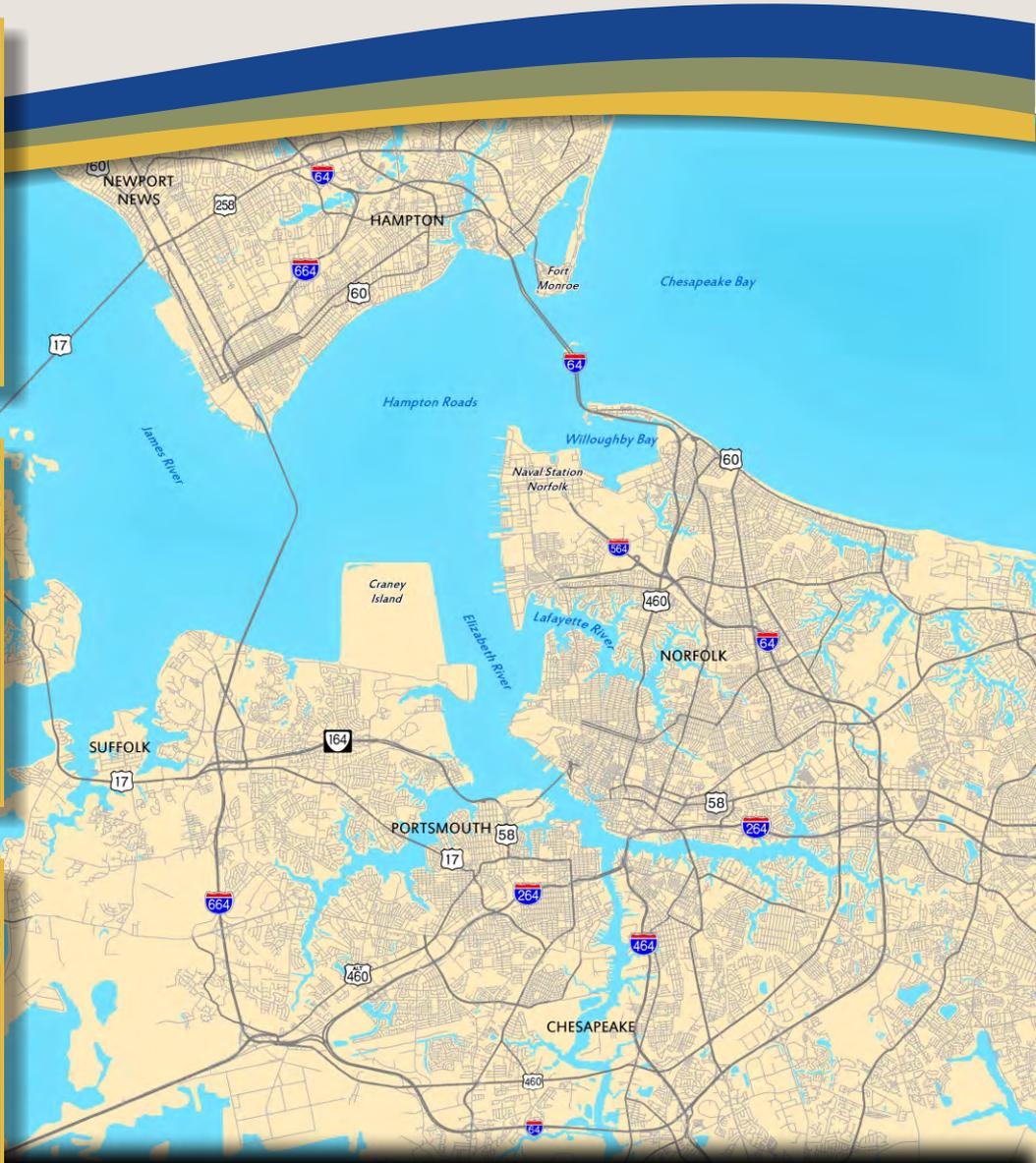


# Archaeological Assessment

Prepared in Support of the Supplemental Environmental Impact Statement



# ARCHAEOLOGICAL ASSESSMENT

## **HRC** **SEIS** Hampton Roads Crossing Study SEIS



Prepared in support of the Supplemental Environmental Impact Statement

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## ABSTRACT

Stantec Consulting Services, Inc. (Stantec) conducted an archaeological assessment for four build alternatives (A, B, C, & D) for the proposed Hampton Roads Crossing Study. For the purposes of analyzing the four build alternatives in the SEIS, 500-foot-wide Study Area Corridors have been delineated for each alternative. The Study Area Corridors extend 250 feet on either side of the centerlines of I-64, I-564, I-664, VA 164 and proposed new alignments. Areas around the interchanges included in the Study Area Corridors vary based on the footprint of proposed modifications. For the purposes of Section 106, the Study Area Corridor for each alternative constitutes the Area of Potential Effects (APE) for Direct Effects, i.e., the area in which there is potential for direct impacts on historic properties to occur.

The archaeological assessment included three tasks: identification of previously recorded archaeological resources and limits of previous archaeological survey within the project APE; identification of areas that may require or warrant additional survey during future stages of the project; and determination of the likelihood for the presence of significant archaeological resources within the APE that may be extraordinarily complex, contain human burials, or would be important chiefly for reasons other than information potential.

Twenty-seven previous surveys fall within or cross the current APE, and 51 previously recorded archaeological sites have been documented within or in close proximity to the APE for Direct Effects. Additional work is recommended for sites 44CS0042, 44HT0009, 44HT0090, and 44NR0015 if the sites cannot be avoided. Site 44SK0194 is immediately adjacent to the APE for Direct Effects but is well outside the LOD at the I-664/I-64 interchange. Several areas are recommended for additional archaeological survey based on lack of previous survey or high potential for intact archaeological deposits. These areas include: a small section of open land on the east side of the intersection of I-64/I-564 in Norfolk near Forest Lawn Cemetery; a small section of wooded land near the southern terminus of the alternatives at the I-64/I-264 interchange in Bowers Hill; and where the alternative comes on land in Suffolk.

Limited Phase I level underwater archaeological survey is recommended for Alternatives C and D from the shoreline in Newport News southeast for a distance of approximately 0.54-mile (3900 feet). The survey corridor employed during the 1999 study largely encompasses the APE for Direct Effects for the current assessment but in this location the deviation may warrant additional work. Should Alternatives A, B, or D be developed, further investigation of the 12 underwater targets identified during the 1999 survey (Cox 1999) within the water-based portions of Candidate Build Alternatives 1 and 2 at the HRBT would be needed as well as further investigation of 44NR0015.

Five cemeteries are located within or near the APE that may need additional delineation pending the final project plans. The cemeteries include 44CS0093, 44CS0094, Veterans' Cemetery in Hampton (Hampton National Cemetery), the Forest Lawn Cemetery in Norfolk, and newly identified cemetery, VDHR #124-5238 in Portsmouth. Two non-traditional resources are also located within the APE for the HRCS SEIS and include the Captain John Smith Chesapeake National Historic Trail and the Washington Rochambeau Revolutionary Route National Historic Trail. The results of the assessment suggest that the potential for the discovery of significant sites associated with these trails is low.

## 1. INTRODUCTION

### 1.1 PROJECT DESCRIPTION

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA) as the lead federal agency, is preparing a Supplemental Environmental Impact Statement (SEIS) for the Hampton Roads Crossing Study (HRCS). The Study is located in the cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Suffolk, Virginia. The SEIS re-evaluates the findings of the 2001 HRCS Final Environmental Impact Statement (FEIS) and Record of Decision (ROD). The three alternatives retained for analysis in the 2001 FEIS, as well as input received from the public during initial scoping for the SEIS, were used to establish the Study Area Corridors shown in **Figure 1**. The purpose and need of the SEIS is summarized below.

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, FHWA is preparing an SEIS because of the time that has lapsed since the 2001 FEIS and new information indicating significant environmental impacts not previously considered. The SEIS, prepared in accordance with the implementing regulations of NEPA (23 CFR §771.130), is intended to aid in ensuring sound decision-making moving forward by providing a comparative understanding of the potential effects of the various options.

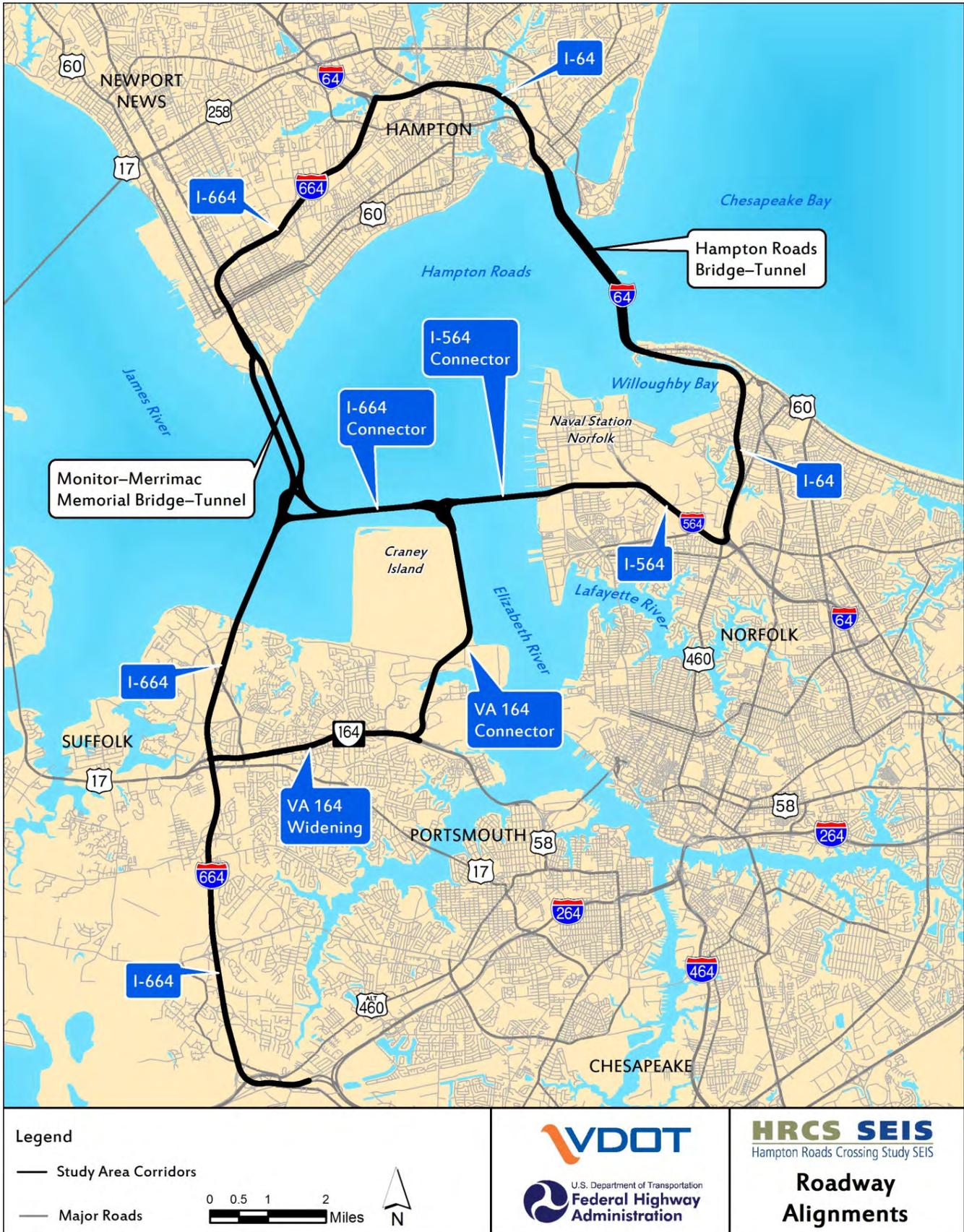
The purpose of this Technical Report is to provide the results of the Archaeological Assessment conducted in support of the Project. Information in this report, described below, will support discussions presented in the SEIS and coordination of the HRCS pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. 306108) with the State Historic Preservation Officer (SHPO) and other consulting parties. The Director of the Virginia Department of Historic Resources (VDHR) serves as the Virginia SHPO. Section 1 of this report describes the preliminary alternatives for which potential impacts will be evaluated and provides an overview of the methodology used. This is followed by the results of the first task of the assessment, background research, including a discussion of previously conducted archaeological and cultural resources surveys, previously recorded archaeological resources for each alternative, battlefield resources, and summaries of two national historic trails. Section 3 summarizes the historic context summarized for purposes of setting the stage for the assessment of archaeological potential within the APE for Direct Effects and is followed by a summary of the environmental and current conditions present within the APE for Direct Effects including an assessment of conditions for each alternative. The final section, Section 5 presents the results of the assessment of archaeological potential including the likelihood for the presence of significant archaeological resources within the APE that may be extraordinarily complex, contain human burials, or would be important chiefly for reasons other than information potential as well as a recommendation of areas within the APE for Direct Effects that may require additional, future, archaeological survey and assessment.

#### 1.1.1 Purpose and Need

The purpose of the HRCS SEIS is to relieve congestion at the I-64 Hampton Roads Bridge-Tunnel (HRBT) in a manner that improves accessibility, transit, emergency evacuation, and military and goods movement along the primary transportation corridors in the Hampton Roads region, including the I-64, I-664, I-564, and VA 164 corridors. The HRCS will address the following needs (in the order of presentation in Chapter 1 of the Draft SEIS):

- Accommodate travel demand – capacity is inadequate on the Study Area Corridors, contributing to congestion at the HRBT;

Figure 1: HRCS Study Area Corridors



- Improve transit access – the lack of transit access across the Hampton Roads waterway;
- Increase regional accessibility – limited number of water crossings and inadequate highway capacity and severe congestion decrease accessibility;
- Address geometric deficiencies – insufficient vertical and horizontal clearance at the HRBT contribute to congestion;
- Enhance emergency evacuation capability – increase capacity for emergency evacuation, particularly at the HRBT;
- Improve strategic military connectivity – congestion impedes military movement missions; and,
- Increase access to port facilities – inadequate access to interstate highway travel in the Study Area Corridors impacts regional commerce.

**1.1.2 Alternatives**

Five alternatives, including the No-Build Alternative, are under consideration for the Draft SEIS and are assessed in this Technical Report. The proposed limits of the four Build Alternatives are shown on **Figure 2**. Each Technical Report and Memorandum prepared in support of the Draft SEIS assesses existing conditions and environmental impacts along the Study Area Corridors (**Figure 1**) for each alternative. Each alternative is comprised of various roadway alignments, used to describe the alternatives and proposed improvements, shown on **Figure 3**.

The No-Build Alternative

This alternative includes continued routine maintenance and repairs of existing transportation infrastructure within the Study Area Corridors, but there would be no major improvements.

