DC TO RICHMOND
SOUTHEAST HIGH SPEED RAIL

R-17 PHASE IA ARCHAEOLOGICAL SURVEY & PREDICTIVE MODEL, SEGMENTS ROAF–BBHW (SEGMENTS 1-20)

D.C. TO RICHMOND SOUTHEAST HIGH SPEED RAIL

July 14, 2015

DC TO RICHMOND
SOUTHEAST HIGH SPEED RAIL

Archaeological Background Review and Predictive Model

Washington, D.C. to Richmond Southeast High Speed Rail Corridor

DRPT
Virginia Department of Rail and Public Transportation

U.S. Department of Transportation
Federal Railroad Administration

Archaeological Background Review and Predictive Model for the Washington, D.C. to Richmond, Virginia, Southeast High Speed Rail Corridor

by

Mike Klein, Emily Calhoun, Marco González, and Earl E. Proper

Prepared for

Virginia Department of Rail and Public Transportation

801 E. Main Street, Suite 1000
Richmond, Virginia 23219

Prepared by

DC2RVA Project Team

600 E. Main Street, Suite 2102
Richmond, Virginia 23219

July 2015

ABSTRACT

The proposed Washington, D.C. to Richmond (DC2RVA) segment of the Southeast High Speed Rail project was examined through an archaeological background review and predictive model of archaeological site locations. This work will serve to guide subsequent Phase I cultural resource surveys. The proposed project is being completed under the auspice of the Federal Rail Administration (FRA) in conjunction with the Virginia Department of Rail and Public Transportation (DRPT). Because of the FRA's involvement, the undertaking is required to comply with the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act of 1966, as amended. The project is being completed as Virginia Department of Historic Resources (DHR) File Review #2014-0666.

Previous studies throughout the region provided a basis for projection of relative probability of discovering terrestrial archaeological sites using standard Phase I survey techniques in the DC2RVA project corridor. Environmental variables included distance to major drainages, soil fertility as reflected in the Soil Conservation Service's identification of soil classes, and disturbance evident on aerial images of the project corridor. Aspects of the built environment also used as variables included the georeferenced location of historic roads and National Park Service (NPS) historic trails that crossed the DC2RVA corridor. Documentary research provided information on previously identified architectural and archaeological resources, Revolutionary War and Civil War camps depicted on period maps, and the American Battlefield Protection Program-defined location of Civil War battlefields. Together, these data allowed the prediction of the settings characterized by a high, moderate, and low probability of discovering archaeological sites, as well as areas where previous disturbance, development, previous archaeological survey, or soil attributes indicate that archaeological sites will not be discovered in these areas. Those areas where previous disturbance or soil attributes indicate that archaeological sites will not be discovered are not given a probability ranking

For the purposes of the predictive model, the area of potential effects (APE) was defined as a linear corridor that extends 50 feet (15.2 m) on both sides of the center of the existing 123-mile (198-km) project corridor, an area encompassing 2,109.5 acres (853.7 ha). The proposed DC2RVA project is expected to primarily impact near-surface resources; for this reason, the predictive model does not include deep testing. It is **recommended that 90 percent (1,890.8 acres [765.2 ha]) of the 2,109.5-acre (853.7-ha) APE should not be tested due to previous archaeological survey meeting DHR standards or its location outside of even the lowest-ranked probability areas**. The results reflect the extensive development in Fairfax County and the cities of Alexandria, Fredericksburg, and Richmond, as well as the construction and maintenance of the existing rail corridor. Of the remaining 218.7 acres (88.5 ha), 156.8 (63.4 ha) were classified as high probability, 46.9 acres (19 ha) as moderate probability, and 15.0 acres (6.1 ha) as low probability. It is **recommended that all of the high and moderate probability areas, a total of 203.7 acres (82.4 ha), and a 10 percent sample of the low probability area (approximately 1.5 acres [0.6 ha]) be subjected to shovel test pit and metal detector survey, where appropriate.** The areas recommended for testing occur primarily in the less developed

segments located between Fredericksburg and Richmond. Additionally, it is **recommended that all sites within the APE previously determined eligible or potentially eligible for listing on the NRHP as well as those sites that have not been evaluated by the DHR should be reexamined regardless of their probability ranking/location within the probability model. After reexamination, these resources should be evaluated as necessary in coordination with DHR.**

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

Dovetail Cultural Resource Group (Dovetail) conducted an archaeological background review and predictive model of the Washington, D.C. to Richmond (DC2RVA) segment of the Southeast High Speed Rail project (SEHSR) corridor for the Virginia Department of Rail and Public Transportation (DRPT). The project included an archaeological background review of the DC2RVA corridor as well as a probability-based archaeological predictive model. The project is being completed as Virginia Department of Historic Resources (DHR) File #2014-666.

The Federal Railroad Administration (FRA) and DRPT propose passenger rail service and rail infrastructure improvements in the north-south travel corridor between Washington, D.C. and Richmond, VA. These passenger rail service and rail infrastructure improvements are collectively known as the DC2RVA project. The Project will deliver higher speed passenger rail service, increase passenger and freight rail capacity, and improve passenger rail service frequency and reliability in a corridor shared by growing volumes of passenger, commuter, and freight rail traffic, thereby providing a competitive option for travelers going between Washington, D.C. and Richmond and those traveling to and from adjacent connecting corridors. The Project is part of the larger Southeast High Speed Rail (SEHSR) corridor (Figure 1-1), which extends from Washington, D.C. through Richmond, VA, and from Richmond continues east to Hampton Roads (Norfolk), VA and south to Raleigh, NC, and Charlotte, NC, and then continues west to Atlanta and south to Florida. The Project connects to the National Railroad Passenger Corporation (Amtrak) Northeast Corridor (NEC) at Union Station in Washington, D.C.

The purpose of the SEHSR program, as stated in the 2002 Tier I Final Environmental Impact Statement (EIS) completed for the full SEHSR corridor, is to provide a competitive transportation choice to travelers within the Washington, D.C. to Charlotte travel corridor. The purpose of the current Washington, D.C. to Richmond SEHSR project described here is to fulfill the purpose of the SEHSR Tier I EIS within this segment of the larger SEHSR corridor. The Project, by increasing rail capacity and improving travel times between Washington, D.C. and Richmond, will improve passenger train performance and reliability in the corridor, enabling intercity passenger rail to be a competitive transportation choice for travelers between Washington, D.C. and Richmond and beyond.

Given FRA's funding involvement and permitting through various other federal agencies, the Project is required to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations under 36CFR800. Additionally, all cultural resource work was designed to comply with the Virginia Antiquities Act (Code of Virginia § 10.1-2300) and guidelines and regulations promulgated by the DHR as necessary.

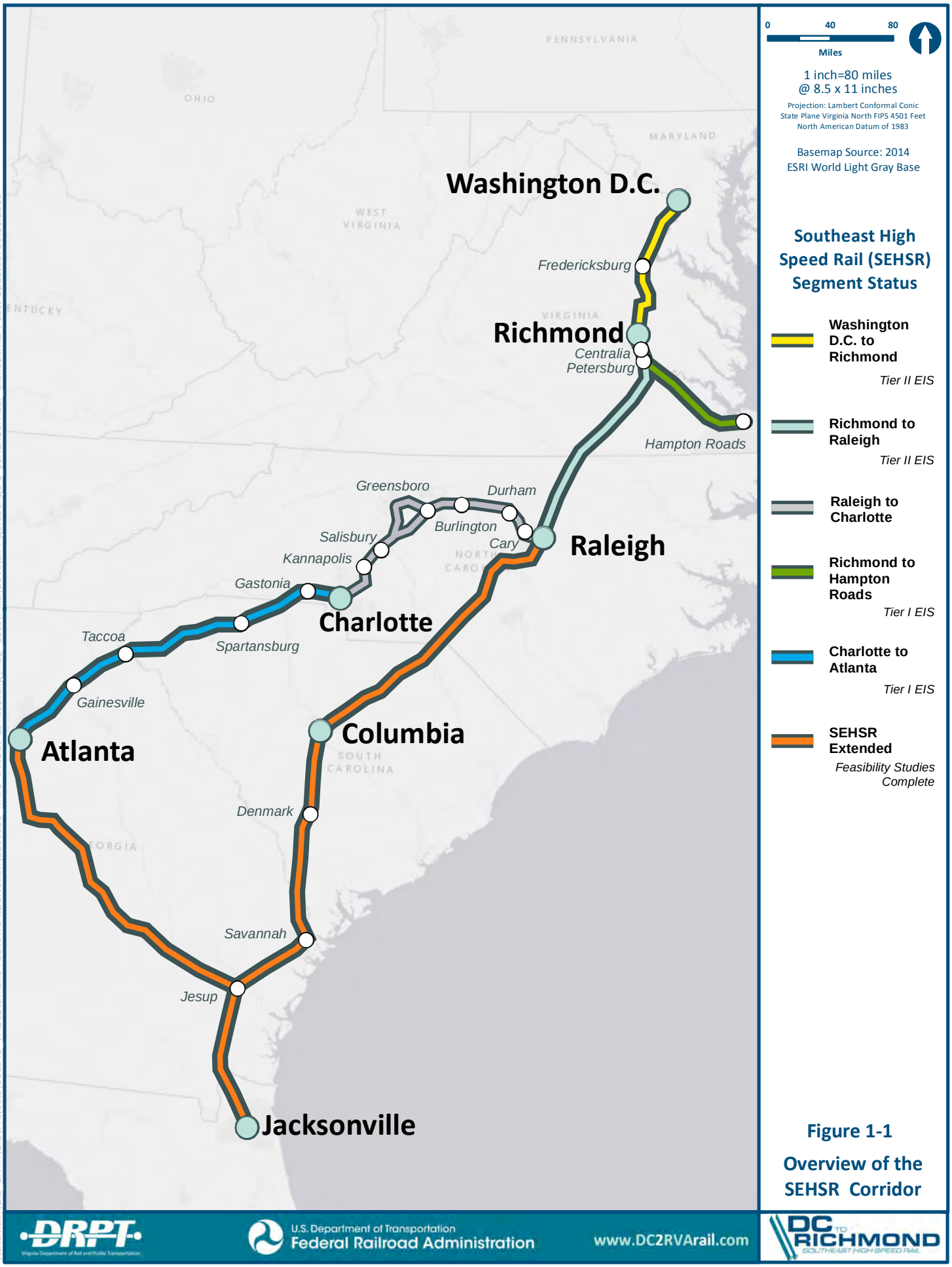

Figure 1-1

Overview of the SEHSR Corridor

1.1 PROJECT LOCATION

The Washington, D.C. to Richmond corridor spans 123 miles (198 km) along an existing rail corridor owned by CSX Transportation (CSXT) between Control Point RO (milepost [MP] CFP 110) in Arlington, VA to the CSXT A-Line and S-Line junction at MP A-11 in Centralia, VA (Chesterfield County) (Figure 1-2). For the purposes of engineering and environmental planning, the DC2RVA corridor has been subdivided into 20 segments that correspond with improvements and alternatives, and as such have been named and numbered from north to south (Figure 1-3). At the northern terminus in Arlington, VA, the Project limit ends at the southern approach to Long Bridge, a double-track rail bridge taking the rail corridor over the Potomac River; however, the northern terminus of Union Station in Washington, D.C. will be used for ridership and revenue forecasting, as well as service development planning within the Project corridor. The southern terminus in Centralia is the junction of two CSXT routes that begin in Richmond and rejoin approximately 11 miles (17.7 km) south of the city.

Additional segments of the Project include the CSXT Peninsula Subdivision CA-Line from Beulah Road (MP CA-76.1) in Henrico County, VA to AM Junction in the City of Richmond, and the Buckingham Branch Railroad (BBR) from AM Junction to the Richmond, Fredericksburg & Potomac Railway (RF&P) Crossing (MP CA-111.8) in Doswell, VA.

Proposed improvements are along CSXT-owned track, generally parallel to the I-95 corridor between northern Virginia and Richmond. From north to south, the project travels through the following counties and cities:

- Arlington County
- City of Alexandria
- Fairfax County
- Prince William County
- Stafford County
- City of Fredericksburg
- Spotsylvania County
- Caroline County
- Hanover County
- Henrico County
- City of Richmond
- Chesterfield County

In Arlington, the Project connects to existing CSXT track extending across the Potomac River on the Long Bridge into Washington, D.C. and Union Station, the southern terminus of Amtrak's NEC. At Centralia, the Project connects to both the Richmond to Raleigh segment of the SEHSR corridor and the Richmond to Hampton Roads segment of the SEHSR corridor. The Washington, D.C. to Richmond segment is an integral part of the overall Washington, D.C. to Charlotte SEHSR corridor and provides a critical link between high speed intercity passenger service from Boston to Washington, D.C. and the southeastern United States.

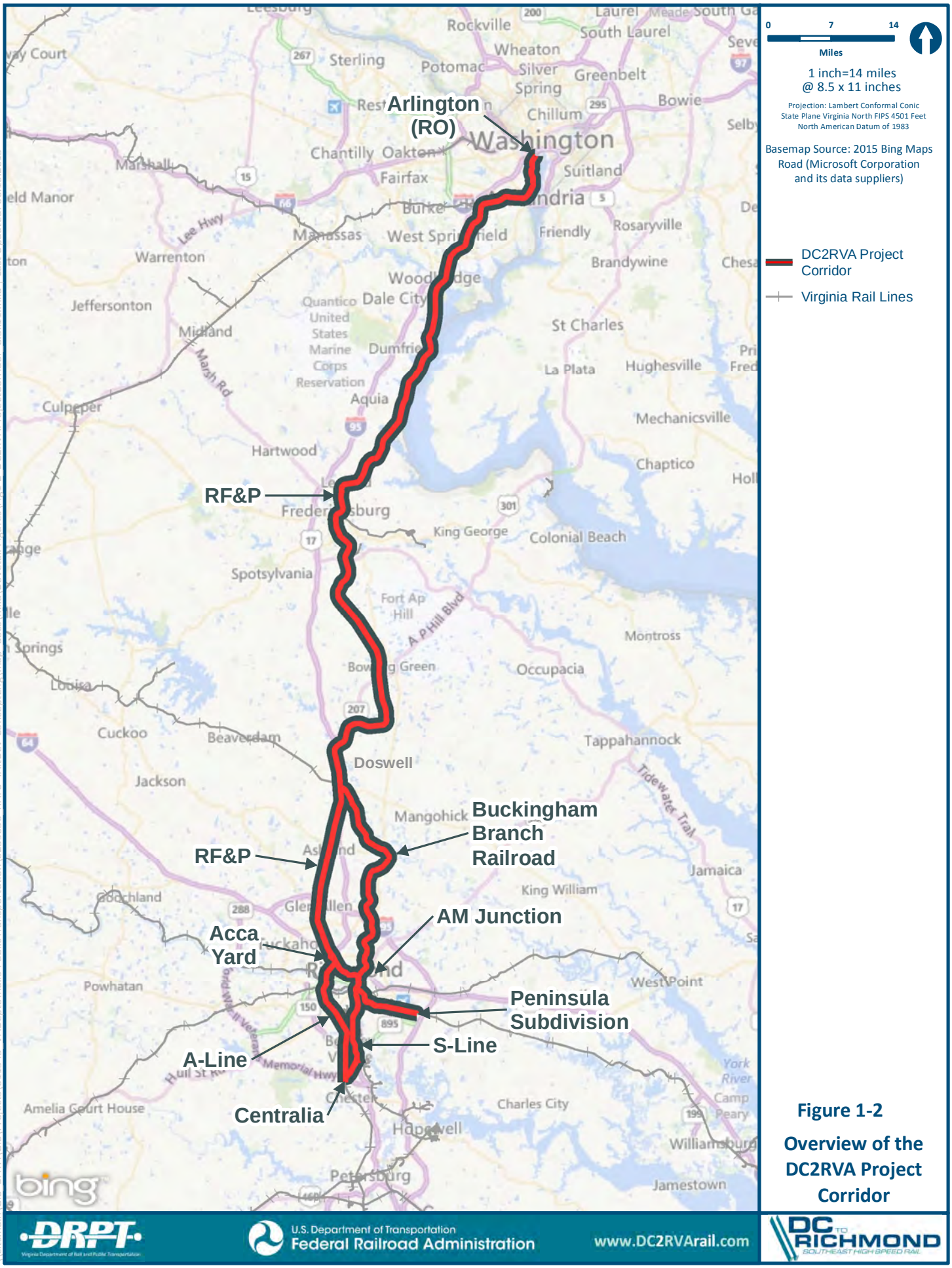

Figure 1-2

Overview of the DC2RVA Project Corridor

DRPT Virginia Department of Rail and Public Transportation

U.S. Department of Transportation Federal Railroad Administration

www.DC2RVArail.com

DC TO RICHMOND SOUTHEAST HIGH SPEED RAIL

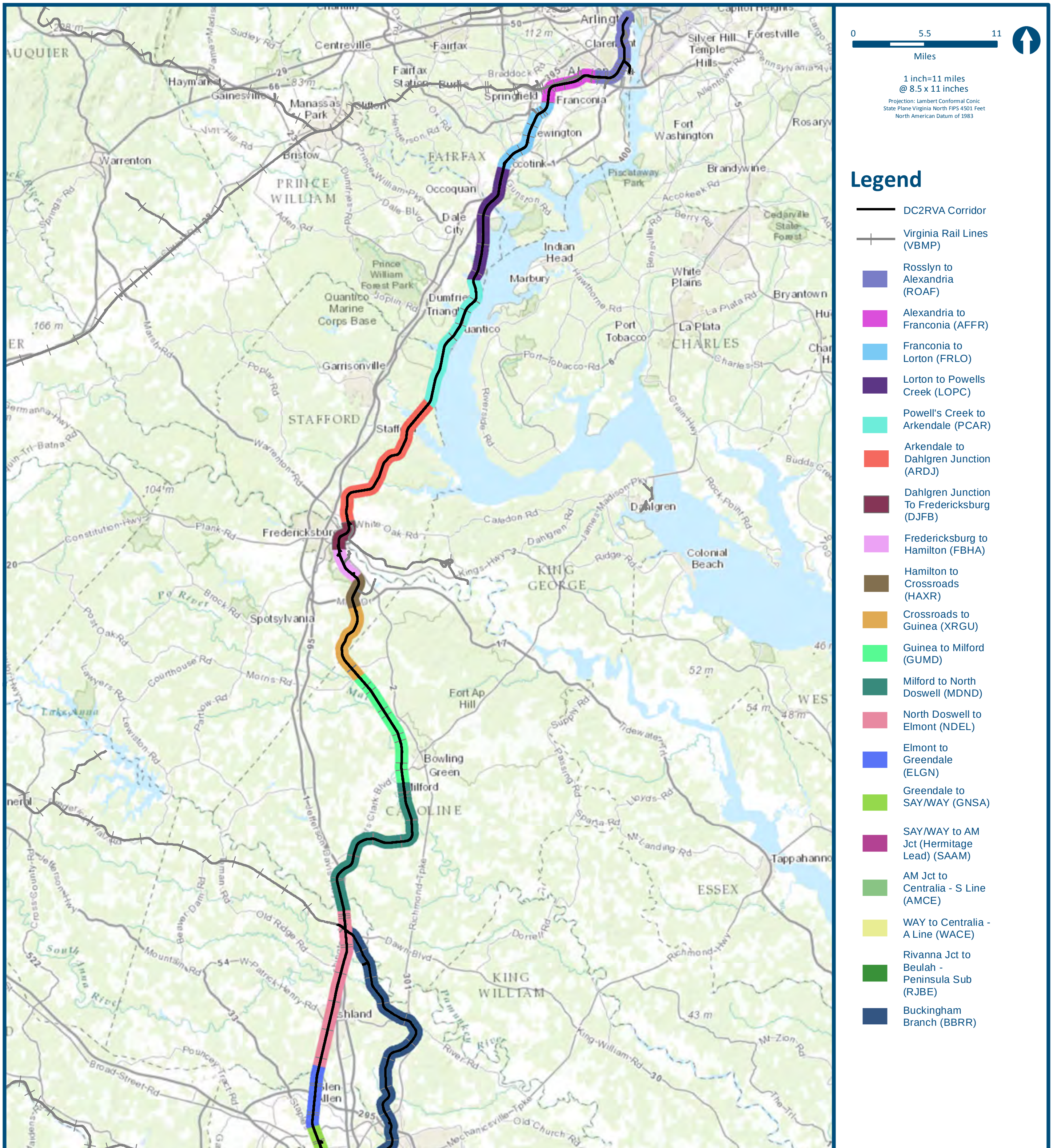

Figure 1-3
Overview of the DC2RVA Project Segments

1.2 PROJECT DESCRIPTION

The Project will include specific rail infrastructure improvements and service upgrades intended to improve the travel time, service frequency, and on-time performance of passenger trains operating between Washington, D.C. and Richmond, VA. Specific improvements to the existing rail infrastructure between Arlington, VA, and Centralia, VA include:

