankers clear the battlefield (D).

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The route of egress the Lexington militia followed would have taken them directly to the battles of Bloody Bluff and Fiske Hill and back to Lexington town center (Figure 102). Not only does this route follow the natural topography, it also follows the path of an old stone wall, likely a field boundary in 1775.

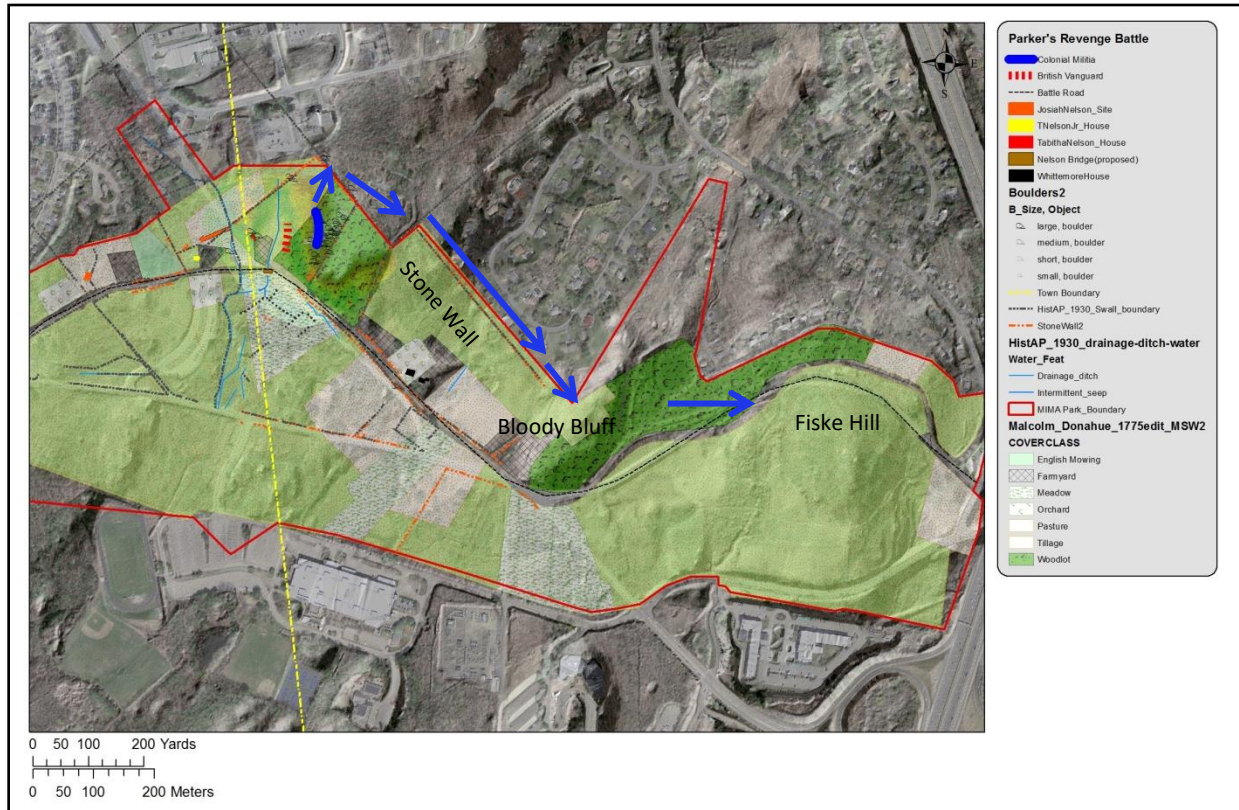


Figure 102 Rout of egress for the Lexington Militia following the exchange of fire at Parker's Revenge.

This exchange of fire, the Parker's Revenge battle, lasted maybe 5 minutes - at the most 10.

It took but a few moments, yet tells a resounding story of the first day of the American Revolution.

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"Finding my first musket ball was an amazing feeling. Seeing the reading on your machine, carefully exposing the metallic object, and picking up a musket ball that had been in the ground where it fell since April 19th 1775 made the hair stand up on the back of my neck.

This project has contributed greatly to the history of the park. Rangers and historians can now interpret an important piece of ground using new archaeological evidence. We have identified the location and interpreted the action of the battle."

Joel Bohy, Park Volunteer and Historian, Skinner Auction Specialist, Historic Arms & Militaria, Capt.
David Brown's Company

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Chapter 8: Conclusions and Recommendations for Continued Research

Project Conclusions

Over the past two centuries historic scholarship has written the story of the fighting during the first day of the American Revolutionary War. Through PRAP, archaeological investigations were first utilized for battlefield research in MIMA since its founding in 1959. The integrated archaeological approach not only located the battle, but it interpreted the tactical engagement between the British Regular army and Captain John Parker's Lexington militia. Mapping the battle lines of Parker's Revenge was significant in many ways. Up to this point the only record of the fighting was from a historical perspective. Archaeological evidence changed the details.

The fired Colonial musket balls clearly show the Regulars were using conventional flanking formations, extend order, but within standard training of the British army. The fired British musket balls show the Colonial force was using similar training and tactics but had adapted them to tactics learned in the Colonial wars. While "artifacts don't tell lies (Dr. Doug Scott, *personal communication*)," each of them tells a story. The 32 musket balls of Parker's Revenge tell us the story of a brief but violent exchange of fire on a hillside in Lexington.

Project Structure

The framework of PRAP, a partnership between MIMA and FMMP supported by park volunteers, re-enactment communities, descendant communities, and NRAP is what has made this project possible. The sponsorship and successful fund raising on part of the Friends group, the Town of Lexington and the Lexington Minute Men coupled with the love and labor invested by the Park and their volunteers provides a model through which innovative and important archaeological research can be structured to continue to protect, preserve, and learn more about our National Parks' and country's cultural heritage for the future.

PRAP has established a model for collaboration, cooperation, and partnership that should be used and adapted for future archaeological investigations in MIMA. A key component established by PRAP is the archaeological research design developed to incorporate historical, archaeological, and environmental scholarship for the effective analysis of new data. The PRAP metallic survey team has established itself as an invaluable archaeological resource demonstrating the importance of public engagement.

Continuation of the Parkers Revenge Project

The first phase of three, the results of PRAP will be used in phase 2 for new interpretive programming as a base line for battlefield landscape refurbishment. Exhibit and outreach materials are planned to not only present the artifacts and battle interpretation, but may also focus on engaging the public in the underlying STEM principles inherent in archaeological research methods. In the third and final phase of the project MIMA plans to refurbish the core area of the Parker's Revenge battlefield to better represent the 1775 landscape and provide a more realistic visual and immersive learning experience for the public.

Testable Hypotheses and Continued Research

“Any good project...opens areas that need more investigation and more work.” (Nancy Nelson, MIMA Superintendent, November 18, 2015)

Good research does not simply answer questions under investigation. It reveals the complexity of the topic and provides an opportunity to identify new questions to be asked. PRAP focused research on one small part of MIMA; on one brief, yet key battle on the first day of the Revolutionary War. As a result of this study the potential for continued research not only related to the Parker’s Revenge battle, but also related to MIMA as a battlefield unto itself, has become evident.

Hypotheses

Tactical engagement during the Parker’s Revenge battle was interpreted from evidence established by PRAP. As a result, we have a model to develop working hypotheses that can be tested in the other areas of Battle Road. One testable hypothesis is the British Regular army’s ball and snake tactical approach to returning to Boston. Another hypothesis would be the tactical use of the landscape by the Colonial force. A combination of historic landscape reconstruction with metallic surveys to map battle related artifacts at the major battle locations in MIMA would contribute significantly to defining the tactical engagements on the first day of fighting from Concord to Lexington.

When we pull our focus back from the recorded individual battles on that day, the entire Battle Road can be considered a single battlefield, a dynamic landscape through which a running battle was fought. Consideration of not only the battles but also of the empty spaces in-between may provide valuable information on not only how people moved through that landscape, but insight as to how the Colonial forces may have communicated.

Parker’s Revenge Battle Interpretation

Continued investigations at Parker’s Revenge may contribute to a more detailed interpretation of the battle. A number of archaeological and analytical projects remain to be studied that include:

Landscape features:

Identification and mapping the location of Nelson’s Bridge and the Tabitha Nelson / Thomas Nelson Sr. barn. Continued geophysical surveys and archaeological excavations of the Nelson farmstead (including Thomas Nelson Jr.’s property) should provide additional insight to the historic 1775 landscape reconstruction.

Environmental research will help better define the character of the historic landscape. This could involve coring to study the evolution of the modern day wetland, pollen evidence to better define boundaries of the woodlot, meadows, pastures, etc. of the 1775 landscape. Not only would this refine the historic landscape reconstruction, it would contribute significantly to the planning and implementation of the landscape refurbishment phase of the project.

While not related to events of that took place in 1775, the identification of the rhyolite chipping debris during excavations should not be overlooked. The pre-Colonial landscape within the park is not well

defined. These chips contribute valuable information to the prehistoric occupation of the site. Continued archaeological investigations should always record and report any additional related finds.

Battlefield definition and tactical engagement:

Metallic Surveys at Parker's Revenge

Continued metallic surveys in the core and peripheral areas of the mapped battlefield may contribute additional battle related evidence. Frost-heaves, seasonal weather, new tree-falls, site clearing, and removal of downed trees provide potential for the location and identification of musket balls and other metal objects that can add to the battle interpretation.

A more intense survey from the Thomas Nelson Jr. property and across the Tabitha Nelson / Thomas Nelson Sr. property may reveal additional clues to the tactical movement of the British Regular column and deployment of flankers. The ball and snake theory was determined by the lack of battle related artifacts found in the wetland and Nelson farmyard areas. If the survey area is extended further west and time is invested in sifting through the historic farmyard debris artefactual evidence may be identified that would modify, or contradict the ball and snake hypothesis this conclusion.

Additional high resolution metallic survey should also be conducted from the identified boundary of the battle lines south across the ridge outcrop to see if any battle related artifacts will be found. This area was surveyed during the first and second weeks of PRAP investigations, but due to the density of trash and modern debris, the metallic survey did not “clean”¹⁸ the site thus there is potential for battle related artifacts to remain in the ground, masked by the metallic debris. Prior to consideration of this massive undertaking it may be good to identify a few locations on the top, the slopes, and at the base of the ledge outcrop for potential excavation. Information on soil horizons should help planning by identifying the existence or lack of intact 18th century soils and depositions that may contain battle related artifacts.

Continued higher resolution metallic surveys to the south and east of the granite outcrop could examine the most likely route of egress that the Lexington militia would have taken. Surveying between Parker's Revenge and the Bloody Bluff may reveal information on the movement of the Lexington militia, any exchange of fire in this area, and contribute to better understanding the tactical deployment of flankers by the British Regular army.

In-depth Artifact Analysis

Analytical methods for studying individual musket balls such as XRF and protein analysis may contribute significant information for in-depth interpretation of the battle and possibly the individual men who participated in it. XRF analysis for identification of Revolutionary War musket ball elemental composition is a new topic of study. Watters continues to communicate with others researchers that are beginning to design a standard test methodology. Participation in workshops such as the “*Get the Lead out, Phase I: A pXRF Pilot Workshop on Early Ballistics Characterization*” hosted by NPS, SEAC in December 2015 and collaborative research efforts should contribute to musket ball characterization as

¹⁸ Cleaning a site would require all of the metallic artifacts in the ground to be retrieved. Then metallic survey would be repeated to map any underlying artifacts that may have been hidden beneath stronger metallic values.

British or Colonial. Future metallic surveys should design artifact retrieval methods with guidelines for successful XRF and protein analyses regarding the treatment of the artifact (i.e. wearing gloves, taking soil samples, and not cleaning artifacts.)

The PRAP musket ball and lead fragment collection should continue to be studied following guidelines set out by Sivilich (2016). More intensive analysis by PRAP members and other specialists will continue to contribute valuable information to the PRAP interpretation of the Parker's Revenge battle.

New partnerships and innovative research such as that being done during the autumn of 2016 as a collaboration between PRAP survey team members Bohy, Poole, and Scott and additional battlefield and ballistics experts will focus on gaining an in-depth understanding and method for analyzing and interpreting individual musket balls. PRAP and other battlefield archaeological investigations have given new impetus to study the rifling characteristics of historic rifled firearms, the external ballistic capability of such firearms, and to combat efficiency of these firearms (Scott, *personal communication* 9-12-2016.) The project will conduct live fire experiments and collect data on the ballistic capabilities of 18th and 19th century weapons. Results of the study will be published and available for use in battlefield archaeology, historic and re-enactor interpretations, and in the law enforcement community.

Battlefield archaeology in MIMA

The Parker's Revenge battle can be better understood and interpreted when taken into context of the broader battlefield landscape and fighting on that day. The Parker's Revenge battle was not an isolated event, but one of many seemingly unplanned battles between the British Regular army and Colonial forces on Battle Road. Great potential exists to study the tactical engagement between these forces across the MIMA landscape that can be approached through a number of ways engaging and adapting the PRAP working model.

Malcolm (1983) and Donahue (n.d.) have done extensive research for reconstructing the 1775 historical landscape throughout MIMA with an emphasis on the western end of the park. Creating a park-wide historical landscape reconstruction combined with archival research, historic landscape impact, and modern topographical mapping (such as LiDAR) will provide a fundamental component for considering tactical movement and engagement along Battle Road. Focused metallic surveys at known battle sites and a methodological approach to the "empty spaces in-between" have potential to reveal highly detailed evidence of the fighting and movement of men through the landscape. Tightening of the timeline of the battle will contribute important data to the movement of troops and determining tactical strategies employed, in particular those of the British army. Continued timeline reconstruction starting with the works by Fischer (1994) and Beck (2015) along with those of Galvin (1989) and Kehoe (1974, 1975) could develop a working hypothesis for the movement of troops that can be tested with the help of the reenactment community.

Combined, these threads of investigation can lead to the most accurate account of the fighting and tactics used by both forces during the first hours of the Revolutionary War. This new information would enable MIMA to more accurately interpret the battle and provide endless opportunities for evidence based stories for public engagement and education.

"The stunning results of the Parker's Revenge Archaeological Project have allowed us to engage in a much deeper analysis of this small but important action than ever before possible. The project has taken this part of the battle out of the realm of second-hand stories and literally placed it on the map. It has changed our understanding of what happened there that day."

Jim Hollister, Park Ranger, Education Coordinator, and Historic Weapons Supervisor, Minute Man National Historical Park

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Thanks and Recognition

PRAP was successful in achieving and surpassing its goals because of the outpouring of interest and collaboration with many individuals and organizations through the four years of the project. Over 1,500 volunteer hours were invested in this work through backbreaking site clearing, technical expertise, and dedicated project management.

Sincere thanks and gratitude go out to the many people and organizations listed below and many more.

Without the support, organization, and guidance of the **Friends of the Minute Man National Park** this project would not have been possible. A very sincere thank you to the entire group for their willingness to initiate and direct such a large and exciting project.

Dr. James W. Kendrick the NRAP Regional Archaeologist recommended Watters to the FMMNP and MIMA as a potential candidate for the project archaeologist. Sincere thanks to Dr. Kendrick who had the vision to match Watters with her integrated approach to landscape archaeology with the innovative proposal of the Friends and MIMA to not only give life to the battle of Parker's Revenge, but to establish a working framework for advanced archaeological research within MIMA.

Bob Morris the head of FMMNP played a key role in project management and keeping Watters focused toward the end goal of exploring the Parker's Revenge battle. His insight to project structure, a successful fund raising campaign, and hard work with the FMMNP enabled what could have been a normal, standard archaeological investigation; develop into a flagship project in NRAP setting new standards and establishing new pathways to collaborative research.

Nancy Nelson, the Superintendent of MIMA enabled PRAP to take place in her park. With enthusiasm, grace, and an occasional hard line her guidance kept PRAP focused on the fine details of working within an extraordinary National Park. Her investment in this project and significant network of friends and colleagues enriched the fundamental breadth of research that reached beyond basic archaeological investigations. I will forever cherish Jack-in-the-pulpits wherever I see them and promise to never drag a GPR over them.

James Hollister the Education Coordinator and Park Ranger, MIMA, is a font of knowledge on all things related to the first day (and much more) of the Revolutionary War. Jim's constant presence and guidance, and the ability to answer any question quickly, thoroughly and with enthusiasm enabled the background research and project interpretations to not only move smoothly, but to include a level of excellence that may otherwise not have been possible.

National and Local Support

PRAP received strong support both financially and State and Agency wide. The following organizations enabled PRAP to explore the Parker's Revenge battlefield and to successfully achieve our goals.

Save our Heritage

Town of Lexington Community Preservation Fund

The Civil War Trust's Campaign 1776 project

The American Revolution Institute of the Society of the Cincinnati

Minute Man National Historical Park and its entire staff

The Core PRAP Survey Team

The PRAP survey team was made up of dedicated volunteers who spent many hours in the field working with Watters in every aspect of the project. Their knowledge of history, expertise in Colonial history and Militaria, and aptitude for learning new archaeological methods was impressive. Each volunteer brought their own special skill to the team that, as a whole, was able to complete the project with good humor and hard work.



Figure 103 PRAP team members Bill Rose, Corinne Rose, Bill Poole, Ed Hurley, and Joel Bohy.

Corinne Rose is the quietest, most intense, and one of the hardest workers of the PRAP team. Corinne contributed a steady pace and a special aptitude for finding musket balls during metallic surveys.

Ed Hurley brought his experience with park historic interpretation and always an enthusiastic hand to the work he did. Each musket ball dug out of the ground as part of this project found itself in thoughtful and careful hands; among them Ed's with thoughts of the last man to touch them before him and what they had experienced.

Bill Poole was a constant and steady presence throughout the PRAP project. Expertise in Revolutionary War history and a descendant of one of the Lexington militia men that fought on the green, clearly PRAP was not just another job for him. Bill contributed an indefatigable energy and strong point of view to the project and helped establish the baseline historic framework for the project. Bill's contribution to editing the final report provided peace of mind for Watters and has made the report easier to read (and hopefully to enjoy.)

Bill Rose from before Watters' involvement with the project has been an enthusiastic and stalwart proponent of PRAP. Never afraid to voice his opinions, Bill has been invaluable in challenging Watters to most effectively and exhaustively work through the history of Parker's Revenge and advocate for (the successful) integration of park volunteers into the core of PRAP. His historic expertise and knowledge of the material record of the Revolutionary War period contributed to in-field interpretation and in-depth contributions to the final report military and artefactual content.

Joel Bohy brought more than his Colonial era history and Militaria expertise with him to PRAP. Having grown up in MIMA he had an intimate knowledge of every inch of the landscape within which we worked. Joel helped make every day in the field interesting. His ability to identify objects as they came out of the ground helped build hypotheses about the battle while in the field. Joel provided imagery and detailed information on military tactics and objects, contributing significantly to the final report.

PRAP Metallic Survey Team

The core PRAP metallic survey was made up of volunteers Corinne Rose, Ed Hurley, Bill Poole, Bill Rose and Joel Bohy. PRAP was pleased to be able to work with **Dr. Douglass Scott**, **Dr. Sheldon Skaggs**, and **Joe Balicki** all historical and conflict archaeologists who trained the volunteer crew in archaeological metal detecting. PRAP benefited significantly from their participation in the metallic surveys and subsequent artifact analysis and tactical analyses of the battle. Dr. Scott analyzed the musket ball collection recovered as part of PRAP and has had many discussions with Watters and PRAP team members regarding their interpretations and the exchange of fire during the Parker's Revenge battle.

The team was joined by archaeologists from the **Public Archaeology Lab (PAL)** who helped manage the survey and processed artifacts found. PAL field staff for the metallic surveys and archaeological excavations included Holly Herbster, Nate Orsi, Eric Fahey, Jen Banister, Christian Heath, and Sam Rousseau. PAL field volunteers included Maggie Klejbuk, Jess Horn, and Jessica Jay. PAL laboratory staff that processed the artifacts included Heather Olson, Danielle Cathcart, Perry Pelkey, and Kate Erickson.

Additional PRAP metallic survey members included **Dr. Bill Griswold** and **Joel Dukes**, both regional archaeologists with NPS NRAP.

The metallic surveys were supported by members of **FMMNP** who provided lunches, water, and coffee during field surveys.



Figure 104 The PRAP metallic survey team: (from left) Joe Balicki, Meg Watters, Bill Rose, Corinne Rose, Joel Dukes, Bill Poole, Doug Scott, Ed Hurley (back), Joel Bohy, Sheldon Skaggs, Erik Fahey (missing from picture is Nate Orsi.)

Site preparation and Clearing

To conduct the geophysical and metallic surveys a significant area of the Tabitha Nelson / Thomas Nelson Sr. farmyard and wetland tracts had to be cleared of underbrush. Clearing involved hand-clipping of vegetation; a rather laborious task. Our sincere thanks go out to every person who came and helped prepare the site, a concerted effort with MIMA and members of 10 local re-enactment groups including: the **Lexington Minutemen**, the **10th Regiment of Foot**, the **Lincoln Minutemen**, the **Acton Minutemen**, the **10 Mass Regiment**, the **4th Middlesex Regiment**, the **4th Regiment of Foot**, the **Foot Guards**, and the **2nd Dragoons**.

Academic & Professional

MIMA is in an ideal location to draw on academic and professional expertise. PRAP benefited from this and from a profound local interest in the first day of fighting of the Revolutionary War.

Personal thanks go out to **Dr. Richard T.T. Forman** a landscape ecologist and professor at Harvard University. Richard reached out to Nancy Nelson and offered to come take a group for a site walk to talk about the observations he made on the environmental development and history of the Parker's Revenge battlefield landscape. Numerous site walks and 3 reports later, Richard's contribution significantly impacted the final historic 1775 landscape reconstruction and provided a fundamental concept of the landscape and environment within which the battle took place.

Additional thanks go to **Dr. Brian Donahue** a Professor of American Environmental Studies at Brandeis University who consulted with PRAP to interpret the land use of the battlefield landscape. **Dr. Robert Thorsen** a geologist from University of Connecticut consulted with PRAP about stone walls and offered a preliminary overview of the age of stone walls in the battlefield landscape.

Local scholars including **Dr. Dan Fenn** and **Dr. Robert Gross** contributed thought provoking discussion providing material and viewpoints for investigation and consideration in the context of defining the battlefield and tactics of the Parker's Revenge battle.

David Wood, Curator of the Concord Museum collaborated with PRAP in not only providing access to Concord Museum artifacts for comparative study and inclusion in the XRF analysis, but also provided insightful discussion regarding the lead up to the fighting on April 19, 1775 and thoughtful comments on pathways of communication. David and the Concord Museum collaborated with PRAP by providing a venue for the Military Tactical Review dinner and for the first time, displayed a collection of muskets (some contributed by Bill Rose) and musket balls (including the Parker's Revenge collection) from the first day of fighting.