Alternative A

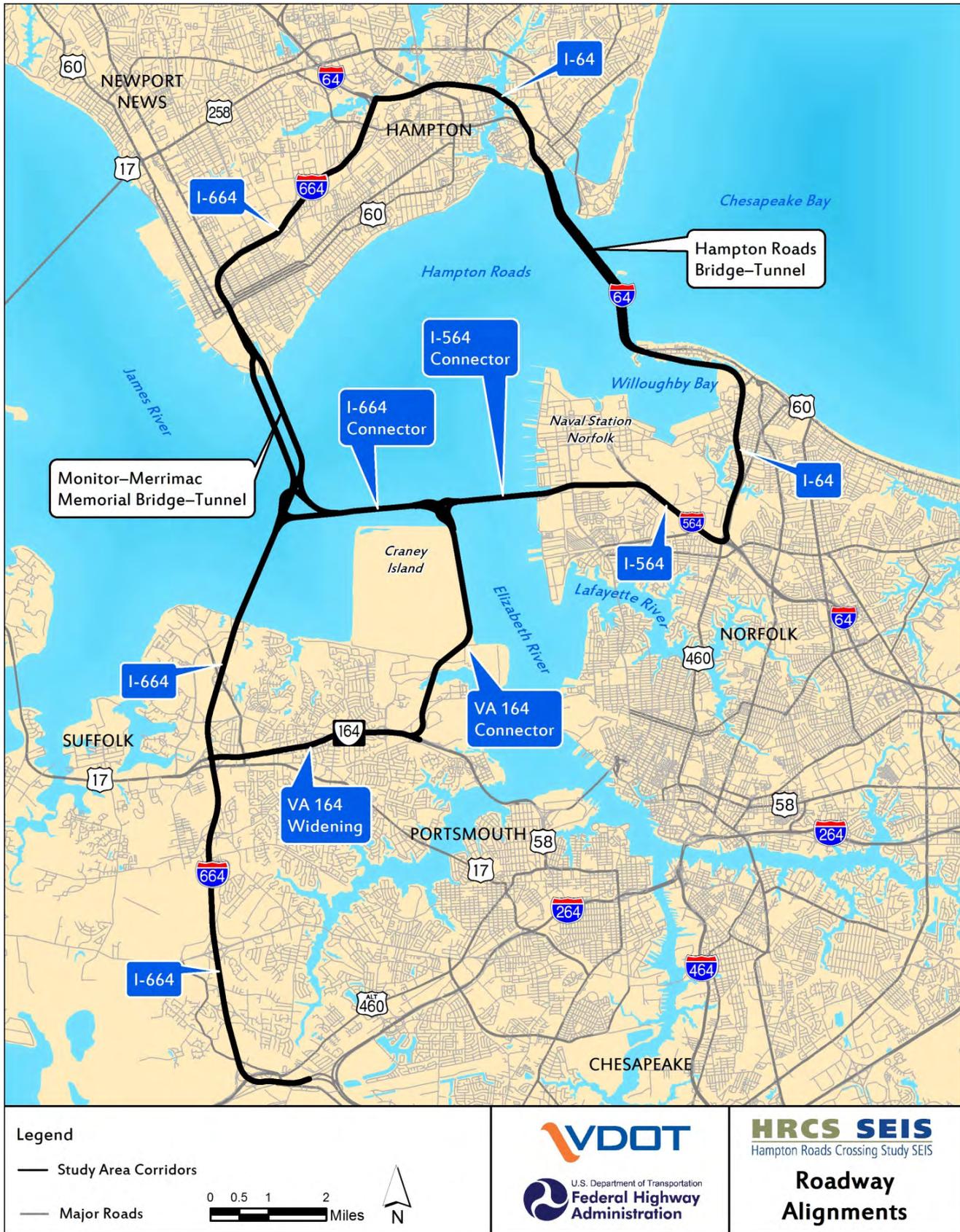
Alternative A begins at the I-64/I-664 interchange in Hampton and creates a consistent six-lane facility by widening I-64 to the I-564 interchange in Norfolk. A parallel bridge-tunnel would be constructed west of the existing I-64 HRBT. During the public review of the HRBT DEIS, there was a clear lack of public or political support for the level of impacts associated with any of the build alternatives. Specifically, potential impacts to the historic district at Hampton University, Hampton National Cemetery, and the high number of displacements were key issues identified by the public, elected officials, and University and Veterans Affairs officials. Given this public opposition, a Preferred Alternative was not identified and the study did not advance. On August 20, 2015, FHWA rescinded its Notice of Intent to prepare the HRBT DEIS, citing public and agency comments and concerns over the magnitude of potential environmental impacts to a variety of resources, such as impacts to historic resources as well as communities and neighborhoods. Consequently, VDOT and FHWA have committed that improvements proposed in the HRCS SEIS to the I-64 corridor would be largely confined to existing right-of-way. To meet this commitment, Alternative A considers a six-lane facility. Alternative A lane configurations are summarized in **Table 1**.

**Table 1: Alternative A Lane Configurations**

Roadway Alignments	Existing Lanes	Proposed Lanes
I-64 (Hampton)	4-6	6
I-64 (HRBT and Norfolk)	4	6



Figure 3: Roadway Alignments



Alternative B

Alternative B includes all of the improvements included under Alternative A, and the existing I-564 corridor that extends from its intersection with I-64 west towards the Elizabeth River. I-564 would be extended to connect to a new bridge-tunnel across the Elizabeth River (I-564 Connector). A new roadway (VA 164 Connector) would extend south from the I-564 Connector, along the east side of the Craney Island Dredged Material Management Area (CIDMMA), and connect to existing VA 164. VA 164 would be widened from this intersection west to I-664. Alternative B lane configurations are summarized in **Table 2**.

**Table 2: Alternative B Lane Configurations**

Roadway Alignments	Existing Lanes	Proposed Lanes
I-64 (Hampton)	6	6
I-64 (HRBT and Norfolk)	4	6
I-564	6	6
I-564 Connector	none	4
VA 164 Connector	none	4
VA 164	4	6

*Note: The I-564 Intermodal Connector (IC) project is separate from HRCS that lies between the I-564 Connector and I-564. It would be constructed regardless of whether the HRCS improvements are made and therefore is included under the No-Build Alternative and is not listed with other proposed improvements.*

Alternative C

Alternative C includes the same improvements along I-564, the I-564 Connector, and the VA 164 Connector that are considered in Alternative B. This alternative would not propose improvements to I-64 or VA 164 beyond the VA 164 Connector. Alternative C includes dedicated transit facilities in specific locations. DRPT completed a study in November 2015 that recommended high frequency bus rapid transit (BRT) service in a fixed guideway or in a shared high occupancy vehicle (HOV) or high occupancy toll (HOT) lanes (DRPT, 2015). Based on that recommendation, for the purposes of this Draft SEIS, transit assumes Bus Rapid Transit (BRT). In the Final SEIS, transit could be redefined or these lanes may be used as managed lanes. Alternative C converts one existing HOV lane in each direction on I-564 in Norfolk to transit only. The I-564 Connector and the I-664 Connector would be constructed with transit only lanes. This alternative also includes widening along I-664 beginning at I-664/I-64 in Hampton and continuing south to the I-264 interchange in Chesapeake. One new transit lane is included along I-664 between I-664/I-64 in Hampton and the new interchange with the I-664 Connector. Alternative C lane configurations are summarized in **Table 3**.

**Table 3: Alternative C Lane Configurations**

Roadway Alignments	Existing Lanes	Proposed Lanes
I-664 (from I-64 to the proposed I-664 Connector)	4-6	8 + 2 Transit Only
I-664 (from the proposed I-664 Connector to VA 164)	4	8
I-664 (from VA 164 to I-264)	4	6
I-564	6	4 + 2 Transit Only
I-564 Connector	none	4 + 2 Transit Only
VA 164 Connector	none	4
I-664 Connector	none	4 + 2 Transit Only

*Note: The I-564 IC project is a separate project from HRCS that lies between the I-564 Connector and I-564. It would be constructed regardless of whether the HRCS improvements are made and therefore is included under the No-Build Alternative and is not listed with other proposed improvements.*

Alternative D

Alternative D is a combination of the sections that comprise Alternatives B and C. Alternative D lane configurations are summarized in **Table 4**.

**Table 4: Alternative D Lane Configurations**

Roadway Alignments	Existing Lanes	Proposed Lanes
I-64 (Hampton)	4-6	6
I-64 (HRBT and Norfolk)	4	6
I-664 (from I-64 to VA 164)	4-6	8
I-664 (from VA 164 to I-264)	4	6
I-664 Connector	None	4
I-564	6	6
I-564 Connector	none	4
VA 164 Connector	none	4
VA 164	4	6

*Note: The I-564 IC project is a separate project from HRCS that lies between the I-564 Connector and I-564. It would be constructed regardless of whether the HRCS improvements are made and therefore is included under the No-Build Alternative and is not listed with other proposed improvements.*

**1.1.3 Operationally Independent Sections**

Given the magnitude and scope of the alternatives, it is expected that a Preferred Alternative would be constructed in stages or operationally independent sections (OIS). An OIS is a portion of an alternative that could be built and function as a viable transportation facility even if other portions of the alternative are not advanced. The OIS are comprised of various roadway alignments and were developed by identifying sections of roadway improvements that if constructed, could function independently.

**1.2 METHODOLOGY**

For the purposes of analyzing the four build alternatives in the SEIS, 500-foot-wide Study Area Corridors have been delineated for each alternative. The Study Area Corridors extend 250 feet on either side of the centerlines of I-64, I-564, I-664, VA 164 and proposed new alignments (see **Figure 1**). Areas around the interchanges included in the Study Area Corridors vary based on the footprint of proposed modifications. For the purposes of Section 106, the Study Area Corridor for each alternative constitutes

the Area of Potential Effects (APE) for Direct Effects, i.e., the area in which there is potential for direct impacts on historic properties to occur.

The 500-foot Study Area Corridors were recognized as so-called “worst-case scenarios” for direct impacts. As work on this SEIS has proceeded, more realistic and narrower Limits of Disturbance (LOD) have been delineated for each alternative. The LOD was developed using the proposed pavement width of the mainline alternatives and the selected roadside design option (open section, guardrail section, retaining wall, or sound wall) based on the existing roadside conditions and constraints. The LOD is conservative and accounts for an additional 30 feet beyond the improvements to accommodate drainage, utilities, erosion and sediment control, and construction easements. In locations where the LOD exceeds the Study Area Corridor, the APE for Direct Effects has been adjusted to match the limits of the LOD.

The archaeological assessment was conducted by Stantec, assisted by Rummel, Klepper & Kahl, LLP (RK&K), with the goal of providing an archaeological overview for the defined APE for the HRCS SEIS alternatives. The archaeological assessment included three tasks: identification of previously recorded archaeological resources and limits of previous archaeological survey within the project APE; identification of areas that may require or warrant additional survey during future stages of the project; and determination of the likelihood for the presence of significant archaeological resources within the APE that may be extraordinarily complex, contain human burials, or would be important chiefly for reasons other than information potential.

### **1.2.1 Background Research**

The research was largely based on information available via the Virginia Department of Historic Resources’ (VDHR) Virginia Cultural Resource Information System (V-CRIS) and GIS-based mapping system. A large amount of historic context has already been prepared for the project APE (Sara et al. 1999; Klein et al. 2011; Magoon and Brady 2012) and served as a basis for the overview. The background research also focused on providing an overview of previous work within the project APE for each build alternative in order to identify previously unsurveyed areas that retain integrity and have the potential to contain significant archaeological resources. This assessment of previous work included the following:

- Review of cultural resource technical studies conducted by VDOT to support the 2011 HRCS Final Environmental Impact Statement (Sara et al. 1999)
- Review of an archaeological assessment conducted by VDOT to support the Draft Environmental Impact Statement for the Hampton Roads Bridge Tunnel (HRBT) Study (Magoon and Brady 2012)
- Review of additional pertinent archaeological studies conducted within the APE for each alternative
- Map overlays generated in ArcGIS illustrating previous survey coverage and the APE
- Review of VDHR GIS data including Phase I level survey coverage layer
- Review of both architectural and archaeological site information and reports housed at the VDHR to identify potential concerns and sites important for reasons other than information potential

### 1.2.2 Current Conditions Assessment

Stantec staff also prepared GIS-based current conditions assessments of the four alternatives which included an overview of environmental context and conditions as well as a review of the current built environment within the APE for each build alternative. The conditions assessment was conducted with the goal of identifying areas within the project APE that retain the potential for the identification of archaeological resources. A review of aerial photography coupled with map overlays showing the change in conditions over time was utilized to meet this project goal. Additionally, the conditions assessment was utilized to illustrate the potential of the project to impact resources already determined potentially significant that have yet to be fully evaluated. The current conditions assessment included the following tasks:

- GIS-based assessment of current conditions utilizing current aerial photography and map overlays
- Review and summation of environmental context prepared during previous investigations in the APE
- Identification of potential areas that retain integrity and may require additional Phase I level survey coverage

### 1.2.3 Assessment of Archaeological Potential

Background research, as noted in Section 1.2.1, conducted as part of the current project included a thorough review of the document entitled *Cultural Resource Survey, Hampton Roads Crossing Study, Candidate Build Alternatives 1, 9, and 2* (Sara et al. 1999) as well as a review of additional information available at the VDHR regarding the level of previous survey coverage for the project APE. Additionally, the VDHR archives were consulted for information on previously recorded archaeological sites present within the APE. The review of the previously conducted cultural resource survey data, coupled with a review of the previously recorded sites identified within the Study Area Corridor as well as a review of the history of the region was synthesized to present an assessment of archaeological site potential within the project APE. This synthesis of information was generated to identify areas within the APE for Direct Effects that may require or warrant additional survey during future stages of the project; and to assess the likelihood for the presence of significant archaeological resources within the APE that may be extraordinarily complex, contain human burials, or would be important chiefly for reasons other than information potential.

Ellen M. Brady was the overall project manager for Stantec. Background research was conducted by Ellen M. Brady with assistance from Stantec Principal Investigators Aimee J. Leithoff and Brynn Stewart, and Project Archaeologists R. Taft Kiser and Donald Sadler. A windshield assessment of the Study Area Corridor was conducted by Stantec Project Archaeologist Donald Sadler. Sean Sutor provided GIS support and prepared project mapping. Additional assistance was provided by RK&K GIS coordinator Ryan Sless, RK&K archaeologists James Kodlick and Jason Shellenhammer, as well as RK&K project managers Eric Almquist and Maggie Berman.

## 2. RESULTS OF THE BACKGROUND RESEARCH

A number of archaeological surveys have been conducted within or near the APE for each of the build alternatives (**Table 5; Appendix A:** Maps 1-13). A review of these studies provides a framework for determining the potential archaeological site types that may be located within the project Study Area and also for evaluating the level of integrity that such resources may contain. This review also documents the level of survey coverage that has already taken place within the current APE to assist with the development of recommendations for additional work during future stages of the project. The largest and most important of the previous surveys conducted, with respect to the HRCS SEIS, is the Phase I level investigation conducted by Louis Berger and Associates (LBA) in 1999 of Candidate Build Alternatives 1, 2 and 9 (now Alternatives A, B, C, and D) on the VDOT's Hampton Roads Crossing Study (Sara et al. 1999). Archaeological surveys conducted before and after the 1999 investigation were also reviewed to assist with recommendations concerning potential future survey that may be necessary. In addition to the review of the cultural resources survey documentation within the APE, limited research associated with two non-traditional resources – the Captain John Smith Chesapeake National Historic Trail (CAJO) and the Washington Rochambeau Revolutionary Route National Historic Trail (WR NHT) - was also conducted.