- Corridor-wide upgrades to existing track and signal systems to achieve higher operating speeds, including curve realignments, higher-speed crossovers between tracks, passing sidings, and grade crossing improvements.
- Corridor-wide improvements to train operating capacity to achieve higher passenger train service frequency and reliability, including an additional main track along most of the corridor, and additional controlled sidings, crossovers, yard bypasses and leads, and other capacity and reliability improvements at certain locations.
- Station and platform improvements for Amtrak and Virginia Railway Express (VRE) stations.

Environmental studies (a Tier II Environmental Impact Statement) in support of the Project will assess the environmental impacts of these improvements and identify ways to avoid, minimize, or otherwise mitigate such impacts.

The Project may include locations for new or replacement intercity passenger stations on the Project corridor, and additional rail capacity and other improvements in the Richmond area, including on the CSXT Peninsula Subdivision from AM Junction in Richmond, VA (just north of Main Street Station) east to Beulah Road in Henrico County, and on the Buckingham Branch Railroad from Doswell, VA south to AM Junction.

Studies in support of the Project will address passenger and freight rail operations and service between Union Station in Washington, D.C. and Richmond and beyond, but the Project does not include physical improvements to the Long Bridge across the Potomac River or to rail infrastructure within Washington, D.C. Other projects will address improvements to the rail infrastructure north of Arlington and south of Centralia along the SEHSR corridor.

1.3 CURRENT STUDY

The current study included an archaeological background review of the DC2RVA corridor and the creation of an archaeological predictive model. Project tasks included gathering background data, in terms of both previous investigations and recorded archaeological sites and historic architectural properties within the DC2RVA corridor, and then the use of this cultural information combined with environmental data to develop a model for predicting probable locations of yet unidentified archaeological sites. The goals of this work were to develop a context for the archaeological history of the corridor and to identify locations within the corridor which might yield additional resources. Both of these project goals will be used to guide further archaeological study along the DC2RVA corridor.

The archaeological area of potential effects (APE), as defined in consultation with the DHR, includes the footprint of physical improvements associated with the project, inclusive of both the rail modifications and any associated roadwork. Engineering and design work has not yet been completed for the corridor, as such the APE for this study was limited to proposed

improvement to the existing CSXT rail right-of-way and was specifically defined as extending 50 feet (15.2 m) on either side of the railroad centerline. The area encompassed within this APE was the subject of the current investigation.

Project work was conducted under the auspice of Senior Archaeologist Mike Klein who was assisted by Archaeologists Emily Calhoun and Earl Proper. Marco González, GIS Analyst and Archaeologist, created the GIS-based predictive model. Dr. Kerri Barile served as the Principal Investigator. Drs. Barile and Klein, as well as, Ms. Calhoun, meet or exceed the standards established for archaeologist by the Secretary of the Interior (SOI).

For the purposes of this study, investigations included a background review to identify previously recorded archaeological resources within the APE and within a 1 mile (1.6 km) radius, a limited historic map review to note historic development along the corridor, and the creation of an archaeological probability predictive model. This work built on previous cultural resource work completed along the DC2RVA corridor, including a 2010 McCormick Taylor, Inc. Phase I survey for the proposed addition of a third track along an 11.4 mile (18.3 km) segment of the existing rail corridor through the United States Marine Corps Base Quantico between Powells Creek and Arkendale. The previous project encompasses the Powells Creek to Arkendale (05) segment of the current APE and DHR determined this proposed project would have no effect on archaeological resources.

2 METHODOLOGY

A GIS-based condition assessment of the DC2RVA corridor and a predictive model of the location of archaeological sites were created to identify areas with the potential to contain significant archaeological resources. A minimal suite of variables characterized the probability that archaeological sites exist within different settings. The probability of discovering resources within different areas was classified as high, moderate, low, and no possibility. Prior to conducting the predictive modeling, the potential of the project area to contain significant archaeological resources was assessed by searching the DHR site and survey file records and examining maps housed within DHR's archives.

2.1 PREDICTIVE MODELS AND ARCHAEOLOGICAL SURVEY

Predictive models accumulate and formalize prior knowledge about the location of known archaeological materials in a way that generates expectations about where unknown archaeological sites should occur. Typically, predictive models combine theoretical expectations with a large number of empirical generalizations based on previous archaeological work (Banning 2002:139). The expanding importance of GIS for modeling site location results to a great extent from its ability to capture and manipulate large data sets for analysis and display (Kvamme and Kohler 1988). The development of GIS as a tool for predictive modeling is still evolving and involves a variety of approaches. To avoid repetitive results, and because the subsequent archaeological survey will attempt to recover and assess both precontact and historic resources, this research relied on a minimal number of attributes drawn from existing data to assess the probability of encountering archaeological resources in different settings. In addition, because the project is not expected to disturb deeply buried resources, the work identified areas amenable to subsurface testing through shovel testing survey, rather than investigating the potential for deeply buried resources in different settings. If final design plans include disturbances outside the scope of this model their impacts of cultural resources will be assessed separately.

2.2 DATA SOURCES

Research included a review of known resources, cartographic sources, information on regional history, archaeological site settlement models pertinent to the region, and evaluation of records at the DHR, as well as consideration of the results of previous surveys to assess the current condition of the APE, to collect information on previously identified archaeological resources located within the project area, and to create a predictive model of archaeological site location in the project area. Sources included: 1) previously recorded archaeological sites in the DHR archives for the project area; 2) georeferenced historic maps depicting road networks and

historic resources in northern and central Virginia, including Revolutionary War maps depicting the locations of camps along the Washington-Rochambeau Route; 3) maps prepared by the Civil War Sites Advisory Commission (CWSAC), American Battlefield Protection Program (ABPP), and others (e.g., Salmon 2001); 4) recorded historic architectural resources within or immediately adjacent to the project area; and 5) the location of earlier archaeological surveys that meet the current DHR standards. In addition, attributes of the natural and built environment commonly associated with precontact and historic archaeological sites were reviewed.

The primary sources of digital environmental data, which included aerial and soil data, current and historic roads and structures, and proximity to rivers, were obtained from online sources. Data sources included local, state, and federal government agencies. Notable sources were the U.S. Geological Service (USGS) and the Natural Resource Conservation Service (NRCS) which provide standard information for the entire nation. Historical background information was collected from various materials on file at the DHR and the Library of Virginia. Online resources including the Library of Congress in Washington D.C., the Library of Virginia and Virginia Historical Society in Richmond, and several other historical research web pages were also consulted.

2.3 SCALE

Predictive models attempt to produce computer-generated illustrations of areas stratified according to probability of encountering archaeological resources. GIS data layers used for this project either already exist or were converted for GIS use. In this case, areas disturbed, paved, or otherwise not amenable to Shovel Test Pit (STP) survey were identified, and the remainder of the project area was classified as high, moderate, and low probability. The primary source of digital environmental data for this region is the USGS which is the lead Federal agency for the collection and distribution of digital cartographic data. Typically, in archaeological studies, the analysis unit is the archaeological site, but, in the case of archaeological predictive modeling the unit of investigation is the individual parcel of land (Kvamme 1988). Historically, farmland was divided into acres, as such acreage has been chosen as the base unit of investigation and comparison for this analysis.

Modeling used a 98.4 foot (30-m) grid cell resolution or better in order to provide sufficient spatial resolution to support quantitative field testing of the defined areas. Structurally, the archaeological site database consists of polygon shapefiles of known architectural and archaeological resource boundaries and previously conducted archaeological surveys, as obtained directly from DHR archives. The geospatial data layers were acquired from DHR and their online Virginia Cultural Resource Information System (V-CRIS) portal and are generally set on the 1:24,000 scale topographic maps, also known as 7.5-minute quadrangles. Environmental data included soil maps acquired from NRCS and are generally scaled at 1:24,000.

2.4 ARCHAEOLOGY SURVEY METHODS

The proposed project is expected to impact only near-surface resources; for this reason, the predictive model does not include deep testing. The model instead was designed to predict archaeological locations based on standard Phase I archaeological surveys in the Middle Atlantic Region, which consist of both pedestrian survey and subsurface testing. No

archaeological survey was conducted as part of the current project, but future research based on this modeling should follow the methods outlined below.

Subsurface testing will involve the excavation of STPs within the defined APE. STPs will be excavated at 50-foot (15.2-m) intervals across the testable portions of the project APE. Following DHR guidelines (2011), STPs will measure approximately 15 inches (38.1 cm) in diameter and will be excavated to penetrate at least 0.3 feet (10.2 cm) into sterile subsoil or to the practical limits of excavation. In most settings, archaeological resources occur at depths potentially reached by STPs (i.e., no greater than one to three feet [0.3 to 0.9 m]). Because known Civil War resources exist within the project area, STPs will be augmented by metal-detector survey in undisturbed areas that have the potential for deposits resulting from historic military activity. Archaeologists will rely on experienced operators using Whites 9500 pro/psi and Tesoro Cibola metal detectors. Excavation of metal-detector hits typically approximates the depths potentially reached by STPs.

3 BACKGROUND REVIEW

Background research included a review of historic documents and maps, a search of regional literature, an evaluation of DHR site file maps and records, and an examination of data drawn from systematic archaeological surveys of the project vicinity. Examination of these data generated expectations about the probable location of archaeological resources within the APE and allowed the identification of areas with high, moderate, low, and no potential for the preservation of undisturbed archaeological resources.

The potential of the project area to contain significant archaeological resources was assessed by searching the DHR site and survey file records. The background review area encompassed the archaeological APE as well as a 0.5 mile (0.8 km) radius surrounding the APE, however, the summary tables and discussions presented in this chapter are limited to those resources within/adjacent to the APE. Site and survey file records were accessed at DHR in March 2015 by Mike Klein and Earl Proper. Additionally, information on previously completed cultural resource surveys within or immediately adjacent to the APE was also gathered by accessing DHR's archives and DHR's cultural resource GIS dataset.

3.1 BATTLEFIELDS LOCATED WITHIN THE STUDY AREA

The study area for archaeology stretches south from Arlington through Richmond, ending in Chesterfield County. The deep-water ports of the Hampton Roads area and Richmond and Williamsburg, important cities in the most populous of the states, drew British attention during the American Revolution and again during the War of 1812. Nevertheless, none of the battlefields discussed by Gossett and Mitchell (2007) occur in the project area; of the Virginia resources discussed by Gossett and Mitchell (2007), only the Washington-Rouchambeau Route includes portions of the study area (cf also Selig 2009). In contrast, Federal and Confederate armies clashed repeatedly throughout northern and central Virginia during the Civil War.

3.1.1 Civil War Occupation of the Potomac Valley and Central Virginia

Situated between the Union and Confederate capitals, northern and central Virginia quickly became critical strategic terrain. During 1861, Confederate batteries harassed the Union's Potomac River fleet from fortifications that lined the bluffs overlooking the Virginia side of the Potomac River. Union forces manned earthworks along the Maryland shore of the river opposite Confederates entrenched by the Virginia fortifications. Southern troops established encampments in the vicinity of present-day Route 1 to support the Potomac batteries (Balicki 2006; McPherson 1988).

In 1862, as Union forces advanced toward Richmond, Confederate troops abandoned the Potomac River batteries to defend the capital. Flooding and General McClellan's reluctance to

attack the capital without reinforcements prevented the campaign's success, and Union forces withdrew from Richmond. Although McClellan was replaced, the Federals continued to suffer defeats throughout much of 1862, including at Fredericksburg (McPherson 1988).

As winter approached, both armies established winter camps on opposite sides of the Rappahannock River (McPherson 1988). Furthermore, from 1862 onward, Union soldiers camped along railroad lines between Aquia Creek and Richmond to protect supply lines from raiders, and southern soldiers, slaves, and workers built camps and defensive lines around Richmond to protect the southern capital.

These camps, especially winter encampments, completely obliterated the landscape of a once-pristine countryside. Soldiers dug hut holes for their winter housing in agricultural fields and woods, and in the yards of the area's residents. Trees were cut down for huts, firewood, and, in some cases, corduroy roads. Homes were looted as well to supply the soldiers, windows were removed, and fences were taken down.

Spring brought renewed conflict. Major battles occurred throughout the Rappahannock River Valley in 1863. The Confederate victory at Chancellorsville began a campaign that culminated at Gettysburg. Following the bloodiest three days of the Civil War at Gettysburg, the southerners retreated south pursued cautiously by the Union Army. The two sides again established camps throughout the Rappahannock River Valley over the winter of 1863–1864 (McPherson 1988).

Warfare again erupted during the spring of 1864, notably in the Wilderness in Spotsylvania County. Fighting shifted south during 1864. During the Overland Campaign, as the Union advance on Richmond became known, the Union and Confederate armies clashed repeatedly between Fredericksburg and Petersburg, culminating in siege warfare around the Confederate capital and the railroad hub of Petersburg. Richmond fell the following spring, and General Lee surrendered to General Grant at Appomattox (McPherson 1988).

In summary, the DC2RVA corridor cuts through the contested ground of northern and central Virginia from Arlington to Chesterfield County. Consequently, Union and Confederate armies clashed repeatedly throughout the region, particularly near Fredericksburg and Richmond. Previously recorded archaeological sites include a number of Civil War earthworks, encampments, and other features. The DHR archives record many of the battlefields as architectural resources, generally relying on the boundaries mapped by the ABPP.

3.1.2 American Battlefield Protection Program Maps

Maps produced by the ABPP reveal that the DC2RVA corridor passes through portions of 25 battlefields dating to the Civil War (Table 3-1). The boundaries for these battles were established by the CWSAC, aided by the ABPP, in 2009. The boundaries as currently mapped include the regions of direct fighting, the associated marching routes for soldiers, and the potential National Register of Historic Places (NRHP) boundaries of the battlefields.

TABLE 3-1: BATTLEFIELDS IN THE PROJECT AREA AND ABPP-DEFINED LOCATIONS

Battle	DHR ID	ABPP ID	County	Comment
Beaver Dam Creek	042-5479	VA-016	Hanover	In ABPP-Defined Study Area
Chaffan's Farm/New Market Heights	043-0307	VA-075	Henrico	In ABPP-Defined Potential NRHP Boundary

TABLE 3-1: BATTLEFIELDS IN THE PROJECT AREA AND ABPP-DEFINED LOCATIONS

Battle	DHR ID	ABPP ID	County	Comment
Chancellorsville	088-5180	VA-032	Spotsylvania	In ABPP-Defined Study Area
Chester Station	020-5316	VA-051	Chesterfield	In ABPP-Defined Study Area
Cockpit Point	NA	VA-100	Prince William	In ABPP-Defined Potential NRHP Boundary
Cold Harbor	042-5017	VA-062	Hanover	In ABPP-Defined Study Area
Darbytown and New Market Roads	043-5071	VA-077	Henrico	In ABPP-Defined Potential NRHP Boundary
Darbytown Road	043-5072	VA-078	Henrico	In ABPP-Defined Potential NRHP Boundary
Drewry's Bluff	020-5320	VA-012	Chesterfield	In ABPP-Defined Study Area
Fredericksburg I	111-5295	VA-028	Multiple	In ABPP-Defined Study Area
Fredericksburg II	111-5296	VA-034	Multiple	In ABPP-Defined Potential NRHP Boundary
Gaines Mill	076-5168	VA-017	Hanover	In ABPP-Defined Study Area
Hanover Court House	042-5019	VA-013	Hanover	In ABPP-Defined Potential NRHP Boundary
North Anna	041-0123	VA055	Hanover	In ABPP-Defined Study Area
Petersburg II	123-5025	VA-063	Multiple	In ABPP-Defined Study Area
Port Walthall Junction	020-5317	VA-047	Chesterfield	In ABPP-Defined Study Area
Proctor's Creek	020-5320xx	VA-053	Chesterfield	In ABPP-Defined Potential NRHP Boundary
Salem Church	088-5181	VA-030	Spotsylvania	In ABPP-Defined Study Area
Savage Station	043-0308	VA-019	Henrico	In ABPP-Defined Study Area
Second Deep Bottom	043-5080	VA-071	Henrico	In ABPP-Defined Study Area
Seven Pines	043-5079	VA-014	Henrico	In ABPP-Defined Study Area
Swift Creek	020-5318	VA-050	Chesterfield	In ABPP-Defined Study Area
Totopotomoy Creek	042-5022	VA-057	Hanover	In ABPP-Defined Potential NRHP Boundary
Ware Bottom Church	020-5319	VA-054	Chesterfield	In ABPP-Defined Study Area
Yellow Tavern	043-5108	VA-052	Henrico	In ABPP-Defined Study Area

Source: Dovetail Cultural Resource Group 2015.
Table Notes: Table data compiled from ABPP and DHR databases/files.