Feldman 3D, the 3D visualization division of Feldman Land Surveyors, Inc. worked with PRAP as part of their Pro-Bono program and conducted a 3D laser scan and generate 3D models of the core Battlefield landscape.

Brucker X-ray Florescence manufacturing company worked with PRAP on a day of musket ball scanning and analysis.

Kyle Zick Landscape Architecture, Inc. contributed artistic landscape reconstructions for PRAP.

3D Printsmith LLC provided musket ball scanning and printing for Watters as a proof of concept for artifact modeling.

PRAP worked with **LEC Environmental Consultants, Inc.** in obtaining permits for metallic survey in the wetland area of the site.

Military Tactical Event

The Military Tactical Event successfully achieved its goals of interpreting the tactical actions of the British and Colonial forces during the battle of Parker's Revenge based on existing and new evidence. This success would not have been possible without the participation of the diverse group of specialists that donated their expertise over two days of discussions. Thank you to everyone involved. A special thanks to **FMMNP** volunteers who hosted the event.

Brigadier General Leonid Kondratiuk, Massachusetts Organized Militia; Director, Massachusetts National Guard Military Museum

Howard L. Helfman, Ed.D, Minute Man NHP Volunteer

Doug Scott, Historical & Conflict Archaeologist

David Wood, Curator, Concord Museum

Richard T.T. Forman, Ecologist, Harvard University

Dan Fenn, Lexington Militia Men; Emeritus, John F. Kennedy School of Government; Founding Director of the John F. Kennedy Library

Joel Bohy, Minute Man NHP Volunteer; Arms & Militaria Specialist, Skinner Inc. Auctioneers

Bill Rose, Minute Man NHP Volunteer, Lexington Minute Men

Bill Poole, Lexington Minute Men; President, Lexington Historical Society

Ed Hurley, Minute Man NHP Volunteer, Guild of Historic Interpreters

Greg Hurley, Minute Man NHP Volunteer, Social Studies/History Department Teacher Leader, Malden High School

Don Hagist, editor of the *Journal of the American Revolution*

Robert Gross, Historian & Author (*The Minutemen and Their World*), Emeritus, University of Connecticut

Bob Morris, President, Friends of Minute Man National Park

Jayne Gordon, Public Historian; Friends of Minute Man National Park Board of Directors

Paul O'Shaughnessy, Commander, 10th Regiment of Foot; Friends of Minute Man National Park Board of Directors

Steve McCarthy, Lincoln Minute Men; Friends of Minute Man National Park Board of Directors

Franny Sacco, Minute Man National Park Project Board of Directors

Jennifer Voss, Minute Man National Park Board of Directors

Nancy Nelson, Superintendent, Minute Man National Historical Park

Leslie Obleschuk, Chief of Interpretation and Education, Minute Man National Historical Park

Jim Hollister, Park Ranger, Education Coordinator, and Historic Weapons Supervisor, Minute Man National Historical Park

Patrick Jennings, Historian, American Battlefield Protection Program National Park Service

Jim Kendrick, Northeast Region Archeology Program Chief, National Park Service

Lou Sideris, Chief of Planning and Communications (retired), Minute Man National Historical Park

Community Support

The Parker's Revenge initiative is being guided by an advisory committee of prominent Revolutionary War historians, military representatives, academics and civic leaders. Thank you for the support and guidance through PRAP.

PRAP Advisory Board

Susan Bennett, Executive Director of the Lexington Historical Society

Joel Bohy, Captain David Brown's Company and living historian

Edward Davey, History teacher in Lexington school system, Massachusetts Historical Society

Dan Fenn, Founding Director of the JFK Library, former Lexington selectman, Harvard Kennedy School

David Hackett Fischer, Brandeis University, author of *Paul Revere's Ride* and *Washington's Crossing*

Richard T.T. Forman, Harvard University, landscape ecology and road ecology specialist

Jayne Gordon, Massachusetts Historical Society Director of Education and Public Programs

Robert Gross, University of Connecticut, author of *The Minutemen and Their World*

Brigadier General (MA) Leonid Kondratiuk, Director of the Massachusetts National Guard Military Museum and Archives

Jack MacLean, Former President of the Lincoln Historical Society, author of *A Rich Harvest: The History, Buildings, and People of Lincoln Massachusetts*

Bill Poole, Historian and former Captain of the Lexington Minute Men

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Jennifer Voss, Secretary, Lexington

Michael Giaimo, Sherborn

Douglas Harding, Lincoln

Jayne Gordon, Concord

Stephen McCarthy, Lincoln

Paul O'Shaughnessy, Lexington

Frances Sacco, Tyngsborough

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Massachusetts State Historic Preservation Office

Northeast Region Archaeology Program, National Park Service

A final sincere and heartfelt thanks and gratitude goes out to my family. Thank you **Steve and Vivienne Wilkes** for supporting me and PRAP research through these past 3 years. Your encouragement, site visits, and engagement in PRAP made it not only an interesting project for me, but even more fun.

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References

Abel, Leland JI.

- 1966a *Current Status of Archaeological Program at Minute Man*. Ms. (Memorandum) on file, Administrative Papers on the History of Archaeology at MIMA, Minute Man National Historical Park, Concord MA.
- 1966b *The Tabitha Nelson House Site*. Ms. (Form 10-189 Resource Study Proposal) on file, Administrative Papers on the History of Archaeology at MIMA, Minute Man National Historical Park, Concord MA.
- 1966c *Research report: Archaeological Excavations at the Site of the Josiah Nelson House*. Ms. On file, Minute Man National Historical Park, Concord MA.
- 1967 *Historic Structures Report: Part II (supplement), Archaeological Data Section on the Josiah Nelson Farm*. Ms. On file, Minute Man National Historical Park, Concord MA.
- 1982 Letter to Alan Synecki, January 22, 1982. Ms. On file, MIMA Correspondence File, Eastern Archaeological Field Laboratory, North Atlantic Regional Office, National Park Service, Boston.

Abel, Leland J. and Cordelia Thomas Snow

- 1966 *The Excavation of Sites 22 and 23*. Ms. On file, Minute Man National Historical Park, Concord, MA.

Abel, Julie, Sean Fitzell, and Peter Glumac

- 1998 *Phase I Archaeological Survey, Hanscom Air Force Base, Massachusetts*. Report on file, Massachusetts Historical Commission, Boston, MA.

ABPP

- 2008 *Battlefield Survey Manual*. American Battlefield Protection Program, National Park Service

AMDA American Metal Detecting for the Archaeologist

- 3/6/2016, <http://amda.modernheritage.net/>

1779 *American Archives, IV Series, Vol. 1*. J. Gill Court Street, Boston.

Baker, Vernon G.

- 1980 *Archaeological Overview and Evaluation, Minute Man National Historical Park*. Cultural Resources Management Study No. 2. Division of Cultural Resources, North Atlantic Regional Office, National Park Service, Boston.

Beck, Derek W.

- 2015 *Igniting the American Revolution: 1773-1775*. Sourcebooks.

Berg, Stanton O.

- 1977 The Forensic Ballistic Laboratory. In *Forensic Medicine Volume I Mechanical Trauma* by C. G. Tedeschi, William G. Eckert, and Luke G. Tedeschi, W. B. Saunders Company, pp.527-69, Philadelphia, PA.

- Bland, Humphrey
1727 *A Treatise of Military Discipline.*
- Burns, William E.
2005 *Science and Technology in Colonial America.* Greenwood Press: Westport, Connecticut.
- Chase, Ellen
1911 *The Beginnings of the American Revolution, Volume III,* Sir Isaac Pitman and Sons, Ltd., London.
- Coburn, Frank Warren
1921 *The Battle on the Lexington Common: April 19, 1775,* F.L. Coburn & Co., Boston.
- Cook, E. R. *et al.*
2008 *North American PDSI Reconstructions, Version 2a.* IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series #2008-046. NOAA/NGDC Paleoclimatology Program, Boulder, CO, USA.
<ftp://ftp.ncdc.noaa.gov/pub/data/paleo/drought/NAmericanDroughtAtlas.v2/readme-NADAv2-2008.txt>
- De Witt Bailey
2009 *Small Arms of the British Forces 1664-1815.* Andrew Mowbray Publishers, Inc.
- Dietrich-Smith, Deborah
2005 *Cultural Landscape Report for Battle Road Unit: Minute Man National Historical Park,* NPS, Olmsted Center for Landscape Preservation.
- Donahue, Brian
2004 *The Great Meadow, Farmers and the Land in Colonial Concord.* Yale University.
2015 Personal communication with Meg Watters 11/6/2014, 8/25/2015.
- Donohue, Barbara
2010 *Results of the Research Conducted on the Thomas Nelson Farm Site (19-MD-347/HA.6) in Hanscom Air Force Base, Middlesex, County, and Massachusetts.* John Milner Architects, Inc.
2007 *Report of a Specialized Intensive (Locational) Survey, Lexington Battle Road Hanscom Air Force Base, Middlesex County, Massachusetts,* John Milner Associates, Inc. for Hanscom Air Force Base, 66 MSG/CE.
Pre-2013 *Personal communication* with Lew Sideris.
- Dougherty, Paul M.
1969 Report on Two Early United States Firearms Identification Cases. *Journal of Forensic Sciences* 14(4):453-459.
- Elliott, Daniel Thornton
2015 *Personal communication,* 9-10-2015.

Emerson, Ralf Waldo

1835 *A Historical Discourse, Delivered Before the Citizens of Concord, 12th September, 1835. On the Second Centennial Anniversary of the Incorporation of the Town.* (Concord G.F. Bemis, 1835)
Located in the Special Collections of the Concord Free Public Library.

Everett, Edward

1825 *Orations and Speeches on Various Occasions.* American Stationer's Company: Boston.

Fischer, David Hackett

1994 *Paul Revere's Ride*, Oxford University Press.

Forman, R. T. T.

2015a *Reading the Outcrop*, October 19, 2015, unpublished January 31, 2015 Report for the Park, Concord, Massachusetts.

2015b *Observations on the Lexington Militia Rock Outcrop Site [Site of Parker's Revenge]. Minute Man National Historical Park.* Unpublished December 10, 2016 Report for the Park, Concord, Massachusetts.

Foster, D. R. and Aber, J. D., eds.

2004. *Forests in Time: The Environmental Consequences of 1000 Years of Change in New England.* New Haven, Connecticut: Yale University Press.

French, Allen

1925 *The Day of Concord and Lexington*, Little Brown, Boston.

Galvin, John R.

1989 *The Minute Men, The first Fight: Myths and Realities of the American Revolution*, Potomac Books, Inc. Washington, DC.

Garvin, Beth J., Julius Gy. Fabos, Meg Rasmussen, and Jack Ahern

1993 *A Management Plan to Balance Cultural and Natural Resources: The Minute Man National Historic Park Case Study*, Massachusetts Agriculture Experiment Station.

Grinslade, Tom, (ed.) Linda Scurlock

2005 *Flintlock Fowlers: The First Guns Made in America.* Scurlock Publishing Company.

Griswold, William

1996 *Management summary: intensive archeological testing, phase 2 trail and parking lot construction, visitor access trail project area, Minute Man National Historical Park.* Lowell, MA: United States Department of the Interior, National Park Service, Northeast Cultural Resources Center, Archeology Branch. Unpublished report on file, Minute Man National Historical Park, Concord, MA.

2011 *Geophysical Survey at MIMA The Bull Tavern Site, Lexington, MA 2010.* Unpublished report on file, Northeast Region Archaeology Program, Heritage Preservation, Planning & Compliance, Boott Cotton Mills Museum, Lowell, MA.

Griswold, William A., and William Cooney

- 2002 *Archaeological Testing at the Whittemore House, MIMA, Lexington, MA.* Unpublished report on file, Minute Man NHP, Concord, MA.
- Gunther, Jack Disbrow, and Charles O. Gunther
1935 *The Identification of Firearms.* John Wiley and Sons, London.
- Haag, Luke
2015 "March 7, 2015 Tests at Ben Avery Range." PowerPoint. Forensic Science Services, Inc. Carefree, AZ.
- Hales, John G. Plan of the town of Lexington in the Country of Middlesex. Harvard Geospatial Library.
- Hargreaves, Reginald
1968 *The Bloodybacks: the British Serviceman in North America and the Caribbean 1655-1783.* Hart-Davis, New York.
- Harris, Arthur
n.d. Journal of Arthur Harris of the Bridgewater Coy of Militia.
- Harris, C. E.
1980 Sherlock Holmes Would Be Impressed. *American Rifleman* 128(5):36-39, 82.
- Hatcher, Julian, Frank J. Jury, and Jac Weller
1977 *Firearms Investigation, Identification and Evidence.* Stackpole Books, Harrisburg, PA.
- Heard, Brian J.
1997 *Handbook of Firearms and Ballistics.* John Willey, New York.
- Herbster, Holly
2005 *Archaeological Overview and Assessment Minute Man National Historical Park Concord, Lincoln, and Lexington Massachusetts, PAL, Rhode Island.*
- Hudson, Charles
1913 *History of the Town of Lexington.* Houghton Mifflin Co., Boston.
- Interim Report of the Boston National Historic Sites Commission Pertaining to the Lexington-Concord Battle Road*
1959. Letter from Secretary of the Interior. United States Government Printin Office, Washington.
- James-Pirri, Mary-Jane
2009 *Natural Resource Assessment for Minute Man National Historical Park, Natural Resources Report NPS/NER/NRR – 2009/022.* Graduate School of Oceanography, University of Rhode Island.
- Kehoe, Vincent J.R.
1974 *We were there! April 19th 1775, The British Soldiers.* Published by V.J.R. Kehoe.

1975 *We were Three, April 19th 1775, The American Rebels*. Published by V.J.R. Kehoe.

Kirk, Matthew

2016 "Blood-Residue Analysis of Musket balls from Sackets Harbor Battlefield of the war of 1812." Presented at the Society of Historical Archaeology, Washington D.C. January 2016.

Lexington Minute Men web site - <http://www.lexingtonminutemen.com/the-company-of-lexington-minute-men.html> (2-18-16.)

Mackenzie, Frederick. (ed.) French, Allen. 1926 *A British Fusilier in Revolutionary Boston*. Cambridge Harvard University Press.

Malcolm, Joyce Lee

1983 *Three Historic Ground Study Reports, Minute Man National Historical Park*. Unpublished draft on file at Minute Man NHP, Concord.

1985 *The Scene of the Battle, 1775. Historic Grounds Report, Minute Man National Historical Park*. NPS, North Atlantic Regional Office, Division of Cultural Resources.

Mead, Leslie A.

1999 *Report on Archaeological Testing for Package 170A: Historic Structures and Cultural Landscapes (Tree and Stump Removal) Visitor Access Trail Project, Minute Man National Park*. Archaeology Branch, Northeast Cultural Resources Center, National Park Service, Lowell.

2000 *A Revolution Underground: A History and Analysis of the Management of Archaeological Resources at Minute Man National Historical Park Concord, Massachusetts 1959-2000*. Unpublished MA thesis, Boston University.

National Park Service Cultural Landscapes Inventory, 2012. *Nelson Farm Area Minute Man National Historical Park*.

National Register Documentation Photos (Minute Man National Historical Park), 2006. On file at Minute Man National Historical Park, Concord, MA.

National Register Documentation November 29, 2002. On file at Minute Man National Historical Park, Concord, MA.

PAL

2002 *Minute Man National Historic Park, National Register of Historic Places Documentation, Lexington, Lincoln and Concord Massachusetts*. Unpublished document on file, Minute Man National Historical Park, Concord, MA.

Pederson, N.

2010 External characteristics of old trees in the Eastern Deciduous Forest. *Natural Areas Journal* 30: 396-407.

Pendery, Steven R., and William Cooney

- 2003 *Management Summary, Archaeological Survey of Proposed Septic System, [John] Nelson House, Minute Man National Historic Site, National Park Service.* Unpublished report on file, Minute Man National Historical Park, Concord, MA.

Pendery, Steven, Leslie Mead, and William Griswold

- 1996 *Management Summary, Intensive Archaeological Testing, Phase I Vegetative Clearing and Boardwalk Construction, Visitor Access Trail Project Area, MIMA.* Unpublished document on file, Minute Man National Historical Park, Concord, MA.

Phinney, Elias

- 1825 *History of the Battle at Lexington on the Morning of the 19th April 1775, (Later American Depositions), Phelps and Farnham, Boston.*

Ripley, Ezra

- 1827 *A History of the Fight at Concord on the 19th of April 1775, Allen and Atwell, Concord, MA.*

Ronsheim, Robert

- 1968 *Land in the Park Historic Grounds Report, Minute Man National Historic Park.* On file at the Minute Man National Historical Park, Concord, MA.

Sabin, Douglas P.,

- 1987 *April 19, 1775 A Historiographical Study.* Unpublished document on file, Minute Man National Historical Park, Concord, MA.

Scott, Douglas D.

- 2013 *Uncovering History: Archaeological Investigations at the Little Bighorn.* University of Oklahoma Press: Norman.

Scott, Douglas D.

- 1989 Firearms Identification for the Archeologist. In *From Chaco to Chaco, Archeological Society of New Mexico No. 15* publication in honor of Robert H. and Florence C. Lister edited by Meliha S. Duran and David T. Kirkpatrick, pp 141-151.

Scott, Douglas and Lucien Haag

- 2009 "Listen to the Minié Balls": Identifying Firearms in Battlefield Archaeology. In *Field of Conflict: Battlefield Archaeology from the Roman Empire to the Korean War*, edited by Douglas Scott, Lawrence Babits, and Charles Haecker, pp 102-120, Potomac Press, Washington, DC.

Severts, Patrick

- Forthcoming* "Practical Use of the GPZ 7000 On Rosebud Battlefield"

Siebert, Matthew

- Personal communication, 1-7-2016.*

Sideris, Louis

- Personal communication, 2-7-16.*

Sivilich, Daniel M.

- 1996 Analyzing Musket Balls to Interpret a Revolutionary War Site. *Historical Archaeology* 30(2):101-109.

Sivilich, Daniel M.

- 2009 What the Musket Ball Can Tell: Monmouth Battlefield State Park, New Jersey. In *Field of Conflict: Battlefield Archaeology from the Roman Empire to the Korean War*, edited by Douglas Scott, Lawrence Babits, and Charles Haecker, pp 84-101, Potomac Press, Washington, DC.

Sivilich, Daniel M.

- 2016 *Musket Ball and Small Shot Identification: A Guide*. University of Oklahoma Press: Norman.

Shattuck, Lemuel

- 1835 *A History of the Town of Concord*, Russell, Oriorne and Co., Concord.

Snow, David H.

- 1969 *Archaeological Research Report: The Thomas Nelson, Sr. Farm*. Ms. on file, Minute Man National Historical Park, Concord, MA.
- 1973a *Excavations at Site 264, The Thomas Nelson, Jr. House, 1968*. Ms. on file, Minute Man National Historical Park, Concord, MA.
- 1973b *Archaeological Research Report Excavations at Site 264 The Thomas Nelson, Jr. House Minute Man National Historical Park*. On file at Minute Man National Historical Park, Concord, MA.

Syenenki, Alan T.

- 1984 *Archaeological Investigations of Nelson road*. Ms. on file, Division of Cultural Resources, North Atlantic Regional Office, National Park Service, Boston.
- 1986a *An Archaeological Research Design for Minute Man National Historical Park*. Ms. on file, Division of Cultural Resources, North Atlantic Regional Office, National Park Service, Boston.
- 1990 *Archeological Investigations of Minute Man National Historical Park, Volume 1: Farmers and Artisans of the Historical Period*. Cultural Resources Management Study 22. U.S. Department of the Interior, National Park Service, Washington, DC.
- 1994 *Traces of the Past, A Visitor's Guide to Archaeological Sites at Minute Man National Historical Park*. Eastern National Park & Monument Association.

Thorson, Robert M.

- 2015 *Personal communication*, 10/26/2015
- 2005 *Exploring Stone Walls: A Field Guide to New England's Stone Walls*. Walker & Co., New York.
- 2002 *Stone by Stone: The Magnificent History in New England's Stone Walls*. Walker & Co., New York.

Towle, Linda A. and Darcie A. MacMahon (eds.)

- 1986 *Archaeological Collections Management at Minute Man National Historical Park, Massachusetts, Volume 2*. ACMP Series No. 4, Division of Cultural Resources North

Atlantic Regional Office, National Park Service U.S. Department of the Interior Boston, MA.

Tremer, Charles

- 1974 *Report on Inquiry and Recommendations for Disposition of the Thomas Nelson Jr. Site.* Ms. on file, Minute Man National Historical Park, Concord, MA.

Don Troiani and James L. Kochan

- 2007 *Don Troiani's Soldiers of the American Revolution.* Stackpole Books.

Watters, Margaret S.

- 2013 *Parker's Revenge Minute Man National Historical Park Archaeological Research Proposal.* Unpublished document on file, Minute Man National Historical Park, Concord, MA.
- 2014 *Parker's Revenge Narrative Report: Phase I.* Unpublished document on file, Minute Man National Historical Park, Concord, MA.

Weider, K. and Boutt, D. F.

- 2010 Heterogeneous water table response to climate revealed by 60 years of ground water data. *Geophysical Research Letters* (L24405) 37: 1-6.

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Appendix 1: PAL Archaeological Excavation Report 2016

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Completion Report
Parker's Revenge
Archaeological Project
Minute Man NHP
Lexington, Massachusetts

Submitted to:

Meg Watters and

Tabitha Nelson/Thomas Nelson Sr. Site
Excavations

February 2016

Friends of the Minute Man National Park

174 Liberty Street

Concord, MA 01742

PAL has completed the field and laboratory tasks associated with limited subsurface excavation at the Tabitha Nelson Site (LEX-HA-6, ASMIS MIMA00024.00) in support of the Parker's Revenge Archaeological Project (PRAP) at the Minuteman National Historical Park (MIMA) in Lexington, Massachusetts. The PRAP is being completed with the support of the Friends of the Minute Man National Park and under the direction of Dr. Margaret Watters.

The fieldwork was completed between September and December 2015 using the methodologies developed by Dr. Watters and PAL. PAL staff involved in the fieldwork portion of the project included Holly Herbster (co-Principal Investigator), Jen Bonner Banister (Project Archaeologist), and Eric Fahey, Christian Heath, and Sam Rousseau (Archaeologists).

The goal of the excavation was to investigate several geophysical survey anomalies that had been identified in October 2014 and June 2015 by Dr. Watters as part of earlier geophysical survey designed to identify structural/archaeological features associated with the Tabitha Nelson House Site (also known as the Thomas Nelson, Sr. House Site). The combined results of Dr. Watters' geophysical survey, historic aerial photography research, and surface assessment identified six anomalies (Figure 1) that were proposed for possible subsurface investigation.