### 2.1 PREVIOUS ARCHAEOLOGICAL SURVEY WITHIN THE APE

In 1999, Louis Berger & Associates (LBA) (Sara et al. 1999) conducted a Phase I survey of Candidate Build Alternatives (CBA) 1, 2 and 9 (now Alternatives A, B, C, and D) on the behalf of Michael Baker Jr. Inc., for the VDOT's Hampton Roads Crossing Study. To facilitate the presentation of the 1999 survey information the following correlations to the current alternatives are offered: CBA 1 is current Alternative A; CBA 2 is current Alternative B; CBA 9 most closely correlates to current Alternative C; and current Alternative D covers all three of the 1999 CBAs. The combined area covered a total of 225.7 acres (Maps 4-6). During the survey, LBA re-identified twenty-nine previously recorded sites and identified six new sites (44CS0244, 44CS0245, 44CS0246, 44HT0089, 44HT0090, and 44PM0053). Sites 44CS0244 and 44HT0089 were recommended eligible for listing under Criterion D along with 44HT0090 which was recommended eligible under both Criteria A and D. Sites 44CS0245, 44CS0246 and 44PM0053 were not recommended for inclusion in the NRHP. Of the 29 previously recorded archaeological sites, 28 were recommended not eligible for listing on the NRHP. One site, 44CS0092 had been previously recommended eligible for listing on the NRHP, but had been removed at the time of the 1999 survey (Sara et al. 1999:i). Shovel tests, where employed, were generally excavated on 20-meter (66-foot) intervals except for those areas within Naval Station Norfolk. Within the Naval Station, shovel tests were excavated on 15-meter intervals (47-feet) at the request of the Base Archaeologist.

Within current Alternatives A and B (CBA 1 and 2 in the 1999 study) a total of seven survey sections were identified and subjected to systematic shovel testing covering a total of 47.5 acres (**Appendix A:** Maps 14-15). The shovel test survey effort included all areas characterized by minimal ground disturbance or thought to retain the potential for the identification of archaeological sites. A large majority of the APE was characterized by urban, built environment and shovel test survey was not considered necessary. The first survey section commenced at the I-64/I-664 interchange and proceeded east to the Hampton River. This section was described as primarily urban land including artificial banks and berms associated with the construction of I-64 as well as the channelization of Newmarket Creek. Additionally, this section of the APE was and is characterized by dense residential

**Table 5: Previously Conducted Cultural Resources Surveys within the APE**

VDHR Report #	Conducted by (Bibliographic Reference)	Survey Date	Current Alternative Covered by Survey Area	Survey Description/Methodology
CS-010	James Madison University-Archaeological Research Center (Sherwood and MCartney 1987)	1987	C, D	Cultural resources survey for I-664 alternatives. Major highway construction – numerous prehistoric sites and structures.
CS-055	Louis Berger & Associates, Inc. (Sara et al. 1999)	1999	A, B, C, D	Cultural resources survey for HRCS build alternatives 1, 2, & 9. Underwater Phase I survey (Cox 1999) appendix at back of report.
CS-074	Dolan Research, Inc. (Cox 2000)	2000	A, B, C, D	Field Testing and Evaluation of 17 Remote Sensing Targets for HRCS Candidates 9 and 9/2. All 17 targets were identified as modern and no further work was recommended.
CS-076	Coastal Carolina Research (Moore, et al. 2003)	2003	C, D	Archaeological survey of proposed Joliff Road and Red Top to In-Town Lakes water transmission lines in Chesapeake, Virginia. Two previously recorded sites, 44CS0042 and 44CS0079, were revisited. One new site, 44CS0269, was recorded.
HT-023	Virginia Archaeological Services, Inc. (VAS 1989)	1989	A, B, D	6.5 acres; Five areas of habitation or special use. Three late 18th- early 19th century, One prehistoric, One early 20th century. A site number does not appear to have been assigned to this site. This site has been destroyed and the vicinity of the study window is currently a residential development.
HT-045	James River Institute for Archaeology (Magoon et al. 1995)	1994/1995	A, B, D	James River Institute for Archaeology (JRIA) conducted a Phase I survey on 28 acres of land called the Strawberry Banks in the City of Hampton, Virginia. During the survey two sites were re-identified, 44HT0008 and 44HT0009. Both sites were recommended potentially eligible for listing on the NRHP. However, it is unclear if the work performed by JRI was officially reviewed by the VDHR or if concurrence with the recommendation of potential eligibility was received. Methodology included shovel testing at varying intervals not greater than 75-feet.
HT-006	Archaeological Society of Virginia (Koski-Karell 1982)	1979	A, B, D	Underwater remote sensing survey for Route 143 Bridge replacement. Identified 11 Cultural Magnetic Features all of which were recommended Not Eligible for listing on the NRHP.

VDHR Report #	Conducted by (Bibliographic Reference)	Survey Date	Current Alternative Covered by Survey Area	Survey Description/Methodology
NN-050	Geo-Marine, Inc. (Jones and Cox 2008)	2008	C, D	A marine cultural resources remote sensing survey along a 25-mile-long gas pipeline from Newport News, across Hampton Roads Harbor, to Norfolk. 23 magnetic and 9 acoustic targets were identified in the survey. Five were positioned directly over the pipeline. A diving task force dove on four of the targets likely to be directly impacted by the proposed work. None were considered potentially significant.
NN-007	Virginia Research Center for Archaeology (Virginia Research Center for Archaeology 1979)	1979	C, D	Magnetic and acoustic remote sensing and diver investigation of select targets. No significant targets identified.
NR-054	R. Christopher Goodwin & Associates, Inc. (R. Christopher Goodwin & Associates 1997)	1997	A, B, D	44NR31 – highly disturbed and recommended not eligible for listing in the later 2002 report prepared by Goodwin for Naval Station Norfolk.
NR-058	Tidewater Atlantic Research (Watts 1996a)	1996	C, D	23 previously identified magnetic and acoustic targets in the project area were subjected to diver investigation prior to dredging channel to depth of 55 feet. No additional investigation currently recommended, though if project is modified to a deeper depth then target B2-02 should be further investigated.
NR-060	Tidewater Atlantic Research (Watts 1996b)	1996	C, D	4 areas in Anchorage F were systematically surveyed, resulting in 28 anomalies being identified, with 11 considered potentially significant, and worthy of further investigation. An additional target outside of Area A, though not recommended for further work in conjunction with this project, should be investigated if future work impacts that site.
NR-069	R. Christopher Goodwin & Associates, Inc. (Polglase et. al 2002)	2001/2002	A, B, D	Report documented areas of potential within Naval Station Norfolk with recommendations for survey in various areas.
NR-079	Southeastern Archaeological Research, Inc. (SEARCH 2011)	2011	D	Phase I archaeological inventory of medium and high probability areas on Naval Station Norfolk, Naval Support Activity Norfolk, and Lafayette River Annex, in Norfolk, Virginia, and offers an eligibility recommendation for site 44NR0039

VDHR Report #	Conducted by (Bibliographic Reference)	Survey Date	Current Alternative Covered by Survey Area	Survey Description/Methodology
PM-003	Thunderbird Archaeological Associates (Thunderbird 1981)	1981	B, C	Survey methods utilized at the approximately 400-acre project area included a combination of pedestrian survey and subsurface testing. Additional study was conducted on selected sites to further determine their potential significance and the need for further study. Multiple sites were identified, none of which are within the current project APE.
PM-037	Panamerican Consultants, Inc. (Lydecker and Tuttle 2000)	2000	B, C	400 anomalies noted within the project area. Most were single point, not potentially historic sites. 32 clusters of points indicated potentially historic sites, though 17 clusters appeared to be dredge pipes. Other clusters were believed to exhibit trash and debris indications. No further work is recommended.
PM-038	Cultural Resources, Inc. (McDonald and Andria 2003)	2003	B, C	Phase I Archaeological survey conducted in advance of the proposed Maersk terminal in Portsmouth. Shovel tests were excavated on 50-foot intervals throughout the property and several sites were recorded. A total of 3 new sites and 4 previously recorded sites were documented; none of which are located in the vicinity of the current project APE.
PM-039	US Army Construction Engineering Research Laboratory (UACER 1990)	1990	B, C	Remote sensing survey on the north and west sides of Craney Island. Report documented 337 targets, all of which were identified as modern debris.
PM-043	Cultural Resources, Inc. (McDonald 2002)	2002	B, C	Portions of the proposed Marine Container Facility were investigated utilizing subsurface testing at 50-foot intervals as well as pedestrian reconnaissance. A number of previously recorded sites were re-identified and five new sites recorded as part of this effort. Additional work was recommended for Sites 44PM0007, 44PM0008, 44PM0009, 44PM0012 and 44PM0013. None of these sites are located in the vicinity of the current project APE.

VDHR Report #	Conducted by (Bibliographic Reference)	Survey Date	Current Alternative Covered by Survey Area	Survey Description/Methodology
PM-047	Southeastern Archaeological Research, Inc. (Sara et al. 2008)	2008	B, C, D	<p>Two newly identified sites were recorded: 44PM0060 (diverse prehistoric and historic scatter site) and 44PM0061 (multicomponent site). Site 44PM0061 corresponds to the location of the footprint of the original Craney Island prior to land filling activities which began in the early twentieth century. Both prehistoric and historic artifacts were recovered from deposits in an undisturbed field. 44PM0061 recommended for Phase II evaluation. Due to the age of Building 84 and its historic use as a quarantine and military hospital, there is potential for subsurface deposits to yield information regarding late-nineteenth- and early twentieth-century military hospitals. As a result, further testing in the area around Building 84 is recommended. No further archaeological investigations are recommended for the remaining portions of FISC Craney Island as these areas have been disturbed from a century of filling, grading, and construction and maintenance of the naval fuel storage facility.</p>
PM-053	Coastal Carolina Research (Gosser et al 2009)	2009	B, C, D	<p>Cultural Resources Survey for the road and rail corridor. Three sites were identified. Sites 44PM0065 and 44PM0066 are recommended as not eligible for inclusion on the NRHP. Site 44PM0031 was previously recommended as not eligible for inclusion on the NRHP.</p>
PM-075	Dovetail Cultural Resource Group, LLC (Barile et al. 2012)	2012	B, C, D	<p>Cultural Resources survey of a revised route for Candidate Build Alternative 9 (now Build Alternatives B and C) as it crosses the Craney Island Marine Terminal. This survey was designed to compensate for slight design changes in this portion of the alternative and also the proposed access road to the Marine Terminal surveyed by Coastal Carolina Research in 2009.</p>
SK-104	Versar Inc. (Versar 2010)	2010	C, D	<p>Archaeological monitoring services for ongoing military munitions response program activities within the Nansemond River Beachfront area of concern at the former Nansemond Ordnance Depot in Suffolk. No intact archaeological deposits were observed or encountered during these operations, due primarily to prior disturbances through previous utility infrastructure, demolition and shoreline stabilization efforts. No further monitoring is recommended within the 19 sampling grids observed during this investigation.</p>

VDHR Report #	Conducted by (Bibliographic Reference)	Survey Date	Current Alternative Covered by Survey Area	Survey Description/Methodology
SK-031	James River Institute for Archaeology (McSherry and Locketti 1992)	1992	C, D	Three prehistoric procurement sites may date to the Archaic period. A late 19th-early 20th-century agricultural and domestic complex was also located. Neither is recommended for further work.
SK-035	Espey, Huston & Associates (Outlaw 1990)	1990	C, D	18 archaeological sites located, four of which are recommended for further testing. No further work is recommended on the remaining 14.
SK-058	James River Institute for Archaeology (McSherry and McCartney 1997)	1997	C, D	Archaeological survey for the Harborview development area in Suffolk. Included shovel testing at 50-foot intervals and pedestrian reconnaissance where applicable. Additional studies on select sites were also conducted. 176 sites identified over 1500 acres in Harbour View developmental area.
SK-077	James River Institute for Archaeology (Fesler et al. 2004)	2004	C, D	Archaeological survey of the proposed Belleharbour development. Identified three archaeological sites, two locations, and nine isolated finds. Site 44SK0497 is potentially eligible for inclusion on the NRHP. Sites 44SK498 and 44SK499 are not eligible for inclusion on the NRHP. No further archaeological study is recommended.

and commercial development. No subsurface survey was conducted in this area because of the widespread disturbances.

The second survey segment was located in the vicinity of the Hampton Municipal Golf Course (The Woodlands) and the vicinity of Poole’s Grant and was located on both the east and west sides of existing I-64 (Transects BB, Q, R, and S) (**Appendix A:** Map 14). This segment included the investigation of 44HT0062, which has been destroyed by the construction of the Route 143 Bridge, and survey within the Poole’s Grant Subdivision, which has been completely disturbed by the construction of the condominium complex. Also within this study segment was previously recorded Site 44HT0031. Site 44HT0031 had been previously recorded by the Virginia Research Center for Archaeology (a former subunit of the present VDHR) in 1985 and was documented as being identified in an open field. No evidence for this site was identified within the study corridor. Additional shovel tests were excavated in an area south of Poole’s Point and also on the west side of I-64 which revealed intact soils, however no archaeological sites were identified (Sara et al. 1999).

Transects N, O, P, and AA were surveyed in the segment containing the National Cemetery as well as Hampton University (**Appendix A:** Map 14). This segment is located between the Route 143 interchange (Settlers Landing Road) and the Mallory Street interchange and consisted largely of vacant land within the study area. Previous archaeological survey work in this area has been conducted on the grounds of the Hampton University as well as the Department of Veterans Affairs (VA) complex. Previously recorded archaeological sites located in this vicinity and within the survey area included 44HT0033, 44HT0034, and 44HT0035. Sites 44HT033 and 44HT0034, previously recorded as historic

and prehistoric artifact scatters in 1985, were documented as having been destroyed by road construction while Site 44HT0035 encompasses the entire VA complex. No archaeological materials associated with 44HT0035 were identified in the survey corridor. Shovel tests in this vicinity documented disturbance associated with landscaping, filling, and past agricultural activity.

Located along Transects N and O, Site 44HT0090 was identified as a primary refuse deposit located in close proximity to Jones Creek and within the boundaries of the Hampton University property. Site 44HT0090 (see **Appendix A**: Map 17) dates to the late nineteenth century and may be associated with the Normal School Farm associated with the Hampton University. The site was recommended potentially eligible for listing on the NRHP possibly as a contributing element to the NRHP-listed Hampton University property and also for its potential research value. Transect AA was excavated in the vicinity of the Hampton National Cemetery within a small strip of undeveloped land bound on the west by I-64 and the cemetery to the east. The National Cemetery intersects the VDOT right of way and easement for the I-64 corridor. This survey segment identified areas of dense fill that appears to have been placed to reclaim the poorly drained and channelized Jones Creek and associated lowlands. In some locations fill deposits were present to over three feet below ground surface. No intact archaeological deposits were identified in this survey section, however, the boundaries of the cemetery and some interments are present within close proximity to the existing road corridor.