3.2 CARTOGRAPHIC EVIDENCE

A wide variety of documentary sources, including official land records, personal narratives, maps, photographs, and other images, potentially inform archaeological models of landscape

use from the seventeenth century onward. John Smith's (1624) *Virginia Discovered and Discribed* ranks among the most accurate seventeenth-century representations of the river systems draining into the Chesapeake Bay. Despite the remarkable overall accuracy of the map, Smith's depiction of areas located away from early-Colonial settlement and intensive exploration efforts is best viewed as a reflection of the general cultural and political landscape as perceived by his Algonquin informants, rather than a precise record of exact settlement locations (Gallivan 1997). Moreover, Smith provides little detail about Native American activities in the inter-riverine uplands. Nevertheless, Smith's map depicts a number of settlements along the Potomac River in the vicinity of the DC2RVA corridor.

Other seventeenth- and eighteenth-century maps, in general, depict only major landmarks and landowners. Maps illustrating the location of Revolutionary War camps prepared for French General Rochambeau are an exception. Multiple maps depict the location of camps in relation to the local natural and built environment. Moreover, Selig (2009) has approximated the location of the camps, which are recorded as archaeological sites in the DHR archives (see below).

Nevertheless, not until the military required detailed maps during the Civil War were comprehensive depictions of the Virginia landscape produced. Because Virginia represented a major theatre of war, military engineers on both sides created accurate maps of the area, often including key landmarks. In addition to accurately depicting natural features such as rivers, creeks, swamps, agricultural fields, and woodlands, military cartographers recorded the location of roads, rail lines, bridges, and other elements of infrastructure. Many maps indicate the location of individual dwellings and associated farm structures, often named by owner or occupant, as well as a variety of other buildings such as mills, churches, stores, and public buildings. By the late-nineteenth century, the USGS began producing topographically sensitive quadrangle sheets that depicted entire states. Comparison of these resources with earlier maps helps refine the location of roads. A complete list of historic maps consulted during the background review is presented in Table 3-2.

TABLE 3-2: GEOREFERENCED HISTORICAL MAPS

Map Title	Date	Author
Amerique campagne: Camp a Garrot's Tavern le 14 Juilles 3 milles de Falmouth…a Peyton's tavern.	1782	Rochambeau
Caroline Co., Va	186-a	Anonymous
Map of part of Fairfax and Prince William Counties, Virginia.	186-b	Anonymous
Map of the northern portion of Hanover County, Virginia., showing fortifications on the South Anna River near Taylorsville	186-c	Anonymous
Map of Louisa County and part of Hanover County, Virginia.	186-d	Anonymous
Map of Spotsylvania and Caroline Counties, Virginia.	186-e	Anonymous
Map of Stafford County, Va.	186-f	Anonymous
Map of Richmond, Va., shewing fortifications surrounding the Confederate capital.	186-	Bailey, A. M.
Reconnaissance in advance of Camp Mansfield	186-	Church, B. S.
Caroline County, Virginia / Eng. Office, 2d Corps, A.N.Va. Confederate States of America. Army of Northern Virginia	186-a	Engineer Office, 2nd Corps

TABLE 3-2: GEOREFERENCED HISTORICAL MAPS

Map Title	Date	Author
Sketch No. 4 of Roads between HQ 10th Army Corps and Swift Creek on the South with Enemy's 2nd Line of entrenchments around Drewry's Bluff on the North.	186-b	Engineers' Office, 10th Army Corps
One hundred & fifty miles around Richmond. 10th ed. Magnus, Charles.	186-	Magnus, Charles
Central Virginia showing Lieut. Gen'l. U.S. Grant's Campaign and marches of the armies under his command in 1864-65 Engineer Bureau, War Dept. Prepared by order of the Secretary of War for the officers of the U.S. Army under the command of Lieut. Gen. U.S. Grant.	186-	United States. Army, Corps of Engineers
Sketch of the seat of war in Alexandria & Fairfax Cos.	1861	Corbett, V. P.
Map of part of Fairfax County, Virginia, south of the city of Alexandria and the Orange and Alexandria Railroad	1861	Mead, F. F.
White House to Harrisons Landing Prepared by command of Maj. Gen. George B. McClellan U.S.A., commanding Army of the Potomac.	1862	Abbot, Henry L.
Approaches of A. of P. to Fredericksburg. United States. Army of the Potomac.	1862	Anonymous
Map of part of Henrico and Chesterfield Counties, July 12th, 1862	1862	Campbell, Albert H.
Sketch of the battles of Chancellorsville, Salem Church, and Fredericksburg, May 2, 3, and 4, 1863	1863	Hotchkiss, Jedediah
A map of Fairfax County, and parts of Loudoun and Prince William Counties, Va., and the District of Columbia	1864	Hoffman
Thirty five miles around Richmond, Va. Compiled by Jed. Hotchkiss, Top. Engineer, Staunton, Virginia, from the surveys of the C.S. Engineers, U.S. Engineers, and the U. States Coast Survey.	1867	Hotchkiss, Jedediah
Bermuda Hundred 1864-1865	1867	Michler, Nathanel
Cold Harbor. [June 1-3, 1864] From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, and Bvt. Lieut. Col. P. S. Michie, Capt. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers.	1867	Michler, Nathanel
North Anna. [May 1864] From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers.	1867	Michler, Nathanel
Richmond [1862-1865] From surveys under the direction of Bvt. Brig. Gen. N., Michler, Maj. of Engineers and Bvt. Lieut. Col. P. S. Mitchie, Capt. of Engineers, by command Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers.	1867	Michler, Nathanel
Fredericksburg	1889	USGS
Map of the vicinity of Richmond and part of the Peninsula From surveys made under the direction of A. H. Campbell, Capt: P.E.C.S.A. in charge Topographl. Dept., D.N.V. 1864. Facsimile reproduction made from the original Confederate war map owned by T. Sewell Ball, Publisher, Pikesville, Baltimore Co., Maryland. A. B. Graham, photolith., Washington, D.C. Entered according to Act of Congress in the year 1891, by T. Sewell Ball . . . Campbell, Albert H. (Albert Henry), 1826-1899.	1891	Ball, T. Sewell
Mount Vernon	1891	USGS
Fredericksburg	1892	USGS
Bermuda Hundred	1894a	USGS
Fredericksburg	1894b	USGS

TABLE 3-2: GEOREFERENCED HISTORICAL MAPS

Map Title	Date	Author
Mount Vernon	1894c	USGS
Richmond	1894d	USGS
Mount Vernon	1897	USGS
Map of the main battlefields, routes, camps and head qrs., in the Gettysburg, Wilderness and Appomattox campaigns of the Civil War in U.S. Compiled and published by Joshua Smith, 1st Lieut., Co. K, 20th Pa.' Cav., 2nd Brig., 1st Div., Sheridan's command. Chicago, c1899.	1899	Smith, Joshua
Maryland and Washington, D,C.	1900	USGS
Indian Head	1913	USGS
Doswell	1918a	USGS
Indian Head	1918b	USGS
King William	1920	USGS
Indian Head	1923	USGS
Indian Head	1925	USGS
Stafford	1926	USGS
Stafford	1931a	USGS
Topographic map of Fredericksburg and vicinity, Virginia, showing battlefields Surveyed in cooperation with the War Department and the Fredericksburg and Spotsylvania County Battlefields Memorial Commission. Topography by G. E. Sisson, Paul Blake, and Benjamin Munroe. Control by U.S. Geological Survey and U.S. Coast and Geodetic Survey. Surveyed in 1931	1931b	USGS
Seven Pines	1938a	USGS
Yellow Tavern	1938b	USGS
Richmond	1943	USGS
Chester	1944a	USGS
Quantico	1944b	USGS
Stafford	1944c	USGS
Quantico	1949	USGS
Ruther Glen	1951	USGS
Washington , DC	1957	USGS

Source: Dovetail Cultural Resource Group 2015.

Table Notes: Table data compiled from NPS, ABPP, and DHR databases/files.

3.2.1 Revolutionary War Rochambeau Maps

General Jean Baptiste Donatien de Vimeur, comte de Rochambeau arrived in Narragansett Bay on July 11, 1780. Rochambeau led an army of 450 officers and 5,300 men through the military campaign that culminated in the defeat of British General Charles Cornwallis at Yorktown.

Following the victory, the French under Rochambeau established camps in the Williamsburg vicinity over the winter of 1781−1782. In July, the army decamped and trekked north to Boston following the precursor of U.S. 1, the main overland route linking the population centers of the fall line (Selig 2006). Maps produced during the march documented the location of camps in relation to the built and natural environment (Figure 3-1). Selig's (2009) study of the Virginia segment of the Washington-Rochambeau trail recorded the estimated location of the camps; however, no archaeological testing was done during the pedestrian survey. The estimated location of camps reported in the DHR site files was inferred from period maps and documents. For this reason, rectangular blocks enclose the approximate locations, rather than precisely recorded site boundaries. Selig's (2009) site forms and estimated settings were used as a guide. The georeferenced locations of camps depicted in the Library of Congress' Rochambeau Map Collection were used to narrow the probable locations of the camps in relation to the project area. Three archaeological sites recorded by Selig (2009) occur within the APE. From north to south, the three sites record the location of camps in the City of Alexandria (44AX0207), in Prince William County near Marumsco Creek (44PW1843), and in Caroline County near Downer's Bridge (44CE0626). These locations are further summarized in the discussion of known archaeological sites within the APE.

FIGURE 3-1: EXAMPLE ROCHAMBEAU CAMP MAP, DETAIL OF ALEXANDRIA CAMP (ROCHAMBEAU 1782A)

3.2.2 Historic Roads

The expansion of transportation networks during the nineteenth century drew people who constructed dwellings and farmsteads along the roads and rail lines. Civil War and, particularly, late nineteenth-century topographic maps provide details that allow relatively accurate georeferenced road locations (Figure 3-2). The georeferenced location of various nineteenth-century roads were included in the predictive model (see Table 3-2).

FIGURE 3-2: DETAIL FROM *MAP OF THE NORTHERN PORTION OF HANOVER COUNTY, VA., SHOWING FORTIFICATIONS ON THE SOUTH ANNA RIVER NEAR TAYLORSVILLE* ILLUSTRATING THE LOCATION OF RAILROADS, ROADS, HOTELS, MILLS, STORES, AND RESIDENTS (ANONYMOUS 186-)

3.3 PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES WITHIN THE APE

A review of DHR site files indicated that there are 30 previously identified archaeological sites located within the APE (Table 3-3) and 649 within the 0.5 mile (0.8 km) background review area. Artifacts recovered from eight archaeological sites identified prehistoric components. Diagnostic artifacts from one site document the presence of Archaic and Woodland components, though the assemblages from remaining precontact sites lacked temporally diagnostic artifacts. Although the file for site 44FX3194 refers to a Contact-era component, only debitage was reported in an assemblage dominated by historic material. Precontact sites were identified as camps.

Twenty-five sites contained historic components. Eighteenth- through twentieth-century historic sites were identified, though sites date primarily to the nineteenth century. Site function varied widely. One site was classified as a village or town. Domestic resources included farmsteads and dwellings, though barns and other outbuildings were also identified. Two cemeteries were also noted. Infrastructure comprised railroad beds, canals and canal locks, and bridges. A warehouse and storage building were also identified, as were military camps, earthworks, and forts, most associated with the Civil War. Revolutionary War camps, however, were also recorded. In addition, a Civil War prison has been previously recorded in the APE.

The DHR has not made a NRHP determination for 27 of the 30 previously identified resources. The DHR determined archaeological sites 44CF0680 and 44FX2542 eligible or potentially eligible for listing on the NRHP. Site 44HN0101 is listed on the NRHP.

TABLE 3-3: PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES LOCATED WITHIN THE APE

DHR ID	Name	Description	Time Period	NRHP Eligibility/ Comment
44AR0037	Jackson City	Dwelling, multiple, Hotel	19th Century: 2nd half (1850–1899)	Not Evaluated; Beneath Fill in Backhoe Trench
44AX0028	Alexandria Canal	Canal	19th Century (1800–1899)	Not Evaluated
44AX0207; 000-9800-xxxx	Campsite No. 1 of American Wagon Train Sept. 1781	Camp, temporary	18th Century: 4th quarter (1775–1799)	Not Evaluated; Visual Inspection
44CE0106	Fairfield Plantation/ Stonewall Jackson Shrine	Dwelling, single, Grave/burial, Ice house, Lawn	18th Century: 2nd half (1750–1799), 19th Century (1800–1899), 20th Century (1900–1999)	Not Evaluated; Surface Collection
44CE0626; 000-9800-0054	Wagon Train Camp No. 6 at Downer's Bridge	Camp, temporary	18th Century: 4th quarter (1775–1799)	Not Evaluated; Visual Inspection
44CF0260		Camp, temporary	Prehistoric/Unknown (15000 B.C. –1606 A.D.)	Not Evaluated
44CF0680	Fort Darling	Battlefield, Earthworks, Fort	19th Century: 2nd/3rd quarter (1825–1874), 19th Century: 3rd quarter (1850–1874), Prehistoric/Un	DHR Determined Eligible
44FX0453		Camp, temporary, Dwelling, single, Farmstead	19th Century: 2nd half (1850 –1899)	Not Evaluated; Beneath Building and Parking Lot
44FX0561		Camp, temporary	Prehistoric/Unknown (15000 B.C.–1606 A.D.)	Not Evaluated; Collection from Road Cut and Judgmental STPs
44FX0562		Camp, temporary	Prehistoric/Unknown (15000 B.C.–1606 A.D.)	Not Evaluated; Collection from Road Cut and Judgmental STPs
44FX2455		Camp, Dwelling, single	20th Century: 1st half (1900–1949), Prehistoric/Unknown (15000 B.C.–1606 A.D.)	Not Evaluated
44FX2542	King's House Hill		18th Century (1700–1799), Prehistoric/Unknown (15000 B.C. –1606 A.D.)	DHR Determined Potentially Eligible
44HE0026			Archaic (8500–1201 B.C.), Woodland (1200 B.C. –1606 A.D.)	Not Evaluated; Surface Collection

TABLE 3-3: PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES LOCATED WITHIN THE APE

DHR ID	Name	Description	Time Period	NRHP Eligibility/ Comment
44HE0328		Dwelling, single, Trash scatter	19th Century: 2nd half (1850–1899), 20th Century: 1st half (1900–1949)	Not Evaluated
44HE0671			18th Century (1700–1799), 19th Century (1800–1899)	Not Evaluated; Backhoe Trench Identified Buried Features
44HE0840		Bridge	19th Century: 4th quarter (1875–1899)	Not Evaluated; Visual Inspection
44HE0841		Canal		Not Evaluated; Visual Inspection
44HE0890		Cemetery	19th Century: 1st half (1800–1849)	Not Evaluated; Visual Inspection, No Surface Features
44HE1092	Middle Basin	Warehouse	19th Century (1800–1899)	Not Evaluated; Monitoring
44HE1094	Commissary Warehouse Site	Warehouse	19th Century (1800–1899)	Not Evaluated; Monitoring and Surface Collection
44HE1095	Hawes	Storage facility	19th Century (1800–1899)	Not Evaluated; Monitoring
44HE1096	Libby Prison	Prison	19th Century (1800–1899)	Not Evaluated; Destroyed
44HE1097	Main Street Station 1	Railroad, Warehouse	19th Century (1800–1899)	Not Evaluated; Monitoring
44HE1098	Main Street Station 2	Railroad	19th Century (1800–1899)	Not Evaluated; Surface Survey
44HN0101	Hickory Hill	Farmstead	19th Century (1800–1899)	NRHP Listed
44HN0282		Railroad	20th Century: 1st quarter (1900–1924)	Not Evaluated
44PW1843; 000-9800-0079	French Wagon Train Camp No. 3 at Marumsco Creek	Camp, temporary	18th Century: 4th quarter (1775–1799)	Not Evaluated
44SP0187		Bridge	19th Century (1800–1899)	Not Evaluated
44ST0192		Camp	Prehistoric/Unknown (15000 B.C.–1606 A.D.)	Not Evaluated
44ST0296		Military base/facility	19th Century: 3rd quarter (1850–1874)	Not Evaluated

Source: Dovetail Cultural Resource Group 2015.

Table Notes: Table data compiled from DHR databases and survey files.

3.4 PREVIOUSLY IDENTIFIED ARCHITECTURAL RESOURCES

Sixty previously recorded architectural resources occur in the APE (Table 3-4) and 6,568 within the 0.5 mile (0.8 km) background review area. In addition to being significant resources on their own merit, architectural properties may help to identify locations where archaeological deposits

could remain. Potentially significant archaeological sites appear most likely to occur within or near spatially extensive resources like battlefields, plantations, farmsteads, mills, and historic districts. Archaeological sites associated with smaller-scale resources like individual houses, outbuildings, and industrial sites, particularly those dating to the twentieth-century, are also likely along the corridor.