Methodology Summary

The locations of PAL's testing units were determined by the results of Dr. Watters' previous research, and included the excavation of 50-x-50 centimeter (cm) shovel test pits (STPs) as well as larger excavation units (EUs) arranged in configurations of 1 meter (m)-x-50 cm units.

The testing resulted in the excavation of 16 STPs and 4 EUs. All units were designated by site (TN) and Feature name (e.g. H, B1, F2) followed by a test pit (STP) or trench (T) number. As an example, a test pit was designated TN-B2-STP4 while an EU was designated TN-H-T2.

PAL archaeologists were assisted with screening by trained PRAP volunteers; all data was recorded by PAL staff on standard field forms and tags.

All units were excavated by hand in 10 cm levels to sterile subsoils; and/or to depth at which potentially significant features were exposed. Excavated soils were screened through ¼-inch hardware mesh. Cultural materials were bagged and labeled with provenience information. Representative samples of demolition and structural debris including brick and glass were collected, with percentages noted on field forms. Profiles and plans were drawn for all features. Field notes were recorded on standard PAL forms and soil profiles will be drawn for all STPs and EUs. Photographs were taken of the site area and all cultural features.

As the subsoil and/or foundation strata are exposed, the PAL field crew identified and numbered all archaeological features. Exposed cultural features were photographed, mapped on scaled project plans, and recorded using a hand-held GPS unit.

Laboratory Processing and Analyses

Processing

All cultural materials recovered from the PRAP project area were organized by provenience, recorded, and checked in on a weekly basis. Cultural materials were sorted by type and washed or dry brushed. In order to allow for potential future conservation and/or more specialized analyses, artifact cleaning was limited.

Cataloging and Analyses

All cultural materials were cataloged using the current version of the DOI Interior Collections Management System (ICMS). This program consists of a core of databases relationally linked to multiple material type-specific databases that allow for in-depth analysis of cultural materials. Materials with similar attributes such as material type, functional and typological classes, size range, color, etc. were grouped and cataloged by lots. Artifacts were packaged separately by ICMS catalog number, with an acid-free label in each bag with the appropriate catalogue number and each artifact individually labeled as per NPS Northeast Region Archeology Program (NRAP) guidelines. Lots were stored in 2-millimeter-thick polyethylene resealable bags with acid-free tags containing provenience identification information.

Post-contact artifacts were cataloged by material (e.g., ceramic, glass, coal, and synthetic) and functional (e.g., plate, bowl, bottle, and building material) categories. Ceramic sherds and bottle glass were examined for distinguishing attributes that provide more precise date ranges of manufacture and use, including maker's marks, decorative patterns, and embossed or raised lettering. Tentative dating of post-contact archeological resources was performed using ceramic indices according to Noël Hume (1969, 2001), Miller (1980, 1991, 2000), Miller and Hurry (1983), and South (1977).

Curation

Following laboratory processing and cataloging, all recovered cultural materials and supporting documentation were stored in acid-free Hollinger boxes with box content lists and labels printed on acid-free paper. The cataloged artifacts and associated project documentation were temporarily curated at PAL, 26 Main Street, Pawtucket, Rhode Island, according to NPS NRAP guidelines. The artifact collection and all supporting documentation will be transferred with approved digital ICMS catalog records to the NPS at project close-out.

As per the project scope of work, all documentation returned upon completion of the project will be supplied in a form acceptable for long-term archival storage. Digital records will be submitted to Dr. Watters for inclusion as part of her digital data storage plan and paper records will be supplied on acid-free and lignin-free paper stock. If materials are reproduced, the original documentation will be submitted with the reproduced copy.

Results of the Fieldwork

The fieldwork at the Tabitha Nelson/Thomas Nelson Sr. Site resulted in the excavation of 14, 50-x-50 cm shovel test pits, 2 50-x-100 cm shovel test pits, and 4 EUs (map to be included by Meg). A total of 547 artifacts was collected in 15 of the STPs and all four EUs (see Appendix A).

The STPs and two of the EUs were placed to explore the identified anomalies and the other two EUs were placed to locate the corner of the Tabitha Nelson House Site foundation originally located by Snow in 1969. Six of the STPs placed in the TN-B2 (Barn 2) area produced cultural materials, and what appeared to be a cobble lens was identified at the transition between the plowzone and the B₁ subsoil. Further excavation revealed the B₁ subsoils in all six of the TN-B2 test pits to have a high density of cobbles indicating that they are a natural occurrence.

Two of the STPs in the TN-B3 (Barn 3) area produced cultural material, although in lower densities than that noted in the B2 STPs. Between the two test pits, a total of 25 pieces of cultural material was collected in the plowzone horizon.

The TN-B4-STP1 test pit was opened into a 50-x-100 cm unit in order to further investigate a rock impasse encountered at 45 cmbs. The rock was not encountered in the expanded unit, which contained plowzone and natural B subsoils to a maximum excavated depth of 50 cmbs. The rock appeared to be natural and not a cultural feature.

A possible fieldstone feature was identified in the TN-B5-STP1 test pit at 26 cmbs. Excavation was stopped once the potential feature was exposed, mapped and photographed. The TN-B5-STP1 and STP2 test pits together yielded on 6 pieces of cultural material, all molded glass fragments.

Four STPs were placed west of the house foundation at the location of geophysical anomalies. TN-F1-STP1 and STP2 were placed inside and outside of a square depression near the old Hanscom fence line. The interior of the depression contained multiple fill deposits that contained only wire nails. The depression does not relate to the Tabitha Nelson occupation of the site and its function is not known at this time but it likely relates to twentieth-century Hanscom ownership of this part of the parcel. TN-F2-STP2 (STP1 not excavated) and TN-F3-STP1 exhibited natural soil profiles consisting A over B and C subsoils, although the soils in TN-F3-STP1 were wetland in nature. No anomalies were identified either STP.

TN-H-T1 began as a 50-x-200 cm unit placed within the area of the Tabitha Nelson House foundation and was expanded another 50-x-100 cm to the east of the southern end. The unit was placed in order to intercept the northeast corner of the foundation. Excavation continued to 40 cmbs into what was interpreted as a natural rock ledge. The mottled soils encountered between 0 and 40 cmbs contained brick fragments and modern materials and were interpreted as likely backfill from the 1960s excavations completed by David Snow (Snow 1969).

TN-H-T2 was a 1-x-2 m unit placed east of the southern end of TN-H-T1 and was also designed to potentially intercept the corner of the Tabitha Nelson House foundation that was not located in the first unit. The northeastern house foundation corner was exposed at approximately 20 cmbs in the southern portion of the unit. Excavation around the foundation continued to a maximum depth of 50 cmbs. Excavation on the outside foundation wall encountered and the likely 1969 backfill, and what appeared to be natural B subsoil at 40 cmbs. The interior of the foundation contained a fill deposit with brick fragments and other materials to the maximum excavated depth, and like the fills in TN-H-T1 this was interpreted as possible backfill from the Snow excavations. The materials collected in this unit were primarily domestic and structural debris and included redwares, bottle glass, and several clay pipe stem fragments.

TN-B1-T1 was a 1-x-1 m unit placed next to an existing stone wall and in the area of an anomaly identified during the geophysical survey and in the general location of a possible barn (Barn 1). Excavation of this unit extended to a maximum depth of 40 cmbs through a rooty and gravelly A/topsoil horizon and into what appeared to be a natural C/subsoil stratum. No cultural features were identified in this unit, and only 7 pieces of cultural material were collected (glass, redware, and whiteware).

TN-B5-T1 was a 50-x-300 cm unit placed across a linear mounded soil feature in the possible barn area. Excavation of this unit extended to 30 cmbs at the A/B soil interface where a potential feature was encountered in the central portion of the unit. The feature consisted of two linear piles of fieldstones contained within an ashy fill lens. The unit contained 50 pieces of cultural material collected between 10 and 20 cmbs in the plowzone; the majority of these materials were glass fragments.

The artifact assemblage was dominated by domestic items (see Appendix A; Table 1). Ceramic sherds comprised 40 percent of the total assemblage, and redwares (including lead glazed, plain/unglazed, and slipware) were the most common type collected. Glass comprised 23 percent of the total and included flat (window, mirror, undetermined), curved (bottle, jar, lamp), and other (1 glass bead, 1 cut jewelry stone) types.

Two pieces of rhyolite chipping debris were collected between 0 and 10 cmbs in the upper A/A_{pz} horizon during the fieldwork. One flake was collected in the TN-B2-STP2 test pit and one was collected in the TN-B1-T1 unit. No evidence of pre-contact cultural features or other Native American artifacts were identified.

Table 1. Breakdown of Artifacts by Type, PRAP Tabitha Nelson/Thomas Nelson Sr. Site 2015

Artifact Type	Artifact Subtype	Count
Ceramic	Redware	165
	Whiteware	31
	Porcelain	11
	Creamware	7
	Pearlware	4
	Other	4
Glass	Curved	112
	Flat	11
	Other	2
Metal		88
Bone	Mammal	44
	Bird	3
Brick		32
Mortar		6
Clay Pipe Stem		11
Coal/Ash/Slag		6
Plastic		3
Wood sample/Charcoal		2
Stone		2
Lithic Chipping Debris		2
Clay Marble		1
TOTAL		547

Conclusions

The subsurface testing documented several features within the Tabitha Nelson/Thomas Nelson Sr. House Site and provided more accurate data on the location of the house foundation to supplement the Snow (1969) excavations and more recent testing in the area (Donohue 2010). The testing also ground-truthed the results of the geophysical study and provided additional belowground information about soils and cultural features.

References Cited

Donohue, Barbara

2010 *Results of Research Conducted on the Thomas Nelson Farm Site (19-MD-347/HA.6) in Hanscom Air Force Base, Middlesex County, Massachusetts*. Report on file, Minute Man National Historical Park, Concord, MA.

Miller, George L.

1980 Classification and Economic Scaling of Nineteenth Century Ceramics. *Historical Archaeology* 14(1):1–40.

1991 A Revised Set of CC Index Values for Classification and Economic Scaling of English Ceramics from 1787 to 1880. *Historical Archaeology* 25(1):1–25.

2000 Telling Time for Archaeologists. *Northeast Historical Archaeology* 29:1–22.

Noël Hume, Ivor

1969 *A Guide to the Artifacts of Colonial America*. Random House, New York, NY.

2001 *If the Pots Could Talk: Collecting 2,000 Years of British Household Pottery*. Chipstone Foundation, Milwaukee, WI.

Snow, David H.

1969 Archaeological Research Report, The Thomas Nelson, Sr. Farm, Minute Man National Historical Park. Report on file, Minute Man National Historical Park, Concord, MA.

South, Stanley A.

1977 *Method and Theory in Historical Archaeology*. Academic Press, New York, NY.

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Appendix 2: Artifact Catalogue (PAL 2016)

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The artifact catalog below was edited from the original provided by PAL in fulfillment of ARPA permit requirements for artifact inventory and curation. Original copies of the complete artifact inventory are archived at MIMA (Concord, MA) and NRAP (Lowell, MA) and can be accessed upon request.

Catalog#	Class 4	Description 1	MS #/Site	FS #/Unit	Depth
MIMA-77654	METAL	INDETERMINATE, POSSIBLE STRAP BUCKLE	MS-1	FS-1	5 CMBS
MIMA-77655	METAL	INDETERMINATE	MS-3	FS-2	8 CMBS
MIMA-77656	METAL	MACHINE CUT, INDETERMINATE	MS-10	FS-8	10 CMBS
MIMA-77657	METAL	SPOON	MS-12	FS-4	4 CMBS
MIMA-77658	METAL	MACHINE CUT, INDETERMINATE	MS-14	FS-3	7 CMBS
MIMA-77659	METAL	MACHINE CUT, INDETERMINATE	MS-15	FS-12	0-10 CMBS
MIMA-77660	METAL	12 GAUGE SHOTGUN CARTRIDGE CASE	MS-25	FS-13	0-10 CMBS
MIMA-77661	METAL -- SHELL	2 PIECE, INDETERMINATE	MS-27	FS-5	8 CMBS
MIMA-77662	METAL	AMERICAN PENNY	MS-33	FS-6	5 CMBS
MIMA-77663	METAL	MACHINE CUT, INDETERMINATE	MS-54	FS-7	6-10 CMBS
MIMA-77664	METAL	UNIDENTIFIED FLAT STAMPED BRASS WITH Y SHAPED HOLE IN CENTER	MS-71	FS-9	17 CMBS
MIMA-77665	METAL	POSSIBLE CAP, ROUND BRASS WITH RING ATTACHED AT TOP	MS-74	FS-10	13 CMBS
MIMA-77666	METAL	MACHINE CUT, INDETERMINATE	MS-89	FS-11	0 CMBS
MIMA-77667	METAL	MUSKET BALL	MS-122	FS-14	9 CMBS
MIMA-77668	METAL	WIRE	MS-164	FS-15	9 CMBS
MIMA-77669	METAL	MUSKET BALL	MS-168	FS-16	0-10 CMBS
MIMA-77670	METAL	OX SHOE	MS-175	FS-17	16 CMBS
MIMA-77671	METAL	LEAD TRIMMINGS	MS-181	FS-18	14 CMBS
MIMA-77672	METAL	OX HAME TOPPER	MS-192	FS-36	16 CMBS
MIMA-77673	METAL	INDETERMINATE RUSTED METAL, POSSIBLE NAIL	MS-192	FS-36	16 CMBS
MIMA-77674	METAL	CANTEEN CAP	MS-194	FS-20	5-10 CMBS

MIMA-77675	CERAMIC	WHITEWARE	MS-194A	FS-33	15 CMBS
MIMA-77676	METAL	SPOON	MS-194A	FS-33	15 CMBS
MIMA-77677	METAL	MACHINE CUT, INDETERMINATE	MS-194A	FS-33	15 CMBS
MIMA-77678	METAL	SAFETY RAZOR HEAD	MS-197A	FS-31	6 CMBS
MIMA-77679	METAL	PROPHYLACTIC TIN CONTAINER	MS-198A	FS-32	11 CMBS
MIMA-77680	METAL	POSSIBLE LATCH HARDWARE OR CUTTING BLADE	MS-199	FS-19	5 CMBS
MIMA-77681	METAL	SPOON	MS-206	FS-28	0-10 CMBS
MIMA-77682	METAL	THIN RUSTED METAL, POSSIBLE WIRE OR SPRING FRAGMENT	MS-206	FS-28	0-10 CMBS
MIMA-77683	CERAMIC	WHITEWARE	MS-207	FS-27	0-10 CMBS
MIMA-77684	CERAMIC	WHITEWARE (PORCELANEOUS)	MS-207	FS-27	0-10 CMBS
MIMA-77685	GLASS	MOLDED	MS-207	FS-27	0-10 CMBS
MIMA-77686	METAL	JAR, CANNING	MS-207	FS-27	0-10 CMBS
MIMA-77687	SHELL	BIVALVE	MS-207	FS-27	0-10 CMBS
MIMA-77688	METAL	POSSIBLE CARRIAGE OR ANIMAL HARNESS FRAGMENT, CURVED WITH LOOP ON ONE END	MS-215	FS-24	0 CMBS
MIMA-77689	METAL	FLAT METAL WITH SCREW ATTACHMENTS, POSSIBLE ELECTRICAL SCREW TERMINALS	MS-218	FS-26	0 CMBS
MIMA-77690	METAL	FLAT METAL WITH SCREW ATTACHMENTS, POSSIBLE ELECTRICAL SCREW TERMINALS	MS-219	FS-25	0 CMBS
MIMA-77691	METAL	TAPERED RUSTED METAL	MS-225	FS-22	9 CMBS
MIMA-77692	METAL	MUSKET BALL	MS-229	FS-21	10 CMBS
MIMA-77693	METAL	POSSIBLE NAIL OR PIN	MS-230	FS-23	10 CMBS
MIMA-77694	METAL	FLAT COPPER ALLOY CURVED ON ONE END WITH TWO HOLES	MS-233	FS-39	0-10 CMBS
MIMA-77695	METAL	JUG	MS-236	FS-30	11 CMBS
MIMA-77696	METAL	1 PIECE STAMPED	MS-240	FS-29	10 CMBS

MIMA-77697	METAL	FLAT METAL WITH CUT OUTS ON BOTH ENDS AND TWO HOLES IN CENTER	MS-264	FS-35	0 CMBS
MIMA-77698	METAL	COMPACT	MS-271	FS-37	0-10 CMBS
MIMA-77699	METAL	COMPACT	MS-280	FS-41	0-10 CMBS
MIMA-77700	METAL	POSSIBLE FLAGPOLE FINIAL, THREADED SPHERE	MS-281	FS-40	10-20 CMBS
MIMA-77701	METAL	RAZOR BLADE, SAFETY	MS-283	FS-38	0-10 CMBS
MIMA-77702	METAL	INDETERMINATE METAL FRAME, RECTANGULAR WITH 3 SIDES, POSSIBLE SCREEN REMNANTS ON BACK	MS-401	FS-34	0-10 CMBS
MIMA-77703	METAL	THIMBLE	MS-405	FS-42	6 CMBS
MIMA-77704	METAL	COMPACT	MS-617	FS-43	4 CMBS
MIMA-77705	METAL	INDETERMINATE	MS-632	FS-44	0 CMBS
MIMA-77706	GLASS	MOLDED	MS2	FS-101	0 CMBS
MIMA-77707	METAL	MUSKET BALL	MS2-02A	FS-2A	14 CMBS
MIMA-77708	METAL	NICKEL, BUFFALO, USA	MS2-003	FS-66	6 CMBS
MIMA-77709	METAL	RING	MS2-009/14.4 6	FS-102	21 CMBS
MIMA-77710	METAL	SPATTER	MS2-010/11.1 9	FS-67	1 CMBS
MIMA-77711	METAL	FLAT, CURVED OBJECT WITH FINISHED EDGES, STOVE PART (?)	MS2-012/8.34	FS-65	22 CMBS
MIMA-77712	METAL	RING	MS2-013/7.29	FS-64	30 CMBS
MIMA-77713	CERAMIC	YELLOWWARE	MS2-013/7.29	FS-64	30 CMBS
MIMA-77714	METAL	STAMPED SCROLL, STAR AND GRAIN DESIGN, FURNITURE OR LIGHTING DEVICE PART (?)	MS2-019	FS-62	5 CMBS
MIMA-77715	METAL	WHEEL	MS2-025/13.4 2	FS-60	5 CMBS
MIMA-77716	CERAMIC	WHITEWARE (HOTEL CHINA)	MS2-025/13.4 2	FS-61	15 CMBS
MIMA-	GLASS --	MOLDED	MS2-	FS-32A	5 CMBS

77717	METAL		032A		
MIMA-77718	METAL	HORSEHOE	MS2-033/15.2 1	FS-103	17 CMBS
MIMA-77719	METAL	RECTANGULAR DRAWER PULL OR RECEIVER PIECE FOR LOCKING MECHANISM (?)	MS2-039	FS-104	15 CMBS
MIMA-77720	METAL	MACHINE CUT, INDETERMINATE	MS2-042/14.3 5	FS-105	10 CMBS
MIMA-77721	METAL	WIRE	MS2-044/14.4 3	FS-63	5 CMBS
MIMA-77722	METAL	RING WITH ANCHOR	MS2-045/13.3 1	FS-106	18 CMBS
MIMA-77723	METAL	.50 CALIBER RIFLE CARTRIDGE	MS2-051/14.4 7	FS-70	10 CMBS
MIMA-77724	METAL	SPIGOT OR FAUCET PART (?)	MS2-052/16.3 7	FS-107	10 CMBS
MIMA-77725	METAL	CAN, OLIVE OIL	MS2-053	FS-71	20 CMBS
MIMA-77726	METAL	INDETERMINATE, POSSIBLE ANIMAL HARNESS	MS2-054/10.4 2	FS-69	24 CMBS
MIMA-77727	METAL	PENNY, WHEAT, USA	MS2-055/14.4 1	FS-72	8 CMBS
MIMA-77728	METAL	RING, SIGNET	MS2-056A	FS-56A	5 CMBS
MIMA-77729	METAL	CAR EXHAUST COMPONENT, REDUCER OR ADAPTER (?)	MS2-057/14.1 0	FS-73	30 CMBS
MIMA-77730	METAL	HANDMADE DOOR OR FURNITURE STRAP HINGE (?) WITH NAIL HOLE AND SNIPPED END IN LEAF SHAPE	MS2-058	FS-91	12 CMBS
MIMA-77731	METAL -- GLASS	COMPACT CAP WITH GLASS MIRROR FRAGMENTS ATTACHED	MS2-058	FS-92	13 CMBS
MIMA-77732	METAL	DECORATIVE JEWELRY COMPONENT(?)	MS2-059	FS-75	20 CMBS
MIMA-77733	CERAMIC	WHITEWARE (HOTEL CHINA)	MS2-060	FS-74	20 CMBS
MIMA-77734	METAL	SPOON, SERVING	MS2-061	FS-79	20 CMBS
MIMA-	METAL	ASSEMBLY LATCH/THUMB LATCH FOR	MS2-062	FS-80	17 CMBS

77735		CABINET			
MIMA-77736	METAL	SPOON	MS2-063	FS-81	16 CMBS
MIMA-77737	METAL	DRAWER PULL	MS2-065	FS-84	24 CMBS
MIMA-77738	METAL	SPOON	MS2-066	FS-87	10 CMBS
MIMA-77739	CERAMIC	WHITEWARE (IRONSTONE)	MS2-067	FS-85	5 CMBS
MIMA-77740	CERAMIC	BOWL	MS2-067	FS-85	5 CMBS
MIMA-77741	METAL	SPOON	MS2-068	FS-89	5 CMBS
MIMA-77742	PAPER	TRIANGULAR CARDBOARD TAB, FOOD LABEL (?)	MS2-068	FS-89	5 CMBS
MIMA-77743	BONE	MISCELLANEOUS HANDLE FRAGMENTS WITH COPPER STAINING	MS2-068	FS-89	5 CMBS
MIMA-77744	METAL	UNIDENTIFIED	MS2-068	FS-88	21 CMBS
MIMA-77745	GLASS	MOLDED	MS2-069	FS-78	10 CMBS
MIMA-77746	METAL	FLAT, L-SHAPED TRIMMING	MS2-069	FS-76	14 CMBS
MIMA-77747	METAL	CAN, BEVERAGE CAN (?)	MS2-069	FS-77	15 CMBS
MIMA-77748	METAL	BEVERAGE CAN	MS2-070	FS-82	5 CMBS
MIMA-77749	GLASS	MOLDED	MS2-071	FS-95	15 CMBS
MIMA-77750	METAL	TRIANGULAR INDENTED PLATE, FURNITURE OR APPLIANCE PART (?)	MS2-071	FS-95	15 CMBS
MIMA-77751	METAL	DISC WITH 2 FERROUS PROJECTIONS ON THE INTERIOR, MACHINE PART (?)	MS2-072	FS-86	10 CMBS
MIMA-77752	METAL	MACHINE CUT, INDETERMINATE	MS2-073	FS-90	15 CMBS
MIMA-77753	METAL	AX BLADE	MS2-074	FS-93	30 CMBS
MIMA-77754	METAL	FOLDED RECTANGULAR FASTENING PLATE/ESCUTCHEON (?) WITH 2 NAIL HOLES	MS2-075	FS-99	12 CMBS
MIMA-77755	METAL -- HIDE	RIVET BUTTON ATTACHED TO THICK LEATHER, MACHINE OR ANIMAL STRAP/HARNESS PART (?)	MS2-076/10.4 1	FS-98	15 CMBS
MIMA-77756	METAL	CAN KEY	MS2-077	FS-94	7 CMBS
MIMA-77757	METAL	CURVED KETTLE/POT PART (?)	MS2-078	FS-97	15 CMBS