The final survey segment within the Hampton was located in the vicinity of Strawberry Banks. A total of 10 shovel test transects (A-J) were excavated across the open, park-like property at Strawberry Banks (**Appendix A**: Map 14). The 1999 report documents the recordation of a new site 44HT0089, which in fact coincides with the 1994-defined boundaries of 44HT0009 (see **Appendix A**: Map 17). The site number recorded in the DSS system for this site is 44HT0009. Also located in this area was site 44HT0008, which is largely located within the boundaries of 44HT0009. Located on the Strawberry Banks property are also the remnants of the former Roseland Manor (VDHR Inventory No. 114-0003) which was listed on the NRHP and burned in 1985. The 1999 HRBT Study Corridor passed through the eastern edge of 44HT0009. In addition, Magoon et al. (1995) note that Civil War maps locate Union Camp Hamilton in the immediate vicinity of site 44HT0009; early seventeenth-century Fort Charles may have been in the area as well. No military artifacts were recovered during the Phase I survey, possibly because no metal detecting was done. Over 1,200 artifacts were recovered from the portion of the HRBT Study Corridor that crosses Site 44HT0009 during the 1999 survey effort (Sara et al. 1999). Site 44HT0009 was recommended potentially eligible for the NRHP in 1995 by JRIA (Magoon et al. 1995) and also in 1999 by LBA (Sara et al 1999).

Subsurface archaeological survey within Norfolk and the 1999 Candidate Build Alternatives 1 and 2 (now Alternatives A, B, and D) was limited to one location near the intersection of I-64 and I-564 (**Appendix A**: Map 15). This area is characterized by low lying wetlands, dense residential development, both private and military, and areas of manmade lands resulting from the deposition of dredge spoils. From Willoughby Spit to Mason Creek, subsurface archaeological testing was not conducted. From Mason Creek south to the Intersection of I-64 and I564, three transects of shovel tests were excavated in areas of open land and light woods along the west side of I-64. Much of this area is on Naval Station Norfolk and was investigated according to the predictive model in development in 1999 and published in 2002. Shovel tests in this section revealed largely disturbed soils; however, pockets of natural soils were identified. Although some soil integrity was present, no intact archaeological sites were identified. Additional shovel tests were excavated along transects A-D as the 1999 survey area turned to the west toward Terminal Boulevard. Subsurface testing in this

section revealed heavily disturbed and/or truncated soils that were poorly developed and filled. No archaeological sites were identified.

Within Candidate Build Alternative 9 (now Alternatives B and C), which also incorporates a portion of Alternative B in Norfolk and Portsmouth, a total of eleven survey sections were subjected to systematic shovel testing covering a total of 178.2 acres (**Appendix A: Maps 15-16**). The shovel test survey effort included all areas characterized by minimal ground disturbance or thought to retain the potential for the identification of archaeological sites. A large majority of the Study Area was characterized by urban, built environment and shovel test survey was not considered necessary.

The first survey section within the 1999 Candidate Build Alternative 9 (now Alternative C), which also applies to Candidate Build Alternative 2 (now Alternatives B and C), is located within Naval Station Norfolk, parallels I-564 commencing at the I-64/I-664 interchange and proceeds west to the Sewell's Point Terminal on the Elizabeth River. Transects A-G were excavated within this segment (**Appendix A: Map 15**). One previously recorded site, 44NR0031, is located within this segment and no new sites were identified. Site 44NR0031 was recorded by R. Christopher Goodwin & Associates in 1997 (R. Christopher Goodwin & Associates 1997) and showed no intact deposits. It was noted that the site was likely destroyed by the runway addition. The 1999 study did not investigate this area and the site was recommended not eligible.

The second survey segment associated with the 1999 Candidate Build Alternative 9 (current Alternative C) was located from the I-64/I-664 interchange through Hampton to the edge of Newport News at City Line Road (Transects J, K, CC, H, & I) (**Appendix A: Map 14**). This segment included residential areas, industrial zones, and utility corridors. Deeper soil profiles were noted in Transect J where soils had washed down the hill. The remainder of the soil profiles in this segment confirmed shallow soils, man-made landforms and poorly drained wet soils. No previously recorded sites are located within this segment and no new archaeological sites were identified.

The third survey segment associated with Candidate Build Alternative 9 was located along I-664 from City Line Road in Newport News to the north end of the MMMBT (Transects V, W, X & Y) (**Appendix A: Map 14**). This segment was primarily urban developed land that included residential and industrial zones, and existing transportation corridors. Soils in this segment were heavily disturbed and consisted of fill from twentieth century demolition. All cultural material recovered was documented as isolated finds. No previously recorded sites are located within this segment and no new archaeological sites were identified.

The fourth survey segment within Candidate Build Alternative 9 was located along I-664 from the southern entrance of the MMMBT to Route 135 Interchange in Suffolk (Transects OO, PP, & U) (**Appendix A: Map 16**). This segment contained paved streets running perpendicular to I-664 and several abandoned twentieth-century buildings that were demolished for the construction of I-664. Soils in this segment were heavily disturbed and consisted of fill from twentieth century demolition. All cultural material recovered was documented as isolated finds. No previously recorded sites are located within this segment and no new archaeological sites were identified.

The fifth survey segment described in the 1999 documentation was located along I-664 in Suffolk from SR 135 to the Western Freeway (SR 164) (Transects KK-NN) (**Appendix A: Map 16**). This segment was primarily urban developed land. Soils in this segment were heavily disturbed or poorly drained wet soils. All cultural material recovered was documented as isolated finds. Four previously recorded sites, 44SK0262, 44SK0307, 44SK0348, and 44SK0382, are located within this segment. Sites 44SK0307 and

44SK0382 have been completely removed by the I-664 corridor. Additional artifacts were recovered from sites 44SK0262 and 44SK0348. 44SK0262 is a nineteenth to twentieth century domestic scatter. The site was recommended not eligible for listing in the NRHP. Site 44SK0382 is a prehistoric site that was partially removed during the construction of I-664. The 1999 survey did not recover any additional prehistoric artifacts, but did recover a piece of window glass and a piece of bottle glass. The site was recommended not eligible for listing in the NRHP. No new archaeological sites were identified.

The sixth survey segment described in the 1999 documentation was located along I-664 in Suffolk and Chesapeake from the Western Freeway (SR 164) to Pughsville Road (SR159) (Transects T & JJ). This segment was described as primarily a tree farm in low-lying terrain on the western side of the highway and new housing subdivision on the east. Soils in this segment were poorly drained and wet soils. No new archaeological sites were identified. Two previously recorded sites 44CS0049, 44CS0095 are located within this segment. Both sites were determined not eligible and had been removed by the Pughsville Road/I-664 interchange.

The seventh survey segment described in the 1999 documentation was located in Chesapeake and followed I-664 from Pughsville Road (SR 159) to SR 337 (Portsmouth Boulevard) (Transects Q & II) (**Appendix A: Map 16**). This segment was described as primarily dense woods and open fields. A new housing subdivision was under construction during the survey. Soils in this segment were documented as poorly drained wet soils. One new archaeological site, Site 44CS0026 was identified. Eight previously recorded sites 44CS0048, 44CS0087, 44CS0088, 44CS0090, 44CS0091, 44CS0092, 44CS0093, 44CS0094 and 44CS0095 have been recorded within this segment. Sites 44CS0048, 44CS0087, 44CS0088, 44CS0092, and 44CS0095 had been completely removed by the I-664 construction. Previously recorded sites 44CS0090 and 44CS0091 were re-identified during the 1999 survey but were both recommended not eligible for listing in the NRHP. Both sites had been impacted by the I-664 construction and did not contain intact significant deposits. Site 44CS0093 is a historic cemetery that was avoided by the I-664 construction and would not be impacted based on the 1999 plans. Site 44CS0094 is also a cemetery that should be located under the cloverleaf for the I-664/Pughsville Road interchange, however there was no evidence identified for this cemetery during the investigation. The one new archaeological site identified in this segment, site 44CS0026, was recommended not eligible for listing in the NRHP. Site 44CS0246 is a prehistoric site identified by four positive shovel tests and six prehistoric artifacts.

The eighth survey segment within Candidate Build Alternative 9 follows generally I-664 in Chesapeake from Route 337 (Portsmouth Boulevard) to Dock Landing Road (Transects O, P, DD) (**Appendix A: Map 16**). This segment was described as primarily woods with open fields. Soils in this segment consisted mostly of plow zone over subsoil. Three previously recorded sites 44CS0083, 44CS0084, and 44CS0085 are located within this segment. Sites 44CS0084 and 44CS0085 have been completely removed by the I-664. Additional artifacts were recovered from site 44CS0083. 44CS0083 is a prehistoric lithic scatter and a nineteenth-century refuse scatter. Artifacts recovered from the site were recovered from plow zone. The site was recommended not eligible for listing. No new archaeological sites were identified (Sara et al. 1999).

The ninth survey segment was located along I-664 in Chesapeake from Dock Landing Road to Joliff Road (Transects L-N, & EE, GG, HH) (**Appendix A: Map 16**). This segment was primarily woods interspersed with areas of wetlands. Soils in this segment consisted mostly of a single stratum over subsoil. Two new archaeological sites were identified: 44CS0244 and 44CS0245. Site 44CS0244 was identified as a historic dwelling and a prehistoric lithic scatter. The site was recommended potentially eligible for

listing in the NRHP. Site 44CS245 was identified as a prehistoric lithic scatter and was recommended not eligible (Sara et al. 1999).

The tenth survey segment associated with Candidate Build Alternative 9 was located in Chesapeake and followed I-664 from Joliff Road to the I-664/I-264 Interchange (Transects R & S) (**Appendix A: Map 16**). This segment consists of a number of interchanges which have heavily impacted the Study Area Corridor. Small pockets of woods are also present. Soils in this segment consisted mostly of a single stratum over subsoil and were disturbed. No new archaeological sites were identified within this segment. Three previously recorded sites 44CS0081, 44CS0080, and 44CS0233 are located within this segment. All three sites were previously determined not eligible. Sites 44CS0080 and 44CS0233 have been removed by construction of I-664. Site 44CS0081 was partially removed by the construction of I-664 and the portion of the site not removed is located outside of the Study Area Corridor (Sara et al. 1999).

The eleventh survey segment encompassed the portion of Candidate Build Alternative 9 and Candidate Build Alternative 2 from Craney Island to the Western Freeway (VA 164) (**Appendix A: Map 16**). This survey segment was subdivided into four sections and included Transects FD, CG, SE, SEA, SEB, NR, and NRA-NRP. This segment crossed the man-made soils of Craney Island and the Coast Guard facility. Soils in this segment were heavily disturbed. Natural soil stratigraphy was identified in only several areas and the stratigraphy documented consisted of one and two strata over subsoil. One newly recorded site 44PM0053 was located within this segment. Site 44PM0053 is a prehistoric lithic scatter that was recommended not eligible for listing in the NRHP. Five previously recorded sites are located within this segment and include sites 44PM0015, 44PM0025, 44PM0026, 44PM0027, and 44PM0028. Site 44PM0015 is a prehistoric lithic scatter documented as a temporary camp. The site was re-identified and recommended not eligible. Site 44PM0025 was re-identified and is a prehistoric lithic scatter. This site was also recommended not eligible. Site 44PM0026 is a historic trash scatter that was re-identified and was recommended not eligible. Site 44PM0027 is a historic trash scatter that was re-identified and was recommended not eligible. Site 44PM0028 is a late nineteenth to twentieth century domestic site and was re-identified. The site was recommended not eligible (Sara et al. 1999).

In summary, the terrestrial portion of the 1999 survey covered 225.7 acres and investigated all areas within the APE that exhibited the potential to contain archaeological deposits (**Appendix A: Maps 14-16**). A large majority of the survey area was characterized by urban land, modern development, and disturbed areas of soils. During the survey LBA re-identified twenty-nine previously recorded sites and identified six new sites (44CS0244, 44CS0245, 44CS0246, 44HT0089, 44HT0090, and 44PM0053). Sites 44CS0244 and 44HT0089 were recommended eligible for listing under Criterion D along with 44HT0090 which was recommended under both Criteria A and D. Sites 44CS0245, 44CS0246 and 44PM0053 were not recommended for inclusion in the NRHP. Of the 29 previously recorded archaeological sites, 28 were recommended not eligible for listing on the NRHP. One site, 44CS0092 had been previously recommended eligible for listing on the NRHP, but had been removed at the time of the 1999 survey (Sara et al. 1999:i).

In addition to the terrestrial survey, underwater archaeological survey was conducted in support of the project by Dolan Research in November, 1998 (Cox 1999). The remote sensing survey included an intensive magnetic and acoustic investigation and target analysis to determine if any potentially significant submerged cultural resources were present in the water-based portions of each candidate build alternative. A total of 78 targets were located, 30 of which were classified as potentially significant and suggestive of submerged cultural resources. Of this number, 15 were identified in

Candidate Build Alternative 9 (now Alternatives B, C, and D), 13 in the vicinity of Candidate Build Alternatives 1 and 2 (now Alternatives A, B, and D) and two in the corridor for Candidate Build Alternative 9 and 2 (now Alternatives C and D). In the vicinity of Candidate Build Alternative 1 and 2, the underwater survey identified 13 targets including the site of previously recorded resource 44NR0015, a wrecked German submarine located near the shore off the south side of the HRBT at Willoughby Spit. The 13 targets were spread across the river, but were not evenly spaced, in part because three of the anomalies were identified by multiple targets. However, it is likely that dredging of the Hampton Roads channel between Point Comfort and Fort Wool likely disturbed or destroyed submerged resources. None of these targets were investigated as the focus of the project turned to Candidate Build Alternative 9 and 9/2.

A Phase Ib and II survey for Candidate Build Alternative 9 and Candidate Build Alternative 9/2 (now Candidate Build Alternatives B, C, and D) was conducted by Dolan Research (Cox 2000) primarily in the vicinity of the MMMBT and Craney Island. Seventeen targets were investigated during this investigation. The investigation included a detailed remote sensing survey at each target site to refine target boundaries. Following this step, divers identified, recorded, and evaluated each site as appropriate. All of the targets associated with this investigation were discovered to be some form of modern debris. At Target 1:970 divers did identify the remains of what has been reported as a structure associated with berthing for barges carrying ordnance. The structure was removed prior to the construction of the MMMBT (Cox 2000:7). No additional underwater survey was recommended.

In 2009, Coastal Carolina Research Inc. (CCR) (Gosser et al. 2009) conducted cultural resources survey for a proposed access to the Craney Island Marine Terminal in Portsmouth, Virginia. The survey corridor included an approximately 500-foot-wide area between VA 164 and the US Army Disposal Area and the 10,000-foot-long area for the collector road widening paralleling VA 164. This APE was reduced prior to the survey. The APE that was surveyed largely coincides with the current southern terminus of Candidate Build Alternatives B, C, and D. The CCR survey for the Craney Island Marine Terminal access fully encompasses both former Candidate Build Alternatives 9 and 2 (now Candidate Build Alternatives B, C, and D) in this area. A combination of methodologies was utilized for the survey including shovel testing on 37- to 150-foot intervals as well as selectively placed judgmental shovel tests to identify potentially significant archaeological resources as well as document the presence of disturbed and wet soils. Two archaeological sites were identified during the survey and one previously identified site was revisited. All three sites, 44PM0065, 44PM0066, and 44PM0031 were recommended not eligible for listing in the NRHP. The results of this investigation were reviewed and accepted by the VDHR.