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
016-0007	Bridge, Route 684 (Current)	Not Evaluated
016-0073	Milford Depot (Historic/Current), Milford Railroad Station (Historic)	Destroyed
016-0137	Fontaine Hill (Historic)	Not Evaluated
016-0331	Ruther Glen Railroad Bridge, Route 652 (Function/Location)	Destroyed
016-0335	Storage building, Chesterfield Road (Function/Location)	Not Evaluated
016-5087	Bridge #1026, Route 207 (west-bound), spanning CSX Railroad (Function/Location)	Not Eligible
020-0022	Centralia Earthworks (Historic)	Eligible
020-5320	Drewry's Bluff (2nd) (Historic), Fort Darling (Historic), Fort Drewry (Historic), Proctor's Creek Battlefield (Historic/Current)	Eligible
020-5351	Richmond & Petersburg Electric Railway (Historic)	Eligible
020-5392	Motiva Enterprises (Current), Terminal Office, 5801 Jefferson Davis Highway (Function/Location)	Not Eligible
020-5397	Blue Rhino (Current), Commercial, 8102 Shell Road (Function/Location)	Not Eligible
020-5410	Industrial Chemicals Incorporated (Current)	Not Eligible
020-5413	Ferguson House (Historic/Current), House, 8524 Chester Road (Function/Location)	Not Eligible
020-5474	DuPont Spruance (Historic/Current), DuPont Spruance Factory Complex Historic District (Current)	Potentially Eligible
020-5475	Bridge, Jefferson Davis Highway (Function/Location)	Not Eligible
020-5476	Railroad Bridge, Kingsland Creek (Function/Location)	Not Evaluated
020-5578	DuPont Pedestrian Underpass (Function/Location)	Not Eligible
020-5613	Centralia Historic District (Function/Location)	Not Eligible
020-5623	Chippenham Parkway Bridge over SAL (Function/Location)	Not Eligible
020-5624	SAL Railroad Bridge over Falling Creek (Historic/Location)	Not Eligible
020-5625	Elliham Avenue Bridge over SAL (Function/Location)	Not Eligible
020-5626	Dupont Vehicular Bridge over SAL (Function/Location)	Not Eligible
029-0218	George Washington Memorial Highway (portion) (Historic), Mount Vernon Memorial Highway (Historic/Current)	Listed
029-5470	Washington and Virginia Railway Company (Historic), Washington, Arlington and Falls Church Electric	Not Evaluated

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
042-0093	Doswell Train Station (Historic/Current), Train Station, Route 668 (Function/Location)	Not Evaluated
042-0100	Hickory Hill (Historic)	Listed
042-0106	Gwathmey Baptist Church (Historic)	Destroyed
042-0117	Gwathmey Historic District (Historic/Current)	Not Eligible
042-0123	Battle of North Anna River (Historic), North Anna Battlefield (Historic)	
042-0205	Verlander House, 9252 Cool Spring Rd (Rt 652) (Historic/Location)	Not Eligible
042-0215	Butler House (Historic), Spring Valley Farm (Current)	Not Evaluated
042-0341	Cobb Store (Historic)	Not Eligible
042-0465	Pottomoi (Historic), Windy Knoll Farm (Historic/Current)	
042-0467	Daniel Campbell House (Historic)	Not Evaluated
042-0470	Darnell Store (Historic), Squashapenny Junction (Current)	Not Evaluated
042-0475	Daniel Campbell House (Historic), House, Railroad Avenue (Function/Location)	Not Evaluated
042-0477	Billy Wright House (Historic/Current), Fathead Farm (Current), House, 10617 Doswell Road (Function/Location)	Not Evaluated
042-0708	Trench near Atlee High School (Historic)	Not Evaluated
042-0731	RF&P North Anna Crossing (Current)	Not Evaluated
042-0777	Route 646 (Historic)	Not Evaluated
042-5017	Cold Harbor Battlefield (Historic), Second Cold Harbor (Historic)	Eligible
042-5019	Hanover Court House Battlefield (Historic), Hanover Court House Park, US 301 (Historic/Location)	Eligible
042-5022	Totopotomoy Creek Battlefield (Historic)	Eligible
042-5048	Elmont Historic District (Historic/Current)	Not Evaluated
042-5279	House, 8054 Track Road (Function/Location)	Not Evaluated
042-5306	RF&P Bridge over Rt. 689 (Function/Location)	Not Eligible
042-5307	Taylorsville Road Historic District (Function/Location)	Eligible
042-5313	House, 9320 Atlee Station Road (Function/Location)	Not Eligible
042-5448	Doswell Historic District (Current)	Eligible
042-5463	Little River Railroad Bridge (Historic/Current)	Not Evaluated
042-5466	Doswell Train Station Switch Tower (Historic), Switch House (Current)	Not Evaluated
042-5468	House, 9945 Cool Springs Road (Function/Location)	Not Evaluated
042-5469	Culvert, Atlee Station Road (Function/Location)	Not Evaluated

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
042-5479	Beaver Dam Creek Battlefield (Historic/Current)	Not Eligible
043-0289	Laurel Crossroads Historic District (Descriptive), Laurel Historic District Expansion (Current)	Not Eligible
043-0307	Battle of Chaffin's Farm, New Market Road (Historic/Location), New Market Heights Battlefield (Historic/Location)	Eligible
043-0308	Savage Station Battlefield (Historic/Current)	Eligible
043-0436	CSX Fulton Yards (Historic/Current)	Not Eligible
043-0440	Airco (Historic/Current)	Not Evaluated
043-0441	Railroad Bridge (Descriptive)	Not Evaluated
043-0693	Mill Road Historic District (Current)	Proposed Eligible
043-0742	Woodland Cemetery (Historic/Current)	Not Evaluated
043-0756	Air Junction (Historic), Richard E. Byrd Air Field (Historic), Richmond Army Air Base Historic District (Historic), Richmond International Airport (Current)	Proposed Eligible
043-5071	Darbytown & New Market Roads Battlefield (Historic), Fourmile Creek (Historic)	Eligible
043-5072	Alms House (Historic), Darbytown Road Battlefield (Historic)	Eligible
043-5073	Fair Oaks & Darbytown Road Battlefield (Historic)	Eligible
043-5079	French's Field (Historic), King's School House (Historic), Oak Grove Battlefield (Historic)	Not Eligible
043-5080	Bailey's Creek (Historic), Fussell's Mill (Historic), Second Deep Bottom Battlefield (Historic)	Eligible
043-5081	Fair Oaks (Historic), Seven Pines Battlefield (Historic)	Not Eligible
043-5108	Yellow Tavern Battlefield (Historic)	Not Eligible
043-5108	Yellow Tavern Battlefield (Historic)	Not Eligible
076-0301	RF&P (Historic)	Eligible
076-5031	Bridge #5006 (Current), Quantico Bridge #1760 (Current)	Not Eligible
076-5094	Haynes (No. 2) House, 1538 Cherry Hill Road (Function/Location)	Not Evaluated
076-5095	Hall House, 1538 Cherry Hill Road (Function/Location)	Not Evaluated
076-5096	Ebert House, 1508 Cherry Hill Road (Function/Location)	Not Evaluated
076-5098	Bauckman House (No.2), 1510 Cherry Hill Road (Function/Location)	Not Evaluated
076-5126	Dent House (No. 3), 1504 Cherry Hill Road (Function/Location)	Not Evaluated
076-5130	Cockpit Point Reduction Plant Complex (Historic/Current)	Not Evaluated
076-5132	Bauckman House (No.1), 1536 Cherry Hill Road (Function/Location)	Not Evaluated
076-5206	Bridge, Railroad Avenue (Function/Location)	Not Eligible

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
076-5219	Woodbridge Auto Sales, 13611 Jefferson Davis Highway (Function/Location)	Not Eligible
088-0039	La Vue (NRHP Listing), Prospect View (Historic)	Listed
088-5181	Bank's Ford (Historic), Salem Church Battlefield (Historic)	Eligible
088-5413	CSX Railroad Corridor (Current), RF&P (Historic)	Potentially Eligible
089-0045	RF&P Railroad Bridge (Current)	Not Evaluated
089-0080	Bridge #6075 (Current), RFP Tunnel Bridge (Current)	Not Evaluated
089-0106	Brown Field (Current)	Not Evaluated
089-0148	RF&P Railroad Bridge (Current)	Not Evaluated
089-0194	RF&P Railroad Bridge (Current)	Not Evaluated
089-5010	Bridge #6020 (Current)	Not Eligible
100-0124	Alexandria Depot (Descriptive), Alexandria Union Station (NRHP Listing)	Listed
100-0137	Rosemont Historic District (Current)	Listed
100-0161	RF&P Railroad Bridge, spanning Braddock Road (Function/Location)	Not Evaluated
100-0163	Bridge, RF&P over Braddock Road (Descriptive)	Not Evaluated
111-0009	Fredericksburg Historic District Extension (Descriptive)	Proposed Eligible
111-0009-0691	Walker-Grant School (Historic/Current)	Not Evaluated
111-0009-0797	Commercial Building, 500 Lafayette Boulevard (Function/Location)	Not Evaluated
111-0009-0798	Commercial Building, 512 Lafayette Boulevard (Function/Location)	Not Evaluated
111-0132	Fredericksburg Historic District (NRHP Listing)	Listed
111-0132-0052	Commercial Building, 419 Sophia Street (Function/Location), The Pool Table Store (Current)	Not Evaluated
111-0132-0704	Claiborne's Restaurant (Current), Fredericksburg Train Station (Historic), Rail-related, 200 Lafayette Boulevard (Function/Location)	Not Evaluated
111-0132-0742	400 Prince Edward (Function/Location)	Not Evaluated
111-0147	Fredericksburg and Spotsylvania Battlefields National Military Park (Historic/Current),	Listed
111-5295	Battle of Fredericksburg I (Historic)	Eligible
111-5296	Battle of Fredericksburg II (Historic)	Eligible
123-5025	Assault on Petersburg (Historic), Petersburg Battlefield II (Historic)	Eligible
127-0009	Geographic Distributing Services, Inc. (Historic), Wortham-McGruder Warehouse, 23 S 15th Street (Historic)	Destroyed
127-0117	Commercial Building, 1523 East Cary Street (Function/Location), Whitlock, Charles, Store (Historic)	Destroyed

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
127-0171	James River and Kanawha Canal Historic District (Historic)	Listed
127-0172	Main Street Station and Train Shed (NRHP Listing), New Union Station (Historic), Seaboard Airline & Chesapeake & Ohio Railroad Depot (Historic)	Listed
127-0183	Railroad Bridge, east of 14th Street (Function/Location), Seaboard Railroad Bridge (Historic)	Not Eligible
127-0219	Shockoe Slip Historic District (NRHP Listing), Shockoe Slip Historic District and Expansions (Historic/Current)	Listed
127-0219-0096	Commercial Building, 11 South 15th Street (Function/Location)	Not Evaluated
127-0219-0098	Commercial Building, 15 South 15th Street (Function/Location)	Not Evaluated
127-0219-0099	Hawkeye Building (Historic), Manufacturing Facility, 101 South 15th Street (Function/Location), Philip Morris Building (Historic)	Not Evaluated
127-0237-0745	House, 706 North Fourth Street (Function/Location)	Not Evaluated
127-0344	Shockoe Valley & Tobacco Row Historic District (NRHP Listing)	Listed
127-0344-0007	Commercial Building, 1604 East Broad Street (Function/Location), Hungerford Coal and Oil Corp. (Current)	Not Evaluated
127-0344-0012	Gas Station, 1615 East Broad Street (Function/Location), Spur Gas Station (Current)	Not Evaluated
127-0344-0030	Carwich Marine Showroom (Historic), Factory, 1545-1549 East Cary Street (Function/Location), Kemmerer Manufacturing Company (Historic), Old Dominion Hide and Fur Company (Historic), The Canal Club, 1545 East Cary Street (Current)	Not Evaluated
127-0344-0051	Bottoms Up Pizza (Current), Taylor and Jesse Used Parts (Historic)	Not Evaluated
127-0344-0116	Parking Lot, 1511-1537 East Main Street (Function/Location)	Not Evaluated
127-0344-0120	Commercial Building, 1547-1549 East Main Street (Function/Location), Well Laid Carpets (Current)	Not Evaluated
127-0344-0227	Commercial Building, 1600 East Marshall Street (Function/Location), Hungerford Coal and Oil Corporate (Current)	Not Evaluated
127-0344-0237	Commercial Building, 100-104 Pear Street (Function/Location)	Not Evaluated
127-0344-0279	A.D. Jackson and Sons, Inc. (Historic/Current), Jackson Warehouse (Historic/Current)	Not Evaluated
127-0344-0282	Knox Bottle Company (Historic)	Not Evaluated
127-0360	Fifth Street Bridge (Current)	Destroyed
127-0397-0149	Vacant Lot, 1521 W. Cary (Function/Location)	Not Evaluated
127-0457	Manchester Warehouse & Industrial Historic District (Historic/Current)	Not Evaluated
127-0818	Newtowne Area Historic District (Descriptive)	Proposed Eligible
127-0823	Curtis Holt, Sr. Bridge #8066 (Current), First Street Viaduct (Historic/Location), J.E.B. Stuart Mem	Eligible

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
127-0831	Highland Park Plaza Historic District (Historic/Current)	Listed
127-0831-0416	Frame House, 3615 Enslow Avenue (Function/Location), Leake, Thomas S., House (Historic)	Not Evaluated
127-0831-0417	Frame House, 3617 Enslow Avenue (Function/Location), Tucker, Harry W., House (Historic)	Not Evaluated
127-0831-0418	Eads, Harry M., House (Historic), Frame House, 3619 Enslow Avenue (Function/Location)	Not Evaluated
127-0831-0419	Frame House, 3621 Enslow Avenue (Function/Location), Schmus, Henry L., House (Historic)	Not Evaluated
127-0831-0497	Frame Duplex (3504-3506 2nd Ave) (Historic/Location)	Not Evaluated
127-0852	South Jefferson Davis Area (Descriptive)	Not Eligible
127-0854	Bridge #1850 (Current), Bridge, East Main Street, spanning Southern Railway (Descriptive)	Eligible
127-0861	CSX Bridge No. 867 (Descriptive)	Not Evaluated
127-5662	C&O Viaduct on James River (Historic)	Not Evaluated
127-6075	Academy Hill Historic District (Historic/Current)	Proposed Eligible
127-6136	Scott's Addition Historic District (Historic/Current)	Listed
127-6136-0283	Riverside Brick & Supply Company (Current), Southern Brick Company Inc. (Historic)	Not Evaluated
127-6145	J.P. Taylor Leaf Tobacco (Historic), Southern Stove Works (Historic/Current), Virginia Binding Co. (	Listed
127-6166	Hebrew Cemetery (Historic/Current)	Listed
127-6188	American Locomotive Company (Historic), Richmond Locomotive & Machine Works (Historic/Current), Rich	Listed
127-6211	MG Industries (Current)	Not Eligible
127-6213	Davee Gardens Historic District (Current)	Potentially Eligible
127-6236	Zeller+Gmelin Corp. (Current)	Not Eligible
127-6243	Warehouse, Mayo Island (Current)	Not Eligible
127-6249	Sonoco (Historic/Current)	Not Eligible
127-6250	Railroad Bridge, E. 4th Street and Gordon Avenue (Function/Location)	Not Eligible
127-6251	Atlantic Coast Line Railroad Corridor (Current), Richmond and Petersburg Railroad (Historic)	Eligible
127-6254	Quonset Hut, East Main Street (Function/Location)	Not Eligible
127-6255	Fulton Gas Works (Current), Richmond Gas Works (Historic)	Eligible
127-6257	CSX Bridge, Orleans Street (Function/Location)	Not Eligible

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
127-6258	CSX Bridge, North of Orleans Street (Function/Location)	Not Eligible
127-6259	CSX Bridge, Nicholson Street (Function/Location)	Not Eligible
127-6260	CSX Building, Intersection of East Main Street and Orleans Street (Function/Location)	Not Eligible
127-6261	CSX Bridge, East Main Street (Function/Location)	Not Eligible
127-6271	Seaboard Air Line Railroad Corridor (Current)	Eligible
127-6273	Bridge #2838 (Current)	Not Eligible
127-6396	Coxon House (Current)	Not Eligible
127-6397	Muse House (Current)	Not Eligible
127-6629	Cedarhurst Neighborhood Historic District (Current)	Eligible
127-6658	Reco Biotechnology (Current)	Not Eligible
127-6732	Maury Street Interchange (I-95) Bridge Over CSX Railroad (Function/Location), Maury Street Interchange (I-95) Bridge Over CSX Railroad (Descriptive)	Not Eligible
166-0001	Ashland Historic District (Current)	Listed
166-0001-0020	House, 500 North Center Street (Function/Location)	Not Evaluated
166-0001-0023	House, 506 North Center Street (Function/Location)	Not Evaluated
166-0001-0041	House, 403 South Center Street (Function/Location)	Not Evaluated
166-0001-0045	House, 501 South Center Street (Function/Location)	Not Evaluated
166-0001-0047	House, 505 Center Street (Function/Location)	Not Evaluated
166-0001-0049	House, 600 South Center Street (Function/Location)	Not Evaluated
166-0001-0050	House, 601 South Center Street (Function/Location)	Not Evaluated
166-0001-0051	House, 603 South Center Street (Function/Location)	Not Evaluated
166-0001-0052	House, 604 South Center Street (Function/Location)	Not Evaluated
166-0001-0054	House, 700 South Center Street (Function/Location)	Not Evaluated
166-0001-0055	Gray, Ms. Emily, House (Historic), House, 702 South Center Street (Function/Location)	Not Evaluated
166-0001-0056	House, 703 South Center Street (Function/Location)	Not Evaluated
166-0001-0057	House, 705 South Center Street (Function/Location)	Not Evaluated
166-0001-0058	House, 706 South Center Street (Function/Location), Lost Lenore House (Historic)	Not Evaluated
166-0001-0059	House, 707 South Center Street (Function/Location)	Not Evaluated
166-0001-0060	Fox, Fleming M., House (Historic), House, 708 South Center Street (Function/Location)	Not Evaluated

TABLE 3-4: ARCHITECTURAL RESOURCES IN THE PROJECT AREA

DHR ID	Resource Name	NRHP Eligibility
166-0001-0061	House, 709 South Center Street (Function/Location)	Not Evaluated
166-0001-0062	House, 712 South Center Street (Function/Location)	Not Evaluated
166-0001-0063	MacMurdo, John, House (Historic)	Not Evaluated
166-0001-0064	House, 714 South Center Street (Function/Location)	Not Evaluated
166-0001-0065	House, 718 South Center Street (Function/Location)	Not Evaluated
166-0001-0066	House, 801 South Center Street (Function/Location)	Not Evaluated
166-0001-0067	Fox, Fleming House (Historic)	Not Evaluated
166-0001-0068	House, 803 South Center Street (Function/Location)	Not Evaluated
166-0001-0069	House, 804 South Center Street (Function/Location)	Not Evaluated
166-0001-0070	House, 805 South Center Street (Function/Location)	Not Evaluated
166-0001-0071	House, 807 South Center Street (Function/Location)	Not Evaluated
166-0001-0073	House, 904 South Center Street (Function/Location)	Not Evaluated
166-0001-0078	House, 1006 South Center Street (Function/Location)	Not Evaluated
166-0001-0079	House, 1008 South Center Street (Function/Location)	Not Evaluated
166-0001-0080	House, 1010 South Center Street (Function/Location)	Not Evaluated
166-0001-0081	House, 1013 South Center Street (Function/Location)	Not Evaluated
166-0001-0082	House, 1014 South Center Street (Function/Location)	Not Evaluated
166-0001-0083	House, 1017 South Center Street (Function/Location)	Not Evaluated
166-0039	Blair House (Historic/Current)	Not Evaluated
287-0010	Marine Corps Base Quantico (Current), Quantico Marine Corps Base Historic District (NRHP Listing)	Listed
287-0011	Quantico Station (Current Name), Quantico Station, RF&P Railroad (Descriptive)	Not Evaluated

Source: Dovetail Cultural Resource Group 2015.
Table Notes: Table data compiled from DHR databases and survey files.