MIMA-77758	METAL	MUSKET BALL, FIRED	MS2-079	FS-41A	12 CMBS
MIMA-77759	METAL	CAP WITH HANGING RING ATTACHED, FAUCET OR BATHTUB RELATED (?)	MS2-080	FS-100	24 CMBS
MIMA-77760	METAL	SPOON, SILVER PLATE WORN AWAY	MS2-081	FS-96	5 CMBS
MIMA-77761	METAL	WATCH, POCKET	MS2-082	FS-83	16 CMBS
MIMA-77762	METAL	MUSKET BALL, FIRED	MS2-083	FS-22A	12 CMBS
MIMA-77763	CERAMIC	WHITEWARE	MS2-084	FS-8A	3 CMBS
MIMA-77764	METAL	FOIL FOOD WRAPPER, BEVERAGE CONTAINER (?)	MS2-084	FS-8A	3 CMBS
MIMA-77765	GLASS -- METAL	MOLDED	MS2-085	FS-43A	0 CMBS
MIMA-77766	CERAMIC	WHITEWARE	MS2-086	FS-19A	4-7 CMBS
MIMA-77767	CERAMIC	WHITEWARE	MS2-086	FS-19A	4-7 CMBS
MIMA-77768	CERAMIC	WHITEWARE	MS2-086	FS-19A	4-7 CMBS
MIMA-77769	METAL	SUSPENDER CLIP	MS2-086	FS-19A	4-7 CMBS
MIMA-77770	METAL	MUSKET BALL	MS2-087	FS-33A	18CMBS
MIMA-77771	METAL	SPOON, SERVING	MS2-088	FS-13A	5 CMBS
MIMA-77772	METAL	MACHINE CUT, INDETERMINATE	MS2-089	FS-46A	10 CMBS
MIMA-77773	METAL	INDETERMINATE, BELT/SHOE (?)	MS2-090	FS-49A	12 CMBS
MIMA-77774	METAL	MEN'S GARTER CLIP	MS2-091	FS-50A	10 CMBS
MIMA-77775	METAL	MACHINE CUT, INDETERMINATE	MS2-091	FS-50A	10 CMBS
MIMA-77777	METAL	SUSPENDING BUCKLE	MS2-092	FS-55A	15 CMBS
MIMA-77778	METAL	MACHINE CUT, INDETERMINATE	MS2-093	FS-60A	10 CMBS
MIMA-77779	METAL	SCREW	MS2-093	FS-60A	10 CMBS
MIMA-77780	METAL	MACHINE CUT, INDETERMINATE	MS2-094	FS-54A	10 CMBS
MIMA-77781	METAL	FIGURINE	MS2-095	FS-7A	5 CMBS
MIMA-	METAL	ESCUTCHEON	MS2-096	FS-35A	5 CMBS

77782					
MIMA-77783	METAL	ESCUTCHEON, EXTERIOR DOOR (?)	MS2-097	FS-15A	15 CMBS
MIMA-77784	METAL	MUSKET BALL	MS2-098	FS-3A	13 CMBS
MIMA-77785	METAL	MUSKET BALL, FIRED	MS2-099	FS-51A	19 CMBS
MIMA-77786	METAL	FORK	MS2-100	FS-30A	8 CMBS
MIMA-77787	METAL	HEART-SHAPED SETTING FOR NECKLACE OR RING	MS2-101	FS-23A	6 CMBS
MIMA-77788	METAL	MUSKET BALL, IRREGULARLY SHAPED WITH DIVOTS	MS2-102	FS-28A	12 CMBS
MIMA-77789	ARCHIVAL	FOLDER 1: ORIGINAL FIELD FORMS (121)			
MIMA-77790	METAL	AMORPHOUS LEAD PIECE	MS3	FS-01B	0-10 CMBS
MIMA-77791	METAL	INDETERMINATE RUSTED CHUNK	MS3	FS-02B	0-10 CMBS
MIMA-77792	METAL	FIGURINE REPLICA OF STATUE MANNEKEN PIS, PROBABLY A SOUVENIER	MS3	FS-03B	10-20 CMBS
MIMA-77793	METAL	LEAD SOLDERED STRAPPING	MS3	FS-04B	20 CMBS
MIMA-77794	METAL	LEAD DRIPPINGS	MS3	FS-04B	20 CMBS
MIMA-77795	METAL	INDETERMINATE, POSSIBLE BELT OR TACK BUCKLE	MS3	FS-05B	25 CMBS
MIMA-77796	METAL	CIVILIAN SHANK BUTTON, EMBOSSED WITH CHECKED PATTERN	MS3	FS-06B	22 CMBS
MIMA-77797	METAL	INDETERMINATE RUSTED METAL, POSSIBLE BOLT	MS3	FS-07B	21 CMBS
MIMA-77798	METAL	TOE CAP	MS3	FS-08B	20 CMBS
MIMA-77799	METAL	AMERICAN CURRENCY/QUARTER	MS3	FS-09B	
MIMA-77800	METAL	PERFORATED NOZZLE, POSSIBLE WATERING CAN FRAGMENT	MS3	FS-10B	20 CMBS
MIMA-77801	METAL	RING	MS3	FS-11B	15 CMBS
MIMA-77802	METAL	BRASS CLIP OR HOOK, EMBOSSED	MS3	FS-12B	20 CMBS
MIMA-77803	METAL	INDETERMINATE, POSSIBLE BELT OR TACK BUCKLE	MS3	FS-13B	25 CMBS
MIMA-77804	METAL	CUB SCOUT NECKERCHIEF SLIDE	MS3	FS-14B	08 CMBS
MIMA-	METAL	CIRCULAR TOKEN WITH SIX POINTED	MS3	FS-15B	15 CMBS

77805		STAR CUT OUT IN CENTER, FLAG IN CENTER OF STAR			
MIMA-77806	METAL	LEAD TYPE FROM PRINTING PRESS	MS3	FS-16B	22 CMBS
MIMA-77807	METAL	SPOON	MS3	FS-17B	10 CMBS
MIMA-77808	METAL	THREADED CROWN SHAPED FINIAL, POSSIBLE SCREW TOP TO PEPPER GRINDER	MS3	FS-18B	18 CMBS
MIMA-77809	METAL	MOLDED FOUR-SIDED SCREW TOP CONTAINER, POSSIBLE SALT SHAKER	MS3	FS-19B	15 CMBS
MIMA-77811	METAL	FERROUS STRAP, POSSIBLE FARM MACHINERY PART	MS3	FS-21B	15 CMBS
MIMA-77812	METAL	INDERTERMINATE RUSTED HOLLOW TUBE	MS3	FS-22B	29 CMBS
MIMA-77813	METAL	POSSIBLE CLOTHING BUCKLE, D-SHAPED FRAME, SIMILAR TO 78176	MS3	FS-23B	15 CMBS
MIMA-77814	CERAMIC	PORCELAIN	MS3	FS-24B	34 CMBS
MIMA-77815	METAL	HORSESHOE	MS3	FS-24B	34 CMBS
MIMA-77816	METAL	MUSKET BALL	MS3	FS-25B	10 CMBS
MIMA-77817	METAL	TWO SIDED CLASP BUCKLE, ONLY ONE SIDE PRESENT, RAMPANT GRYPHON DESIGN	MS3	FS-26B	10 CMBS
MIMA-77818	METAL	OXSHOE	MS3	FS-27B	0-10 CMBS
MIMA-77819	METAL	SPOON	MS3	FS-28B	10 CMBS
MIMA-77820	METAL	IRON STRAP WITH HOLE IN BOTH ENDS	MS3	FS-29B	10 CMBS
MIMA-77821	CERAMIC	WHITEWARE	MS3	FS-30B	10-30 CMBS
MIMA-77822	METAL	SPOON	MS3	FS-30B	10-30 CMBS
MIMA-77823	METAL	BOLT	MS3	FS-31B	0-5 CMBS
MIMA-77824	METAL	MEXICAN 1/2 REALE	MS3	FS-32B	12 CMBS
MIMA-77825	METAL	MUSKET BALL	MS3	FS-33B	
MIMA-77826	METAL	SPOON	MS3	FS-34B	20 CMBS
MIMA-77827	METAL	POSSIBLE ANIMAL TACK BUCKLE	MS3	FS-35B	16 CMBS
MIMA-	METAL	SPOON	MS3	FS-36B	20-25

77828					CMBS
MIMA-77829	CERAMIC	YELLOWWARE	MS3	FS-37B	7-13 CMBS
MIMA-77830	METAL	POSSIBLE TOOL PART, RECTANGULAR WITH SLOT IN MIDDLE AND NOTCH ON EACH END	MS3	FS-37B	7-13 CMBS
MIMA-77831	METAL	SPOON	MS3	FS-38B	13 CMBS
MIMA-77832	METAL	MUSKET BALL	MS3	FS-39B	5-10 CMBS
MIMA-77833	METAL	HEEL IRON	MS3	FS-40B	0-10 CMBS
MIMA-77834	METAL	UNITED KINGDOM HALFPENNY	MS3	FS-41B	0-10 CMBS
MIMA-77835	METAL	SPOON	MS3	FS-42B	0-10 CMBS
MIMA-77836	METAL	SHOE BUCKLE, EMBOSSED, GOLD PLATED	MS3	FS-43B	0-10 CMBS
MIMA-77837	METAL	AMERICAN PENNY, INDIAN HEAD	MS3	FS-44B	0-10 CMBS
MIMA-77838	METAL	INDETERMINATE METAL, POINTED ON ONE END	MS3	FS-45B	0-10 CMBS
MIMA-77839	METAL	KNOB, POSSIBLE DRAWER OR DOOR KNOB	MS3	FS-46B	10-20 CMBS
MIMA-77840	METAL	SPOON, CHILD'S SPOON ENGRAVED WITH THE NAME BRUCE	MS3	FS-47B	0-10 CMBS
MIMA-77841	METAL	MUSKET BALL	MS3	FS-48B	0-10 CMBS
MIMA-77842	METAL	FORK	MS3	FS-49B	
MIMA-77843	METAL	INDETERMINATE RUSTED METAL, POSSIBLE SPIKE	MS3	FS-50B	10-20 CMBS
MIMA-77844	METAL	MUSKET BALL	MS3	FS-51B	10-20 CMBS
MIMA-77845	METAL	MUSKET BALL	MS3	FS-52B	10-20 CMBS
MIMA-77846	METAL	MUSKET BALL	MS3	FS-53B	10-20 CMBS
MIMA-77847	METAL	AMERICAN MERCURY DIME	MS3	FS-54B	0-10 CMBS
MIMA-77848	METAL	MUSKET BALL	MS3	FS-55B	0-10 CMBS
MIMA-77849	METAL	MUSKET BALL	MS3	FS-56B	0-10 CMBS
MIMA-77850	METAL	POSSIBLE MACHINE PART OR HINGE/STRAP, OBLONG WITH TWO SQUARE HOLES	MS3	FS-57B	0-10 CMBS

MIMA-77851	METAL	SPOON	MS3	FS-58B	0-10 CMBS
MIMA-77852	METAL	MUSKET BALL	MS3	FS-59B	10-20 CMBS
MIMA-77853	METAL	MUSKET BALL	MS3	FS-60B	
MIMA-77854	METAL	MUSKET BALL	MS3	FS-61B	0-10 CMBS
MIMA-77855	METAL	MUSKET BALL	MS3	FS-62B	10-20 CMBS
MIMA-77856	METAL	MUSKET BALL	MS3	FS-63B	10-20 CMBS
MIMA-77857	CERAMIC	WHITEWARE	MS3	FS-64B	0-10 CMBS
MIMA-77858	METAL	KNIFE, BUTTER	MS3	FS-64B	0-10 CMBS
MIMA-77859	METAL	WASHER	MS3	FS-64B	0-10 CMBS
MIMA-77860	METAL	MUSKET BALL	MS3	FS-65B	10-20 CMBS
MIMA-77861	METAL	MUSKET BALL	MS3	FS-66B	0-10 CMBS
MIMA-77862	METAL	INTERNAL MECHANISM FROM CLOCK	MS3	FS-67B	0-10 CMBS
MIMA-77863	METAL	MUSKET BALL	MS3	FS-68B	10-20 CMBS
MIMA-77864	METAL	AMERICAN WHEAT PENNY	MS3	FS-69B	10-20 CMBS
MIMA-77865	BONE -- METAL	POCKET KNIFE WITH BONE HANDLE	MS3	FS-70B	0-10 CMBS
MIMA-77866	CERAMIC	STEM, 5/64 BORE DIAMETER	MS3	FS-71B	0-10 CMBS
MIMA-77867	METAL	MUSKET BALL	MS3	FS-72B	20-30 CMBS
MIMA-77868	METAL	AMERICAN WHEAT PENNY	MS3	FS-73B	0-10 CMBS
MIMA-77869	METAL	MUSKET BALL	MS3	FS-74B	0-10 CMBS
MIMA-77870	METAL	MUSKET BALL	MS3	FS-75B	10-20 CMBS
MIMA-77871	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B1-T1	0-10 CMBS
MIMA-77872	GLASS	MOLDED	TABITHA NELSON SITE	TN-B1-T1	0-10 CMBS
MIMA-	GLASS	MOLDED	TABITHA	TN-B1-T1	0-10

77873			NELSON SITE		CMBS
MIMA-77874	GLASS	INDETERMINATE	TABITHA NELSON SITE	TN-B1-T1	0-10 CMBS
MIMA-77875	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B1-T1	0-10 CMBS
MIMA-77876	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B1-T1	10-20 CMBS
MIMA-77877	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP1	0-10 CMBS
MIMA-77878	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP1	0-10 CMBS
MIMA-77879	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B2-STP1	0-10 CMBS
MIMA-77880	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP1	10-20 CMBS
MIMA-77881	GLASS	CUT GLASS CABOCHON, POSSIBLE JEWELRY OR ADORNMENT	TABITHA NELSON SITE	TN-B2-STP1	10-20 CMBS
MIMA-77882	METAL	INDETERMINATE RUSTED WIRE OR NAIL FRAGMENTS	TABITHA NELSON SITE	TN-B2-STP1	10-20 CMBS
MIMA-77883	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP1	10-20 CMBS
MIMA-77884	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP1	20-30 CMBS
MIMA-77885	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP1	20-30 CMBS
MIMA-77886	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B2-STP1	20-30 CMBS
MIMA-77887	GLASS	INDETERMINATE	TABITHA NELSON SITE	TN-B2-STP1	20-30 CMBS
MIMA-77888	METAL	INDETERMINATE RUSTED METAL	TABITHA NELSON SITE	TN-B2-STP1	20-30 CMBS

MIMA-77889	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP1	20-30 CMBS
MIMA-77890	STONE	POSSIBLE BUILDING STONE OR BURNISHING STONE	TABITHA NELSON SITE	TN-B2-STP1	30-40 CMBS
MIMA-77891	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP1	30-40 CMBS
MIMA-77892	STONE	FLAKE	TABITHA NELSON SITE	TN-B2-STP1	30-40 CMBS
MIMA-77893	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP2	0-10 CMBS
MIMA-77894	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP2	0-10 CMBS
MIMA-77895	METAL	INDETERMINATE ID TAG WITH 82 STAMPED IN CENTER	TABITHA NELSON SITE	TN-B2-STP2	0-10 CMBS
MIMA-77896	METAL	INDETERMINATE RUSTED METAL	TABITHA NELSON SITE	TN-B2-STP2	0-10 CMBS
MIMA-77897	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP2	0-10 CMBS
MIMA-77898	STONE	FLAKE	TABITHA NELSON SITE	TN-B2-STP2	0-10 CMBS
MIMA-77899	GLASS	LID LINER	TABITHA NELSON SITE	TN-B2-STP2	10-20 CMBS
MIMA-77900	METAL	TOOTHPASTE TUBE, LISTERINE	TABITHA NELSON SITE	TN-B2-STP2	10-20 CMBS
MIMA-77901	METAL	INDETERMINATE RUSTED METAL	TABITHA NELSON SITE	TN-B2-STP2	10-20 CMBS
MIMA-77902	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP2	10-20 CMBS
MIMA-77903	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP2	20-30 CMBS
MIMA-77904	CERAMIC	WHITEWARE	TABITHA NELSON	TN-B2-STP2	20-30 CMBS

			SITE		
MIMA-77905	CERAMIC	CLAY MARBLE	TABITHA NELSON SITE	TN-B2-STP2	20-30 CMBS
MIMA-77906	METAL	INDETERMINATE RUSTED METAL, POSSIBLE NAIL	TABITHA NELSON SITE	TN-B2-STP2	20-30 CMBS
MIMA-77907	OTHER MINERAL MATERIALS	COAL	TABITHA NELSON SITE	TN-B2-STP2	20-30 CMBS
MIMA-77908	METAL	BOTTLE CAP, THREADED WITH CORK LINER	TABITHA NELSON SITE	TN-B2-STP3	0-10 CMBS
MIMA-77909	METAL	BOTTLE CAP, CROWN	TABITHA NELSON SITE	TN-B2-STP3	0-10 CMBS
MIMA-77910	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77911	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77912	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77913	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77914	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77915	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77916	METAL	POSSIBLE WIRE	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77917	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP3	10-20 CMBS
MIMA-77918	METAL	POSSIBLE CAN FRAGMENTS	TABITHA NELSON SITE	TN-B2-STP3	20-30 CMBS
MIMA-77919	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP4	0-10 CMBS
MIMA-	CERAMIC	REDWARE	TABITHA	TN-B2-	0-10

77920			NELSON SITE	STP4	CMBS
MIMA-77921	CERAMIC	UNIDENTIFIED WHITE BODIED EARTHENWARE	TABITHA NELSON SITE	TN-B2-STP4	0-10 CMBS
MIMA-77922	METAL	BOTTLE CAP, CROWN	TABITHA NELSON SITE	TN-B2-STP4	0-10 CMBS
MIMA-77923	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP4	0-10 CMBS
MIMA-77924	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B2-STP4	10-20 CMBS
MIMA-77925	CERAMIC	STEM, 5/64 BORE DIAMETER	TABITHA NELSON SITE	TN-B2-STP4	10-20 CMBS
MIMA-77926	CERAMIC	SEMI-CIRCULAR FRAGMENT WITH TWO FINISHED EDGES, POSSIBLE GROMMET OR ELECTRICAL INSULATOR	TABITHA NELSON SITE	TN-B2-STP4	10-20 CMBS
MIMA-77927	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP4	10-20 CMBS
MIMA-77928	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP4	10-20 CMBS
MIMA-77929	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP4	10-20 CMBS
MIMA-77930	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-B2-STP4	10-20 CMBS
MIMA-77931	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77932	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77933	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77934	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77935	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS

MIMA-77936	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77937	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77938	METAL	BOTTLE CAP, CROWN	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77939	METAL	TOOTHPASTE TUBE CAP	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77940	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77941	METAL	INDETERMINATE RUSTED METAL, POSSIBLE WIRE FRAGMENT	TABITHA NELSON SITE	TN-B2-STP4	20-30 CMBS
MIMA-77942	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B2-STP4	30-40 CMBS
MIMA-77943	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B2-STP4	30-40 CMBS
MIMA-77944	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-B2-STP4	30-40 CMBS
MIMA-77945	METAL	BOLT	TABITHA NELSON SITE	TN-B2-STP4	30-40 CMBS
MIMA-77946	METAL	INDETERMINATE RUSTED METAL	TABITHA NELSON SITE	TN-B2-STP4	30-40 CMBS
MIMA-77947	SYNTHETIC	INDETERMINATE PLASTIC, ONE WITH METAL WIRE GLUED IN PLACE	TABITHA NELSON SITE	TN-B2-STP4	30-40 CMBS
MIMA-77948	SYNTHETIC	INDETERMINATE SYNTHETIC, CURVED, PARTIALLY MELTED	TABITHA NELSON SITE	TN-B2-STP4	40-50 CMBS
MIMA-77949	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP7	0-10 CMBS
MIMA-77950	STONE	POSSIBLE HEAT ALTERED ROCK?	TABITHA NELSON SITE	TN-B2-STP7	0-10 CMBS
MIMA-77951	GLASS	MOLDED	TABITHA NELSON	TN-B2-STP7	0-10 CMBS

			SITE		
MIMA-77952	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B2-STP7	0-10 CMBS
MIMA-77953	GLASS	MIRROR	TABITHA NELSON SITE	TN-B2-STP7	0-10 CMBS
MIMA-77954	BONE	MAMMAL	TABITHA NELSON SITE	TN-B2-STP7	0-10 CMBS
MIMA-77955	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP7	60-70 CMBS
MIMA-77956	METAL	INDETERMINATE RUSTED METAL	TABITHA NELSON SITE	TN-B2-STP7	60-70 CMBS
MIMA-77957	GLASS	LAMP CHIMNEY FRAGMENT	TABITHA NELSON SITE	TN-B2-STP8	10-20 CMBS
MIMA-77958	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B2-STP8	10-20 CMBS
MIMA-77959	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B2-STP8	10-20 CMBS
MIMA-77960	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP8	20-30 CMBS
MIMA-77961	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP8	20-30 CMBS
MIMA-77962	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B2-STP8	20-30 CMBS
MIMA-77963	GLASS	MOLDED	TABITHA NELSON SITE	TN-B2-STP8	20-30 CMBS
MIMA-77964	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B2-STP8	20-30 CMBS
MIMA-77965	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B3-STP1	0-10 CMBS
MIMA-77966	CERAMIC	PEARLWARE	TABITHA NELSON SITE	TN-B3-STP1	0-10 CMBS
MIMA-	CERAMIC	WHITEWARE	TABITHA	TN-B3-	0-10