In 2012, Dovetail Cultural Resources Group (Barile et al. 2012) conducted a survey of a revised route for Candidate Build Alternative 9 (now Candidate Build Alternatives B and C) as it crosses the Craney Island Marine Terminal. This survey was designed to compensate for slight design changes in this portion of the alternative and also the proposed access road to the Marine Terminal surveyed by Coastal Carolina Research in 2009 (Gosser et al. 2009). Four areas were resurveyed, all of which about the current APE. The survey identified one site, 44PM0079, which is outside of the current APE and was recommended not eligible for listing in the NRHP.

In 2002, R. Christopher Goodwin & Associates (Polglase et al. 2002) submitted a preliminary predictive model for the location of cultural resources on Naval Station Norfolk to the United States Navy. The model was compiled from a study of geotechnical, archival, cartographic, and archaeological data. During the course of the field investigations for the study, archaeological Sites 44NR0027 through

44NR0030 were identified and recorded. Site 44NR0028 was subject to a Phase II during the study. The base was divided into 11 areas for the preparation of the predictive model and report and of those, Areas 1, 2, 3, and 9 had no further work recommended while areas 4, 5, 6, 7, 8, 10, and 11 were recommended for intensive Phase I testing before any construction. Survey Area 11 is located within the APE for Direct Effects for the current study. This section is immediately adjacent to existing I-64 and extends from Mason’s Creek to the I-564 interchange and west to the I-564/Terminal Boulevard Interchange. The entire length of Survey Area 11 within the APE was investigated during the 1999 survey by LBA (Sara et al. 1999). No archaeological deposits were identified in Survey Area 11.

Southeastern Archaeological Research, Inc. (SEARCH) (Search 2011) conducted Phase I survey of approximately 31 acres at Naval Station (NAVSTA) Norfolk, Naval Support Activity (NSA) Norfolk, and the Lafayette River Annex in Norfolk, Virginia, in November and December 2010. The portion of this project located on Naval Station Norfolk intersects the APE for Candidate Build Alternative C and Candidate Build Alternative B in the vicinity of survey area NAVSTA 4 which measured approximately 9.45 acres. Shovel tests were excavated on 30-m intervals because of the highly disturbed nature of the area. The soils in this area were described as sandy and contained a large amount of road gravel, modern trash, and deconstruction debris throughout. No archaeological sites were identified in this area.

**2.2 PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES – ALTERNATIVE A**

Eight previously identified archaeological sites are located within or in very close proximity to the APE for Direct Effects for Alternative A. Seven of the sites are located in Hampton between the Hampton River and the HRBT (Table 6; Appendix A: Maps 17-18) and include 44HT0009 (also recorded as 44HT0089), 44HT0031, 44HT0033, 44HT0034, 44HT0035, 44HT0062, 44HT0090. A single site, 44NR0015, has been recorded within the APE for Direct Effects in the Norfolk. These eight sites were addressed or recorded during the 1999 survey conducted by LBA (Sara et al. 1999).

**Table 6: Previously Recorded Archaeological Resources within the APE for Alternative A**

Resource	Resource Type	Association	Reference	NRHP Recommendation
44HT0009 (also 44HT0089)*	Village; Roseland Manor	Woodland; Late 19 <sup>th</sup> to 20 <sup>th</sup> Century	Browning 1982; Magoon et. al 1995; Sara et al. 1999	VDHR: Potentially Eligible 2012
44HT0031	Indeterminate	18 <sup>th</sup> to 19 <sup>th</sup> Century	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0033	Indeterminate	19 <sup>th</sup> Century:2 <sup>nd</sup> Half; Late Archaic	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0034	Indeterminate	19 <sup>th</sup> Century	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0062	Refuse Scatter	18 <sup>th</sup> to 19 <sup>th</sup> Century	Wittkofski 1980; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0089 (also 44HT0009)*	Dwelling, Temporary Camp	19 <sup>th</sup> Century:2 <sup>nd</sup> Half; 20 <sup>th</sup> Century: 1 <sup>st</sup> Qtr; Woodland	Sara et al. 1999	VDHR: Not Evaluated LBA: Potentially Eligible
44HT0090	Dwelling	Mid 19 <sup>th</sup> to early 20 <sup>th</sup> Century	Sara et al. 1999	VDHR: Potentially Eligible
44NR0015	Possible Submarine	20 <sup>th</sup> Century: 1 <sup>st</sup> Half	Hazzard 1979	Not Evaluated

\* Sara et al. 1999 documents the recordation of a new site 44HT0089, which in fact coincides with the 1994-defined boundaries of 44HT0009. The site number recorded in the V-CRIS system for this site is 44HT0009.

**2.3 PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES – ALTERNATIVE B**

Fifteen previously identified archaeological sites are located within or within close proximity to the APE for Direct Effects for Alternative B. Eight of the sites are located in Hampton between the Hampton River and the HRBT (**Table 7; Appendix A: Maps 17-19**) and include 44HT0009 (also recorded as 44HT0089), 44HT0031, 44HT0033, 44HT0034, 44HT0035, 44HT0062, 44HT0090, and 44NR0015. These eight sites were addressed or recorded during the 1999 survey conducted by LBA (Sara et al. 1999). Seven sites within the APE for Direct Effects for Alternative B are located at the VA 164/Cedar Lane intersection in the Portsmouth section of the alternative. Sites 44PM0017-44PM0021 were all identified by Lyle E. Browning in 1981 (Browning 1981) and further documented by Thunderbird Archaeological Associates (Thunderbird) in 1982 (Gardner 1982) and are listed as unevaluated in the VDHR data. However, it is likely that these sites have been destroyed. All of these sites were documented as historic trash scatters dating from the eighteenth through the nineteenth century and are located in the VA 164/Cedar Lane Interchange. All of these sites were documented as associated with a nearby “mansion” that appears to have been destroyed during the construction of VA 164 (Western Freeway). Site 44PM0031 was originally identified in 1981 (Thunderbird 1981) and revisited by CCR in 2009 (Gosser et al. 2009). The site was significantly disturbed and recommended not eligible for the NRHP. The previously recorded sites within Candidate Build Alternatives B range in date from the Late Archaic through the early twentieth century.

**Table 7: Previously Recorded Archaeological Resources within the APE for Direct Effects for Alternative B**

Resource	Resource Type	Association	Reference	NRHP Recommendation
44HT0009 (also 44HT0089)*	Village; Roseland Manor	Woodland; Late 19 <sup>th</sup> to 20 <sup>th</sup> Century	Browning 1982; Magoon et al. 1995; Sara et al. 1999	VDHR: Potentially Eligible 2012
44HT0031	Indeterminate	18 <sup>th</sup> to 19 <sup>th</sup> Century	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0033	Indeterminate	19 <sup>th</sup> Century:2 <sup>nd</sup> Half; Late Archaic	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0034	Indeterminate	19 <sup>th</sup> Century	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0062	Refuse Scatter	18 <sup>th</sup> to 19 <sup>th</sup> Century	Wittkofski 1980; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0089 (also 44HT0009)*	Dwelling, Temporary Camp	19 <sup>th</sup> Century:2 <sup>nd</sup> Half; 20 <sup>th</sup> Century: 1 <sup>st</sup> Qtr; Woodland	Sara et al. 1999	VDHR: Not Evaluated LBA: Potentially Eligible
44HT0090	Dwelling	Mid 19 <sup>th</sup> to early 20 <sup>th</sup> Century	Sara et al. 1999	VDHR: Potentially Eligible
44NR0015	Possible Submarine	20 <sup>th</sup> Century: 1 <sup>st</sup> Half	Hazzard 1979	Not Evaluated
44PM0017	Trash scatter	18th Century, 19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0018	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0019	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0020	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0021	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)

Resource	Resource Type	Association	Reference	NRHP Recommendation
44PM0022	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0031	Other, Trash scatter	18th Century: 4th quarter; 19th Century: 1st quarter	Thunderbird 1981; Gosser et al 2009	VDHR: Not Eligible 2009

*\* Sara et al. 1999 documents the recordation of a new site 44HT0089, which in fact coincides with the 1994-defined boundaries of 44HT0009. The site number recorded in the V-CRIS system for this site is 44HT0009.*

## 2.4 PREVIOUSLY RECORDED ARCHAEOLOGICAL RESOURCES – ALTERNATIVE C

Forty-three previously identified archaeological sites are located within or within close proximity to the APE for Direct Effects for Alternative C: 26 are located in Chesapeake, 10 in Suffolk; and seven in Portsmouth (**Table 8; Appendix A:** Maps 19-24). Fifteen of the previously recorded sites in Chesapeake and Suffolk were addressed or recorded during the 1999 survey conducted by LBA (Sara et al. 1999). The majority of the previously identified sites were recommended as Not Eligible for listing in the NRHP but are noted as unevaluated within the V-CRIS system. Site 44CS0089 was recorded by JMU in 1987 (Sherwood and McCartney 1987) and has not been evaluated. Site 44SK0481 has not been evaluated and no information is present within the record. One site, 44CS0042 is identified as potentially eligible for listing on the NRHP and additional work in this site may be warranted. An additional site, located at the edge of the APE in the vicinity of the I-664/US Route 17 interchange has been listed on the NRHP. This site, 44SK0194 is documented as a seventeenth-century site. In Portsmouth, sites 44PM0017-44PM0021 were all identified by Browning in 1981 (Browning 1981) further documented by Thunderbird in 1982 (Gardner 1982) and are listed as unevaluated in the VDHR data. However, it is likely that these sites have been destroyed. All of these sites were documented as historic trash scatters dating from the eighteenth through the nineteenth century and are located in the VA 164/Cedar Lane Interchange. Site 44PM0031 was originally identified in 1981 (Thunderbird 1981) and revisited by CCR in 2009. The site was significantly disturbed and recommended not eligible for the NRHP (Gosser et al. 2009). The previously recorded sites within Candidate Build Alternative C range in date from the Archaic through the early twentieth century.

**Table 8: Previously Recorded Archaeological Resources within the APE for Direct Effects for Alternative C**

Resource	Resource Type	Association	Reference	NRHP Recommendation
44CS0039	Indeterminate	Early Woodland	Bott 1980	Not Evaluated (Destroyed)
44CS0040	Indeterminate	Middle Woodland, Historic/Unknown	Bott 1980	Not Evaluated (Destroyed)
44CS0041	Indeterminate	Prehistoric/Unknown	Bott 1980	Not Evaluated (Destroyed)
44CS0042	Camp, Temporary	Middle Woodland	Moore et al. 2003; Bott 1980	Potentially Eligible VDHR 2003
44CS0043	Indeterminate	Prehistoric/Unknown 20 <sup>th</sup> Century	Bott 1980	Not Evaluated (Destroyed)
44CS0044	Indeterminate	Prehistoric Unknown	Bott 1980	Not Evaluated (Destroyed)
44CS0048	Indeterminate	18 <sup>th</sup> Century; 20 <sup>th</sup> Century, Prehistoric/Unknown	Gardner 1982; Sara et al. 1999	Not Evaluated
44CS0049	Indeterminate	19 <sup>th</sup> Century: 2 <sup>nd</sup> Half	Browning 1981; Sara et al. 1999	Not Evaluated
44CS0079	Camp, Temporary	Middle Woodland	Sherwood and McCartney 1987; Moore et al. 2003	Not Eligible
44CS0080	Dwelling	20 <sup>th</sup> Century	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0081	Dwelling	19 <sup>th</sup> Century	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0083	Indeterminate	19 <sup>th</sup> Century; Prehistoric/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0084	Indeterminate	18 <sup>th</sup> Century; Prehistoric/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0085	Indeterminate	Historic Unknown	Sherwood and McCartney 1987	Not Evaluated
44CS0086	Cemetery	20 <sup>th</sup> Century	Sherwood and McCartney 1987	Not Evaluated
44CS0087	Dwelling	Historic/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0088	Dwelling	20 <sup>th</sup> Century: 2 <sup>nd</sup> half	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0089	Dwelling	19 <sup>th</sup> Century: 2 <sup>nd</sup> /3 <sup>rd</sup> quarter	Sherwood and McCartney 1987	Not Evaluated
44CS0090	Indeterminate	Woodland	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0091	Indeterminate	20 <sup>th</sup> Century: 1 <sup>st</sup> half; Prehistoric/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0092	Indeterminate	19 <sup>th</sup> Century	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated; Noted in Sara et al. 1999 as eligible and as having been previously removed

Resource	Resource Type	Association	Reference	NRHP Recommendation
44CS0093	Church	19 <sup>th</sup> Century to 20 <sup>th</sup> Century	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0094	Cemetery	19 <sup>th</sup> Century	Sherwood and McCartney 1987	Not Evaluated
44CS0095	Indeterminate	19 <sup>th</sup> Century to 20 <sup>th</sup> Century; Early to Middle Archaic	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0233	Indeterminate	Archaic; Woodland	Sara et al. 1999; Baicey 2014	Not Eligible VDHR 2014
44CS0283	Outbuilding	Late 19 <sup>th</sup> to 20 <sup>th</sup> Century	Gosser et. al 2008	Not Eligible VDHR 2008
44PM0017	Trash scatter	18th Century 19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0018	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0019	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0020	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0021	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0022	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0031	Other, Trash scatter	18th Century: 4th quarter; 19th Century: 1st quarter	Thunderbird 1981; Gosser et al. 2009	VDHR: Not Eligible 2009
44SK0194	Knotts Creek	17 <sup>th</sup> Century	JRIA 1988; McLearn and Harbury 1990	NRHP Listed 2008
44SK0262	Indeterminate	19 <sup>th</sup> to 1 20 <sup>th</sup> Century, Woodland	Green et al 1990; Sara et al. 1999	Not Evaluated
44SK0307	Indeterminate	18 <sup>th</sup> & 19 <sup>th</sup> Century	Jolley 1990	Not Eligible VDHR 1991
44SK0308	Shell Midden	Prehistoric Unknown	VCU 1989	Not Evaluated
44SK0348	Indeterminate	Prehistoric/Unknown	Green et al 1990; Sara et al. 1999	Not Evaluated
44SK0370	Indeterminate	18 <sup>th</sup> & 19 <sup>th</sup> Century Prehistoric Unknown	Green et al 1990	Not Evaluated
44SK0371	Indeterminate	Prehistoric Unknown	Green et al 1990	Not Evaluated
44SK0372	Indeterminate	Prehistoric Unknown 17 <sup>th</sup> Century	Green et al 1990	Not Evaluated
44SK0382	Indeterminate	Prehistoric Unknown	JRAI 1991	Not Evaluated
44SK0481	Indeterminate	Prehistoric/Unknown	Thompson 2000	Not Evaluated

## 2.5 PREVIOUSLY RECORDED ARCHAEOLOGICAL RESOURCES – ALTERNATIVE D

Alternative D comprises all of Alternatives A, B, and C. Therefore, a comprehensive discussion of the previously recorded sites is not repeated here. A total of 51 archaeological sites are located within or in close proximity to the APE for Direct Effects for Alternative D. **Table 9** lists the previously recorded sites for Candidate Build Alternative D and the sites are illustrated in **Appendix A: Maps 17-24**.