3.5 PREVIOUS SURVEYS

Seventy-four previous cultural resource surveys are located within or immediately adjacent to the archaeological APE (an area defined as 50 feet [15.2 m] from the centerline of the rail corridor) (Table 3-5). Surveys were identified in 17 of the 20 project segments; only in project segments Fredericksburg to Hamilton (08), Guinea to Milford (11), and Elmont to Greendale (14) were no previous cultural resource surveys encountered within or immediately adjacent to the APE. A selection of these surveys, which are particularly relevant to the current project based on their similarity in scope and location, are detailed below. All 74 are summarized in Table 3-5.

In October 2012, AECOM Transportation conducted a Phase I archaeological survey for the proposed Potomac Yard Metrorail Station (PYMS) project in the City of Alexandria, VA. Three areas of archaeological potential were identified and were labeled Test Areas A, B, and C. Test Areas A and B were located on the grounds of the George Washington Memorial Parkway (GWMP), administered by the NPS. These Test Areas were examined using regularly space shovel test pits. Test Area C, on property of the City of Alexandria, was tested with a 6.5 x 6.5 foot (2 x 2 m) test unit in an attempt to reach intact soils beneath a thick layer of combustion waste and unconsolidated ballast encountered during other archaeological studies in the area. The test unit in Test Area C did encounter this same layer of material to a depth of 7.9 feet (2.4 m) below the surface covering sterile subsoil. However, no further work was recommended in Test Area C. Three previously unrecorded archaeological sites were identified (44AX0220 in Test Area A; and 44AX0221, and 44AX0222 in Test Area B). If the sites could not be avoided, Phase II NRHP eligibility evaluation was recommended (Albright et al. 2013). According to DHR site files, these sites were never formally evaluated for the NRHP and as such are all denoted as unevaluated in the state archives.

The Soil Systems Division of Professional Service Industries, Inc. conducted a Phase I archaeological investigation along the approximately 3.6-mile (5.8-km) long segment J2 of the Franconia-Springfield Metrorail line in Fairfax County and the City of Alexandria, VA in 1982. The project area followed the existing corridor for the RF&P. One well preserved possible Confederate earthwork with an associated potential winter hut depression (44AX0054) in the proposed Van Dorn Street Station parking lot was identified. Phase II investigations were recommended for this site because of its potential to provide important information regarding Confederate military strategy (Gerlach et al. 1983). However, it appears no formal NRHP determination was made for the site, as it is marked as unevaluated in DHR's site files.

In early 2010, McCormick Taylor, Inc. completed a Phase I archaeological identification survey for the VRE proposed addition of a third track along an 11.4 mile (18.3 km) segment of the existing rail corridor which passes through the United States Marine Corps Base Quantico between Powell's Creek and Arkendale. As previously mentioned, this project encompasses the Powells Creek to Arkendale (05) segment of the current APE. The majority of the project area extended 25 feet (7.6 m) from the center line of the existing track and remained inside the previously disturbed right-of-way (ROW). However, a small percentage of the project area extended as much as 100 feet (30.5 m) beyond the existing track center line and was tested using shovel tests placed at 50-foot (15.2-m) intervals. Two previously recorded archaeological sites (44ST0192 and 44ST0380) were mapped inside of the project area. However the locations of these sites had been severely disturbed and the sites likely destroyed. No prehistoric artifacts were recovered, and historic materials were all the result of twentieth century discard and were not collected. Therefore, no new archaeological sites were recorded and no further work was recommended (McCormick Taylor 2010).

R. Christopher Goodwin and Associates Inc., on behalf of the VRE, conducted a Phase I archaeological survey for the 1.25-mile (2-km) Quantico Creek Railroad Bridge Project in Prince William County, Virginia in September 2001. The corridor was defined as the preferred alternative on the west side of the existing line and began within the Dominion Power Possum Point Power Station facility on the north side of Quantico Creek and continues southwest to the Town of Quantico's passenger rail station south of the creek. No archaeological cultural materials or features were encountered within the project area. One shovel test pit excavated outside of the project ROW contained prehistoric artifacts and was recorded as newly identified

site 44PW1252. Since this area will not be impacted by the proposed project, no further archaeological investigations were recommended except in the case of future planned disturbance in the area where the prehistoric artifacts were recovered (Goodwin et al. 2001)

In 2009, AECOM Transportation completed Phase I archaeological testing of two areas under consideration for expansion of parking facilities at VRE's Leeland Station in Stafford County, VA. Both areas were tested using STPs. No significant archaeological cultural remains or features were encountered, and no further archaeological investigations were recommended (AECOM Transportation 2009).

The majority of the remaining previous cultural resource investigations within or immediately adjacent to the APE are linear surveys which cross a small portion of the current study area. These surveys include investigations of gas line corridors, sewer line corridors, power line corridors, road improvement corridors, and bridge replacement projects (i.e., Baicy et al. 2005; Cultural Resources, Inc. 2001; Galke et al. 1993; González et al. 2007; Mouer 1989). The remainder of the previous projects are typically larger, less linear studies related to development, assessment of the presence of cultural resources in a large study area, and cultural resource investigations of large facilities such as Marine Corps Base Quantico or the Richmond International Airport (i.e., Barse and Gardner 1982; Brady et al. 2005; Clark 1977; Espey, Huston & Associates 1996; Geier et al. 2004; Huston and Downing 1994). Typically, only a small portion of these larger project areas fall within or adjacent to the current study area.

TABLE 3-5: PREVIOUSLY CONDUCTED CULTURAL RESOURCE SURVEYS IN OR ADJACENT TO THE DC2RVA CORRIDOR

Project Segment	County/City	DHR Survey Report Number	Reference
1	City of Alexandria and Arlington County	AX-143	Albright et al. 2013
1	City of Alexandria	AX-139	Rose 2011
1	City of Alexandria	AX-144	Mullen and Barse 2008
1	City of Alexandria	AX-037	Simpson 1992
1	City of Alexandria	AX-020	Mouer and Harbury 1989
1	City of Alexandria	AX-056	Williams et al. 2003
1	City of Alexandria	AX-105	Petraglia et al. 1993
2	City of Alexandria and Fairfax County	FX-081	Gerlach et al. 1983
2	City of Alexandria and Fairfax County	AX-026	Louis Berger and Associates Inc. (LBA) 1991
2	City of Alexandria	AX-084	Gardner et al. 2002
2, 3	Fairfax County	FX-073	Holt et al. 1983
2, 3	Fairfax County	FX-191	Hunter and Robinson 1989
3	Fairfax County	FX-572	Bryant and Carroll 2011
3	Fairfax County	FX-067	Karell Archaeological Services 1983

TABLE 3-5: PREVIOUSLY CONDUCTED CULTURAL RESOURCE SURVEYS IN OR ADJACENT TO THE DC2RVA CORRIDOR

Project Segment	County/City	DHR Survey Report Number	Reference
3	Fairfax County	FX-032	Federal Highway Administration, U.S. Department of Transportation, Virginia Department of Highways and Transportation 1982
3, 4	Fairfax and Prince William Counties	FX-158	Koski-Karell and Ortiz 1987
3	City of Alexandria; Arlington, Fairfax, Prince William, and Stafford Counties	ST-153	Buchanan et al. 2007
3	Fairfax County	FX-344	Eddins and Griffitts 1998
4	Fairfax County	FX-176	Hunter and Cromwell 1989
4	Fairfax County	FX-354	Fiedel 1996
4	Prince William and Fairfax Counties	PW-143	Cooke et al. 2001
4	Fairfax County	FX-133	Johnson 1980
4	Prince William County	PW-142	Hall et al. 2001
4	Prince William County	PW-016	Barse and Gardner 1982
4	Prince William County	PW-294	Poplar-Jeffers and Ward 2006
5	Prince William County	PW-207	Pfanstiehl et al. 1998
5, 6	Prince William and Stafford Counties	ST-212	McCormick Taylor 2010
5	Prince William County	PW-049	Stevens et al. 1990
5	Prince William County	PW-344	Dutton + Associates, LLC 2009
5	Prince William and Fairfax Counties	PW-169	Cultural Resources, Inc. (CRI) 2001
5	Prince William County	PW-166	Godwin et al. 2001
5	Fauquier, Prince William, and Stafford Counties	ST-250	Huston and Downing 1994
6	Stafford County	ST-084	Underwood 2003
6	Stafford County	ST-057	Higgins III 2001
6	Stafford County	ST-184	AECOM Transportation 2009
6	Stafford County	ST-069	Kiser et al. 1996
6, 7, 10	City of Fredericksburg; Spotsylvania and Caroline Counties	SP-159	Geier et al. 2004
6, 7	Stafford County	ST-032	McLearen et al. 1992

TABLE 3-5: PREVIOUSLY CONDUCTED CULTURAL RESOURCE SURVEYS IN OR ADJACENT TO THE DC2RVA CORRIDOR

Project Segment	County/City	DHR Survey Report Number	Reference
7	City of Fredericksburg	SP-101	Sanford et al. 1992
7	City of Fredericksburg	SP-176	Mullen et al. 2011
7	City of Fredericksburg	SP-135	Cooke et al. 2004
7	Stafford County and City of Fredericksburg	ST-003	Clark 1976
9	Spotsylvania County	SP-106	Baicy et al. 2005
9	Spotsylvania County	SP-190	Carmody et al. 2012
12	Caroline County	CE-027	Outlaw et al. 1992
13	Hanover County	HN-028	Peterson et al. 1994
13	King Williams, Hanover, and Louisa Counties	KW-028	LaBudde 2011
13	Town of Ashland	HN-018	McLearen and Binns 1992
15, 19, 20	Henrico County	HE-13	Mouer et al.1978
16	City of Richmond	HE-247	Hardegan and Kimberley 2006
16	City of Richmond	HE-246	Ferland and Magoon 2007
16	City of Richmond	HE-076	McFaden 1990
16	City of Richmond	HE-071	Mouer 1989
17	Chesterfield County	CF-094	Higgins III et al. 1995
17, 18	Chesterfield County	CF-021	McIver 1985
18	City of Richmond	CF-222	Bradley et al. 2009
18	City of Richmond	CF-227	Opperman et al. 1987
19	City of Richmond	HE-252	Rodgers 1996
19	City of Richmond	HE-242	James et al. 2007
19	Hanover, Chesterfield, and Henrico Counties	HE-073	Hunter Jr. and Blanton 1990
19	Henrico County	HE-286	González et al. 2007
19	Henrico County	HE-138	Espey, Huston, & Associates, Inc. 1996
19	Henrico County	HE-145	Mclearen and Egghart 1996
19	Henrico County	HE-090	Luccketti and McCartney 1993
20	Caroline and Hanover Counties	CE-043	The Louis Berger Group, Inc. 2005
20	Hanover County	HN-001	Clark 1977
20	Hanover and Henrico Counties	HN-048	Galke et al. 1993

TABLE 3-5: PREVIOUSLY CONDUCTED CULTURAL RESOURCE SURVEYS IN OR ADJACENT TO THE DC2RVA CORRIDOR

Project Segment	County/City	DHR Survey Report Number	Reference
20	Hanover County	HN-062	McDonald 2000
20	Hanover County	HN-112	Frost and Tyrer 2011
20	Hanover County	HN-037	Egghart 1995
20	Hanover County	HN-080	Brady et al. 2005
20	Hanover and Henrico Counties	HN-039	Browning and Taylor 1992
20	Henrico County	HE-196	O'Donnell 2004
20	Henrico and Hanover Counties	HE-125	Weed and Clarke 1999

Source: Dovetail Cultural Resource Group 2015.

Table Notes: Table data compiled from DHR databases and survey files.

4 ARCHAEOLOGICAL PREDICTIVE MODEL

Background research provided a basis for expectations about the probable location of archaeological resources within the APE and allowed the identification of areas with high, moderate, low, and no potential for the preservation of undisturbed archaeological resources. The following section provides an overview of the environmental parameters commonly associated with precontact and historic archaeological sites in northern and central Virginia, followed by the presentation of the hierarchical predictive model. The model produced is similar in size and scope to the archaeological model used to predict archaeological site locations along the Richmond to Raleigh segment of the SEHSR (Rupnik et al. 2007), however, the current analysis incorporated additional levels of background review and complexity. The Richmond to Raleigh predictive model was validated via subsequent Phase I and II testing, as such the same approach to validation will be adopted for the current model and the Richmond to Raleigh project, itself, is also used as a test case to validate the current methodology.

4.1 ARCHAEOLOGICAL SETTLEMENT MODELS

Archaeological settlement models and previously conducted surveys in Virginia and surrounding areas provide a range of environmental attributes that typically characterize landforms by the probability of encountering undisturbed archaeological resources. The models imply that soil properties, distance to rivers and smaller tributaries, topography, and the diversity of microenvironments in a particular setting allow evaluation of the probability of encountering archaeological sites. Dwellings and many other buildings increasingly clustered near roads as infrastructure improved over the course of the eighteenth and nineteenth centuries. Despite the value of attributes of the natural and built environments for projecting the probable location of archaeological sites, the siting of unique resources like ceremonial sites, mills, and battlefields often responded to functional requirements or events that diverge from the known settlement patterns. Consequently, archaeological resources may occur in areas the models consider to have a low probability of containing archaeological sites.

4.1.1 Precontact and Protohistoric Settlement Models

The archaeological record demonstrates the presence of Native Americans in the Chesapeake Region for over 10,000 years. John Smith's map illustrates a number of settlements, named and unnamed, lining the major rivers in the Chesapeake Region. These data, therefore, imply that a high probability exists for Native American archaeological sites to occur in the vicinity of the larger rivers, the Potomac, Rappahannock, Pamunkey, James, and Appomattox.

Precontact settlement pattern studies in the Middle Atlantic Region commonly rely on a suite of environmental variables to characterize the probable location of archaeological sites. Location

near a major river appears particularly important, not only on the floodplain but atop the bluffs overlooking rivers. Additional variables relevant for projecting the probable location of precontact archaeological resources in the APE include: aspect; elevation; slope; landform type; soil attributes; and distance to a water source, not necessarily a major river (e.g., Hantman 1985; Kellogg 1987; Klein 1995). Aspect and elevation above mean sea level (amsl) appear unlikely to have exerted a major influence on past settlement in the project area. In addition, Klein (1995) found the ubiquity of smaller streams in Virginia's Northern Neck diluted the value of the attribute for predictive modeling, a result that likely applies to at least the northern sections of the project area. The three variables that appear consistently associated with a high density of potentially significant precontact archaeological resources are locations near major rivers, presences of well-drained and fertile soils, and level to gently sloping landforms (cf. Klein et al. 2012:31–32; Potter 1993).

The rich and varied resources and the critical importance of riverine transportation drew humans and animals to riverine settings for millennia. Three of the four major rivers that empty into the Chesapeake Bay influenced pre- and post-contact settlement in the project vicinity. The DC2RVA corridor passes through the inner Coastal Plain of the Potomac River parallel to and less than 1 mile (1.6 km) from the river from approximately from the Occoquan River in Prince William County to Aquia Creek in Stafford County, then crosses the Rappahannock and James Rivers. The archaeological remnants of the villages illustrated by Smith (1624) along the Potomac, Rappahannock, and James Rivers from the Chesapeake Bay to the falls; the remains of earlier settlements identified archaeologically also occur along rivers throughout the Middle Atlantic Region. Moreover, flooding over millennia resulted in the preservation of vertically stacked, or stratified, deposits of sediments that preserve archaeological sites that provide evidence of social evolution over millenia (Custer 1989, 1996; Dent 1995; Potter 1993). As distance from the major rivers increases, the probability of discovering large semi-permanent settlements and dense palimpsests produced by repeated settlement in the same setting over millennia decreases. People ranged out from riverine settlements to harvest the resources of the surrounding landscape, producing a range of archaeological site types. Viewed from a regional scale, significant precontact and contact-era archaeological sites of all types cluster near and in the landscape surrounding rivers. The probability of discovering archaeological sites, therefore, peaks in the undisturbed portions of the project area located within 1 mile (1.6 km) of the Potomac, Rappahannock, and James.

Slope, as noted earlier, constitutes an important aspect of descriptions of past settlement patterns. The effects of erosion on side-slopes along the streams potentially destroyed or altered archaeological contexts, particularly steep, abrupt slopes along deeply incised streambeds. Therefore, even if occupation of side-slopes had occurred, the effects of erosion undoubtedly altered or destroyed the remnants of such activity. Consequently, slopes greater than 15 percent are considered low probability areas. Nevertheless, the Natural Resources Conservation Service's classification of soil types relies, in part, on slope (Soil Conservation Service [SCS] Survey Staff 2013). Therefore, soil was used in the predictive model rather than slope.

Soils susceptible to erosion reduce both the agricultural value of the soil and the potential for preservation of material remains of past activities; as slope increases, so too does susceptibility to erosion. Moreover, wild herbs and grasses exploited by precontact peoples likely flourished in the same environments that favor descendent species like domesticated corn, wheat, and barley, suggesting that soil fertility influenced past land use. In addition, even occupations

unrelated to gathering or hunting probably favored well-drained settings, and soil classifications include the tendency to flood or pond.