77967			NELSON SITE	STP1	CMBS
MIMA-77968	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B3-STP1	0-10 CMBS
MIMA-77969	GLASS	MOLDED	TABITHA NELSON SITE	TN-B3-STP1	0-10 CMBS
MIMA-77970	CERAMIC	CREAMWARE	TABITHA NELSON SITE	TN-B3-STP1	10-20 CMBS
MIMA-77971	CERAMIC	CREAMWARE	TABITHA NELSON SITE	TN-B3-STP1	10-20 CMBS
MIMA-77972	CERAMIC	PEARLWARE	TABITHA NELSON SITE	TN-B3-STP1	10-20 CMBS
MIMA-77973	GLASS	MOLDED	TABITHA NELSON SITE	TN-B3-STP1	10-20 CMBS
MIMA-77974	OTHER MINERAL MATERIALS	COAL ASH	TABITHA NELSON SITE	TN-B3-STP1	10-20 CMBS
MIMA-77975	OTHER MINERAL MATERIALS	SLAG	TABITHA NELSON SITE	TN-B3-STP1	10-20 CMBS
MIMA-77976	CERAMIC	CREAMWARE	TABITHA NELSON SITE	TN-B3-STP2	0-10 CMBS
MIMA-77977	CERAMIC	PEARLWARE	TABITHA NELSON SITE	TN-B3-STP2	0-10 CMBS
MIMA-77978	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B3-STP2	0-10 CMBS
MIMA-77979	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B3-STP2	0-10 CMBS
MIMA-77980	CERAMIC	CREAMWARE	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS
MIMA-77981	CERAMIC	CREAMWARE	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS
MIMA-77982	CERAMIC	PEARLWARE	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS

MIMA-77983	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS
MIMA-77984	CERAMIC	WHITE SALT GLAZED STONEWARE	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS
MIMA-77985	GLASS	MOLDED	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS
MIMA-77986	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS
MIMA-77987	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B3-STP2	20-30 CMBS
MIMA-77988	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77989	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77990	CERAMIC	PORCELAIN	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77991	CERAMIC	PORCELAIN LAMP BODY, OVERGLAZE DECAL	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77992	CERAMIC	BRICK	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77993	GLASS	MOLDED	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77994	GLASS	MOLDED	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77995	GLASS	MOLDED	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77996	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77997	METAL	INDETERMINATE RUSTED METAL	TABITHA NELSON SITE	TN-B4-T1	0-30 CMBS
MIMA-77998	BONE	MAMMAL	TABITHA NELSON	TN-B4-T1	0-30 CMBS

			SITE		
MIMA-77999	WOOD	UNMODIFIED WOOD SAMPLE	TABITHA NELSON SITE	TN-B4-STP1	0-10 CMBS
MIMA-78000	BONE	MAMMAL	TABITHA NELSON SITE	TN-B4-STP1	0-10 CMBS
MIMA-78001	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B4-STP1	10-20 CMBS
MIMA-78002	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B4-STP1	10-20 CMBS
MIMA-78003	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B4-STP1	10-20 CMBS
MIMA-78004	CERAMIC	STEM, 6/64 BORE DIAMETER	TABITHA NELSON SITE	TN-B4-STP1	10-20 CMBS
MIMA-78005	CERAMIC	BRICK	TABITHA NELSON SITE	TN-B4-STP1	10-20 CMBS
MIMA-78006	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-B4-STP1	20-30 CMBS
MIMA-78007	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-B4-STP1	20-30 CMBS
MIMA-78008	METAL	BOTTLE CAP, CROWN	TABITHA NELSON SITE	TN-B4-STP1	20-30 CMBS
MIMA-78009	GLASS	MOLDED	TABITHA NELSON SITE	TN-B4-STP1	30-40 CMBS
MIMA-78010	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78011	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78012	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78013	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-	GLASS	MOLDED	TABITHA	TN-B5-T1	10-20

78014			NELSON SITE	CENTER	CMBS
MIMA-78015	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78016	GLASS	FLAT GLASS	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78017	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78018	METAL	GROMMET	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78019	METAL	POSSIBLE BUCKLE	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78020	METAL	POSSIBLE CAN FRAGMENTS	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78021	METAL	INDETERMINATE FOLDED METAL ALLOY WITH POSSIBLE ASBESTOS LINING	TABITHA NELSON SITE	TN-B5-T1 CENTER	10-20 CMBS
MIMA-78022	CERAMIC	BRICK	TABITHA NELSON SITE	TN-B5-T1 NORTH	10-20 CMBS
MIMA-78023	GLASS	FLAT GLASS	TABITHA NELSON SITE	TN-B5-T1 NORTH	10-20 CMBS
MIMA-78024	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-B5-T1 SOUTH	10-20 CMBS
MIMA-78025	GLASS	FLAT GLASS	TABITHA NELSON SITE	TN-B5-T1 SOUTH	10-20 CMBS
MIMA-78026	METAL	SPIRAL, POSSIBLE SPRING	TABITHA NELSON SITE	TN-B5-T1 SOUTH	10-20 CMBS
MIMA-78027	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-STP1	0-20 CMBS
MIMA-78028	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-STP1	0-20 CMBS
MIMA-78029	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-STP1	0-20 CMBS

MIMA-78030	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-STP1	0-20 CMBS
MIMA-78031	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-STP2	20-30 CMBS
MIMA-78032	GLASS	MOLDED	TABITHA NELSON SITE	TN-B5-STP2	20-30 CMBS
MIMA-78033	METAL	WIRE	TABITHA NELSON SITE	TN-F1-STP1	0-10 CMBS
MIMA-78034	METAL	WIRE	TABITHA NELSON SITE	TN-F1-STP1	10-20 CMBS
MIMA-78035	METAL	WIRE	TABITHA NELSON SITE	TN-F1-STP1	20-30 CMBS
MIMA-78036	METAL	WIRE	TABITHA NELSON SITE	TN-F1-STP2	0-20 CMBS
MIMA-78037	METAL	WIRE	TABITHA NELSON SITE	TN-F1-STP2	20-30 CMBS
MIMA-78038	METAL	WIRE	TABITHA NELSON SITE	TN-F1-STP2	30-40 CMBS
MIMA-78039	METAL	WIRE	TABITHA NELSON SITE	TN-F1-STP2	40-50 CMBS
MIMA-78040	CERAMIC	WHITEWARE	TABITHA NELSON SITE	TN-F2-STP2	0-10 CMBS
MIMA-78041	GLASS	MOLDED	TABITHA NELSON SITE	TN-F2-STP2	0-10 CMBS
MIMA-78042	GLASS	MOLDED	TABITHA NELSON SITE	TN-F2-STP2	10-20 CMBS
MIMA-78043	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78044	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78045	CERAMIC	REDWARE	TABITHA NELSON	TN-H-T1 QUAD A	0-10 CMBS

			SITE		
MIMA-78046	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78047	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78048	CERAMIC	STEM, 4/64 BORE DIAMETER	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78049	CERAMIC	TILE	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78050	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78051	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78052	OTHER MINERAL MATERIALS	MORTAR	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78053	BONE	MAMMAL	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78054	BONE	MAMMAL	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78055	BONE	BIRD	TABITHA NELSON SITE	TN-H-T1 QUAD A	0-10 CMBS
MIMA-78056	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	10-20 CMBS
MIMA-78057	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	10-20 CMBS
MIMA-78058	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	10-20 CMBS
MIMA-78059	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	10-20 CMBS
MIMA-78060	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD A	10-20 CMBS
MIMA-	OTHER	MORTAR	TABITHA	TN-H-T1	10-20

78061	MINERAL MATERIALS		NELSON SITE	QUAD A	CMBS
MIMA-78062	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	20-30 CMBS
MIMA-78063	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	20-30 CMBS
MIMA-78064	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD A	20-30 CMBS
MIMA-78065	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-H-T1 QUAD A	20-30 CMBS
MIMA-78066	OTHER MINERAL MATERIALS	MORTAR	TABITHA NELSON SITE	TN-H-T1 QUAD A	20-30 CMBS
MIMA-78067	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD A	30-40 CMBS
MIMA-78068	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD A	30-40 CMBS
MIMA-78069	BONE	MAMMAL	TABITHA NELSON SITE	TN-H-T1 QUAD A	30-40 CMBS
MIMA-78070	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD B	0-10 CMBS
MIMA-78071	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD B	0-10 CMBS
MIMA-78072	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD B	0-10 CMBS
MIMA-78073	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD B	0-10 CMBS
MIMA-78074	GLASS	HANDMADE, MULBERRY STYLE	TABITHA NELSON SITE	TN-H-T1 QUAD B	0-10 CMBS
MIMA-78075	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T1 QUAD B	0-10 CMBS
MIMA-78076	OTHER MINERAL MATERIALS	COAL	TABITHA NELSON SITE	TN-H-T1 QUAD B	0-10 CMBS

MIMA-78077	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD B	10-20 CMBS
MIMA-78078	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD B	10-20 CMBS
MIMA-78079	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD B	20-40 CMBS
MIMA-78080	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD B	20-40 CMBS
MIMA-78081	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD B	20-40 CMBS
MIMA-78082	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD B	20-40 CMBS
MIMA-78083	GLASS	FREEBLOWN	TABITHA NELSON SITE	TN-H-T1 QUAD B	20-40 CMBS
MIMA-78084	OTHER MINERAL MATERIALS	MORTAR	TABITHA NELSON SITE	TN-H-T1 QUAD B	20-40 CMBS
MIMA-78085	BONE	MAMMAL	TABITHA NELSON SITE	TN-H-T1 QUAD B	20-40 CMBS
MIMA-78086	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	0-10 CMBS
MIMA-78087	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	0-10 CMBS
MIMA-78088	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	0-10 CMBS
MIMA-78089	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	0-10 CMBS
MIMA-78090	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD C	0-10 CMBS
MIMA-78091	GLASS	MOLDED	TABITHA NELSON SITE	TN-H-T1 QUAD C	0-10 CMBS
MIMA-78092	CERAMIC	REDWARE	TABITHA NELSON	TN-H-T1 QUAD C	10-20 CMBS

			SITE		
MIMA-78093	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78094	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78095	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78096	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78097	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78098	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78099	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78100	GLASS	FLAT GLASS	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78101	GLASS	FLAT GLASS, PATINATED	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78102	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78103	OTHER MINERAL MATERIALS	COAL	TABITHA NELSON SITE	TN-H-T1 QUAD C	10-20 CMBS
MIMA-78104	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78105	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78106	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78107	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-	CERAMIC	REDWARE	TABITHA	TN-H-T1	20-30

78108			NELSON SITE	QUAD C	CMBS
MIMA-78109	CERAMIC	STEM, 5/64 BORE DIAMETER	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78110	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78111	GLASS	MOLDED	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78112	GLASS	CURVED GLASS	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78113	BONE	MAMMAL	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78114	BONE	MAMMAL	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78115	BONE	MAMMAL	TABITHA NELSON SITE	TN-H-T1 QUAD C	20-30 CMBS
MIMA-78116	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78117	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78118	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78119	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78120	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78121	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78122	GLASS	MOLDED	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78123	GLASS	MOLDED	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS

MIMA-78124	METAL	NAIL	TABITHA NELSON SITE	TN-H-T2 QUAD A	0-10 CMBS
MIMA-78125	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	10-20 CMBS
MIMA-78126	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	10-20 CMBS
MIMA-78127	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	10-20 CMBS
MIMA-78128	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T2 QUAD A	10-20 CMBS
MIMA-78129	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T2 QUAD A	10-20 CMBS
MIMA-78130	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	20-30 CMBS
MIMA-78131	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	20-30 CMBS
MIMA-78132	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	20-30 CMBS
MIMA-78133	CERAMIC	STEM, INDETERMINATE BORE DIAMETER	TABITHA NELSON SITE	TN-H-T2 QUAD A	20-30 CMBS
MIMA-78134	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T2 QUAD A	20-30 CMBS
MIMA-78135	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-H-T2 QUAD A	20-30 CMBS
MIMA-78136	WOOD	CHARCOAL	TABITHA NELSON SITE	TN-H-T2 QUAD A	20-30 CMBS
MIMA-78137	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	30-40 CMBS
MIMA-78138	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD A	30-40 CMBS
MIMA-78139	CERAMIC	BRICK	TABITHA NELSON	TN-H-T2 QUAD A	30-40 CMBS

			SITE		
MIMA-78140	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T2 QUAD A	30-40 CMBS
MIMA-78141	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	0-10 CMBS
MIMA-78142	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	0-10 CMBS
MIMA-78143	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	0-10 CMBS
MIMA-78144	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	0-10 CMBS
MIMA-78145	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T2 QUAD B	0-10 CMBS
MIMA-78146	OTHER MINERAL MATERIALS	MORTAR	TABITHA NELSON SITE	TN-H-T2 QUAD B	0-10 CMBS
MIMA-78147	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	10-20 CMBS
MIMA-78148	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	10-20 CMBS
MIMA-78149	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	10-20 CMBS
MIMA-78150	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	10-20 CMBS
MIMA-78151	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T2 QUAD B	10-20 CMBS
MIMA-78152	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78153	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78154	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-	CERAMIC	REDWARE	TABITHA	TN-H-T2	20-30

78155			NELSON SITE	QUAD B	CMBS
MIMA-78156	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78157	CERAMIC	STEM, 4/64 BORE DIAMETER	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78158	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78159	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78160	METAL	MACHINE CUT, INDETERMINATE	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78161	METAL	WIRE	TABITHA NELSON SITE	TN-H-T2 QUAD B	20-30 CMBS
MIMA-78162	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	30-40 CMBS
MIMA-78163	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	30-40 CMBS
MIMA-78164	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	30-40 CMBS
MIMA-78165	CERAMIC	BRICK	TABITHA NELSON SITE	TN-H-T2 QUAD B	30-40 CMBS
MIMA-78166	METAL	HAND WROUGHT	TABITHA NELSON SITE	TN-H-T2 QUAD B	30-40 CMBS
MIMA-78167	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	40-50 CMBS
MIMA-78168	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	40-50 CMBS
MIMA-78169	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	40-50 CMBS
MIMA-78170	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	40-50 CMBS

MIMA-78171	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	40-50 CMBS
MIMA-78172	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-T2 QUAD B	CLEAN-UP
MIMA-78173	GLASS	FLAT GLASS	TABITHA NELSON SITE	TN-H-T2 QUAD B	CLEAN-UP
MIMA-78174	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-SURFACE	
MIMA-78175	CERAMIC	REDWARE	TABITHA NELSON SITE	TN-H-SURFACE	
MIMA-78176	METAL	POSSIBLE CLOTHING BUCKLE, D-SHAPED FRAME, SIMILAR TO 77813	MS3	UNPROVE NIENCED	

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Appendix 3: Geophysical Survey Parameters

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Introduction

Geophysical survey methods to map buried features provides a cost-effective means for capturing archaeological information for site recording, investigation, and management. The application of non-invasive sub-surface mapping methods can document the basic structure and layout of site. In instances where historic properties are active sites with maintenance and potential development impact demands, these methods can guide placement of expensive excavations and contribute to site impact strategies when dealing with upgrade of site infrastructure (such as utilities and landscape management); thus providing large cost savings while reducing destructive impact upon important archaeological remains.

Geophysical survey methods can provide primary information on site settlement patterns. The continued application and development of broad area coverage for archaeological assessment has begun to introduce an alternative perspective into regional, or landscape archaeology (David and Payne 1997; Kvamme 2003). Because geophysical surveys are able to cover large areas in comparison to the limited extent of archaeological excavations, the information they provide introduces a new component to the concept of the archaeological landscape. Broad area geophysical surveys provide information on the structure and organization of a site enabling the study of spatial patterns and relationships relevant to research questions. In addition to the large-scale perspective of the site, geophysical survey results also provide a high-resolution focus on individual site features.

Geophysical surveys measure different subsurface properties at regular intervals across broad areas. Contrasting properties in a relatively homogeneous soil can identify buried objects or features such as foundations, compacted earthen surfaces, pits, stone walls, middens, hearths and any number of archaeological features. The different physical properties of the features, measured either in contrast to their surrounding matrix, or as recorded at the surface are referred to as 'anomalies' until they are able to be ground-truthed through excavation or other methods such as soil coring.

Different geophysical methods are sensitive to specific properties, such as magnetic fields, or the flow of an electrical current in the earth. Employing a combination of methods over a survey area can help provide information as to the nature, or material, of an anomaly, thus providing insight for site interpretation. Mapping the distribution of anomalies over a large area can help in the recognition of anomalies generated through cultural activities revealing the spatial distribution and association with site features (Kvamme 2003).

Geophysical surveys can provide important information for help in site planning and preservation. These non-invasive methods can help establish priorities and identify areas for further invasive investigations, or for preservation and management. They are a fast and cost-effective method for gaining insight to what is buried beneath the ground. Geophysical survey results can be spatially integrated with other data relevant to archaeological investigations to provide a comprehensive record of the site environment, both below, and above ground.

Ground Penetrating Radar

GPR can provide high resolution records of boundaries between subsurface features with contrasting dielectric properties. A standard method for detecting buried archaeological features, GPR is able to collect large amounts of data, covering moderate areas, over a short period of time. GPR is a geophysical technique that can produce a three dimensional image of the subsurface and provide accurate depth estimates and information concerning the nature of buried features.

GPR maps the form of contrasting electrical properties (dielectric permittivity and conductivity) of the subsurface and records information on the amplitude, phase and time of electromagnetic energy reflected from subsurface features. The results are presented as 2D vertical profiles in the earth. The stronger the contrast between the electrical properties of two materials, the stronger the reflected signal in the GPR profile will be. Because the electromagnetic radar wave is transmitted from an antenna on the surface, reflects off of sub-surface interfaces, and is recorded back at a receiving antenna on the ground surface, surveys are ineffective in highly conductive materials.

The GPR surveys were conducted with a SIR3000 GPR unit and a 400 MHz antenna. The 400 MHz antenna is a relatively high frequency antenna with the ability to penetrate to approximately 2-3 m in well drained loamy soils. While this antenna can penetrate to that depth, the system can be set to target the upper meter of the earth depending on the estimated depth of buried archaeological features.

GPR survey parameters:

75 scans per meter with 512 samples per scan.

0.5 meter transect spacing

Uni-directional data collection method (all transects travelling in the same direction)

GPR survey data were processed with RADAN.

Magnetometry

Magnetometers are passive instruments that measure the magnetic field strength at a specific location on the surface of the Earth. The Earth's magnetic field varies depending on location relative to the earth's equator and can be visualized as a large bar magnet that is tilted 11 degrees from the axis of rotation (Heimann and Devore 1995). Over a small area and in homogeneous soils, the magnetic field is expected to be uniform (Weymouth 1986). A subsurface target can be detected with magnetic survey as a deviation from this background field reading. The resultant anomaly often has a dipolar form aligned with the dip and direction of the Earth's field (Figure 8). The most common unit of measure is the nanoTesla (nT).

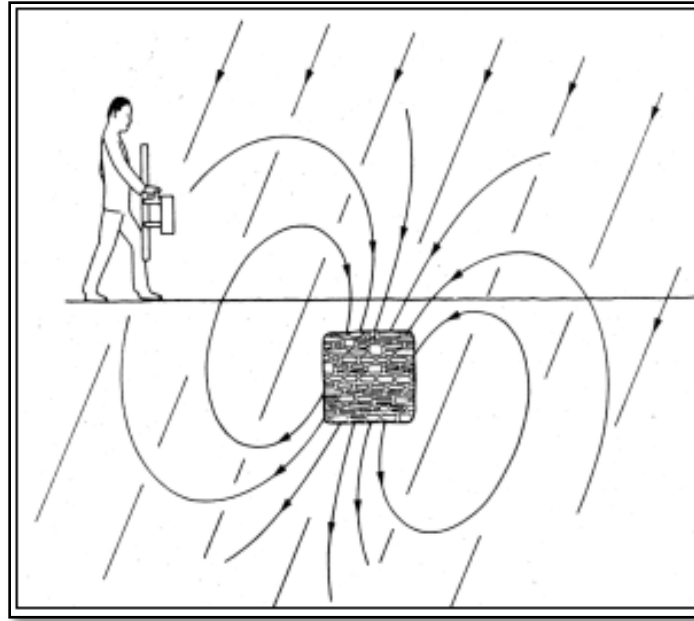


Figure 105 The magnetic anomaly produced by a kiln is aligned to the dip and direction of the Earth's magnetic field (From Clark 1996).

The magnetic signal of a target is composed of two parameters: induced and remnant magnetism (Reynolds 1997). A magnetometer measures the remnant magnetism of a target, which is permanent and may be caused by the presence of highly magnetic rock compounds or thermal alterations to soils which have high iron content (Heimmer and Devore 1995). Magnetization caused by thermal alteration is called thermoremanence and it occurs at maximum expression at temperatures above about 600 degrees Celsius, but there is some effect at any elevated temperature (Aitken 1964).

Induced magnetism is only visible in the presence of magnetizing field. However, the Earth serves as a constant magnetizing agent and, therefore, it can be sensed by a magnetometer. The induced magnetism is generally referred to as magnetic susceptibility. Magnetic susceptibility is greater in the topsoil and soils that are organically rich, but often produces relatively subtle anomalies (Clark 1996). Therefore, excavations that rearrange the topsoil are sometimes evident in magnetic surveys, but these are rather weak in strength.

Magnetic anomalies produced by archaeological targets are often much weaker than signals produced by other sources, usually between 1 nT and 100 nT (Aitken 1961). However, anomalies produced by historic period targets are usually much greater than this range. Archaeological objects that may produce magnetic anomalies include fireplaces, furnaces, burnt clay floors, hearths, kilns, daub, bricks, and walls composed of magnetically anomalous rocks such as basalt (Aitken 1964; Hasek 1999).

Another type of target visible magnetically is ferrous, or iron containing materials (Aitken 1964). Archaeological targets such as historic nails can many times be mapped using magnetometers. However, more recent ferrous objects, such as power lines, cars, buried pipes, and surface trash, can easily obscure archaeological targets (Heimmer and De Vore 1995). Some advantages to the use of fluxgate instruments are their relative insensitivity to steep magnetic gradients and their speed of acquisition is better (Reynolds 1997).

The magnetic gradiometer was developed in the 1990s and uses two sensor heads. The primary advantage of a gradiometer system is that no correction for diurnal drift is necessary (Reynolds 1997, Bevan 1998). In addition, they are much less affected by nearby objects with steep magnetic gradients, such as large masses iron (Bevan 1998). Also, gradiometers tend to emphasize shallow anomalies, a benefit for archaeological survey. One disadvantage is that the accuracy is dependent on a consistent orientation of the sensors (Bevan 1998, Hasek 1999).

Interpretation of magnetic imagery begins by identifying anomalies, which may have strong high and low amplitude values (Bevan 1998). Next, metal objects can be identified from the shape and amplitude. Anomalies with strong, narrowly spaced dipoles or strong monopoles are usually produced by ferrous metal objects. If targets are relatively large and the amplitude is not extreme, the shape may be approximated in the magnetic imagery (Bevan 1998).

Little information about the depth of a target is obtained with magnetic survey. In some cases, the half-width rule can be used to estimate target depth. The half-width rule depends on the amplitude drop off for readings over a target and assumes a simple and regular target shape (Bevan 1998). However, except for buried iron targets, this technique is often not useful for archaeological targets.