**Table 9: Previously Recorded Archaeological Resources within the APE for Direct Effects for Alternative D**

Resource	Resource Type	Association	Reference	NRHP Recommendation
44CS0039	Indeterminate	Early Woodland	Bott 1980	Not Evaluated (Destroyed)
44CS0040	Indeterminate	Middle Woodland, Historic/Unknown	Bott 1980	Not Evaluated (Destroyed)
44CS0041	Indeterminate	Prehistoric/Unknown	Bott 1980	Not Evaluated (Destroyed)
44CS0042	Camp, Temporary	Middle Woodland	Moore et al. 2003; Bott 1980	Potentially Eligible VDHR 2003
44CS0043	Indeterminate	Prehistoric/Unknown 20 <sup>th</sup> Century	Bott 1980	Not Evaluated (Destroyed)
44CS0044	Indeterminate	Prehistoric Unknown	Bott 1980	Not Evaluated (Destroyed)
44CS0048	Indeterminate	18 <sup>th</sup> Century; 20 <sup>th</sup> Century, Prehistoric/Unknown	Gardner 1982; Sara et al. 1999	Not Evaluated
44CS0049	Indeterminate	19 <sup>th</sup> Century:2 <sup>nd</sup> Half	Browning 1981; Sara et al. 1999	Not Evaluated
44CS0079	Camp, Temporary	Middle Woodland	Sherwood and McCartney 1987; Moore et al. 2003	Not Eligible
44CS0080	Dwelling	20 <sup>th</sup> Century	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0081	Dwelling	19 <sup>th</sup> Century	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0083	Indeterminate	19 <sup>th</sup> Century; Prehistoric/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0084	Indeterminate	18 <sup>th</sup> Century; Prehistoric/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0085	Indeterminate	Historic Unknown	Sherwood and McCartney 1987	Not Evaluated
44CS0086	Cemetery	20 <sup>th</sup> Century	Sherwood and McCartney 1987	Not Evaluated
44CS0087	Dwelling	Historic/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0088	Dwelling	20 <sup>th</sup> Century: 2 <sup>nd</sup> half	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0089	Dwelling	19 <sup>th</sup> Century:2 <sup>nd</sup> /3 <sup>rd</sup> Qtr	Sherwood and McCartney 1987	Not Evaluated
44CS0090	Indeterminate	Woodland	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0091	Indeterminate	20 <sup>th</sup> Century: 1 <sup>st</sup> half; Prehistoric/Unknown	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0092	Indeterminate	19 <sup>th</sup> Century	Sherwood and McCartney 1987	Not Evaluated

Resource	Resource Type	Association	Reference	NRHP Recommendation
44CS0093	Church	19 <sup>th</sup> Century to 20 <sup>th</sup> Century	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0094	Cemetery	19 <sup>th</sup> Century	Sherwood and McCartney 1987	Not Evaluated
44CS0095	Indeterminate	19 <sup>th</sup> Century to 20 <sup>th</sup> Century; Early to Middle Archaic	Sherwood and McCartney 1987; Sara et al. 1999	Not Evaluated
44CS0233	Indeterminate	Archaic; Woodland	Sara et al. 1999; Baicey 2014	Not Eligible VDHR 2014
44CS0283	Outbuilding	Late 19 <sup>th</sup> to 20 <sup>th</sup> Century	Gosser et. al 2008	Not Eligible VDHR 2008
44HT0009 (also 44HT0089)*	Village; Roseland Manor	Woodland; Late 19 <sup>th</sup> to 20 <sup>th</sup> Century	Browning 1982; Magoon et al.1995; Sara et al. 1999	VDHR: Potentially Eligible 2012
44HT0031	Indeterminate	18 <sup>th</sup> to 19 <sup>th</sup> Century	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0033	Indeterminate	19 <sup>th</sup> Century:2 <sup>nd</sup> Half; Late Archaic	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0034	Indeterminate	19 <sup>th</sup> Century	Turner et. al 1985; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0062	Refuse Scatter	18 <sup>th</sup> to 19 <sup>th</sup> Century	Wittkofski 1980; Sara et al. 1999	Not Evaluated (Destroyed)
44HT0089 (also 44HT0009)*	Dwelling, Temporary Camp	19 <sup>th</sup> Century:2 <sup>nd</sup> Half; 20 <sup>th</sup> Century: 1 <sup>st</sup> Qtr; Woodland	Sara et al. 1999	Not Evaluated VDHR Potentially Eligible LBA
44HT0090	Dwelling	Mid 19 <sup>th</sup> to early 20 <sup>th</sup> Century	Sara et al. 1999	VDHR: Potentially Eligible
44NR0015	Possible Submarine	20 <sup>th</sup> Century: 1 <sup>st</sup> Half	Hazzard 1979	Not Evaluated
44PM0017	Trash scatter	18th Century 19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0018	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0019	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0020	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0021	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0022	Trash scatter	19th Century	Browning 1981; Gardner 1982	Not Evaluated (Destroyed)
44PM0031	Other, Trash scatter	18th Century: 4th quarter; 19th Century: 1st quarter	Thunderbird 1981; Gosser et al. 2009	VDHR: Not Eligible 2009
44SK0194	Knotts Creek	17 <sup>th</sup> Century	JRIA 1988; McLearn and Harbury 1990	NRHP Listed 2008
44SK0262	Indeterminate	19 <sup>th</sup> to 1 20 <sup>th</sup> Century, Woodland	Green et al 1990; Sara et al. 1999	Not Evaluated
44SK0307	Indeterminate	18 <sup>th</sup> & 19 <sup>th</sup> Century	Jolley 1990	Not Eligible VDHR 1991
44SK0308	Shell Midden	Prehistoric Unknown	VCU 1989	Not Evaluated

Resource	Resource Type	Association	Reference	NRHP Recommendation
44SK0348	Indeterminate	Prehistoric/Unknown	Green et al 1990; Sara et al. 1999	Not Evaluated
44SK0370	Indeterminate	18 <sup>th</sup> & 19 <sup>th</sup> Century Prehistoric Unknown	Green et al. 1990	Not Evaluated
44SK0371	Indeterminate	Prehistoric Unknown	Green et al. 1990	Not Evaluated
44SK0372	Indeterminate	Prehistoric Unknown 17 <sup>th</sup> Century	Green et al. 1990	Not Evaluated
44SK0382	Indeterminate	Prehistoric Unknown	JRIA 1991	Not Evaluated
44SK0481	Indeterminate	Prehistoric/Unknown	Thompson 2000	Not Evaluated

\* Sara et al. 1999 documents the recordation of a new site 44HT0089, which in fact coincides with the 1994-defined boundaries of 44HT0009. The site number recorded in the V-CRIS system for this site is 44HT0009.

## 2.6 BATTLEFIELD RESOURCES

Portions of all four current build alternatives fall at least partly within five previously identified battlefield resources. Two battlefields are associated with the War of 1812: the 1813 Battle of Hampton and the 1813 Battle of Craney Island. The other three battlefields are sites of Civil War engagements: the Battle of Sewell’s Point (VDHR #122-5426), the Battle of Hampton Roads (VDHR #114-5471), and the Battle of Big Bethel (VDHR #114-5297). Study Area, Core Area, and Potential National Register (PotNR) boundaries defined for each battlefield by the American Battlefield Protection Program (ABPP) were obtained from the VDHR and reflect updated information received from the ABPP in 2014. (**Appendix B: Maps 1-4**). Study Area boundaries, as currently mapped, include both the regions of direct fighting as well as the associated marching routes for soldiers. Two of the Civil War battlefields include substantial areas of open water, and include at least part of the existing HRBT crossing. Due to substantial development in the Study Area Corridor over the last 150 years, many elements of the battlefields have succumbed to urban development (Salmon 2001:69; ABPP 2007:62).

### 2.6.1 Battle of Hampton (ABPP No. VA401; no VDHR number assigned)

As defined by the ABPP, the battlefield includes a large portion of Hampton and is located primarily on land (**Appendix B: Map 1**). The northern boundary of the Battle of Hampton is I-64 and thus it intersects the APE for Direct Effects. Much of the area associated with the engagement has been extensively developed. The ABPP lumps the Hampton Battlefield with a group of sites that offer “Commemorative Opportunities,” but are “Fragmented or Destroyed and Threats are Marginal or Do Not Apply” (ABPP 2007:62). The extensive amount of development that has occurred within this same area has resulted in the significant disturbance and likely destruction of archaeological resource associated with this battle. There is a low potential for identifying archaeological resources associated with this engagement within the APE.

### 2.6.2 Battle of Craney Island (ABPP No. VA400; VDHR #124-5267)

The ABPP has identified the Battle of Craney Island (ABPP #VA400; VDHR #124-5267) as one of 78 battlefields associated with events that had a demonstrable influence on the course, conduct, and results of the War of 1812. The ABPP classifies the Battle of Craney Island as a Class B battlefield, or “site of a military or naval action with a significant objective or result that shaped the strategy, direction, or outcome of a campaign or other operation” (ABPP 2007: 24, 29, 61).

As defined by the ABPP and mapped in the files of the VDHR, the battlefield includes a portion of Craney Island and is located within the bounds of the Craney Island Fuel Depot near the mouth of the Elizabeth River and Craney Creek (**Appendix B**: Map 2). The battlefield Study Area measures approximately 259 acres including the parts of the battlefield on land and over water. The Core Area, which is coterminous with the PotNR area, is approximately 70 acres and located only on land. Three of the proposed alignments associated with the HRCS cross this battlefield. Approximately four acres of the far western portion of the battlefield intersect with the APE for Direct Effects for the project. A large majority of the Craney Island Battlefield is located in woodland bound by the marshland associated with Craney Creek. The far eastern portion of the battlefield, at the mouth of Craney Creek at the intersection with the Elizabeth River is located within the Fuel Depot and is characterized by industrial development/buildings associated with the supply center. Immediately north of the Fuel Depot and adjacent to the mapped boundaries of the Battle of Craney Island, a dump site, owned by Portsmouth is present and extends to the boundary of the US Army Disposal Area.

The majority of the landmass associated with the War of 1812 Battle of Craney Island appears to have been encompassed by the man-made fill now characterizing Craney Island which has affected the resource's overall integrity. The entire APE for the current build alternatives has been previously surveyed and no archaeological deposits have been identified.

### **2.6.3 Sewell's Point (VA001; VDHR #122-5426)**

The ABPP (2009) has defined a Study Area of 11,568.96 acres for the battle, 9,878.91 acres of which is classified as PotNR lands (**Appendix B**: Map 3). Portions of the existing HRBT and MMMBT crossings are located in the PotNR area. The APE for Direct Effects for Alternatives A, B, a very small portion of C, and D intersect the Study and PotNR areas for the Sewell's Point Battlefield. The Core Area of the battlefield is located primarily within the water and extends on land partially within the bounds of Norfolk Naval Station. None of the Core area, as mapped by the ABPP intersects with the APE for Direct Effects for any alternative.

The only land within the ABPP Core Area is focused upon the location of the Confederate battery. This area is located within an active military installation and is entirely excluded from the PotNR lands defined by the ABPP for the resource. This portion of the Core Area is located to the north of Alternatives B, C, and D near the intersection of Admiral Taussig and Terminal boulevards. Salmon (2001:69) noted that "...no sign of the battery now remains, as the area has been developed by the United States Naval Base there."

The Civil War Sites Advisory Commission (CWSAC), classified the battlefield as preservation priority IV.2 (Class D) in 1993 (revised 1997). The ABPP (2009) also noted that "the areas that retain integrity are located essentially on water. On land, only historic and archaeological resources at Fort Monroe and Fort Wool retain integrity." Fort Monroe and Fort Wool are located outside of the ABPP Core Area, were not directly involved in the engagement, and are also located outside of the APE for Direct Effects for all Candidate Build Alternatives.

### **2.6.4 Battle of Hampton Roads (ABPP No. VA008; VDHR 114-5471)**

The Battle of Hampton Roads was a Civil War naval engagement, and almost all of the defined battlefield area comprises open water (**Appendix B**: Map 4). The ABPP (2009) has defined a Study Area of 46,034.51 acres for the engagement, with 35,040.82 acres defined as PotNR lands (**Appendix B**: Map 6). Portions of the existing HRBT and MMMBT crossing are located within the PotNR designated

portion of the battlefield. Both land- and water-based portions of Candidate Build Alternatives A, B, C, and D are located within the ABPP-defined Core Area for the battlefield. The land-based portions of the battlefield Study Area are concentrated within the bounds of Norfolk Naval Station, at the entrance to the HRBT in Hampton, partially across the southern tip of Fort Monroe, and also include a small portion of the US Naval Supply Center/Fuel Depot in Portsmouth and locations at both entrances to the MMMBT. The PotNR area associated with this battlefield is limited to the portions of the battlefield within the waterway with the exception of Fort Monroe and Fort Wool. The other land-based portions of the resource have been excluded from the proposed PotNR area.

The CWSAC classified the battlefield as preservation priority II.2 (Class B) in 1992. The ABPP (2009) has also noted that “the areas that retain integrity are located essentially on water. On land, only historic and archaeological resources at Fort Monroe and Fort Wool retain integrity.” Fort Monroe and Fort Wool were not directly involved in the engagement, and are also located outside of the APE for direct effects for the HRCS.

### **2.6.5 Battle of Big Bethel (ABPP No. VA 003; VDHR 114-5297)**

The Battle of Big Bethel was the first Civil War land battle in Virginia and took place on June 10, 1861. The ABPP has defined a Study Area of 121,468 acres for the engagement, with 0.0 acres defined as PotNR lands. The battlefield has been nearly completely destroyed by development and land use not conducive to the preservation of historic features. In addition, the VDHR has determined that the Big Bethel Battlefield is Not Eligible for listing in the NRHP.

### **2.7 CAPTAIN JOHN SMITH CHESAPEAKE NATIONAL HISTORIC TRAIL**

The Captain John Smith Chesapeake National Historic Trail was designated by Congress in 2006 through an amendment to Section 5(a) of the National Trails System Act (16 U.S.C. 1244(a)) and is the first nationally designated water trail under the Act. The trail route extends throughout the Chesapeake Bay and includes tributaries explored by Smith (**Appendix B**: Map 5). The Captain John Smith Trail was further extended into four additional rivers considered as historic components of the Captain John Smith Trail by the Secretary of the Interior in May 2012. Per the National Park Service (NPS) documentation (Chesapeake Conservancy 2013): “The purpose of the Captain John Smith Chesapeake National Historic Trail is to commemorate the exploratory voyages of Captain Smith on the Chesapeake Bay and its tributaries in 1607-1609; to share knowledge about the American Indian societies and cultures of the seventeenth century; and to interpret the natural history of the Bay (both historic and contemporary). Complementing the Chesapeake Bay Gateways and Water Trails Network, the Trail will provide new opportunities for education, recreation, eco-tourism, and heritage tourism in the Chesapeake Bay region” (National Park Service 2006).