Descriptions of individual soils rely on a wide range of attributes, some irrelevant to the identification of landforms selected by past people for settlement. Moreover, a plethora of soil types have been defined, with names often differing across county boundaries. Fortunately, the SCS (2013) classifies individual soils types into broader categories based on attributes like fertility and the tendency to erode or flood (Table 4-1). Although geared to the needs of modern farmers and builders, archaeologists have found soil class valuable (e.g., Potter 1993). Archaeological studies indicate that Class I soils, which exhibit few limitations on use and support a wide range of vegetation types, attracted human settlement prior to and after the arrival of European settlers, as did many Class II soils (e.g., Lukezic 1990; Potter 1993:34–39). Potter (1993:37) also suggests less well-drained Class II soils may exceed the prime agricultural Class I soils in productivity during periods of drought. Since survival during lean years caused by, for example, drought or excessive rainfall is critical for societies, (Potter 1993) believes past peoples chose site locations that maximized access to both fertile Class I and somewhat less well-drained, but still fertile, Class II soils. Therefore, the potential presence of archaeological sites appears highest on Class I and II soils, followed by the less productive Class III and IV soils. Far fewer, if any, precontact and protohistoric sites are expected to occur on Class V through VII soils. The limitations of Class VIII soils include attributes like very steep slopes and disturbance from mining, cutting and filling by humans, and extensive construction that preclude the preservation of undisturbed archaeological sites; nevertheless, given the scale at which soils are mapped, examination of segments characterized as Class VIII soils was conducted, unless obviously disturbed on aerial maps.

The topography, the proximity and type of water resources, and the attributes of soils directly affect the type and variety of flora in different settings. The quantity and variety of both plants and animals in an area has a direct influence on human habitation. A wide variety of native wildlife species inhabit riverine settings in the region (Shelford 1963:19-56). Rivers and the associated tributaries incised the surrounding landform, creating variation in elevation, soils, and drainage that creates microenvironmental variation in the plant and animal species, particularly near the falls of the rivers and the mouth of tidal streams. The evolution of drainage systems also exposed the cobbles used to manufacture many precontact tools. Thus, from large and small settlements on well-drained soils, humans were able to harvest a wide range of resources within relatively small areas.

The precontact and protohistoric predictive model, therefore, identified areas within 1 mile (1.6 km) of the major rivers as high probability. Areas underlain by Class I and II soils located more than 1 mile (1.6 km) from the major rivers were also considered high probability. The moderate probability zone in areas removed from the large rivers consisted of Class III and IV soils; Class V through VIII soils in such settings were defined as low probability. Within the river-based high probability areas, this approach produces a gradation in the expected density of sites from highest to lowest, but since different site types likely occur in different settings, undisturbed portions of the entire areas were considered high probability. The attributes applied to precontact and protohistoric sites appear relevant to early historic resources as well. Social and technological developments produced a different set of expectations for later historic resources.

4.1.2 Historic Settlement Models

The tobacco boom of the seventeenth century fueled immigration and expansion of colonial settlement. Tobacco plants grow best on gentle slopes (2–6 percent) with well-drained, loosely structured fine sands or sandy loams. Ponding impedes oxygen intake by the plants roots, which in turn prevents the plant from maturing. Therefore, the importance of tobacco in the Anglo-Virginian economy of the seventeenth and eighteenth centuries led settlers to favor locations characterized by fertile, well-drained soils and gentle slopes (Lukezic 1990). Soil class, which incorporates drainage and slope, as well as fertility, identifies soils valuable to early tobacco farmers.

TABLE 4-1: SCS (2013) SOIL CLASS DEFINITIONS

Soil Class and Subclass	Definition
I	Soils have slight limitations that restrict their use
2	Soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
3	Soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.
4	Soils have very severe limitations that restrict the choice of plants or require very careful management, or both.
5	Soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
6	Soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
7	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
8	Soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for esthetic purposes.
E	Soils for which the susceptibility to erosion is the dominant problem or hazard affecting their use. Erosion susceptibility and past erosion damage are the major soil factors that affect soils in this subclass.
W	Soils for which excess water is the dominant hazard or limitation affecting their use. Poor soil drainage, wetness, a high water table, and overflow are the factors that affect soils in this subclass.
S	Soils that have soil limitations within the rooting zone, such as shallowness of the rooting zone, stones, low moisture-holding capacity, low fertility that is difficult to correct, and salinity or sodium content.
C	Soils for which the climate (the temperature or lack of moisture) is the major hazard or limitation affecting their use.

Source: Dovetail Cultural Resource Group 2015.
Table Notes: Table data compiled from SCS's online database.

Initially, access to deep water harbors was essential, given the absence of well-developed transportation routes. As a result, early plantations and farms clustered along the major rivers and bays in the Coastal Plain, but soon colonial farms spread upstream along the major rivers.

In sum, early colonists sought the same settings favored by earlier peoples: well-drained, fertile soils near the major rivers. The predictive model incorporates both variables.

Tobacco prices fluctuated widely and tobacco farming depleted the soils of essential nutrients and deep plowing caused erosion. The price of wheat on the world market surpassed tobacco between the 1740s and the 1770s (Siener 1985:42). Although the American Revolution disrupted wheat shipments, farmers shifted to wheat, corn, and other grains and livestock by the beginning of the nineteenth century (Siener 985:414–415).

Grains spurred the growth of associated industries and infrastructure. Grains required milling, and distilling enhanced preservation. New grain mills were constructed along the streams falling from the Piedmont throughout the region, and distillers appeared in port towns like Richmond, Fredericksburg, and Alexandria. Millers and distillers required coopers, manufacturers of milling equipment, and warehouses for storage. The unique requirements of mills ensured location in atypical settings; the requirement for a secure water source to drive the equipment led millers to accept locations on poorly drained soils and moderately sized floodplains unacceptable for other types of structures. Fortunately, the construction of mill races, stone foundations, and other attributes of mills tended to create distinctive, highly visible landscapes. The construction of mills often left surface features visible to today, which can be identified during pedestrian survey (cf. Winter 1994). Moreover, late-eighteenth- and nineteenth-century maps often depict the approximate location of mills.

The introduction of new crops, and advances in farm management and fertilization, opened marginal land to agriculture, a process accelerated by the division of family farms through inheritance. Equally important, the development of transportation networks exerted a strong influence over domestic site location in the mid-nineteenth century, and many rural towns emerged at crossroads and along railroad lines. Proximity to roads, particularly major roads and crossroads, along with railroad stations, define the expected locations for nineteenth-century settlements and farms. By the 1860s, roads and railroad lines crossed Virginia's northern Piedmont.

By the 1920s and 1930s, the state and counties improved the network of roads. As roads improved and automotive transportation became more widely available to rural residents, proximity to roads increasingly influenced settlement patterns.

In sum, the probability of encountering late-eighteenth- through twentieth-century archaeological sites peaks near transportation routes. During the seventeenth century, settlement clustered around well-drained soils near rivers, identified as high-probability locations for both precontact and historic archaeological sites. During the nineteenth century, transportation networks expanded drawing settlers, soldiers, laborers, and taverns to major crossroads and rail lines. To address the influence of travel routes on settlement, the predictive model includes information on crossroads, major roads, and railroad stations on the RF&P line. Architectural resources, particularly extensive architectural resources like battlefields, military camps, forts, plantations, and farmsteads often possess archaeological components. Therefore, the georeferenced location of road networks, the ABPP defined potentially eligible portions of battlefield, military camps, and previously identified architectural resources were included in the predictive model.

4.2 IMPLEMENTATION AND RESULTS OF THE PREDICTIVE MODEL

Modeling that reflects cumulative archaeological knowledge about the expected location and attributes of resources constitute a critical step in the design of efficient and effective cultural resource management (CRM) surveys (Banning 2002:183; Sebastian and Judge 1988:1). An archaeological predictive model is a "simplified set of testable hypotheses, based either on behavioral assumptions or on empirical correlations, which at a minimum attempts to predict the loci of past human activities resulting in the deposition of artifacts or alteration of the landscape" (Kohler 1988:33). Models based on theoretical propositions, Sebastian and Judge (1988:6–9) argue, not only predict the location of prehistoric sites, but also explain the underlying causation, making them superior to empirically derived models. In CRM, however, the overall process that begins with predictive modeling and moves through survey, evaluation, and, if necessary, mitigation evaluates the effectiveness of the predictive model in a particular setting and addresses the underlying causes of the patterns observed in the archaeological record. In addition, the regional literature mined to generate a predictive model for a particular region generally addresses social and environmental influences on the patterns observed in the archaeological record.

Previous studies throughout the region provided a basis for projection of relative probability of discovering intact terrestrial archaeological sites in the archaeological APE. Environmental variables encompassed within the model included distance to major streams, soil fertility as reflected in the SCS's identification of soil classes, and disturbance evident on aerial images of the project corridor. Aspects of the built environment included the georeferenced location of historic roads and NPS trails that crossed the APE. Documentary research provided information on previously identified architectural and archaeological resources, Revolutionary War and Civil War camps depicted on period maps, and the ABPP and CWSAC-defined location of Civil War battlefields. These data allowed the prediction of the settings characterized by a high, moderate, and low probability of discovering archaeological sites, as well as areas where previous disturbance, development, or soil attributes, and areas of previously completed archaeological survey that meet current DHR survey standards, indicate that archaeological sites will not be discovered through STP survey or metal detecting.

High probability settings consist of: 1) undisturbed landforms within 1 mile (1.6 km) of a major river or bay (i.e., the Potomac, Rappahannock, and James and the lower stretches of the Occoquan River and the larger streams emptying into the Potomac River); 2) broad stretches of undisturbed, well-drained, fertile soils (Class I and II soils); 3) areas within the boundaries of known architectural resources, including the NRHP-eligible boundaries defined by the ABPP and CWSAC for the region's Civil War Battlefields and the projected location of Revolutionary War camps identified by Selig (2009); and 4) a 75-foot (22.9-m) area around the location of historic roads based on georeferenced historic maps. It is recommended that STPs spaced at 50-foot (15.2-m) intervals will be excavated within the high probability areas. In addition, it is recommended that metal-detector survey be conducted within the high probability areas of ABPP-defined boundary of Civil War battlefields and the projected location of Civil War and Revolutionary War camps.

Moderate probability settings consist of undisturbed Class III and IV soils that do not meet high probability criteria 1, 3, and 4. It is recommended that STPs spaced at 50-foot (15.2-m) intervals be excavated within the moderate probability areas. In addition, it is recommended that metal-detector survey be conducted within moderate probability areas of the ABPP-defined boundary

of Civil War battlefields and the projected location of Civil War and Revolutionary War camps. Testing of both high and moderate probability areas is recommended based on previous archaeological predictive modeling within the SEHSR corridor (Rupnik et al. 2007).

Low probability areas were identified by the presence of undisturbed Class V through VIII soils that do not meet high probability criteria 1, 3, and 4. It is recommended that the low probability areas be visually inspected and 10 percent of the least disturbed low probability be subjected to systematic subsurface survey. The low probability sample will rely on STPs spaced at 50-foot (15.2-m) intervals and judgmental STPs.

Areas heavily impacted by modern development, including paved areas, industrial and other large-scale developments, inundated soils, and soils classified as Urban Land constitute the areas with no probability of locating archaeological resources within the APE. These areas of no probability were determined via soil mapping and a close inspection of aerial imagery, and totaled 1,866.5 acres (755 ha), mostly concentrated around the urban centers in Northern and Central Virginia. In addition, the no probability areas encompass previously surveyed areas where the survey methodology meets the current DHR (2011) standards. For example, the entirety of the Powell's Creek to Arkendale (05) segment was subjected to Phase I archaeological study in 2010 and therefore this segment was classified as an area of no probability. These previously surveyed areas of no probability encompass 316 acres (127.8 ha). Areas subjected to previous archaeological survey that did not meet the current DHR standards were subjected the probability screening process. The previously recorded archaeological sites within the APE (see Table 3-1) were not included within the model results. Instead, **all sites previously determined eligible and potentially eligible for listing on the NRHP as well as those sites that have not been evaluated by the DHR should be reexamined regardless of their location within the probability model and if necessary evaluated**. The current condition of all sites determined eligible or potentially eligible for listing on the NRHP will be assessed and those that are unevaluated should be evaluated. The goal is to assure that each site retains the characteristics that rendered it eligible for the NRHP. This will be accomplished through a pedestrian survey with photodocumentation and limited subsurface testing. Judgemental shovel testing will be employed to verify intact soils but extensive subsurface studies will not be completed on these resources to avoid any unnecessary impacts. Any site that was previously determined to be not eligible for the NRHP will not be revisited during this work as an eligibility determination has been rendered and no additional work is required.

Given the above outlined criteria, the APE was divided into areas of high, medium, low, and no probability as depicted in the results maps presented in Appendix A. Based on the findings of the predictive model, it is **recommended that 90 percent (1,890.8 acres [765.2 ha]) of the 2,109.5-acre (853.7-ha) project corridor should not be tested due to previous disturbance or archaeological survey.** The results reflect the extensive development in Fairfax County and the cities of Alexandria, Fredericksburg, and Richmond. Of the remaining 218.7 acres (88.5 ha), 156.8 (63.4 ha) were classified as high probability, 46.9 acres (19 ha) as moderate probability, and 15.0 acres (6.1 ha) as low probability. It is **recommended that the all of the high and moderate probability areas, a total of 203.7 acres (82.4 ha), and a 10 percent sample of the low probability area (approximately 1.5 acres [0.6 ha]) be subjected to STP and metal detector survey, where appropriate.** Areas recommended for testing occur primarily in the less developed segments located between Fredericksburg and Richmond. The detailed results of the model by project segment are outlined in Tables 4-2 to 4-3.

TABLE 4-2: ARCHAEOLOGICAL PREDICTIVE MODEL RESULTS

	High Probability	Moderate	Low	No Probability	Total
Acreage	156.8	46.9	15.0	1,890.8	2,109.5
Percentage	7%	2%	1%	90%	100%

Source: Dovetail Cultural Resource Group 2015.
Table Notes: Archaeological Predictive Model Results.

TABLE 4-3: ARCHAEOLOGICAL PREDICTIVE MODEL RESULTS BY AREA

Project Segment		High	Moderate	Low	No Probability	Total
01 Rosslyn to Alexandria	Acreage	0	0	0	78.1	78.1
	Percentage	0%	0%	0%	100%	100%
02 Alexandria to Franconia	Acreage	0	0	0	58.1	58.1
	Percentage	0%	0%	0%	100%	100%
03 Franconia to Lorton	Acreage	7.1	0.9	0	69.4	77.4
	Percentage	9%	1%	0%	90%	100%
04 Lorton to Powells Creek	Acreage	8.6	0.1	0	102.4	111.1
	Percentage	8%	Less than 1%	0%	92%	100%
05 Powells Creek to Arkendale	Acreage	0	0	0	127.5	127.5
	Percentage	0%	0%	0%	100%	100%
06 Arkendale to Dahlgren	Acreage	4.7	4.6	0.6	137.5	147.4
	Percentage	3%	3%	Less than 1%	93%	100%
07 Dahlgren to Fredericksburg	Acreage	1.5	0	0	29	30.5
	Percentage	5%	0%	0%	95%	100%
08 Fredericksburg to Hamilton	Acreage	2.5	0	0	29.5	32.1
	Percentage	8%	0%	0%	92%	100%
09 Hamilton to Crossroad	Acreage	4.6	0	0	25.3	29.9
	Percentage	15%	0%	0%	85%	100%
10 Crossroads to Guinea	Acreage	8	1.1	0.1	66.1	75.3
	Percentage	11%	2%	Less than 1%	73%	100%
11 Guinea to Milford	Acreage	16.7	11.8	1.3	80.1	110.1
	Percentage	15%	11%	1%	73%	100%
12 Milford to North Doswell	Acreage	25.4	15.8	8.2	126.6	176
	Percentage	14%	9%	5%	72%	100%
13 North Doswell to Elmont	Acreage	10.2	2.1	0.5	143.3	156.1
	Percentage	7%	1%	Less than 1%	92%	100%
14 Elmont to Greendale	Acreage	1.6	2.7	0.3	52.3	56.9
	Percentage	3%	5%	1%	92%	100%
15 Greendale to SAY/WAY	Acreage	0.2	0.4	0	66.4	67
	Percentage	Less than 1%	1%	0%	99%	100%
16 SAY to AM Junction-	Acreage	0.02	0	0.03	40.1	40.2

TABLE 4-3: ARCHAEOLOGICAL PREDICTIVE MODEL RESULTS BY AREA

Project Segment		High	Moderate	Low	No Probability	Total
Hermitage Lead	Percentage	Less than 1%	0%	Less than 1%	Greater than 99%	100%
17 AM Junctions to Centralia	Acreage	11.6	0	0	147.5	159.1
	Percentage	7%	0%	0%	93%	100%
18 WAY to Centralia	Acreage	9.3	1.5	0	164.7	175.5
	Percentage	5%	1%	0%	94%	100%
19 Rivanna Junction to Beulah	Acreage	5.7	0	0	88	93.7
	Percentage	6%	0%	0%	94%	100%
20 Buckingham Branch	Acreage	38.7	5.9	4	258.8	307.4
	Percentage	13%	2%	1%	84%	100%

Source: Dovetail Cultural Resource Group 2015.

Table Notes: Archaeological Predictive Model Results.

5 SUMMARY AND RECOMMENDATIONS

The DC2RVA Project Team conducted an archaeological background review and produced a predictive model of archaeological site locations to guide a Phase I cultural resource survey of the proposed DC2RVA segment of the SEHSR project. The proposed Project is being completed under the auspice of the FRA in conjunction with the DRPT. Because of the FRA's involvement, the undertaking is required to comply with NEPA and Section 106 of the National Historic Preservation Act of 1966, as amended. The project is being completed as DHR File Review #2014-0666.

Previous studies throughout the region provided a basis for projection of relative probability of discovering terrestrial archaeological sites using standard Phase I survey techniques in the DC2RVA project corridor. Environmental variables included distance to major drainages, soil fertility as reflected in the Soil Conservation Service's identification of soil classes, and disturbance evident on aerial images of the project corridor. Aspects of the built environment included the georeferenced location of historic roads and NPS historic trails that crossed the DC2RVA corridor. Documentary research provided information on previously identified architectural and archaeological resources, Revolutionary War and Civil War camps depicted on period maps, and the ABPP-defined location of Civil War battlefields. These data allowed the prediction of the settings characterized by a high, moderate, and low probability of discovering archaeological sites, as well as areas where previous disturbance, development, previous archaeological survey, or soil attributes indicate that archaeological sites will not be discovered through shovel test survey or metal detecting.