The Bartington Grad 601 fluxgate gradiometer with dual sensors was used for the magnetic survey.

Proposed magnetometry survey parameters:

0.125 m sample rate

1 meter transect spacing

Zig-zag data collection method (survey grid SW corner to grid NE corner); depending on site surface obstruction, data may be collected in the parallel mode.

The magnetic survey data was processed using TerraSurveyor.

Conductivity / Magnetic Susceptibility

Electromagnetic (EM) induction instrumentation uses a near surface transmitter coil to emit radio frequency electromagnetic waves into the subsurface. Objects in the subsurface respond by generating eddy currents, producing a secondary electromagnetic field (Figure 9). This secondary electromagnetic field is proportional to conductivity and detected by a receiver coil on the instrument and recorded by an attached data-logger (Bevan 1983; Clay 2006).

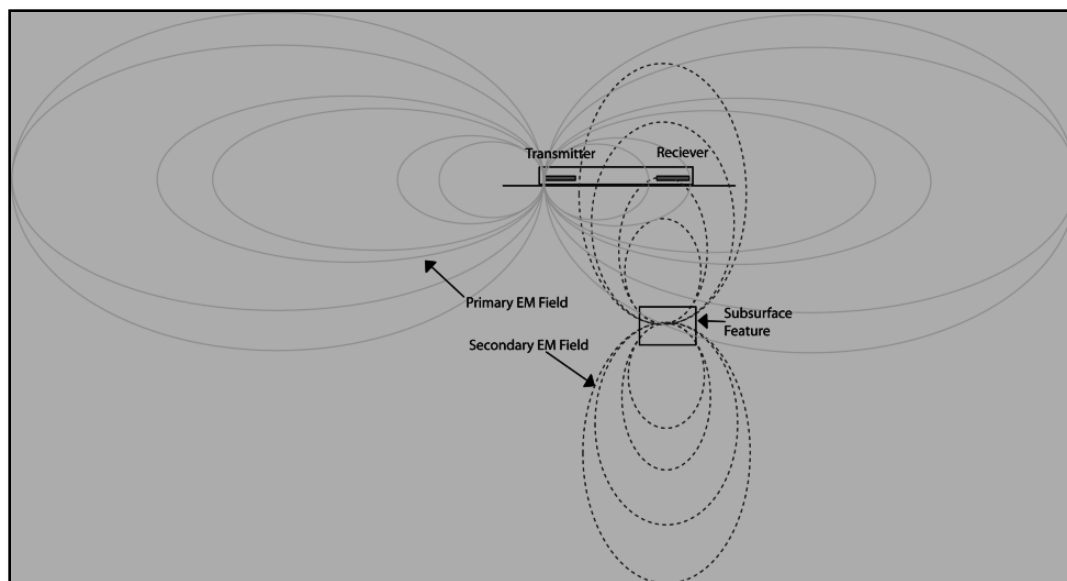


Figure 106 Electromagnetic induction diagram.

The GSSI Profiler collects both quadrature-phase (electromagnetic conductivity) and in-phase (magnetic susceptibility) components. Electromagnetic conductivity measures the “ability of the soil to conduct an electric current” (Clay 2006) and is recorded in Siemens (mS/m). Theoretically, electromagnetic conductivity is the inverse of resistivity although methods for recording each are completely different (voltage, sample spacing, soil, volume, sensitivity to metals) and results may not match entirely. The transmission of the quadrature-phase component of the induced electromagnetic field signal is related to the mineral and chemical composition of the soil. Soils high in clay and/or saline composition will produce higher conductivity measurements; whereas soils composed of sand and/or silt will produce a lower conductivity measurement. Levels of soil moisture also have a dramatic impact on conductivity measurements where increased moisture will cause higher conductivity readings (Clay 2006).

Magnetic susceptibility measures “a material’s ability to be magnetized” (Dalan 2006). It is different from magnetic gradiometry in that susceptibility is an active measurement recorded in the presence of an induced magnetic field. The transmission of the in-phase component of the induced electromagnetic field is based on the presence of a magnetic topsoil matrix being greater in magnetism than proximate soil matrix or materials. The increase in magnetism in topsoil is the result of pedogenesis enhancement from hematite, magnetite and maghematite minerals. Additionally, changes to the magnetic composition of the soil can be caused by human activity, such as fire or the movement of magnetically rich topsoil (Dalan 2006).

Both quadrature phase and in phase readings were collected across relating to conductivity and magnetic susceptibility properties respectively. This specification results in a maximum depth sensitivity of about 1 m for the conductivity. For the magnetic susceptibility, the penetration is significantly shallower.

Proposed conductivity survey parameters:
2 samples per meter

1 meter transect spacing
Zig-zag collection method

The EM data will be processed using TerraSurveyor.

Geophysical Survey Interpretation

All processed geophysical survey data were integrated into the PRAP GIS project and interpreted. Data interpretations were used to guide the placement of excavation trenches to investigate data anomalies targeting the identification and dating of features identified through the geophysical surveys. Basic interpretations are included in the body of work. More detailed interpretations can be found in the PRAP archival materials housed at MIMA and NRAP.

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Appendix 4: Military Tactical Event Transcript

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Military Tactical Review – Conference Discussion

November 18, 2015

Recorded on Thursday, November 17, 2015 (Phil Lupsiewicz, NPS)

Transcribed 1/25-26/2016 (Meg Watters, VES)

Included in the text below are the discussions from the field and conference meeting exchanges that contributed significantly to forming the final interpreted scenario(s) for the Parker's Revenge battle. The introduction, historical context, archaeological results, and project background presentations are not included in the transcript as most of the information is included in the final report for the project. The video of these sections of the MTR can be accessed at the Minute Man National Historical Park.

[] are used when the transcriber is inserting background information to complete the statement.

() are used when a complete statement is not understood due to audio; the gist of the statement is written.

The transcription of these dialogs attempts to be as accurate as possible, however words may be dropped or changed occasionally; without impact on the meaning of statements.

Agenda --Parker's Revenge Military Tactical Review

Wednesday, November 18

- 8:00 am **Continental breakfast and welcome:** Nancy Nelson & Bob Morris
- 8:15 am **Historical introduction, time frame, site setup:** Jim Hollister
- 8:45 am **Archaeological background & findings – 1775 landscape & artifact distribution:** Meg Watters
- 9:15 am ***Break***
- 9:30 am **1775 weapons & ballistics:** Joel Bohy & Bill Rose
- 10:00 am **Battlefield Archaeology:** Doug Scott
- 10:30 am **Observations on asymmetrical warfare:** Howard Helfman
- 11:15 am **Battlefield view of the Lexington militia:** Jim Hollister & Meg Watters
- 12:30 pm ***Lunch break (Visitor Center)***
- 1:30 pm **Battlefield view of the British forces:** Jim Hollister
- 2:45 – 4:30pm **Discussion and interpretation of Parker's Revenge battle** (all participants)
- 5:00 - 8:00 pm ***Concord Museum tour and group dinner***

November 19 – Thursday

- 8:45 am **Continental breakfast**
- 9:00 am **Event summary & final interpretation** (Jim Hollister & Meg Watters)
- 10:30 am **Concluding remarks** (Nancy Nelson & Bob Morris)
- 10:45 am **Group photo**

Participants:

Brigadier General Leonid Kondratiuk, Massachusetts Organized Militia; Director, Massachusetts National Guard Military Museum

Howard L. Helfman, Ed.D, Minute Man NHP Volunteer

Meg Watters, Parker's Revenge Project Archaeologist

Doug Scott, Historical & Conflict Archaeologist

David Wood, Curator, Concord Museum

Richard T.T. Forman, Ecologist, Harvard University

Dan Fenn, Lexington Militia Men; Emeritus, John F. Kennedy School of Government; Founding Director of the John F. Kennedy Library

Joel Bohy, Minute Man NHP Volunteer; Arms & Militaria Specialist, Skinner Inc. Auctioneers

Bill Rose, Minute Man NHP Volunteer, Lexington Minute Men

Bill Poole, Lexington Minute Men; President, Lexington Historical Society

Ed Hurley, Minute Man NHP Volunteer, Guild of Historic Interpreters

Greg Hurley, Minute Man NHP Volunteer, Social Studies/History Department Teacher Leader, Malden High School

Don Hagist, editor of the *Journal of the American Revolution*

Robert Gross, Historian & Author (*The Minutemen and Their World*), Emeritus, University of Connecticut

Bob Morris, President, Friends of Minute Man National Park

Jayne Gordon, Public Historian; Friends of Minute Man National Park Board of Directors

Paul O'Shaughnessy, Commander, 10th Regiment of Foot; Friends of Minute Man National Park Board of Directors

Steve McCarthy, Lincoln Minute Men; Friends of Minute Man National Park Board of Directors

Franny Sacco, Minute Man National Park Project Board of Directors

Jennifer Voss, Minute Man National Park Board of Directors

Nancy Nelson, Superintendent, Minute Man National Historical Park

Leslie Obleschuk, Chief of Interpretation and Education, Minute Man National Historical Park

Jim Hollister, Park Ranger/Education Coordinator, Minute Man National Historical Park

Patrick Jennings, Historian, American Battlefield Protection Program National Park Service

Jim Kendrick, Northeast Region Archeology Program Chief, National Park Service

Lou Sideris, Chief of Planning and Communications (retired), Minute Man National Historical Park

Military Tactical Review Field Walking Transcript

Recorded on Wednesday, November 16, 2015 (Phil Lupsiewicz, NPS)

Transcribed on 1/21/2016 (Meg Watters, VES)

Scene: In the battlefield from Colonial side. Morning

Paul O'Shaughnessy: I'm starting to see it now; it is becoming obvious with Jim

Bill Rose: These balls impact...Some Guys using these rocks Pointing from the Colonial fired line up to Colonial militia position (with General Kondratiuk & Bill Poole)

Doug Scott & Don Hagist: Positioned on the finger

Doug Scott: Tabitha Nelson's ... here; so road up here – Looking down battle road (to the West)

Don Hagist: From this position where do I expect to see people for the first time? Off to my left on the road or here I have an idea already that they might send flankers out that I may have to be watching this direction for them (pointing toward the Tabitha Nelson house (TNH)). That's what I wonder. When did they deploy? Did they come across the bridge and then fan out or did they come around the house?

Greg Hurley: They can step over this and – there is a house there and woodland there, I can't see them coming back to the road.

Don Hagist: I am inclined to agree except for the bridge; not knowing how much of a morass that was.

Doug Scott: They can come across the bridge – take both ends of that; you may have sent flankers here (Thomas Nelson Jr (TN Jr) to TNH); who knows, then they clear this area and they come across either the ridge where the house is or off the bridge – you've got a clear line of fire. You can't see through that ridge (TNH).

Don Hagist: And that is the thing that makes this an interesting location to me: I can see down that road but I can't see over that ridge.

Doug Scott: The ridge is not a big deal because the road is over there.

Bill Rose: Think of the landscape there are a bunch of erratics here that are not going to be plowed away. So this may have been pasture where it is untended with grazing, so not much undergrowth, perhaps some large trees. But visibility may be better than you think.

Don Hagist: But it's the visibility over the ridge.

Bill Rose: Fair enough, geologic feature will definitely stop you.

Greg Hurley: I think Don Hagist has a good point. The bridge is here, earlier about Meriam's corner - the choke point is the bridge. Is this a choke point here? Or can the light infantry traverse that without having trouble.

Don Hagist: Talked about it being dry, just a rivulet, or a mushy morass that you wouldn't want to cross.

Greg Hurley: Clearly they were here (line of musket balls) are they coming from here (around TNH and the ridge) or from here (the bridge)?

Bill Rose: So clearing the Tabitha Nelson house that lump, large geographic feature and they've already been fired at from behind other houses. 2nd thing is they have at least 2 wagons of wounded, they have to hold that bridge – they have 2 wagons they got in Concord and who knows from Lincoln. So it does matter that that bridge is there. The foot guys can go around.

Don Hagist: Another good reason why Parker sets up here. He knows the bridge is important.

Bill Rose: Wagons – 2 chaises were stolen, talked about.

Don Hagist: Regardless of any tactical damage, importance of covering the bridge. Don't know the rate of wounded foot soldiers; but we don't how rapidly they were getting wounded.

Bill Rose: Wounded were being dragged on, getting on the far side of the force, how many on the chaise?

Doug Scott: with significant fights: Meriam's Corner, Bloody angle.

Bill Rose: Bridge/swale at Brooks Village was even deeper – more thinking fights were documented were bridge oriented / happening at bridges – choke point. Bloody angle is different with higher ground.

Leslie Obleschuk: one wounded soldier left at Thomas Nelson Jr house.

Scene: Position changed; same area looks to be still on hill side.

Greg Hurley: They are pulling out, why not fire when they are starting to deploy, why wait until they set up in a full line; as opposed to – if you want tactical advantage want to hit them at a choke point, as they come out instead of waiting for them to deploy.

Patrick Jennings: That is a good point. The objective of any ambush is to ... (stop the main column), their hope is that as they keep moving through, is that they are forced to fire on them. I agree they could have ... (come from that way)

The Colonial objective is a bunch of tired guys is coming over the bridge and to attack it. To cut their head off and try to ... (disturb the column).

Bill Poole: From the British perspective the fighting is from the left side--the rocky field, the Nelson Homes, where we know there are casualties. TNH lines up right with them; this is a perfect sweeping motion of the flankers coming out. With the action taking place prior to this to the left; the flankers will have difficulty keeping up. Or coming across (TNH)

Howard Helfman: I would worry about over strategizing from our perspective. I don't think they had Bernier and Brown maps out; I think they were pushing along; they already had their head kicked in and

were reactive. Did they know the bridge was here? I'm not so sure. I know they know the high ground; they couldn't march here. I don't want to be caught in front of that. As for the other spots such as Meriam's corner, it was a choke point going out. They were not so prepared and they pushed on and took the hit and reacted.

Don Hagist: That offers the alternative scenario, maybe this was the end of the Parker's Revenge battle. Maybe it started on the high ground and British put flankers out to drive them off of the high ground. And this was the American retrograde motion mapped here. Maybe they did strike from the high ground.

Paul O'Shaughnessy: Could you fire on the road from here? Do you have enough of a view; was the woodlot in the way? 2 things going on: fire up here from on the road. British react and send flankers out.

Meg Watters: From our musket ball flag, a 100 yard buffer takes you to Tabitha Nelson farmyard, and just to the edge of battle road.

Bill Rose: We do this in real life, reenactment of this. I was on horseback commanding the British army. I sent light infantry by accident (didn't know evidence) into the woods to push the Americans out of the woods who were sitting there for an hour. And where did they come? They came right up here and pushed the Americans back that way. How long did that take? Imagine the guys reposition? I walked the road (as British) from the lead and last position of the column, brisk pace, encumbered with wounded. You aren't going to be running. It took 13 minutes. That is the only fight that could have been here. No way to reposition guys and have another context. If you cut across you could (across the granite outcrop?). Patrick and Harold say it is difficult to re-position troops once they have done something. Assumes one company of Lexington militia.

(In this exchange below, MEG WATTERS is laying out a hypothetical argument.)

Meg Watters: assumes every member of the Lex militia were in one group. They could have been in 2 groups in different positions, and engaging on separate fronts.

Bill Rose: No data to support that, Parker' took part of the company only.

Meg Watters: Yes, but no data to refute me. We can say for sure X happened. We could say perhaps there would be a second group firing – but that evidence is gone.

Bill Rose: Empirical information for moving troops might give more information.

Patrick Jennings: Next thing to fall back on Inherent Military Probability 0 what would a competent soldier do. Run around like chickens w head cut off. Both sides of the battle. Would it make sense, where did they go, where did they come from, how did they get out? Not going to put themselves on a hard terrain (outcrop). Like every soldier in the world, he isn't going to be shot; he knows how he would get away.

Jim Hollister: So if you are in the Lexington Militia, don't want to be deployed on a cliff. What would you avoid here?

Patrick Jennings: I would avoid anything that was going to put me on an obstacle that I couldn't get off easily to find another place to defend. If I were here I wouldn't want to go that way, (South to the outcrop) see that drop off? It means I have to run down there and then up hill. And if I have a flanker chasing me, they get to the top of the hill as I am coming up I present a target. And then I have to decide am I going to stop half way down to defend that spot. Or am I going to keep running away? Am I scared? Do I have time to reload? Am I going to move as a unit in a column or am I going to file off and run as fast as I can? These are what you are thinking about.

(Standing on the finger) A line of retreat. See the line of retreat; this is an elegant line of retreat. You can go off in that way, or that way and defend it, you can go off in a column. If the British are firing at you, it is harder to hit you. That is a nice logical escape right along that ridge line.

Howard Helfman: And contrast that with when we were up on that bluff, how challenging it is to move off. It can seem at first that it is a good spot to be but it has its problems, you can see there are blind spots in this area.

Bill Poole: When we do the reenactment each year, the terrible thing about that is we are wide out in the open, everyone can see you. I don't know what the cover is there, but there is a beautiful line of retreat on the left flank there and you are protected by a 30 foot drop off. The access then is around here (around the base of the outcrop where the old track is and the finger), just as we see the action taken. If you station someone out there, they are exposed with a good line of retreat, not a nice military press there, but a drop off. This does seem like a logical movement down from the ridge.

Paul O'Shaughnessy: Speak on what the musket ball placement is telling us. Ockham's razor. This is one volley from the Lex Militia standing about where we are at a company, maybe single company of probably light infantry about where it is starting to get flat down there. The musket balls are very concentrated, which means it is a single target all fired at once and the balls on the ground are the ones that missed that went through or over the British soldiers and ended up in the ground down there. If you aim at someone down there, behind them is ground. That is why the balls are here conversely we have all these scattered balls up here of that same company probably firing back at them and their balls imbed on the hill because it is the upslope. We capture all these balls because there is a bowl here both sides fire into the ground in both directions. Otherwise they would be far away. Probably one big fire by the Lex Militia and then they scoot.

Bill Rose: Brits have bayonets, they are low on ammunition, and cartridge boxes are at least half empty.

David Wood: A single company? So

Paul O'Shaughnessy: A little undersized

David Wood: 13 balls.

Bill Poole: The numbers of the British balls are equal to the colonials for what we found for shots fired. Recovery rate: Some went into trees. Are going to lose some balls. There is a high recovery rate, right asked Doug Scott? – cannot hear his entire response.)

Doug Scott: Cannot get people to go over an area 100% metal detecting

David Wood: Does this number of balls argue slightly more than a single company

Doug Scott: if it was 2 partial companies, or one company of British; part of 35-40 of Parker's guys each got one shot off. Maybe a hundred balls – have 33% sample. 10 and 50% we are between. A lot of speculation. Have to say it was here they were down there shooting, and they were up here shooting.

Paul O'Shaughnessy: At least one militia man got rattled enough that he dropped a ball.

Bill Rose: Look at the concentration of fired Colonial it's not so dispersed as up here at all. If you took us and lined us up shoulder to shoulder down there and see how far a half company of 16 people takes up. What are the light infantry doing? They aren't going to be tight order. 2 or 3 paces minimum apart.

Patrick Jennings: They are going to come off the road as an organized unit and then their commander is going to point to a place or line to cover and they are going to begin to spread out. Your best target is when they are clustered. That is where you see the fire, and then they spread out. This British line of fire is brilliant. This British line of fire is in a straight line it likely covers the flanks of the colonials, they do the standard fire, someone mentioned bayonets, fire and advance.

Steve McCarthy: What were the orders when you are here? This is as close to the road as captain Parker wanted to be?

Jim Hollister: That is a question. What is the target here? Standing where we are, it is kind of hard to see where Battle road is. It is really extreme range for a small bore caliber, the ball will carry if it doesn't hit anything. Who were they going for? Chances are someone was shooting at someone on this ridge line. What is their intention – were they going for the column or for the flankers.

Doug Scott: Could have come over the bridge before the column got as far as the bridge and the flankers spotted these guys (Lex Militia) and they moved forward.

Steve McCarthy: Maybe they are here because of the TN house not just the bridge.

Howard Helfman: I still think the bridge is a key factor

Jim Hollister: Either squeezes over it and deploy or the seepage is going to slow them up.

Worth considering this finger of land that slopes off over there. About 50 yards away, see how it slips off there? They could have deployed there for the ambush that is where they are firing from, seeing the musket balls fired from there then the British begin to create their flank. And then they run along this ridge line to either extend or escape and then that is where you get that British fire.

Bill Poole: We are not completely definite that that was the wood line there and they may have had a better view of the bridge

Lou Sideris: When you see the red dots of the British do you think that is where the soldiers were and were being shot at or are they over shots? Are they west of that?

Bill Poole: The dropped musket ball is indicative of one person in the action and his exact location.

Meg Watters: The interpretation of the musket balls we see high and low velocity impact, we can begin to look at these impacts to try to better identify where the soldiers are standing.

Doug Scott: (I can't really hear what he is saying. Something related to velocity of MB and ricochet patterns etc.)

Meg Watters: We have a lot of rocks here, they are all mapped

Doug Scott: I expect we will never come up with a precise interpretation. Multiple plausible interpretations and all of them come out to where we are standing.

Doug Scott: Ricochet, soft led with musket balls, hit rock, they scatter and we won't find it, just goes to pieces. I expect there is more lead out here than you would find.

Joel Bohy: One we found, that hit that rock, put a V in that rock.

Jim Hollister: Imagine you are one of these MM, how does this feel to you? You've got flankers moving through, do you like this position, or not?

? : You probably like this position until the flankers are come through.

Scene 2, on Battle Road, coming from the direction of the British Column, afternoon

Jim Hollister: We are coming up this way; they've already been engaged from Meriam's Corner, that's 3 miles to the west. So they are coming down, they are getting pressed very sharply from the rear. You've got almost 1500 men, colonists pursuing them since that time the numbers are always growing. They get hit by Reading, Chelmsford, Billerica at Meriam's corner; Concord, Lincoln, Acton, Bedford are coming across the fields to the north of the bridge, they are joining in the pursuit. They get to Brooks hill, Framingham and Sudbury come up and hit them on the right flank, now they are continuing. They are coming up to Bloody Angle and Woburn goes in and hits them on the right, they've got that jog in the road. The colonists are able to move more quickly through the landscape because they are not as tied to the area immediately around the road like the British column is. They come in at Brooks Hill, another 180 at Bloody Angle it's just growing, that's why you read their numbers were increasing from all parts while ours were reducing from death wounds and fatigue.

That's another point Major Baldwin from the Woburn militia at Bloody Angle (2 miles to west) talked about the column coming through very fast and left many dead and wounded and a few tired. Already, with so many miles to go.

Meg Watters: So Lexington Militia not in isolation, perhaps out front, but there are another militia following and coming in from the sides so the Column is under pressure to keep moving. What is the number of Colonists at this point in pursuit?