The Captain John Smith Chesapeake National Historic Trail encompasses over 3,000 miles of waterway associated with the voyages of John Smith as well as early explorations of the Chesapeake Bay region. All three Candidate Build Alternatives associated with the HRCS EIS intersect the Captain John Smith Chesapeake National Historic Trail in what has been defined as a High Potential Route Segment. Recently, a portion of the Captain John Smith Chesapeake National Historic Trail, commencing at a point approximately 11.5 miles to the northwest of Candidate Build Alternatives C and D near Jamestown and extending an additional 20 miles (by water), has been determined eligible for listing in the NRHP under Criteria A, B, C, and D. The Keeper of the National Register, in correspondence to the US Army Corps of Engineers dated August 14, 2015, states that this section of the Trail: “forms a

significant cultural landscape associated with both the American Indian inhabitants of the area and the later English settlers.” Currently the HRBT and the MMMBT as well as other features including the James River Bridge and Chesapeake Bay Bridge Tunnel cross the Trail. The portion of the Trail located within the APE for the HRCS SEIS archaeological assessment is within a highly industrialized and developed area of Hampton Roads where few remnants of the historic landscape survive.

## **2.8 WASHINGTON ROCHAMBEAU REVOLUTIONARY ROUTE NATIONAL HISTORIC TRAIL**

The Washington-Rochambeau Revolutionary Route was designated a National Historic Trail by Congress through an amendment to Section 5(a) of the National Trails System Act (16 U.S.C. 1244(a)) and was signed by President Obama in March 2009. The Washington-Rochambeau Revolutionary Route National Historic Trail comprises over 680 miles of land and water trails in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and Washington, D.C. (**Appendix B**: Map 6). The Trail segments follow the routes taken by General Washington and General Rochambeau to and from the Siege of Yorktown during the Revolutionary War. Per the National Park Service documentation and strategic plan for the Trail, the purpose of the trail is to “identify, preserve, interpret, and celebrate the American and French Alliance in the War for Independence. The mission will focus on three main areas: Improve visibility of the trail and its significance, convey the meaning of the route to the public by improved education and interpretation, and identify management partnerships and processes to create and manage the Washington-Rochambeau National Historic Trail.” All three Candidate Build Alternatives associated with the HRCS SEIS intersect the Washington-Rochambeau National Historic Trail. The trail traverses the Hampton Roads and follows the water-route of the Continental Army. The portion of the Trail located within the APE for the HRCS SEIS archaeological assessment is within a highly industrialized and developed area of Hampton Roads where few remnants of the historic landscape survive.

### **3. HISTORIC CONTEXT SUMMARY**

The following section provides a generalized context in which to identify and determine significance of archaeological resources that may be present within the project APE. This context is not designed as a full historic context for the region, but an overview of the background and history of the Study Area Corridor. The following context was largely extracted and summarized from the document entitled *Archaeological Assessment and Predictive Model for the Hampton Roads Bridge Tunnel* prepared in draft form for the VDOT by Dovetail Cultural Resource Group, Inc. (Klein et al. 2011). Small amounts of additional research and context were added to augment the context by Stantec staff.

#### **3.1 PREHISTORIC CONTEXT**

The cultural chronology of Virginia's native peoples in the years before European settlement in Eastern North America is subdivided into three major time periods based on changes in subsistence and exhibited by material remains and settlement patterns. These divisions are known as the Paleoindian (11,000–8,000 B.C.), Archaic (8,000–1,000 B.C.), and Woodland (1,000 B.C.–A.D. 1600) periods. In recent years, an additional, earlier period of prehistory, the Pre-Clovis period (?–11,000 B.C.), has also been recognized as a useful subdivision.

##### **3.1.1 Paleoindian Period**

The majority of Paleoindian-period remains in Virginia are represented by isolated projectile point finds and what appear to be small temporary camps. Both the stratigraphic record and the radiocarbon assays from the recently excavated Cactus Hill site in Sussex County suggest the possibility of human occupation of Virginia well before the fluted point makers appeared on the scene in the Paleoindian period circa 11,000 B.C. (McAvoy and McAvoy 1997).

##### **3.1.2 Archaic Period**

The Archaic Period (8,000–1,000 B.C.) follows the Paleoindian period and began with the start of the Holocene, a geological period that began with the recession of the ice sheets and a shift from moist, cool climates to a warmer, drier climate. The Archaic period can be characterized by the development of more specialized resource procurement activities as well as the development of new technologies to accomplish these activities. These differences in the material culture are believed to reflect larger, more localized populations and changes in methods of food procurement and processing (Dent 1995:147, 164-5). In eastern Virginia, a temperate climate was established and the formation of the Chesapeake estuary began (Dent 1995). Increasing differences in seasonal availability of resources brought on by post-Pleistocene changes are thought to coincide with increasing emphasis on strategies of seasonally geared mobility.

Archaic populations are thought to have been organized in social groups of 20 to 30 individuals (band-level social organization) with settlement patterns characterized by frequent seasonal movements within well-defined territories corresponding to the seasonal availability of resources. Subsistence strategies were developed to exploit the seasonally available flora and fauna emerging during the early Holocene era (Dent 1995). Settlement during the Archaic Period likely involved the occupation of relatively large regions by single band-sized groups living in base camps during part of the year and dispersing on an as-needed or seasonal basis, creating smaller microband camps, possibly consisting of no more than single families (Griffin 1952, Anderson and Hanson 1988, Ward and Davis 1999).

The population increase from the Early to Middle Archaic periods continues throughout the Late Archaic, thus the Late Archaic appears to be one of the most studied areas of Native American history; however, the crux of the matter lies in the fact the environment was optimal for site preservation. The Late Archaic continues to be a model of hunter-gatherer subsistence (egalitarian and highly-mobile bands) with increase in plant processing and the beginnings of shellfish exploitation. Selection of lithic materials during this time shows an increased reliance on locally available resources.

Late Archaic groups became more sedentary as their reliance on seasonal floral resources increased. Evidence for storage of foods such as squash, nuts, and goosefoot appears in the Late Archaic Southeast (Steponaitis 1986:374). The increased use of floodplain settings documented elsewhere during the Late Archaic also occurred in Coastal Virginia (Klein and Klatka 1991; Steponaitis 1986). These increasingly sedentary groups also became more reliant on fishing and other riverine resources as evidenced by the appearance of steatite netsinkers, shell middens, and fish weirs at some Late Archaic sites (Dent 1995:184-185).

Klein and Klatka (1991), using data from three different studies along the Coastal Plain (Potter 1982; Steponaitis 1987; Turner 1976), show a movement toward increased utilization of estuarine resources during the Late Archaic and Early Woodland periods. This pattern is not confined to the Virginia Coastal Plain. It is seen along the entire Atlantic Coast region, and it has been suggested (Braun 1974; Claassen 1986; Snow 1980) that it is indicative of an increase in shellfish exploitation and anadromous fish post-3000 B.C. This was also very likely related to the stabilization of sea levels during the Late Archaic, resulting in favorable conditions for the development of estuarine habitats.

### **3.1.3 Woodland Period**

The Archaic period was followed by the Woodland period (1,000 B.C.–A.D. 1600), characterized by ceramic technology, an intensified reliance upon horticulture and agriculture, and increased sedentism (Klein and Klatka 1991; Mouer 1991). Although some early agriculture may have been practiced during this period, the subsistence pattern of Early Woodland inhabitants of Eastern North America was probably similar to that of Late Archaic people. The exploitation of plants, including goosefoot, sumpweed, maygrass, and knotwood, continued, as did a general increase in sedentism first seen during the Late Archaic (Steponaitis 1986:379).

Three subperiods (Early, Middle, and Late Woodland) have been designated, based primarily on stylistic and technological changes in ceramic and projectile point types as well as settlement patterns. All researchers do not agree upon the temporal brackets for Early and Middle Woodland in Virginia. The most widely used temporal scheme in the Middle Atlantic region at present (Early Woodland, ca. 1200 B.C.–ca. 500 B.C.; Middle Woodland, ca. 500 B. C. - ca. A.D. 900; Late Woodland, A.D. 900-1600), was initially formulated by Gardner (1982b) and elaborated on by others, based on both artifact styles and settlement shifts.

The use of subterranean features such as storage pits, refuse pits, and cooking hearths is also associated with the Early Woodland Period. These types of features appeared first in the Piedmont and then in the Coastal Plain. Mouer (1991) indicates that thick midden deposits with dense occupational debris start to appear on sites along the James River during this period and shell midden deposits were documented by Waselkov (1982) along the Potomac River. These types of features indicate increased sedentism and a shift to more intense and lengthy occupation periods. At the White Oak Point site, remains of hickory nuts, and various species of shellfish, fish, and deer were recovered (Waselkov

1982) During the Early Woodland period, it appears that increased exploitation of oysters as a food source begins.

During the Middle Woodland, there is a decrease in the number of sites along smaller streams and an increase in sites along major trunk streams and estuaries. Shellfish, anadromous and resident fishes, deer, waterfowl, and turkey are among the important fauna in the Middle Woodland diet. Analysis of remains gathered from excavations at the Maycock's Point site have shown the importance of aquatic resources, including fish, shellfish, and plants, in the James River estuary system during the Middle Woodland Period (Opperman 1992). Various nuts, amaranth, and chenopod seeds also appear to be important during this period. These items were probably harvested intensively and often stored for long periods of time.

Settlement models for the Middle Woodland in the outer Coastal Plain have been put forth by Gardner (1982b). Combined with research on the shoreline Potomac area of the Northern Neck region (Potter 1982; Waselkov 1982), these settlement models show that shellfish exploitation began during the Late Archaic and became intensive by the Middle Woodland. During the period between A.D. 200 and A.D. 500, small group sites predominate. These small sites include both low-density shell middens on the coast and non-midden sites in the interior (Potter 1982). After A.D. 500 until the start of the Late Woodland period, there are increasing numbers of very large shell middens. These may represent villages where multiple bands congregated for part of or all of the year (Potter 1982:346). Around Portsmouth, Gardner (1982b:56-57) interprets large sites as sedentary macroband settlements, and smaller sites as outlying ephemeral camps, occupied as needed. Handsman and McNett (1974:26, 31) suggest that the small site/large site dichotomy in the Chesapeake area is a reflection of more semi-permanent villages needed due to population pressure and to accommodate nascent horticulture. However, no evidence of such horticulture is seen in the archaeological record before the Late Woodland.

The Late Woodland period is marked by an intensified use of cultivated plants, particularly maize. Various beans and squashes were also being used consistently during the Late Woodland. This dependence on agriculture was tied to socio-economic systems that were in place at the time of European contact and probably extended several centuries before contact. Carbonized remains of maize, squash, gourd, hickory nut, walnut, acorn, grape, huckleberry, persimmon, blueberry, blackgum, and amaranth have been recovered from Late Woodland associations at the Great Neck site (Gardner 1990). European accounts describe a heavy reliance on slash-and-burn agricultural methods (Turner 1992:106). However, despite this supposed dependence on cultigens, only nine sites report such remains in the region (Turner 1992:107). This may be due, in part, to recovery methods: greater numbers of cultigens have been found at Coastal Plain sites where water screening and flotation methods were used, as opposed to traditional dry screening. Also, as Turner (1992:108) points out, post-depositional processes in the coastal plain, such as soil acidity and percolation conditions, may be obscuring cultigens from the archaeological record. However, if maize and other cultigens were truly not common during the Late Woodland period, knowing the processes under which the Powhatan chiefdom emerged without maize agriculture would be "theoretically important for studies on the evolution of chiefdoms" (Turner 1992:108). The role of abundant aquatic resources available in the estuarine environment also cannot be overlooked, and may account for the possible decreased dependence on maize. In addition to cultigens and shellfish, Late Woodland peoples throughout the region continued to rely on large mammals, small mammals, and birds (Dent 1995:251) for their subsistence.

Shell was an important material used during the Late Woodland Period in the Chesapeake and tended to be associated with the accumulation of wealth and possibly status in those societies. A prominent example of an indicator of wealth and status is Powhatan's Mantle. This deerskin mantle contains thousands of small marginella beads sewn into various patterns. Pendants and gorgets made of shell are also common indicators of wealth during this period. Of note, five engraved shell masks, decorated with a traditional Southeastern "forked/weeping eye" motif were found in a seventeenth-century burial in Stafford County. Three of the five masks show clear similarities with others located in the lower Southeast (Smith and Smith 1989), and likely indicate long-distance trade. Bone was also used for items including pins and fishhooks.

Trade becomes a significant factor during the Late Woodland. As Turner (1992:105) states, it "presumably was a factor in the evolution of the Powhatan chiefdom as well as the less complex Nottoway and Meherrin societies to the south." In addition to the shell masks described above, steatite pipes found at the Hand site demonstrate trade with groups in the Virginia Piedmont. Copper also is found in small amounts across the region, although its originating source is to the west. Of a less exotic nature, some lithic raw materials not generally found along the coast had to be traded into the region from areas to the west. Coastal Plain groups appear to have had goods to trade out of the region. At the Great Neck site, a possible shell bead workshop area was uncovered (Painter 1983, cited in Turner 1992:105).

Settlement during the Late Woodland period is markedly changed from that of the preceding Middle Woodland. Most prominently, the presence of palisaded villages is a distinguishing settlement characteristic. These emerge during the fifteenth and sixteenth centuries. Palisades are generally interpreted as defensive mechanisms, indicating tension and possibly hostilities between neighboring groups (Turner 1992). In addition to palisaded villages, nucleated and dispersed non-palisaded villages, hamlets, and temporary camps are quite common in the region at this time. Although only nucleated villages were usually identified, more recent work by Potter (1982), Hodges (1986a, 1986b), and Opperman and Turner (1989, 1990) suggest that dispersed villages were present as well. The difficulty in identifying them archaeologically may have contributed to the low number of identified Powhatan settlements known from the 1612 map by John Smith (Turner 1992:110). Village settlement itself varied, but some sites show evidence of longhouses located adjacent to the palisade (Callahan 1985; Egloff and Turner 1984:37-39). Other sites, associated with the Weanocks and located in Prince George County, have uncovered short, oval structures.

The social organization of groups located along the coast during the Late Woodland is recognized as hierarchical, based primarily on historical documentation. This hierarchy was manifested most prominently by the Powhatan Chiefdom of the sixteenth and seventeenth centuries. Its growth is documented, rising from six to nine districts in the middle to late sixteenth century, to comprising a total of 31 districts by 1607, with 13,000 persons and covering 16,500 square kilometers (Turner 1992). The fast rise of this paramount chiefdom, and the presence of multiple lower level chiefdoms within the confederacy where rank is not as well-defined, as well as the lack of monumental architecture such as mounds, makes archaeological identification of hierarchical rank difficult. There is archaeological evidence and historic documentation of the expansion of Powhatan by increased territoriality and warfare. However, the best archaeological indicator of rank in this region is seen in the mortuary practices.