For the purposes of the predictive model, the APE was defined as a corridor that extends 50 feet (15.2 m) on both sides of the center of the existing rail lines, an area encompassing 2,109.5 acres (853.7 ha). The proposed DC2RVA project impacts only near-surface resources; for this reason, the predictive model does not include deep testing. It is **recommended that 90 percent (1,890.8 acres [765.2 ha]) of the 2,109.5-acre (853.7-ha) APE should not be tested due to lack of defined probability or previous archaeological survey that meets DHR standards**. The results reflect the extensive development in Fairfax County and the cities of Alexandria, Fredericksburg, and Richmond, as well as the construction and maintenance of the existing rail corridor. Of the remaining 218.7 acres (88.5 ha), 156.8 (63.4 ha) were classified as high probability, 46.9 acres (19 ha) as moderate probability, and 15.0 acres (6.1 ha) as low probability. It is **recommended that the all of the high and moderate probability areas, a total of 203.7 acres (82.4 ha), and a 10 percent sample of the low probability area (approximately 1.5 acres [0.6 ha]) be subjected to STP and metal detector survey, where appropriate.** Testable areas occur primarily in the less developed segments located between Fredericksburg and Richmond. Additionally, it is **recommended that all sites previously determined eligible and potentially eligible for listing on the NRHP as well as those sites that have not been evaluated by the DHR should be reexamined regardless of their location within the probability model and if necessary**

evaluated. The current condition of all sites determined eligible or potentially eligible for listing on the NRHP will be assessed and those that are unevaluated will be formally evaluated. The goal is to assure that each site retains the characteristics that rendered it eligible for the NRHP. This will be accomplished through a pedestrian survey with photodocumentation and limited subsurface testing. Judgemental shovel testing will be employed to verify intact soils but extensive subsurface studies will not be completed on these resources to avoid any unnecessary impacts. Any site that was previously determined to be not eligible for the NRHP will not be revisited during this work as an eligibility determination has been rendered and no additional work is required.

6 REFERENCES

Abbot, Henry L.

1862 White House to Harrisons Landing Prepared by command of Maj. Gen. George B. McClellan U.S.A., commanding Army of the Potomac. Compilation under the direction of Brig. Gen. A. A. Humphreys, by Capt. H. L. Abbot, Top Engrs. Engraved by W. H. Dougal. Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883h.cw0594000, accessed March 2015.

AECOM Transportation

2009 *VRE Leeland Station Phase I Archaeological Report.* AECOM Transportation, Trenton, New Jersey.

Albright, Brian M., Paul W. Schopp, Vanessa Zeoli, and Frank G. Mikolic III

2013 *Phase I Archaeological Survey Report, Potomac Yard Metrorail Station Project, City of Alexandria, Virginia and Arlington County, Virginia*. AECOM Transportation, Trenton, New Jersey.

Anonymous

186-a *Caroline County, Virginia. Library of Congress, Geography and Maps Division, Washington, D.C.* Electronic document, http://hdl.loc.gov/loc.gmd/g3883c.cwh00026, accessed March 2015.

186-b *Map of part of Fairfax and Prince William Counties, Virginia*. Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883f.cw0536300, accessed March 2015.

186-c *Map of the northern portion of Hanover County, Va., showing fortifications on the South Anna River near Taylorsville.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883h.cwh00038, accessed March 2015.

186-d *Map of Louisa County and part of Hanover County, Va*. Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883l.cwh00045, accessed March 2015.

186-e *Map of Spotsylvania and Caroline Counties, Virginia.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883s.cwh00062

186-f *Map of Stafford County, Va. From the surveys of B.L. Blackford, Asst. Engr. Made under the direction of Capt. A.H. Campbell, Provl. Engrs. in charge Topog. Dept. D.N.V.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883s.cwh00063, accessed March 2015.

Army of Northern Virginia, Engineer's Office, 2nd Corps

186- *Caroline County, Virginia / Eng. Office, 2d Corps, A.N.Va.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883c.cwh00024, accessed March 2015.

Army of the Potomac

1862 *Approaches of A. of P. to Fredericksburg.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884f.cw0555000, accessed March 2015.

Baicy, Dan, Keith Heinrich, and Loretta Lautzenheiser

2005 *Phase I Archaeological Survey, Proposed Massaponax Gravity Sewer Interceptor Pipeline Replacement, Spotsylvania County, Virginia*. Coastal Carolina Research, Inc., Tarboro, North Carolina.

Bailey, A. N.

186- *Map of Richmond, Va., shewing fortifications surrounding the Confederate capital. From the latest government surveys*. Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd /g3884r.cw0622000, accessed March 2015.

Balicki, Joseph

2006 "Masterly Inactivity": The Confederate Cantonment Supporting the 1861-1862 Blockade of the Potomac River, Evansport, Virginia. In *Huts and History: The Historical Archaeology of Military Encampment During the American Civil War*, edited by Clarence R. Geier, David G. Orr, and Matthew B. Reeves, pp. 97–136. University Press of Florida, Gainesville, Florida.

Banning, E. B.

2002 *Archaeological Survey*. Manuals in Archaeological Method, Theory, and Technique, Kluwer Academic/Plenum Publishers, New York.

Barse, William P, and William M. Gardner

1982 *A Prehistoric Cultural Resources Reconnaissance of Neabsco and Powells Creek, Prince William County, Virginia*. Thunderbird Research Corporation, Front Royal, Virginia.

Bradley, Dawn M., Jennifer Stewart, Bill Hall, and Robert Patterson

2009 *Phase I Cultural Resources Survey, Proposed Improvements to Jahnke Road, Richmond, Virginia*. Coastal Carolina Research, Inc., Tarboro, North Carolina.

Brady, Ellen M., Darby O'Donnell, and John P. Cooke

2005 *Phase I Cultural Resources Survey of the 197-Acre Proposed Rutland Development Project Area, Hanover County, Virginia.* Cultural Resources, Inc., Norfolk, Virginia.

Browning, Lyle E., and Michael V. Taylor

1992 *Phase I Intensive Cultural Resources Survey; Elmont-Old Church 230 kV Transmission Line Hanover & Henrico Counties, Virginia*. Browning and Associates, Ltd., Midlothian, Virginia.

Bryant, Tammy, and David Carroll

2011 *Phase I Archaeological Investigation, Loisdale Road Properties, Fairfax County, Virginia.* Thunderbird Archeology, a Division of Wetland Studies and Solution, Inc., Gainesville, Virginia.

Buchanan, Brian, Christopher Shephard, David Carroll, Curt Breckenridge, Johnna Flahive, Christine Jirikowic, Tammy Bryant, and William P. Barse

2007 *Phase I Archaeological Investigations of the I-95/395 HOV/Bus/HOT Lanes Project, Arlington, Fairfax, Prince William and Stafford Counties and the City of Alexandria, Virginia*. Thunderbird Archeology, a Division of Wetland Studies and Solution, Inc., Gainesville, Virginia.

Carmody, Michael, Earl E. Proper, Aubrey Von Lindern, and Mike Klein

2012 *Phase I Cultural Resource Survey of the Crossroads Parkway Virginia Railway Express Station, Spotsylvania County, Virginia*. Dovetail Cultural Research Group, Fredericksburg, Virginia.

Campbell, Albert H.

1862 *Map of part of Henrico and Chesterfield Counties, July 12th, 1862 / Albert H. Campbell Capt. P. Engrs., & Chf. Top. Dept. Library of Congress, Geography and Maps Division, Washington, D.C.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883h.cwh00040, accessed March 2015.

1891 *Map of the vicinity of Richmond and part of the Peninsula From surveys made under the direction of A. H. Campbell, Capt: P.E.C.S.A. in charge Topographl. Dept., D.N.V. 1864. Facsimile reproduction made from the original Confederate war map owned by T. Sewell Ball, Publisher, Pikesville, Baltimore Co., Maryland. A. B. Graham, photolith., Washington, D.C. Entered according to Act of Congress in the year 1891, by T. Sewell Ball* . Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884r.cw0626000, accessed March 2015.

Civil War Sites Advisory Commission (CWSAC)

2009 *Update to the Civil War Advisory Commission's Report on the Nation's Civil War Battlefields*. U.S. Department of the Interior, National Park Service, American Battlefield Protection Program, Washington, D.C.

Church, Benjamin Silliman

186- *Reconnaissance in advance of Camp Mansfield*. Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883a.cw0521000, accessed March 2015.

Clark, Wayne E.

1976 *An Initial Archaeological Survey of the Route 3 East-West Connector in the Fall Line Zone of the Rappahannock River, Virginia*. Virginia State Library, Richmond, Virginia.

1977 *Archaeological Resources of the Bear Island Farm, Little River, Hanover County, Virginia.* The Virginia Research Center for Archaeology, College of William and Mary, Williamsburg, Virginia.

Cooke, John P., Lily A. Richards, and Taft Keiser

2004 *Phase I Archaeological Survey of the Proposed Cobblestone Square Apartments, City of Fredericksburg, Virginia.* Cultural Resources, Inc. Fredericksburg, Virginia.

Cooke, John P., Mary Ann Holm, Bill W. Hall, N. Carolyn McCollum, and Loretta Lautzenheiser

2001 *Cultural Resources Identification Survey (Phase I) Improvements to U.S. Route 1 from Route 123 to Route 611 (Telegraph Road) Prince William and Fairfax Counties, Virginia, Project B.* Coastal Carolina Research, Inc., Tarboro, North Carolina.

Corbett, V. P.

1861 *Sketch of the seat of war in Alexandria & Fairfax Cos., by V. P. Corbett.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883a.cw0522000, accessed March 2015

Cultural Resources, Inc.

2001 *Phase I Archaeological Survey of a Proposed 14-Mile Natural Gas Pipeline between the Possum Point Power Station in Prince William County to the Cove Point Pipeline in Fairfax County, Virginia*. Cultural Resources, Inc., Williamsburg, Virginia.

Custer, Jay F.

1989 *Prehistoric Cultures of the Delmarva Peninsula: An Archaeological Study*. The University of Delaware Press, Newark.

1996 *Prehistoric Cultures of Eastern Pennsylvania*. Pennsylvania Historical and Museum Commission, Harrisburg.

Dent, Richard J., Jr.

1995 *Chesapeake Prehistory: Old Traditions, New Directions*. Plenum Press, New York.

Dutton + Associates, LLC

2009 *Management Summary: Phase I Archaeological Survey of the Proposed Relocated Line 571 and the Possum Point-PEPCO Interconnection Transmission Lines*. Dutton + Associates, LLC, Richmond, Virginia.

Eddins, John T., and Eric F. Griffitts

1998 *Cultural Resource Evaluation on the Grounds of the Former Medium Security Facility, District of Columbia Detention Center, Lorton, Virginia*. The Cultural Resource Group, Louis Berger and Associates, Inc., Washington, D.C.

Egghart, Christopher P.

1995 *Phase I Archaeological Survey of Proposed Highway Improvements to Rt. 637, Hanover County, Virgini*a. Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

Engineers' Office, 10th Army Corps

186-a *Caroline County, Virginia / Eng. Office, 2d Corps, A.N.Va. Confederate States of America. Army of Northern Virginia.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883c.cw0536000, accessed March 2015.

186-b *Sketch No. 4 of Roads between HQ 10th Army Corps and Swift Creek on the South with Enemy's 2nd Line of entrenchments around Drewry's Bluff on the North.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883c.cw0536000, accessed March 2015.

Espey, Huston & Associates

1996 *Results of a Facility-Wide Cultural Resources Survey, Richmond International Airport, Henrico County, Virginia*. Espey, Huston & Associates, Newport News, Virginia.

Federal Highway Administration, U.S Department of Transportation, and Virginia Department of Highways and Transportation

1981 *Springfield Bypass and Extension, Fairfax County, Virginia. Technical Report: Cultural Resources*. Virginia Department of Transportation, Richmond, Virginia.

Ferland, Sara C., and Dane Magoon

2007 *Phase I Cultural Resources Survey of the Proposed Battery Park Emergency Overflow Relief Pipeline Alignment, City of Richmond, Virginia*. Cultural Resources, Inc., Richmond, Virginia.

Fiedel, Stuart J.

1996 *Phase I Archaeological Survey of the Proposed Lorton Pumpover Project, Fairfax County, Virginia*. John Milner Associates, Inc., Alexandria, Virginia.

Frost, David M., and Carol D. Tyer

2011 *Phase I Cultural Resources Survey of Atlee Road Extended, Hanover County, Virginia*. Circa~Cultural Resource Management, LLC, Williamsburg, Virginia.

Galke, Laura J., J. Mark Wittkofski, Sue Ellen Kozarek, Ruth G. Myers, Orloff G. Miller, W. Kevin Pape, E. Jeanne Harris, Douglas J. Harnsberger, Catherine Farmer, and Paulette Roberts

1993 *Phase I Cultural Resources Investigations of Proposed 15.8-Mile Elmont to Old Church Overhead Transmission Line, Hanover and Henrico Counties, Virginia*. Gray and Pape, Inc., Richmond, Virginia.

Gallivan, Martin D.

1997 Spatial Analysis of John Smith's 1612 Map of Virginia. *Journal of the Middle Atlantic Archaeology* 13:145–160.

Gardner, William M., Gwen J. Hurst, and John P. Mullen

2002 *Phase I-III Archaeological Investigations of 4840 Eisenhower Avenue, Alexandria, Virginia.* Thunderbird Archeological Associates, Inc, Woodstock, Virginia.

Geier, Clarence R., Stephen Lotts, Eric Mink, and Karen Early

2004 *An Overview and Assessment of Archaeological Resources and Landscapes within Lands Managed by Fredericksburg & Spotsylvania National Military Park: Volume II: the Battlefields of Chancellorsville and Fredericksburg And the Associated National Park Properties of "Stonewall" Jackson Shrine and Chatham*. Department of Sociology and Anthropology, James Madison University, Harrisonburg, Virginia.

Gerlach, Jonathan, Cheryl A. Holt, Susan A. Lebo, and Teresa E. Ossim

1983 *Phase I Archaeological Investigation of Segment J2 of the Franconia-Springfield Metrorail Line, City of Alexandria and Fairfax County, Virginia*. Soil Systems Division, Professional Service Industries, Inc., Alexandria, Virginia.

Godwin, Peter, Joshua Roth, Michael Hornum, and Scott Meacham

2001 *Phase I Archaeological Survey for the Proposed Quantico Creek Railroad Bridge Project, Prince William County, Virginia*. R. Christopher Goodwin & Associates, Inc., Frederick, Maryland.

González, Marco A., Andrew H. Deci, Melissa L. Celii, Erik F. Nelson, and Michael L. Carmody

2007 *Phase I Cultural Resource Survey of the Charles City Road Widening Project, Henrico County, Virginia*. Dovetail Cultural Research Group, Fredericksburg, Virginia.

Gossett, Tanya M., and H. Bryan Mitchell

2007 *Report to Congress on the Historic Preservation of Revolutionary War and War of 1812 Sites in the United States*. American Battlefield Protection Program, National Park Service, United States Department

Hall, Bill W., Loretta Lautzenheiser, John P. Cooke, Mary Ann Holm, and N. Carolyn McCollum

2001 *Cultural Resources Identification Survey (Phase I) Improvements to US 1 from Stafford County Line to Route 123, Prince William County, Virginia, Project A*. Coastal Carolina Research, Inc., Tarboro, North Carolina.

Hantman, Jeffrey L.

1985 *The Archaeology of Albemarle County*. University of Virginia, Department of Anthropology, Archaeological Survey Monograph No. 2. Charlottesville, Virginia.

Hardegan, Steven E., and Ryan Kimberley

2006 *Phase I Archaeological Survey Battery Park Trunk Sewer Project, City of Richmond, Virginia*. FEMA Region III, Philadelphia, Pennsylvania.

Higgins, Thomas F. III

2001 *Archaeological Identification Survey of the Proposed Route 677 Project, Stafford County, Virginia.* William and Mary Center for Archaeological Research, Williamsburg, Virginia.

Higgins, Thomas F. III, Charles M. Downing, Donald W. Linebaugh, Antony F. Opperman, E. Randolph Turner, III

1995 *Archaeological Investigations of Site 44CF7, Falling Creek Ironworks, and Vicinity, Chesterfield County, Virginia*. William and Mary Center for Archaeological Research, Williamsburg, Virginia.

Hoffman, Paul J.

1864 *A map of Fairfax County, and parts of Loudoun and Prince William Counties, Va., and the District of Columbia*. Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3851s.cwh00030, accessed March 2015.

Holt, Cheryl A., Teresa E. Ossim, Susan E. Lebo

1983 *Phase I Archaeological Investigation of the H-1 Route of the Franconia-Springfield Metrorail Line, Fairfax County, Virginia*. Soil Systems, Inc. Alexandria, Virginia.

Hotchkiss, Jedediah

1867 *Thirty five miles around Richmond, Va. / compiled by Jed. Hotchkiss, Top. Engineer, Staunton, Virginia, from the surveys of the C.S. Engineers, U.S. Engineers, and the U. States Coast Survey.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884r.cw06310001, accessed March 2015.

1891–1893 *Sketch of the battles of Chancellorsville, Salem Church, and Fredericksburg, May 2, 3, and 4, 1863 / prepared by order of General R. E. Lee, by Jed. Hotchkiss, Topogl. Engr. 2d Corps, A.N.V.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.ndlpcoop/glva01.lva00054, accessed March 2015.

Hunter, Bruce, A., and James R. Cromwell

1989 *A Phase I Cultural Resource Survey of the Proposed Widening of Route 642, Fairfax County, Virginia*. James Madison University Archaeological Research Center, Harrisonburg, Virginia.

Hunter, Robert R., Jr., and Dennis B. Blanton

1990 *A Phase I Cultural Resources Survey of the Proposed Eastern Henrico Lateral Pipeline, Hanover, Chesterfield & Henrico Counties, Virginia*. William and Mary Archaeological Project Center, The College of William and Mary, Williamsburg, Virginia.

Hunter, Robert R., Jr., and Gary G. Robinson

1989 *A Phase I Cultural Resource Survey of the Proposed Route 613 Project, Fairfax County, Virginia.* William and Mary Archaeological Project Center, The College of William and Mary, Williamsburg, Virginia.

Huston, Clifton A., and Charles M. Downing

1994 *An Archaeological Assessment and Survey of Marine Corps Base, Quantico, Fauquier, Prince William, & Stafford Counties, Virginia*. William and Mary Center for Archaeological Research, Williamsburg, Virginia.

James, Tiffany A., Jennifer Stewart, Bill Hall, and Loretta Lautzenheiser

2007 *A Cultural Resources Survey of Proposed Improvements to Route 5 in the City of Richmond, Virginia.* Coastal Carolina Research, Inc., Tarboro, North Carolina.