Jim Hollister: About 1500 in the pursuit, probably running along and setting up ambush sites along the flanks.

Don Hagist: If I were as smart as I am now I would have put the flankers out back there by that great big tree (pointing west along battle road beyond the Thomas Nelson Jr. property) where you can see.

Meg Watters: Yes beyond Thomas Nelson Jr's house.

Bill Poole: You know they were engaged in the rocks, the field of rocks; back beyond Josiah Nelson's house.

Howard Helfman: Jim, do you know if they were taking any fire from homes before, anything reported about that?

Jim Hollister: You know most of the reports of taking fire from homes seem to be when they push past Lexington and when they get into Menotomy.

Scene Change: In the woods, in the Colonial fired musket ball line. Or, the interpreted position of the British flankers, afternoon.

Patrick Jennings: Try being a flanker for 6-8 miles there were broken fields. It would be 5 in the afternoon before they pass. The head of the column is not going to pass the flankers, they set the pace. This is not a John Ford movie with cavalry flankers out on the side. It's going to take too long. The time range leaving 1—11 from Concord, and they get here at noonish. That column is moving. They are moving at the speed of their flankers. The flankers are out front and reacting not marching across in lines. I can't imagine, that would take 5 hours to do that.

Don Hagist: Bear in mind that the British method for suppressing fire was to rush on with bayonets. I see what you mean by send them out and bring them back, out and back.

Patrick Jennings: That is what we were talking before about digging into the history. If we could tighten the chronology of the British actions, if you could see the speed the slow down... you would probably notice that what they are doing is instead of moving with cohesive flankers, it's not a solid wall of resistance so when they hit pockets of resistance they spread out react and keep moving, push them away.

Scene change: Standing on Airport Road looking at the line of Colonial fired, afternoon

Meg Watters: The colonial force was on that finger to north of the outcrop. They[colonials] saw this flanking when they pushed them off, they shot, the concentration in the 20 yard area they completed their deployment and swept up and they fired on the retiring column along the contour and up over the bluff of the colonials. So that is one scenario of what that deployment was. We asked that question – if the colonial force was deployed along the contour where the musket balls put them, who were they there for? Because the British column is over on Battle road and they are kind of set out over here.

Afternoon 16th: Conference discussion in the Minute Man National Historical Park Visitor Center, Lincoln, MA

Military Tactical Review – Conference Discussion

November 16, 2015

Recorded on Thursday, November 16, 2015 (Phil Lupsiewicz, NPS)

Post field walk meeting discussion, Minute Man National Historical Park, Lincoln Visitor Center

(This film clip begins in the middle of the discussion.)

Bill Poole – may have been some communication

Bob Gross - Fischer has an account of the town alarm.

Jim Hollister – what if Parker did not come out for revenge, he is following the directive of the Provincial Congress, army of Observation

So not knowing that the fighting at N Bridge, when he marches he doesn't know that the fighting has begun that he comes out here to the town line to observe and then everything goes horribly wrong just as it did in the morning.

Meg Waters - But he is in place there has to be an intent when he sees and hears the fight coming up the road.

Bill Rose – He is a leader he has experience, that is what he does. That is what a soldier does

Howard Helfman – He is an experienced soldier. He had been in combat before. Did he have the intention of watching your territory? It is interesting that they show up at that line. If you use the territorial boundary, all the towns cross their lines to be in the confrontation. Is this a unique thing and understanding that Parker' had of watching your territory (don't know) it's a hypothesis but I don't think so. I know of no other town that looked at it in that way.

Jim Hollister – They stayed within their borders it is unusual.

Meg Watters – They know that they are coming back.

Jim Hollister – they know they are coming back and they can hear that fighting.

Don Hagist – He knows that the British are going to go right through his town, which is different from the other towns.

Meg Watters – and let's not forget the strategic landscape this is a place with a bridge, a turn in the road and an outcrop. So strategically if you were to go within a few miles where you know Battle Road is, where would you choose? This may have been one of those strategic places.

Bill Poole – Don't forget the influence of Rev. Jonas Clark, Lexington is one of the most radical towns in this area. So their ideals and beliefs might have been stronger than some other town. I can't remember any mention by Jonas Clarke of Parker's Revenge.

Bill Rose – It seems that it happened and that's it, no one ever talked about it

Bill Poole – His influence was tremendous extending beyond the borders of Lexington. I believe very strongly that those two individuals who were very good friends. Dr. Bob Brooks had a greater good and motivated Lexington.

Bill Rose - So for Howard there is no indication that Parker ever served other than in the Lexington militia company in 1759 so we cannot give him any combat experience, even in a combat zone. The musket balls do not tell us which ones the blue ones or the red which ones were fired first. We don't know and it really matters.

If the Brits see Parker up there and fired first, what would you expect Parker to do? He went that route in the morning and that didn't go too well. However if he fired first, he didn't have any orders to do that but back to the observation, are they are supposed to allow the other guys the first fire?

The musket balls do not tell us anything about which fired first. By the way, we may not have found the first fired musket ball.

Parker died 7 months later of consumption, so he was not the most robust of men. But, he hitched up his britches and headed out to this one.

The next thing that gets me, remember they lost 8 men killed and 10 wounded in their town that morning. Now at some point if you are a good taxpayer looking at the Mayor taking all your money, it is like nice job John.

Bill Poole – 7 dead, 9 wounded from Lexington. 1 from Woburn dead and 1 from Woburn wounded. Get the numbers right for statistics.

Bob Gross – Put this a different way. If you commanded men who responded to disperse the rebels, disperse and they dispersed and were fired on. How do you recoup from that, if it isn't just the losses, it's the losses in the end. What is your frame of mind as a commander and what are you men likely to follow given the way of the morning.

Bill Rose – Send their guys and tell them to turn around one more time and they get murdered.

Bob Gross – You bring up the Army of Observation; you've already seen what the Army of Observation led to. if we can conclude that's not so good then they probably were there the second time to be ready.

Bill Rose – the thing says that Parker only brought part of the company. I read that as he had a tough time getting a bunch of guys to go. If it had been the majority of the company this is Nathan Monroe (the quote – Parker took part of the company and went out...) it is 50 years after this happened; now he

can be proud of what happened, more than proud that they are making up stories that never happened but making it look good.

Gen Kondratiuk— It is leadership meets rally the troops.

Bill Rose – he rallied some

Gen Kondratiuk – so what.

Bill Rose – I’m arguing that it is maybe a bit more passive.

Jim Hollister – this is valid. There is leadership going on here. A conversation I had many years ago with a Marine Corps officer who had been in Falluja. One of the hardest things to do is to have a company of men who have seen something that has upset them. And they are upset, scared, angry, armed to the teeth well trained you have an incredible amount of power there how do you control that? It’s really difficult

Capt. Parker finds himself in the situation where the people under his command, those who trusted him, they elected them into this position, have just suffered a devastating loss, is he feeling that was horrible decision I made look what happened. Is he feeling that? How does he control how his men are feeling? What sort of qualities would a leader show in that moment? How do you channel that?

Dan Fenn – The community in Lexington, you have 77/78 people on the green but you have a community that has been whipped up by Jonas Clark to support resistance and so they were living in a psychological world of support which would make a difference I would think in their willingness ...

Patrick Jennings - I’m having a really hard time imagining that a group of militia men who got knocked about in the morning said you know what lets walk out the door and watch again. And then they are going to sit on this knoll, and now they are spreading out. Take away every military aspect of this, and this becomes logic. They aren’t going to do it. They are smart and are going to run as soon as they see the British, flankers coming over the hill, and an entire army coming over the bridge, can you assume the British fire first? They are not going to stay, As soon as the British deploy in some way that is Battle green.

Bill Poole - the Lexington company is divided into 2 groups, the Alarm List and the Training Band... Some on the common were in their 60s, so you aren’t going to take them all, some will be charged to support and protect the town.

Paul O’Shaughnessy - There is a reason why you would leave some of your men back in town. These are not the only British around that day, there are patrols out and they may have found out that there was a relief column coming. So I’m not sure it is a motivation issue, I think it may have been a deliberate decision. We are going take some of them up there, and leave others back in town.

But I think they are angry. I wouldn’t call it revenge but more like OK you want to play this game, OK we are going to play.

Most of the militia companies had the luxury to get within musket range, firing, and leaving. And then doing it again. They don't have to stay and duke it out, the column is stuck on the road. They have all the advantage. There is every reason to get up fire and leave, which is what I think we see here. It gets a little bit foreshortened, I bet they were meaning to fire on the road. But ended up shooting at the guys that came out to meet them.

Lou Sideris – Responding to what Bill Rose said about which musket ball was fired first. Just as Patrick went through, based on what was found it looks like Lexington shot first. Based on the blue concentrated and the red scattered. The logical thing is Lexington shot first at a more concise target and the British shot at a scattered, running away target.

Meg Watters – The thing they were grouped on this finger, this piece of land firing almost at once, down and then deploying across and then retreating along the contour back up here. Would the British begin firing as soon as they were in position, turn and fire, or would they have fired as they were running into their position?

Patrick Jennings – They would have waited to turn. They would have been told where to go, they step off. They are given a mark, which is how far they go. They are going to go out, the commander is the last in position, then they all turn to fire. Whatever he decides.

Jim Hollister – I want to think of the psychological impact. In the morning they catch it, suffer egregious casualties very quickly. When you read their 1775 depositions it is very much the victims of British aggression. So think about the psychological impact of a leader saying we are not done yet, they are taking control, even if it is just to go out and fire just one shot, the psychological effect on your troops is going to be tremendous, it is going to be see we hit them back, we are still in this fight.

Bill Poole – I have something that resonates today, Rev. Clark always talked about God being on their side. Faith inspired and so forth, he is giving them a religious reason for going out to combat again.

Howard Helfman – Tourtellot's reference of an older sergeant that took his Scottish sword with him and marched down and was killed. (Bill Rose it was Jedidiah, not a sergeant) He was killed; talk about getting people to get up and follow and go down and do damage.

Bill Rose – I believe that an American or some Colonial wise guy fired first on the green. I don't believe the Brits fired without a command, so it was they who were fired upon, the Brits got a second shot in. I also believe that Parker had to have some serious guts with the guys that had just been decimated on the green. He got part of the company, huge initiative just to get them out there. Listening to everyone (here), it makes sense that yes we are going to do this again but this time we are going to fire first. The fact that Parker got his bunch down there, and the received British balls on the American side are so spread out, I am convinced that the

Americans fired first, both morning and afternoon, doing with a good leader, not the greatest, but had some reasonable guts to get his folks out there again. I think he was a parochial guy. There is no

indication that he ever left the boundaries of the town.... He was following some kind of order that no one else seemed to; every other town went somewhere else. Parker never left the boundary.

Meg Watters - Don't disregard the strategic point in the landscape, the bend in the road, the bridge, the outcrop. From my perspective this is a huge component.

Don Hagist – The point there is that if the town border was on the other side of the outcrop, it would have still been that same position.

Patrick Jennings – It is very handy that the border is there.

Bob Gross – there is no strategy to try to defeat the British army that day. It is also reasonable to know that this is the route back. Your job as a colonial militia officer is to protect your town. You know Woburn and those are going there. You don't have to be given the responsibility to protect the town of Lexington. You can also view him as a prudent person, taking a stand at a strategic point in the landscape with an obligation to protect Lexington, without meaning to go out further knowing others are.

Patrick Jennings – He led the opening engagement and took casualties, and has got to recover. These are not hardened combat veterans. It takes some time to get them all back together. This may be his decision to reach this point as far as he could reach before he had to set something up.

Don Hagist - We talk about all the other commanders having to go out of their towns, but they had to get to the battle; he is the only one that could stay in his town and be in the battle.

Doug Scott – Observation. The points of view are multiple. I want to come back to the points on that map which represent fired bullets and one dropped bullet. That is physical evidence. That physical evidence has engendered a whole bunch of points of view, and multiple plausible alternatives. I think the psychological thing has changed the face of this event and understanding of it. The physical evidence, the conversation, it is a really great model.

Bill Rose – the MB on the other side of the road that is a skip.

Doug Scott – (shows how it would have skipped)

Meg Waters – (pointing out on the map on the screen) Following on what we are talking about speaking of artifacts and listening to everyone. As they are deploying, the Colonists take their first shot in this area then turn and retreat. The British deploy, they turn, they fire on the retreating Colonists. As we were saying in the field, some were going faster, some were going slower. They are perhaps spread out along that contour line. The British are in place at that point and they can send their fire up as they are sweeping along and clearing that landscape. It is the distribution of these (Colonial) musket balls which show that cluster as perhaps a single event of firing by the Colonists. and then the distribution of these which are much more spaced out along the landscape, that shows perhaps there was a bit of time as the colonists were moving the British were getting into their line and then turning and firing and sweeping. Just from spatial distribution.

Steve McCarthy – Looking at the two groups what, do you people think? Is that the same people or is it two companies being fired upon, are they being fired upon twice once in one position and once in another, or is it a line of two groups.

Bill Rose - don't think we have enough data; we have to remember the disturbance here.

Steve McCarthy - The reason I mention this, Meg is talking about the British deploying and giving us a sequence and we don't know if that is the case or not. Maybe they waited until both were in place and fired once. Nothing farther to the right there (to the east – I believe he is referring to the Colonial fired line of musket balls), before we assume the British were fired as they were deploying.

Bill Poole – It is the grouping, with the narrowness of the (Colonial) line of fire.

Steve McCarthy – Are there 2 groups or one?

Patrick Jennings – I see 1. You see in the center there is a short ground (the fired Colonial musket ball that is just south of the alignment of FCMBs), and then right there, above it, straight up, there is another (the CFMB that is located north of the water seep feature in the Tabitha Nelson farmyard). If you could bring those in as good shot bad shot. They are really close. How far across is that line of fired Colonial MBs?

Meg Watters – that is 50 yards (FCMB).

Patrick Jennings– that is good, they are starting to spread out.

Meg Watters - The stone wall is right here, 130 yards. This line is 100 yards

Bill Rose – is there any compelling evidence that either group was able to fire more than one shot?

? – my guess would be one. (general agreement)

History by consensus.

Patrick Jennings - British fire by the colonials – someone is trigger happy or stumbled (referring to the fired British musket ball in the alignment of the fired Colonial musket balls).

Doug Scott – in all fairness, we should take a closer look at the musket balls [and the interpretation.]

Bill Rose It is easy to say a ball is not British, but it is less easy to say a MB is not Colonial.

Steve McCarthy – Is this the only time that Gage sent out Grenadiers, like out to Salem or Roxbury is this a standard thing?

General discussion

Bill Rose – I think this is a unique thing,

Paul O'Shaughnessy – [Gage] said specifically in the orders companies of light infantry and grenadiers.

General Kondratiuk - The US army would never do this.

Paul O'Shaughnessy - The risk assessment on this is insane.

Bob Gross – I'd like to offer an observation. A story about Everett Edward, April 19, 1825. He had a problem; he was the new congress man in Middlesex County. Just one year before when Lafayette came through visiting Lexington and Concord. Samuel Hoar got up and said that Concord was the first site of armed response to British aggression. He really ticked off Lexington. Everett has to give his speech in this political context. This is not a day of Concord or Lexington this is a day for Every Middlesex village. He was right. The battle road is the embodiment of Everett's speech. It seems to me that Parker's battle enhances for the park, the interpretation of the Battle Road as also the day of Middlesex. It seems to me that you could take everything we are talking about, not just in the historical reconstruction of what is happening at that site, but also for heightening the interpretation in later interpretations of the story about the battle day and use that as well.

Morning 17th: Concluding discussion in the Minute Man National Historical Park Visitor Center, Lincoln, MA

Jim Hollister: Overview and Presentation of Interpreted Scenario(s)

Ok, so yesterday we started the day with a series of presentations to get everyone on the same page; to give an introduction to the project and the history behind it and various topics swirling around it. We started off going back to history, the primary source evidence we have of the events before and on the 19th of April and then leading up to the engagement in the afternoon with Captain Parker and the British column. Then Meg presented the archaeological evidence. Did we really expect to find 32 musket balls out there? That shows there was a very significant fire fight that happened in that area. We reviewed weapons and ballistics with Bill Rose and Joel Bohy, and with Doug Scott we discussed conflict archaeology a very unique field. Then Howard led a discussion on asymmetrical warfare and how it applies to this or not, is this gorilla war fare or something different?

Then we went out to the field. The best way to really explore a battle site is to get out there and look at the ground. You can look at maps, but being out there on the ground is something that is really instructive... (Aside about Antietam Civil War and the sunken road – and you stand there and realize they can't see their line of site.). We did 2 field sessions one covering from the Colonial point of view and the other one from the British point of view, two completely different situations. All of this was to answer two essential questions: What happened? And Where?

We know the Lexington Company went back to action in the afternoon. Speaking in terms of Historiography we've been all over the map, in the 19th century authors put them north of the road, south of the road, further west in Lincoln taking Nathan Monroe literally; in the boulder field in the meadows and then starting in the early 20th century they began focusing on the Hill, the rocky outcrop. We had Coburn in 1912, we had Galvin and Fischer and to be honest, they weren't that far off based on what we found. However, because of this investigation we now believe that this happened slightly differently than what those 19th and 20th century authors have put forward.

So let's go back to Nathan Monroe and taking a page from Bill Rose's book, recap what Nathan Monroe tells us. We know the middle of the fore noon, 10 or 11:00 in the morning, again they don't write these things for us in the detail that we want. Captain Parker collects part of his company, so was that 40 men 50, men 100 men? We don't know, they march out to meet the Regulars in the bounds of Lincoln... did Nathan Monroe know where exactly that border was, how is he interpreting that? So we don't have much to go on. We also have a plausible time line that we can draw on. For example taking Nathan Monroe, Parker leaves Lexington somewhere between 10 and 11 in the morning. The British leave concord just before noon when they pulled in all their companies from various parts of town and prepared to leave to return to Boston, an 18 mile journey. The column is moving 2-3 miles per hour based on the time line, the Meriam's Corner engagement happens about 12:30. Captain Parker would have arrived at the battle site that we identified yesterday sometime around noon. He gets there; he has time to set up, has time to prepare his men to choose his ground. At about 12:30 the fight at

Meriam's Corner happens and now this running battle is coming toward him. He and his men can hear the firing as it is coming down the road.

For the British, by the time they reach here they have suffered at least 23 dead, probably around 60 or so wounded; they are tired; they have been up for over 24 hours; they've marched almost 30 miles; they are running low on ammunition. We have that in all the sources that their ammunition is running low and that the light infantry is not functioning exactly as they were trained and they are getting in contact with the enemy and doing what they thought they were supposed to do – firing quickly – not really going to help them in this situation. So they are running low on ammunition, they also only came out with 36 rounds of ball cartridges which are not a lot for an engagement like this. Command and control is starting to break down; however they are not done yet. They still have some fight left in them and they are still able to function, but the flanker as in de' Bernier account, they were scared to act they were so fatigued. They are in pretty rough shape, but they are moving toward this area. Parker and his men would have heard them, and we think they would have arrived within range somewhere between 1:30 and 2 in the afternoon.

There is a question, what did Captain Parker intend to do? This is what archaeology can't really tell us; if we take the colonial company out there to be Captain Parker's when we get into the scenario they set up a good fighting position. But we don't really know what their intent was to re-engage the British, was it something else?

What does he know? He knows the British are aggressive, willing to engage and shed blood. He and his company know that better than anyone. They also know that the countryside has been alarmed. Their countrymen have been mobilized; Woburn came through earlier that morning so if they go out there they are not alone. Captain Parker is a leader. He has been elected to his post by the men under his command. He now has to be a leader and show those traits. His men's emotions are very high this could lead to all sorts of disasters either they are to be not going to want to go back in or they will go charging in and get themselves killed. He has to be on top of that, he marches them out toward the town border.

Now we get into the Battle scenario itself. He marched them out there to the town border. We talked about why he stopped at the town border. And chances are he did that because he has some good ground there, why go further if the choice ground is at the border. (Pulling up a map)

(Describing the landscape, bridge, seep, "finger of land, Nelson bridge, grouping of fired Colonial musket balls in this area just behind the seepage; there is a scatter of British fired musket balls along the ridge running this way.

So our job yesterday was to interpret this, what did it tell us?

Discussion with Meg and Jim setting up their map.

Meg Watters: I have the colonial forces on that little finger; I am imagining they are looking down Battle road being prepared to fire on the turn here in the bridge; but also being prepared to fire anywhere based on the lay of the land.

Jim Hollister: So there is the bridge, and here is the ridge line –well within musket shot.

Meg Watters: From this position, I have a 50 yard light blue line – buffer, firing range from the position on the finger; this is a 100 yard firing range. Effectively where their musket balls would go if positioned there.

We have re-interpreted that. If we begin with the assumption that the bridge is where the British begin to deploy their men along the water feature, I have the very beginning of the line coming out here, we don't know how far they went out, I took them out to the stone wall. Then you can see the 50 yard and the 100 yard buffer of the Colonial fire.

The British Buffers, 50 yards is the inner circle, 100 yards the outer circle. We talked about the Colonial milit retreating; (new interpretation – turned off pre-prepared graphic; placing the note pad in front of projection).

The new interpretation we were discussing this morning, this is the interactive part the pen and paper; you are all welcome to chime in this is what we have the white board. We can create any scenario we want. This is continuing on what we did yesterday, I hope everyone had a good night of sleep and let things filter a bit.

Jim Hollister: Presents yesterday's conclusions and resulting scenario(s)

So here is what we came up with yesterday. Acknowledging the importance of that bridge. They come across that bridge and deployed; extended to the left. Or did they deploy out and come straight across [the landscape from Thomas Nelson Jr's house]. We have the Tabitha Nelson house here; bump in the ground along here [the ledge] which would have covered them approaching it, but coming over it they would have been silhouetted which is not good. The Thomas Nelson house is here.

We are interpreting right now, most likely the flankers were in compact formation and reacting to situations and deploying out as needed. Edmund Fosters account of the Bloody Angle fight which is further to the west talks about that. He mentions getting into this position in the wooded area that lies near the road taking cover behind trees and walls and mentions the British coming up and he mentions they ordered out the flank guard to the left to dislodge the Americans from their posts behind the large trees. It didn't work well of course; they became a better mark to be shot at. He spoke specifically of them being deployed out, not just being out.

Figuring they are doing the same thing here. They would have known this feature was here having crossed earlier in the morning now they are coming back. Most likely this is a vanguard slightly in front of the column, they see this and rush across and begin deploying because you have colonists on this finger of land. With being deployed we are not sure exactly how many men they have (Colonists) but they are going to use the features of the landscape. We doubt they stood in ranks, they would have used trees, rocks whatever they could find. This is roughly what we think the configuration is. So they can put fire on the bridge and covering the flank in case they are flanked.