Johnson, Mike

1980 *Preliminary Cultural Resource Reconnaissance Report, Route 1-Occoquan River Bridge, Fairfax County, Virginia*. Fairfax County, Virginia.

Karell Archaeological Services

1983 *Springfield Bypass & Extension Fairfax, County, Virginia. Technical Report: Cultural Resources Phase II Investigation*. Arlington, Virginia.

Kellogg, Douglas C.

1987 Statistical Relevance and Site Locational Data. *American Antiquity* 52 (1):143–150.

Kiser, R. Taft, Robin L. Ryder, Lynwood Barhurst, Mary Ellen, Bushy, and Douglas C. McLearen

1996 *Phase I Archaeological Survey of the Mount Pleasant Subdivision South in Stafford County, Virginia*. Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

Klein, Michael

1995 Predicting Prehistoric Settlement in the Northern Neck of Virginia: The Richmond County Assessment Survey Methodology. *North American Archaeology* 16(4):317–342.

Klein, Mike, Marco A. González, and Michael L. Carmody

2012 *Archaeological Assessment of the I-64 Peninsula Study Area from I-664 in Hampton to I-95 in Richmond, Virginia*. Report prepared by Dovetail Cultural Resource Group, Inc., Fredericksburg, Virginia.

Kohler, Timothy A.

1988 Predictive Locational Modeling: History and Current Practice. In *Quantifying the Present and Predicting the Past: Theory, Method, and Application of Archaeological Predictive Modeling,* ed. by W. J. Judge and L. Sebastian, pp. 19–59. USDI Bureau of Land Management, Denver, Colorado.

Koski-Karell, Daniel, and Louis Ortiz

1987 *Phase I Cultural Resource Reconnaissance Survey for the Interstate-95 HOV Lane Project, Fairfax and Prince William Counties, Virginia*. Karell Archaeological Services, Arlington, Virginia.

Kvamme, Kenneth L.

1988 Using Existing Archaeological Survey Data for Model Building. In *Quantifying the Present and Predicting the Past: Theory, Method, and Application of Archaeological Predictive Modeling*, edited by W. James Judge and Lynne Sebastian, pp. 301–323. USDI Bureau of Land Management, Denver, Colorado.

Kvamme, Kenneth L. and Kohler, Timothy A.

1988 Geographic Information Systems: Technical Aids for Data Collection, Analysis, and Display. In *Quantifying the Present and Predicting the Past: Theory, Method, and Application of Archaeological Predictive Modeling*, edited by W. James Judge and Lynne Sebastian, pp. 493–547. USDI Bureau of Land Management, Denver, Colorado.

LaBudde, Gregory

2011 *Terrestrial and Underwater Archaeological Survey of the Proposed Large Component Transport Route, King William, Hanover, and Louisa Counties, Virginia*. The Louis Berger Group, Inc., Richmond, Virginia.

Louis Berger & Associates, Inc.

1991 *Phase IB Cultural Resource Survey of the Clermont Avenue Interchange, City of Alexandria, Fairfax County, Virginia*. The Cultural Resource Group, Louis Berger and Associates, Inc., East Orange, New Jersey.

2005 *Cultural Resource Survey of Route 30 (Kings Dominion Boulevard/Dawn Boulevard) State Fair Project, Caroline and Hanover Counties, Virginia*. The Louis Berger Group, Inc., Richmond, Virginia.

Luccketti, Nicholas M., and Martha W. McCartney

1993 *Cultural Resources Overview for Virginia Army National Guard Army Aviation Support Facility, Henrico County, Virginia*. James River Institute for Archaeology, Inc., Williamsburg, Virginia.

Lukezic, Craig

1990 Soils and Settlement Location in 18th Century Colonial Tidewater Virginia. *Historical Archaeology* 24(1):1–17.

Magnus, Charles

186- *One hundred & fifty miles around Richmond. 10th ed.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884r.cw06324001, accessed March 2015.

McCormick Taylor

2010 *Phase I Archaeological Identification Survey for the Virginia Railway Express Cherry Hill Third Track Project from Arkendale (CFP 72.0) to Powell's Creek (CFP 83.4) Prince William and Stafford Counties, Virginia*. McCormick Taylor, Glen Allen, Virginia.

McDonald, Bradley

2000 *Phase I Archaeological Investigations Along a Sewer Line Connecting P.S. Number 5 to the Proposed Totopotomoy Wastewater Treatment Plant, Hanover County, Virginia*. Gray and Pape, Inc., Richmond, Virginia.

McFaden, Leslie D.

1990 *A Phase I Cultural Resource Survey of the Proposed First Street Bridge Replacement, City of Richmond, Virginia.* William and Mary Archaeological Project Center, Department of Anthropology, The College of William and Mary, Williamsburg, Virginia.

McIver, Robert D.

1985 *A Phase I Archeological Evaluation of the Proposed Construction Right-Of –Way for Route 288, Chesterfield County, Virginia*. James Madison University Archeological Research Center, Harrisonburg, Virginia.

McLearen, Douglas C., and Beverly J. Binns

1992 *Phase I Archaeological Survey of Carter Park, Town of Ashland, Virginia.* Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

McLearen, Douglas C., Mary Ellen Bushy, and Beverly J. Binns

1992 *Phase I Cultural Resources Survey of Proposed Highway Improvements to Route 218, Stafford County, Virginia*. Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

McLearen, Douglas C., and Christopher P. Egghart

1996 *Phase I Archaeological Survey of a Gravity Sewer Line, Force Main and Pump Station Location in Eastern Henrico County, Virginia*. Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

McPherson, James M.

1988 *Battle Cry of Freedom: The Civil War Er*a. Oxford University Press, New York, New York.

Mead, F. F.

1861 *Map of part of Fairfax County, Virginia, south of the city of Alexandria and the Orange and Alexandria Railroad] / F. F. Mead, Lt. Co. I, 16th N.Y.V. Del., Aug. 30th 1861*. Library of Congress, Geography and Maps Division,

Washington, D.C. Electronic document, ttp://hdl.loc.gov/loc.gmd/g3883f.cw0536400, accessed March 2015.

Michler, Nathaniel

1867a *Bermuda Hundred. [1864-1865] / From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers and Bvt. Lieut. Col. P. S. Michie, Capt. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. 1867.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884b.cw0525b40, accessed March 2015.

1867b *Cold Harbor. [June 1-3, 1864] From surveys under the direction of B'v't. Brig.-Gen. N. Michler, Maj. of Engineers, and B'v't. Lieut.-Col. P. S. Michie, Capt. of Engineers. 1867.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884o.cw0531000, accessed March 2015.

1867c N*orth Anna. [May 1864] From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed and drawn by Maj: J. E. Weyss, assisted by F. Theilkuhl, J. Strasser & G. Thompson. Photolith. by the N.Y. Lithographing, Engraving & Printing Co., Julius Bien, Supt. 1867.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3882n.cw0590100, accessed March 2015.

1867d *Richmond [1862-1865] / from surveys under the direction of Bvt. Brig. Gen. N., Michler, Maj. of Engineers and Bvt. Lieut. Col. P. S. Mitchie, Capt. of Engineers, by command Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj: J. E. Weyss, assisted by F. Theilkuhl, J. Strasser & G. Thompson. Photolith. by the N.Y. Lithographing, Engraving & Printing Co., Julius Bien, Supt.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884r.cw0632800, accessed March 2015.

Mouer, L. Daniel

1989 *Phase I Cultural Resource Study of the Proposed Replacement of the Stonewall Jackson Bridge, City of Richmond, Virginia*. Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

Mouer, L. Daniel, and Katharine C. Harbury

1989 *Further Archaeological Investigations of Proposed Improvements to King Street, Route 7, City of Alexandria, Virginia.* Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

Mouer, L. Daniel, Robert R. Hunter, Elizabeth G. Johnson, Lawrence W. Lindberg, and John Saunders

1978 *Archeology in Henrico, Volume 1: Identification and Evaluation of Archaeological and Historic Resources for the Henrico County, Virginia Regional Wastewater System*. Virginia Commonwealth University Archaeological Research Center, Richmond, Virginia.

Mullen, John P., and William P. Barse

2008 *Archeological Investigations Within a Portion of Potomac Avenue and Associated East/West Roads and of 44AX0204, Potomac Yard Property, City of Alexandria, Virginia.* Thunderbird Archeology, a Division of Wetland Studies and Solution, Inc., Gainesville, Virginia.

Mullen, John P., Kathryn Gettings Smith, Evelyn D. Causey, Julia Claypool, and Erik Nelson

2011 *Phase I Cultural Resources Investigations of the ±3.5 Mile Virginia Central Railroad Trail Project, City of Fredericksburg, Virginia*. Thunderbird Archeology, a Division of Wetland Studies and Solution, Inc., Gainesville, Virginia.

O'Donnell, Darby

2004 *A Phase I Archaeological Survey Along the Proposed Lakeside to Strawberry Hill Pipeline, Henrico County, Virginia*. Cultural Resources, Inc. Fredericksburg, Virginia.

Opperman, Antony, Jacqueline Hernigle, and Judith Jobrack

1987 *Phase I Cultural Resources Survey, Warwick Road Improvement, City of Richmond, Virginia.* MAAR Associates, Williamsburg, Virginia.

Outlaw, Alain C., Martha W. McCartney, and Carol Tyrer

1992 *Phase I Archaeological Investigations of Spratt Recycling, Inc. Property, (Schwab Tract), Swans Corner, Caroline County, Virginia*. Espey, Huston, & Associates, Inc., Williamsburg, Virginia.

Peterson, Jane, Kenneth E. Stuck, and Anne S. Beckett

1994 *A Phase I Cultural Resource Survey of the Proposed Route 609 Project, Hanover County, Virginia*. William and Mary Center for Archaeological Research, Williamsburg, Virginia.

Petraglia, Michael D., Catharine B. Toulmin, and Madeleine Pappas

1993 *An Archaeological Survey at the Alexandria Business Center, Alexandria, Virginia*. Engineering-Science, Washington, D.C.

Pfanstiel, Cynthia, Heather Crowl, Rachel Grant, Janet Friedman, and Kevin Mock

1998 *Phase I Archaeological Survey of Legend Properties, Southbridge Community, Cherry Hill, Prince William County, Virginia*. Dames and Moore, Bethesda, Maryland.

Poplar-Jeffers, Ira, and Ryan Ward

2006 *Phase I Archaeological Survey of the EZ Cruz Marina, Woodbridge, Prince William County, Virginia.* Virginia Waters and Wetlands, Inc., Warrenton, Virginia.

Potter, Stephen

1993 *Commoners, Tribute, and Chiefs: The Development of Algonquian Culture in the Potomac Valley*. University of Virginia Press, Charlottesville, Virginia.

Rochambeau, Jean-Baptiste-Donatien de Vimeur, compte de

1782a *Amerique campagne: Camp a Alexandrie le 17 Juilles es 19 milles de Clochester*. Library of Congress, Geography and Maps Division, Washington, D. C. Electronic resource, http://memory.loc.gov/ammem/collections/rochambeau-maps/index.html, accessed April 2015.

1782b *Amerique campagne: Camp a Garrot's Tavern le 14 Juilles 3 milles de Falmouth…a Peyton's tavern*. Library of Congress, Geography and Maps Division, Washington, D. C. Electronic resource, http://memory.loc.gov/ammem/collections/rochambeau-maps/index.html, accessed April 2015.

Rodgers, Bradley A.

1996 *The 1996 Richmond Ship Dock Archaeological Survey.* Maritime Studies Program, East Carolina University, Greenville, North Carolina.

Rose, Craig

2011 *Potomac Yard Property, City Of Alexandria: Geoarcheological Investigations of a Portion of Landbay G*. Thunderbird Archeology, a Division of Wetland Studies and Solution, Inc., Gainesville, Virginia.

Rupnik, Megan, Kristie Baynard, Stephanie Jacobe, Patti Kuhn, Brad Duplantis, and Eric Voigt

2007 *Archaeological, Architectural and Battlefield Surveys, Southeast High Speed Rail Corridor, Cities of Colonial Heights, Petersburg, and Richmond, and Chesterfield, Dinwiddie, and Henrico Counties, Virginia. Louis Berger Group, Richmond.* The Louis Berger Group, Inc. Richmond, Virginia.

Sebastian, L., and W.J. Judge (editors)

1988 *Quantifying the Present and Predicting the Past: Theory, Method, and Application of Archaeological Predictive Modeling*. U.S. Department of the Interior Bureau of Land Management, Denver.

Salmon, John S.

2001 *The Official Virginia Civil War Battlefield Guide*. Stackpole Books, Mechanicsville, Pennsylvania.

Sanford, Douglas W., Gary N. Stanton, Karen France, and Carter L. Hudgins

1992 *Archaeological and Historical Assessment of Blocks 48 and 49 in Fredericksburg, Virginia*. Center for Historic Preservation, Mary Washington College, Fredericksburg, Virginia.

Selig, Robert A

2006 *Washington-Rochambeau Revolutionary Route*. Electronic resource, http://www.nps.gov/waro/learn/historyculture/washington-rochambeau-revolutionary-route.htm, accessed March, 2015.

2009 *Revolutionary War Route and Transportation Survey in the Commonwealth of Virginia, 1781-1782: An Historical and Architectural Study*. Report sponsored by the Virginia Department of Historic Resources, Richmond, Virginia.

Siener, W. H.

1985 *Charles Yates, The Grain Trade, and Economic Development in Fredericksburg, Virginia, 1750–1810*. Virginia Magazine of History and Biography 93 (4):409–426.

Shelford, Victor E.

1963 *The Ecology of North America*. University of Illinois Press, Urbana, Illinois.

Simpson, Kay

1992 *Phase I Cultural Resource Survey of the Proposed Braddock Road Improvement in the City of Alexandria, Virginia*. The Cultural Resource Group, Louis Berger and Associates, Inc., Richmond, Virginia.

Smith, John

1624 *Virginia discovered and discribed by Captayn John Smith, 1606*. Library of Congress Geography and Map Division Washington, D.C. (g3880 ct000377). Electronic document, http://memory.loc.gov/cgi-bin/query/h?ammem/gmd:@field%28NUMBER+@band%28g3880+ct000377%29%29, accessed March 2015.

Smith, Joshua

1889 *Map of the main battlefields, routes, camps and head qrs., in the Gettysburg, Wilderness and Appomattox campaigns of the Civil War in U.S. Compiled and published by JoshuaSmith, 1st Lieut., Co. K, 20th Pa.' Cav., 2nd Brig., 1st Div., Sheridan's command. Chicago, c1899.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3824g.cw0512000, accessed March 2015.

Soil Conservation Service (SCS) Survey Staff

2013 Natural Resources Conservation Service, United States Department of Agriculture. *Soil Series Classification Database*. Electronic document, http://soils.usda.gov/soils/technical/classification/scfile/index.html, accessed March 2015.

Stevens, J. Sanderson, Donna Seifert, and Joseph Balicki

1990 *Phase I Archaeological Investigation at the Site of the Proposed Robinson Marine Terminal Warehouse Possum Nose, Prince William County, Virginia*. John Milner Associates, Inc., Alexandria, Virginia.

Underwood, John R.

2003 *An Archaeological Identification Survey of the Proposed Route 629 Project, Stafford County, Virginia*. William and Mary Center for Archaeological Research, Williamsburg, Virginia.

United States Army, Corps of Engineers

186-a *Central Virginia showing Lieut. Gen'l. U.S. Grant's Campaign and marches of the armies under his command in 1864-65 Engineer Bureau, War Dept. Prepared by order of the Secretary of War for the officers of the U.S. Army under the command of Lieut. Gen. U.S. Grant.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3881s.cw0515000, accessed March 2015.

186-b *Detailed map of part of Virginia From Alexandria to the Potomac River above Washington, D.C.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3883a.cw0523000, accessed March 2015.

United States Geological Survey

1889 *Fredericksburg, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1891 *Mount Vernon, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1892 *Fredericksburg Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1894a *Bermuda Hundred, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1894b *Fredericksburg, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1894c *Mount Vernon, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1894d *Richmond, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1897 *Mount Vernon, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1900 *Maryland and Washington, D.C. 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1913 *Indian Head, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1918a *Doswell, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1918b *Indian Head, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1920 *King William, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1923 *Indian Head, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1925 *Doswell, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1926 *Stafford, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1931a *Stafford, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1931b *Topographic map of Fredericksburg and vicinity, Virginia, showing battlefields Surveyed in cooperation with the War Department and the Fredericksburg and Spotsylvania County Battlefields Memorial Commission. Topography by G. E. Sisson, Paul Blake, and Benjamin Munroe. Control by U.S. Geological Survey and U.S. Coast and Geodetic Survey. Surveyed in 1931.* Library of Congress, Geography and Maps Division, Washington, D.C. Electronic document, http://hdl.loc.gov/loc.gmd/g3884f.cw0556000 , accessed March 2015.

1938a *Seven Pines, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1938b *Yellow Tavern, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1943 *Richmond, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1944a *Chester, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1944b *Quantico, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1944c *Stafford, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1949 *Quantico, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1951 *Ruther Glen, Virginia 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

1957 *Washington, D.C. 7.5-Minute Topographic Quadrangle*. The National Map: Historical Topographic Map Collection. Electronic document, http://nationalmap.gov/historical/, accessed March 2015.

Virginia Department of Historic Resources (DHR)

2011 *Guidelines for Conducting Historic Resources Survey in Virginia*. Virginia Department of Historic Resources, Richmond, Virginia.

Weed, Carol S., and Robert D. Clarke

1999 *Archaeological Survey of Three Pre-Designated Segments along Route 627 (Meadowbridge Road), Henrico and Hanover Counties, Virginia*. Gray and Pape, Inc., Richmond, Virginia.

Williams, Martha R., David Soldo, and Katherine Grandine

2003 *Phase I Cultural Resource Survey of the United States Postal Service Memorial Station Branch Property, Alexandria, Virginia*. R. Christopher Goodwin & Associates, Inc., Frederick, Maryland.

Winter, Susan E.

1994 Mill Settlement Patterns Along the Antietam Creek Drainage, Washington County, Maryland. In *Settlement Patterning in Historical Archaeology: Selected Studies of Settlement*, edited by Donald W. Linebaugh and Gary G. Robinson, pp. 65–90. Occasional Papers in Archaeology No. 2, William and Mary Center for Archaeological Research, Williamsburg, Virginia.