Cover the 50 yard buffer zone here. (Draws the 50 yard buffer zone) and then the 100 yard buffer zone. So they can easily cover the bridge. 100 y for musket is not accurate fire, but certainly it will travel. If your enemy is going to be there they are going to be in concentration. But where we find the concentration of fired colonial musket balls it is easily within musket range. Reasonable Major George Hanover (?), a British officer did a study in the 1780s unless it is exceedingly ill bored it should be able to strike the figure of a man at 50 yards but at 200 yards you might as well be shooting at the moon (chatter).

So, here is the Colonial position. So now, (bridge up on screen) the British are rushing across the bridge and spreading out to the left. Did they go all the way out to the stone wall? We don't know but that is surely open. But in doing that what they can then do is put an awful lot of pressure on the colonists here. We are not sure where the colonial right is here, depending on how many men they had. Was it just Parker's Company or Thatcher from Cambridge with him there? Did they have 50 men or 100 men? By opening up the Regulars can now open up and wheel rank and drive them off. But this cluster of fired balls. The white ones we can't determine if British or colonial but they are certainly there. So, they (Colonials) are waiting; British come across the bridge and quickly run out on the flank; Captain Parker opens fire as they are deploying out – and then they begin to retreat out this way, out toward the bluff. As they are retreating we see the scatter of British fired musket balls possibly indicating the fire at retreating Militia Company.

The British buffer zone here, 50 yard (draws).

This is what we came up with yesterday.

Questions:

Which way did the British troops go?

Jim Hollister: The flankers, their job is to drive off pockets of resistance; they are not going to hold this ground. After wheeling right, they are going to come back to the road and continue moving. Captain Sauder of the marines said – going forward, first possession of one hill and then another and made their way to Boston.

Question: More fighting at bluff, is that what we are seeing here, or did it happen later?

The bluff is just down there. They don't know what is out there; what if you run into something if you go too far out (flankers) you are out of sight and can't call in help? They go back on the road.

How do you know they went over the bridge first? You have the Nelson Houses out there, wouldn't it make sense for them to go out and check out the houses first?

Yes, we talked about that. The whole column is made up of light infantry and grenadiers, troops that are both well trained in flanking. So if the vanguard pushes forward there are other flanking parties behind. Another possibility is that they had other flankers deployed near the house.

As far as we know the Hartwell tavern was never searched and the Samuel Hartwell house, though it took a shot through a garret window, was not entered, Capt. William Smith's house wasn't entered. There is precedent for both, later on when they get into Monotony where they are taking fire from the houses. That is also the biggest concentration of Colonial militia that come into that area, more thickly settled and forcing themselves into the houses using their bayonets. Out here at Meriam's corner some militia took cover behind the house and barns, but there is no evidence of the British searching the house.

Howard Helfman: At Menotomy there were fresh or fresher troops that came out and reorganized, included flankers more regularly available

Lou Sideris: Doolittle image burned at least 3 houses. In Lexington, there was sniping at least before Lexington center.

Jim Hollister: Depends on which direction, if heading East is after Lexington center. Percy comes up, forms a battle line on that ridge just E of town Center, places his artillery, they get a little bit of a rest, they are taking fire from houses and then burned them.

Patrick Jennings: Flankers sweep along the left, from the Thomas Nelson house. Mark the house and go just above it, there is a stone wall that is going to be the limit of the flank, it's going to peak there and then coming back down. So here is your problem, military problem. Are you going to send your flankers on the other side of the stone wall; you are not going to do that because you are cutting off part of your unit – leaving part of your unit without support, so the limit of those flanks has to be compressed wider and wider to sweep around. When you consider the degradation of command you are talking about a complex military situation. A sergeant isn't going to just think keep pressing out to the wall; that you'd have to be well trained, the soldiers keep falling back on the notion. Going from the Thomas Nelson house and you have that ridge, it doesn't look that big, but if someone is shooting at you it gets taller. I'm not sure looking at this I don't know exactly what the vegetation was like, not an easy ridge to get over, and then get to the next house then down again over two water features.

Jim Hollister: That argues they were compact and crossed over the bridge.

Patrick Jennings: It's possible, but if I reversed the side I would find more friendship and protection behind a stone wall than I am in a house.

Bill Poole: talks about the boulder field; How far is this position?

Meg Watters: ID boulder field to West of Josiah Nelson house.

Bill Poole: We know there was some action just a bit beyond there; there is something going on around the Nelson farm house with 1 or 2 dead soldiers. There are people sheltering in drainage ditches from which the British are taking fire. All this is happening on the left flank all the way through.

Jim Hollister – the question, to keep in mind is those things did happen, but when? We are interpreting this action at the head of the column, the vanguard, you still have a whole column coming up behind.

Bill Poole... but the flankers are protecting the column. How did they move, who were they confronting? Were they closely engaged around the Nelson properties?

Jim Hollister: What I'm saying is that a lot of that action, these guys are already gone by the time; remember Lincoln, Acton, the town militias etc.... are all pursuing, pushing from the rear.

Bill Poole: Just looking at the pattern of engagement, how are they going to counter it? The only thing we know is they used flankers. Having a vanguard out presumably is good military tactics to add to their defense. In addition to flankers are they sending someone out from the vanguard as the flankers are coming over the ridge down into that hollow? That hollow is a good point to start firing. Or they came across the bridge and then come out. Take into account the action that had taken place immediately prior to this.

Jim Hollister: The other scenario is the vanguard coming up, flankers up and they sweep in. ... and sweep in, and that is the other one

Bill Rose: Patrick and I were talking about Bill Poole's discussion about having flankers deployed along the route; the other tactic is the snake and tennis ball and who is going to be giving orders — we are talking about command and control. Did they codify their tactics as we do in the 20th Century? But I think the complexity within our data; I think what are you going to do to.

Patrick's snowplow allusion.

The snake and tennis ball — lumps of action occur, in semi linear fashion. My concern is that when the public reads this they will think there is no command and control. We talk about command and control, compared to other battles and to the 20th Century. For the interpretation, express the complexity that we are having with all of our data so folks understand the interpretation. Art of this, command and control, how long was the line of communication: a line of sight or a line of hearing — please put these in there so people will understand.

Jim Hollister: people will have opinions, it opens a discussion

Meg Watters: this is an archaeological investigation; this is not a historical review of what happened on that day, while history contributes to the interpretation of the archaeological evidence, my report will focus on the archaeological evidence, this activity, the analyses that we've done and will really focus on the landscape and the evidence and what that speaks to us. I think we have two scenarios that we've been assessing that will come in to the report. I'm coming back to this line of musket balls, and for me that second scenario: if we have flankers deployed across the landscape, out to that stone wall. Perhaps on this side of it [south] and if they are sweeping across evenly patterned, our concentration of musket balls are concentrated in one area. That is saying two things: either the British were only in that area and being fired upon at that moment in time when these fellows were clustered or maybe a little deployed on the wall; or it is saying these guys only had a chance to fire at the ones that were close to them and then turned and took off?

Bill Rose: That is the point. We looked at this one point in time; it doesn't matter if there was cavalry behind this scene at this time, it is irrelevant. But those that consume this report will start asking questions that are hypothetical.

Doug Scott: We have Evidence

Patrick Jennings: AMBPP we get the report and use it as a thesis. ...get the archaeological evidence and use the terrain analysis.

If you use terrain analysis correctly and look at this, every land battle pre-analysis result revolves around key terrain. Key terrain is the road, only the road. Excuse me, size of terrain, size of terrain is that one piece or stretch of land that fits every other piece of KOCO analysis: road becomes (all the qualifications for both sides: avenue of approach, obstacle, key terrain observation, cover for both sides of the battle etc.), everything concentrates on that road. Inherent military probability, British in hostile territory are getting slower, 2 options here you are moving to your object from one side people are lining up against you. You know the numbers are overwhelming, I can sense this. Are you going to send out 25 guys to walk along the sides in a nice wide line in hopes to scare off 200-300? No we are going to keep moving and where you reach resistance, where that resistance is met you are going to react. Your react, this is, a move to regress and reacting to contact. The idea of keeping flankers out, even if you shift them out. How often every 5 min every 10? every mile? What is the regress and reacting to contact. What if your flankers encounter 50 or 100 guys, they run back in? Who takes care of those? That way then the column gets slower and slower. What is our march here, 2.7 miles per hour that is fast.

Don Hagist: One of the keys here is I don't think we are talking about keeping flankers out for the whole march. If they were deployed 200 yards further back down the road down by where the triangle is or before the bridge, that is still a short time. I see the point but I don't think anyone is talking about having flankers out the entire time. It is a question of when they saw the need to put those flankers out.

Jim Hollister: The two interpretations we have. What we know is that they ended up here. But did they get there by crossing the bridge and extending left or get there by deploying earlier and sweeping across?

Don Hagist: A key point of the concentration of the musket balls because of the scale of the map and the size of the circles, we get the impression that those musket balls are very densely packed. But they are actually spread out over about 50 yards long. If you take the British flank company that by this time may have about 25 men in it and put them out in open order it is about 50 to 60 yards of frontage. I question if a single flanking party would be able to extend all the way out to the stone wall. It looks like it may be a British company front by this time; they may be fully deployed covering that size space.

We talked about all of this, vanguard and the head of the column and we also imply that most of the other fighting so far was at the rear of the column. Were the British thinking of their strategy when they got here as fighting a retrograde movement where they are defending the rear and the front of the

column moving as fast as it can then something suddenly happens here and then they have at that point to get out in a hurry?

38:30 That fits the model of crossing the bridge first and realizing that there is a threat in front of us now. Have they had any threat at the head of the column before this?

(Someone Joel B? comments Woburn)

They are already thinking we may have danger at the front as well as behind.

Jim Hollister: Bloody angle Foster says they got there in time to meet the enemy; Woburn, Baldwin's account talks about coming up to Brooks hill pitching and resting themselves then they see the Regulars, They are clearly ahead of the column and come off the east end of the hill, cross over Lincoln bridge then come to the uplands of Lincoln. Then as he said we concluded to scatter using the trees and make use of the trees and walls for to defend us for an attack. It is plausible that there is flanking all along the wall.

Yes, because of the jog in the road and the colonists able to use the landscape for easy movement. They are not tired, they got there first.

Don Hagist: so by this time the anticipatory of the British is just as plausible.

Lou Sideris: I think we need to rip up airport road and see what is down there. A lot depends on where the bridge was located. We know for example at Meriam's Corner they saw a bridge and pulled in the flankers to cross the bridge. If it was a substantial bridge, then the odds are the flankers said lets go in across the bridge.

Joel Bohy: They also pulled the flankers in because they were on a ridge. The flankers had to come off the ridge and get across. They were following all the way on a ridge.

Jim Hollister: At Meriam's Corner.

Bob Morris introduces Katlin from Lexington Monitor.

Bill Poole: Lincoln bridge, any evidence of the width?

Jim Hollister: No

Lou Sideris: at Meriam's corner they changed the culvert and put in a new corner. Whereas here, they may have just buried it.

Discussion of traces of Nelson bridge possibly still existing.

Bill Rose asks Meg Watters: Could there be a single piece of stone that would have been the bridge. Tablet stone? Talking about this possible construction at Nelson Bridge – from Oxbridge.

Meg Watters: not a running river but an intermittent seepage. Bob Gross not here today, out recently talking with Bob Thorsen, Gross suggested looking at records of the actual maintenance and upkeep of Old Bay Road. This could provide evidence of a bridge and its construction.

Joel Bohy: I have this information.

Meg Watters: Another line to follow in defining this landscape. It is not like the Nelson farmyard dinky bridge to get his cows over drainage, it is the main road. It would be something more impressive. I have radar data over this area, but it could be done in higher resolution, to propose excavation through airport road. Can archaeological investigations identify the location of the bridge? Is it under airport road or further up near Thomas Nelson Jr. house?

Bob Morris: Do you have any idea of where it could be in the existing data?

Meg Waters: I haven't thoroughly investigated this part of the

Lou Sideris: It was paved; the park took the pavement off. [1960s]. Wasn't main highway where it was significantly changed.

Meg Watters: shows radar example for bridge location potential.

Conclusions and Questions:

Jim Hollister:

1. Did the British flankers deploy before or after the bridge?
2. Was their deployment anticipatory or reactive?
3. How wide was Nelson bridge?
4. Was the column engaged in the rear only or on the flanks as well? Now that I am thinking about it, Woburn was ahead. Lincoln coming from behind.

Lingering questions any additional?

Doug Scott: Data exists, a lot of hard work getting it. You have at this junction of our knowledge archaeological and historically significant information. This data says set up a working hypothesis and the scenario for testing that. Detectives interview witnesses, victims, and ... the forensic scientists collect all the physical evidence as archaeologists we put the whole picture together, it takes both to put this together and the oral to achieve a hypothesis. To investigate in the future. What types of questions should you be asking?

(Doug Scott continues to talk for 3 more minutes, cannot hear commentary due to volume.)

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Appendix 5: Musket Ball Interpretation Statistics

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Parker's Revenge Archaeological Project 2013-2013

Musket Ball Statistics

Origin	Weight Grams	Calc Dia Inches	Velocity Impact	FS Number
British	31.3	0.702	low	Hanscom 2
British	30.9	0.699	high	51A
British	30.3	0.695	high	75B
British	29.5	0.688	high	22A
British	29.2	0.686	high	74B
British	29.1	0.685	high	39B
British	28.7	0.682	high	72B
British	27.9	0.676	high	33B
British	27.6	0.673	high	Hanscom 1
British	27	0.668	low	53B
British	26.8	0.667	high	28A
British	26.7	0.666	low	33A
British	26.5	0.664	low	3A
British	25.4	0.655	medium	2A
British	23.8	0.641	high	Hanscom 9
British	23.6	0.639	high	14
Colonial	24.7	0.649	medium	51B
Colonial	24.3	0.645	medium	61B
Colonial	24	0.643	medium	52B
Colonial	23.8	0.641	low	55B
Colonial	23.3	0.636	medium	66B
Colonial	23.2	0.635	medium	60B
Colonial	22.4	0.628	dropped	21
Colonial	12.8	0.521	medium	56B
Colonial	8.2	0.449	high	48B
Unknown	26.9	0.668	medium	65B
Unknown	26.1	0.661	low	59B
Unknown	24.9	0.651	low	68B
Unknown	24.4	0.646	high	62B
Unknown	22.3	0.627	low	63B
Unknown	18.1	0.585	high	16
Unknown	14.1	0.538	high	41A

Origin	Range
British	31.3g - 23.6g
Colonial	24.7g - 8.2g
Unknown	26.9g - 14.1g

Thanks to Doug Scott for musket ball analysis and to Dan Sivilich for equation and diameter calculation.

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Appendix 6: Press Release, Media, Public and Professional Presentations

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Press Release

FOR IMMEDIATE RELEASE: SEPTEMBER 28, 2015

Contact:

**Battlefield Archaeology Project Uncovers Details of the
Opening Day of the American Revolution**

Musket Balls Tell the Tale of a Heroic Stand

Concord, MA –September 28, 2015 –On April 19, 1775, despite heavy casualties just hours before, Lexington’s Captain John Parker made the courageous decision to rally his troops and pursue the British on their march back from Concord to Boston. An archaeology project using advanced technology has unearthed important details on the little known but noteworthy battle called “Parker’s Revenge.”

“As we enter the centennial year of the National Park Service in 2016, this project is especially exciting. Thanks to the sponsorship by our nonprofit partner the Friends of Minute Man National Park, we have been able to use technology as a new way for people to find their park and their shared heritage,” said Nancy Nelson, superintendent of Minute Man National Historical Park.

Today, the 44- acre site of Parker’s Revenge is on a heavily wooded hillside within the confines of Minute Man National Historical Park. Utilizing a suite of technologies, the Parkers Revenge project is reconstructing the historic 1775 landscape.

“What we have found to date is very significant. Due to the location and spatial patterning of the musket balls recovered, we now know the exact place where individuals were standing during the battle, allowing us to begin to paint a much clearer picture about what happened that day,” said Dr. Meg Watters, project archaeologist.

A dropped musket ball indicates the geographical position of a combatant. In addition, since the effective range of a 1775 musket was only approximately 100 yards, a fired musket ball also provides clues to combatant positioning. Archaeological investigations have discovered British and colonial musket balls, and a 1775-era copper button from a waistcoat. These findings are significant because they are located within 80 yards of each other. The small cluster is the only occurrence of battle related artifacts over the 44 acre site, clearly identifying the position of individuals fighting that day. Continued archaeological excavations and metallic surveys will complete the historic landscape investigation.

Historians assert the Lexington militia laid down a heavy fire with a ferocity that surprised the British column, slowing its advance and exposing their rear to pursuing militia companies. After taking casualties, the Lexington militia withdrew back through the woods to continue the fight farther down the road.

“It is extremely gratifying to be able to use modern technology to reveal this history and heroism. You don’t have to be a professional historian to be moved by being able to stand in the exact spot where this battle took place, look down the road and imagine the militia anticipating the British column’s advance,” said Bob Morris, president of the Friends of Minute Man National Park.

Once the archaeology field work is completed in November, the project will shift to development of educational resources and battlefield rehabilitation. “Our goal is to document and understand an important chapter in the story of April 19, 1775 and honor the courage and resolve of those who stood here some 240 years ago, said Nelson. Upon completion, this project will enable the park to convey this compelling story to current and future generations.

The Parker’s Revenge project is a collaborative venture between the Friends of Minute Man National Historical Park, the National Park Service Regional Archaeology Program, the Town of Lexington’s Community Preservation Fund, the Lexington Minute Men and other living history experts, Save Our Heritage, the Civil War Trust’s Campaign 1776, the Society of the Cincinnati and numerous local supporters.

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About the Friends of Minute Man

The non-profit Friends of Minute Man National Park supports the national park by funding educational programs and raising funds for restoration and preservation. For more information about the Parker’s Revenge project and the Friends of Minute Man National Park, visit <http://www.friendsofminuteman.org>

Outreach

The Parker's Revenge Project press release, developed by the Friends of the Minute Man National Historical Park with input from MMNHP and National Park Service's Regional Public Affairs staff, was issued on PR Newswire on September 28th. The NPS Regional Public Affairs staff was also very helpful in suggesting several national reporters who might be interested in the story. Those reporters received a personal e-mail from the Friends.

Coverage

The associated press story (above) drove much of the coverage
<http://bigstory.ap.org/article/493a1f38bf08412592cd94531ff77114/archeologists-uncover-secrets-revolutionary-war-site>

We have identified the following media outlets that carried the AP story on their websites (there may well have been others - over 130 journalists viewed the release). December 2015.

- The Washington Post
- Minneapolis/St Paul Star Tribune
- Fox News
- Sky News Canada
- Seattle Times
- Nashua Telegraph
- Burlington (VT) Free Press
- Army Times
- Boston Globe
- Boston Herald
- Sputnik news
- Mass Live
- The McKeesport Daily News
- WSAU TV Wausau WI
- WMUR TV Manchester NH
- Archaeology.org

Other coverage

Project archaeologist Meg Watters was interviewed on **Fox TV News** for a story that ran nationally. And a tip of the tri-corn hat to Phil Lupsiewicz of Lowell National Park for securing the background footage that helped us help the Fox producer. October 15, 2015.

<http://video.foxnews.com/v/4533614321001/new-technology-uncovers-secrets-of-parkers-revenge/?#sp=show-clips>

Meg and Nancy were interviewed for a story that ran on **News Radio WBZ** on two consecutive days during drive time

The **Concord Journal** ran the Friends press release as a news article

The **Lexington Minuteman** ran a lengthy front page story on the initial release and a second story on the tactical event

<http://lexington.wickedlocal.com/article/20151002/NEWS/151008305>

<http://concord.wickedlocal.com/article/20151203/NEWS/151208916>

The **Lexington Minuteman** also ran an editorial on the project: *Praise for public-private partnership*

<http://lexington.wickedlocal.com/article/20151005/NEWS/151007644>

Archaeology Magazine published the project in the January 2016 *In the Trenches* section:

<http://www.archaeology.org/issues/202-1601/trenches/3933-trenches-massachusetts-revolutionary-war-parker-s-revenge>

WBUR/NPR <http://www.wbur.org/2015/10/28/archaeological-dig-lexington>

Additional Outlets that posted the press release:

- Marketwatch
- The Street.com
- New Mexico Business Daily
- Boston Business Journal
- And Business Journals in Birmingham, Buffalo, Albany, Charlotte, Chicago, Cincinnati, Columbus, Dallas, Dayton, Houston, Denver, Jacksonville, Los Angeles, Louisville, Memphis, and Milwaukee

<http://www.archaeology.org/news/3719-150928-massachusetts-parker-revenge>

<http://www.prnewswire.com/news-releases/battlefield-archaeology-project-uncovers-details-of-the-opening-day-of-the-american-revolution-musket-balls-tell-the-tale-of-a-heroic-stand-300149856.html>

Public & Professional Presentations

Presented by Meg Watters

2014

The Parker's Revenge Archaeological Project 2013-2014

The League of Women Voters

Cary Memorial Library, Lexington, MA

October 3, 2014, 5:00

2015

Parker's Revenge Archaeological Project: Notes from the field

Friends of the Minute Man National Park

Bemis Hall, Lincoln MA

March 15, 3:00

Interpreting the Evidence: Parker's Revenge Under Investigation

Lexington Historical Society

The Depot, Lexington MA

April 10, 8:00

Examination of the Parker's Revenge Historic Battlefield, 19 April 1775

Lincoln and Lexington, MA Minute Man National Historical Park

Lincoln Minute Men

Bemis Hall, Lincoln MA

April 14, 6:00

Parker's Revenge Notes from the Field

Friends of the Concord Free Public Library

Concord Free Library, October Massachusetts Archaeology Month 2015

October 3, 7:00

Musket Balls: The Stories They Tell

Mrs. Giunta's 1st grade class

Clyde F. Brown Elementary School

Millis, MA

Parker's Revenge Revealed

The American Revolution Institute of the Society of the Cincinnati

Anderson House, Washington, DC

December 9, 7:00

2016

Parker's Revenge Revealed

Society for Historical Archaeology 2016

From Great Meadows to Petersburg: Battlefield Archaeology in National Parks

Washington, DC

January 7

Parker's Revenge Revealed

Capt. David Brown's Company

Concord Museum, Concord MA

April 16

Parker's Revenge Archaeological Project

Concord Museum

Concord, MA

April 17

First Glimpse of Tactical Engagement: Parker's Revenge and the beginning of the American Revolution

Lexington Historical Society Cronin Lecture

The Depot, Lexington, MA

April 29

Parker's Revenge: revealing tactics?

Colonial Warriors lunch

General Society of Colonial Wars

Union Club, Park Street, Boston, MA

May 19

Captain Parker's Revenge: Archaeology project reveals new insights to the opening day of the American Revolution

Harvard Club

Boston, MA

November 3

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