There are early historic accounts of different treatment of corpses of different rank. Archaeologically, there are indicators of this as well. Good examples include the "Great King of Great Neck", a burial

with more than 30,000 shell beads (Turner 1992:117) and a child burial at the Hatch site that contained almost 1,500 shell beads. Ossuary burial is common in the Chesapeake. Rank is more difficult to assess with this burial type, because it is unclear if higher status individuals were placed in separate areas as ossuaries filled up. Generally, ossuaries contained between 10 and 20 individuals, and interred artifacts were rare. Some ossuaries appear to be located away from villages.

Woodland period sites are more common in the region than Archaic sites. Woodland sites tend to be located along larger streams and estuaries and conditions for preservation tend to be better than for sites of the earlier periods. By the onset of the Woodland period, environmental conditions similar to those of today were well established and sea level rise and shoreline erosion become less of a factor in the preservation of sites.

### **3.2 CONTACT PERIOD THROUGH THE ANTEBELLUM PERIOD (1607-1860)**

Sustained contact between Native Americans and Europeans began with the construction of the English fort at Jamestown in 1607. Jamestown colonist Captain John Smith explored much of the Chesapeake Bay region, including the vicinity of the current Study Area Corridor, during the early years of the new colony. A map depicting Virginia at the time of his explorations, *Virginia Discovered and Discribed* (1624), shows a Native American settlement (Kecoughtan) near the Study Area Corridor in the present-day Hampton. Additional Native American settlements, including the village of Chesapeake in the vicinity of the Elizabeth River, are located south of the James in the vicinity of the modern cities of Norfolk, Portsmouth, and Chesapeake as well as portions of Surry and Isle of Wight Counties. The Kecoughtan settlement near modern Hampton was located near the mouth of the Hampton River in the general vicinity of the western end of the HRBT, perhaps in the location of the current Veterans Administration Hospital Complex grounds (Rountree 1989:11).

Kecoughtan reportedly remained an independent entity until the late 1500s, when Powhatan allegedly killed the local chief and moved the people north of the York River. In 1608, the former inhabitants, led by Powhatan's son Pochins, reoccupied Kecoughtan (Rountree 1989:119). Rountree et al. (2007:146) estimate the population of the settlement at 180 people, including 20 warriors.

In 1610, Virginia Governor Sir Thomas Gates forcibly removed the Kecoughtan, which paved the way for English settlement in the area. At the same time, the English erected Fort Charles and Fort Henry along the Hampton River (Turner and Opperman n.d.:6-2). By 1616 some 20 English settlers lived in the former Native American settlement of Kecoughtan which became Elizabeth City after 1619. Hampton, the oldest continuously occupied community in English-speaking North America, grew from Elizabeth City. By the end of the seventeenth century, dwellings lined both banks of the Hampton River, and settlement increased during the eighteenth century (Turner and Opperman n.d.:6-13). Norfolk and Hampton quickly evolved as important ports for the region.

South of the James River, the area that would become Isle of Wight County was first settled by the English in the early seventeenth century. The first English settlers in what is now Isle of Wight County included Captain Christopher Lawne, Sir Richard Worsley, Nathaniel Basse, and John Hobson. When Virginia's first counties were created in 1634, Warrosquoyacke County encompassed Isle of Wight. Warrosquoyacke was divided in 1647 between Isle of Wight to the west, and Upper and Lower Norfolk counties to the east. Early settlement of the county centered around the James River's south shore and both the east and west shores of Pagan Creek.

In 1742, the Town of Suffolk, named for the home county of Governor William Gooch, was established. Formerly known as the settlement of Constant's Wharf, Suffolk was burned by the British in 1779 ([www.suffolkva.com](http://www.suffolkva.com) n.d). In 1752, Portsmouth was founded on the Elizabeth River. Located on 65 acres of William Crawford's extensive Norfolk County plantation, Portsmouth boasted a church, a market, a courthouse, and a jail in its early days. By 1761 Portsmouth Parish had been established and two years later the town made its first annexation of land ([www.portsmouthva.gov](http://www.portsmouthva.gov) n.d.).

In 1775, the Battle of Great Bridge occurred in the vicinity of modern Chesapeake. At the end of the American Revolution, Virginian soldiers under the command of Colonel William Woodford, Lieutenant Colonel Scott, and Major Thomas Marshall were marching from Williamsburg toward Suffolk where provisions were present. When they reached Great Bridge, Woodford's men constructed a breastworks at the southern end of the causeway manned by only a few. Across the bridge were British forces. The British eventually moved on Woodford's men after receiving information from one of Major Marshall's slaves. The slave pretended to desert to the British and informed them that the American force numbered no more than 300 men. The British force, including regular soldiers as well as local British sympathizers and some 90 slaves, advanced and opened fire on Woodford's breastwork. The American force, safely behind the fortifications returned fire and within half an hour had defeated the British who suffered a loss of nearly 40 men (Harper, 2007:24-27).

In December of 1812, Britain declared a blockade of the Chesapeake Bay. At the beginning of February in 1813, the Royal Navy began keeping station at the south end of the Chesapeake in Lynnhaven Bay, just west of Cape Henry and the open ocean. British strategy for the region was to control the Bay and its shipping. In general, the Royal Navy judged Hampton Roads too confined and dangerous and stayed out of the long anchorage leading to Virginia's interior. Virginians feared an attack on Norfolk and Brigadier General Robert B. Taylor mustered local defense forces. In March of 1813, General Taylor and his militiamen were transferred into the US Army and charged with defending the area. There was relatively little in the way of men or material, but Taylor began organizing the defenses around Norfolk (Butler 2013, Lossing 1868). On June 22, 1813, Portsmouth was attacked by the British under the command of Admiral Sir John B. Warren and Brigadier General Sir Sydney Beckwith ([www.portsmouthva.gov](http://www.portsmouthva.gov) n.d.). This battle, the Battle of Craney Island, was initiated by the British in the attempt to secure the mouth of the Elizabeth River with the goal of taking Fort Norfolk and the Gosport Navy Yard. A brief and decisive battle in favor of the US Defenders, the British altered their plan and focused their energy northward.

Three days later, on June 25th, Hampton too was invaded by the British. The British fleet bombarded an American Camp and batteries at Little England Farm, south of the Study Area. Simultaneously, 2,000 British troops landed near Newport News and marched east along Celey's Road to attack Hampton. British barges also approached Blackbeard Point, near the mouth of the Hampton River. During the battle, British troops disembarked from the barges and took possession of Hampton, approaching the Study Area from the west. The British force destroyed ordnance and seized supplies during the ten-day occupation of Hampton. Only 12 were killed during the battle, five British soldiers and seven colonials. In the aftermath, however, British troops sacked Hampton (Echelman et al. 2010:235–237).

By the nineteenth century, agricultural practices had depleted soils in the vicinity of the Study Area. However, other industries began to take hold and the seafood industry became a major factor in the economies of Hampton, then Elizabeth City, and Norfolk (Fairfax 2005). Also during this period, Fort Monroe was completed (1819 to 1834). Fort Monroe was built by military prisoners and civilian workers and is the only fort in America continuously occupied by the US Army (Fairfax 2005). At the

same time, Portsmouth's economy relied heavily on commerce. In 1827 the US Navy had constructed its first hospital in Portsmouth, at the site of Fort Nelson which dated to the Revolutionary War. By 1833, the first dry dock in North America was built by the Navy at Gosport Navy Yard, now the Naval Shipyard ([www.colonelcrawford.com](http://www.colonelcrawford.com) 2013). In the Suffolk vicinity, the early nineteenth century saw the first commercial peanut crop harvested. The production of peanuts would grow into a significant industry in Suffolk in the post-Civil War era (Evans-Hylton 2004).

### **3.3 THE CIVIL WAR (1861-1865)**

#### **3.3.1 Overview**

Eastern Virginia attracted military attention during 1861 and 1862, when Union and Confederate forces clashed over control of the Chesapeake Bay and its major tributaries. In May of 1861, Camp Hamilton, located on the western shore of the James River and possibly near the western entrance to the HRBT, was established to relieve overcrowding at Fort Monroe caused by the sudden influx of troops and to protect a fresh water source east of the mouth of the Hampton River. Fort Monroe's guns helped protect the encampment. Many of the troops involved in the Battle of Big Bethel and the Peninsula Campaign initially lived in tents and shebangs at Fort Hamilton.

Federal sailors abandoned Norfolk on April 20, 1861, burning the buildings, wharves, and vessels at Gosport Navy Yard, the nation's major shipyard. To protect gunboats and blockade runners from Union warships and the guns at Fort Monroe, Southern troops reinforced existing fortifications and constructed new batteries along the shores of the James River and the Chesapeake Bay.

During the spring of 1862, Major General George McClellan and the Army of the Potomac sailed to Hampton and embarked up the peninsula between the James and York Rivers to capture Richmond in what became known as the Peninsula Campaign. The Union Navy docked in Hampton, Newport News, Norfolk, and Portsmouth throughout the remainder of the war, and Fort Monroe and Fort Wool remained important to the Northern blockade.

No battles were fought in the immediate vicinity of Chesapeake during the Civil War. However, the region was occupied by Union forces which laid waste to much of the land ([www.cityofchesapeake.net](http://www.cityofchesapeake.net) n.d., accessed September 2015). In April of 1863, Confederate forces besieged the Union garrison at Suffolk, guarded by some 25,000 soldiers. The rebels, led by Lieutenant General James Longstreet, constructed a battery on Hill's Point on the Nansemond River, blocking the Union shipping. Two days later, Union forces were successful in driving the Confederates back from nearby position at Norfleet House. Later that same month, the Battle of Hill's Point occurred when Union forces launched an assault on Fort Huger after landing on Hill's Point at the confluence of the forks of the Nansemond River. This successful attack re-opened the Union shipping channels cut off by the Confederates earlier in April ([www.legendsofamerica.com](http://www.legendsofamerica.com) 2003-Present). Civil War naval battles in the project vicinity associated with the 1861–1862 blockade of the Chesapeake Bay include the Battle of Sewell's Point and the Battle of the Ironclads in Hampton Roads.

#### **3.3.2 Battle of Sewell's Point**

The Battle of Sewell's Point began during the late afternoon of May 18, 1861, when the *USS Monticello* opened fire on the unfinished battery at Sewell's Point to disrupt ongoing construction. The *USS Thomas Freeborn* soon joined the assault; both retired after inflicting slight damage to the battery emplacement. Captain Eagle, commanding the *Monticello*, unleashed the ship's full arsenal, including

one of the few ten-inch Dahlgren guns that saw service, on the Sewell's Point battery. The firing ceased after an hour and a half, when the ship's ammunition ran out and the Confederate battery had only two rounds remaining (Salmon 2001:67–68). Damage to both sides was minimal (Kennedy 1998:5).

### **3.3.3 Battle of Hampton Roads**

The hull and engines of the U.S.S. Merrimack, scuttled when Norfolk was abandoned by the Union in 1861, were salvaged by the Confederates. Two-inch-thick (5.1 cm) plates cast at the Tredegar Iron Works clad the refurbished vessel, including a sharply pointed prow that served as a ram. A casemate with sloping sides engineered to deflect shot capped the vessel. Renamed the *C.S.S. Virginia* when launched on February 17, 1862, the first ironclad of the war sported ten heavy guns.

The US Navy's ironclad, the *USS Monitor*, had launched on January 30, 1862. The 172-foot long (52.4 m), 41.5-foot wide (12.6 m) *Monitor* also rode low in the water. An armored turret with two 11-inch (27.9 cm) smoothbore Dahlgren guns was mounted on the surface of the Union ironclad. On the morning of March 9th the *Virginia* sailed toward the Union fleet anchored at Fort Monroe. The *Monitor* prepared for battle. Shortly after 8 A.M., as the *Virginia* opened fire on the *USS Minnesota*, the *Monitor* moved into position near the Confederate ironclad, rotated its turret, and opened fire. Over the next four hours, the two ships circled each other, firing at close range and attempting to ram the other vessel. Eventually, the *Monitor* began to leak and the iron plates separated from the wooden backing. Just after noon, while looking through the observation slit, the *Monitor's* commander Lieutenant John L. Worden was wounded and temporarily blinded by shell fragments. The vessel, which had been maneuvering in the direction of Fort Monroe, continued to sail as crew members tended to Worden. Thinking the *Monitor* was retiring from the fray, the *Virginia's* officers set course for Norfolk, ending the engagement. A total of 433 casualties were suffered during throughout the battle.

## **3.4 RECONSTRUCTION THROUGH THE NEW DOMINION (1865 TO PRESENT)**

In the vicinity of the Study Area Corridor are the Phoebus Historic District and the Pasture Point Neighborhood Historic District. Early settlement of the Phoebus Historic District began along Mill Creek during the seventeenth century. Nevertheless, the area remained largely rural until 1874, when the town was incorporated as Chesapeake City. The name changed to Phoebus in 1900 in honor of Harrison Phoebus, the owner of the Hygeia Hotel, a well-known resort on the edge of town. The ferry from Norfolk landed at Phoebus, and the construction of a railroad during Reconstruction spurred further growth. Hampton annexed Elizabeth City County, including Phoebus, in 1952. Phoebus declined after the 1957 opening of the Hampton-Roads Bridge Tunnel, which bypassed Phoebus.

From the circa 1610 founding of Hampton through the Civil War, the current Pasture Point neighborhood remained largely rural. Like early suburbs elsewhere, the Pasture Point neighborhood developed along electric streetcar lines during the late nineteenth- and early twentieth-century. New York railroad magnate Collis P. Huntington's Old Dominion Land Company platted the land and promoted the development of Hampton Roads as port and center of shipbuilding and dry-dock facilities tied to the rest of the country by an extensive network of rail lines. Many of Hampton's prominent white-collar managers and professionals made Pasture Point their home. The automobile's increased popularity drove the evolution of the Pasture Point neighborhood, leading to the construction of suburban houses on available lots.

The outbreak of World War I spurred substantial military growth in the vicinity of the Study Area Corridor. In 1917, the US Naval Operating Base and Training Station (Naval Station Norfolk) was

established in Norfolk and population grew in both Norfolk and Hampton and people moved to work in and for the military ([www.city.data.com](http://www.city.data.com) 2009). In Portsmouth, thousands of new jobs were created with the construction of dry docks and ships ([www.colonelcrawford.com](http://www.colonelcrawford.com) 2013). Following World War I, there was a drop in economic growth. However, World War II once again saw thousands of workers moving into the Study Area Corridor vicinity. Population growth brought the necessity for residential neighborhoods and overcrowding in both Hampton and Norfolk became a problem ([www.city.data.com](http://www.city.data.com) 2009). In 1943 nearly 43,000 people were employed by the shipyard in Portsmouth and the huge increase in population resulted in numerous large, older homes in the city being converted to apartment buildings ([www.colonelcrawford.com](http://www.colonelcrawford.com) 2013).

In 1910, the town of Suffolk was incorporated. Two years later, Italian immigrant Amedeo Obici established the Planters Nut and Chocolate Company in Suffolk, making the town famous around the world ([www.suffolkva.com](http://www.suffolkva.com) n.d.). During the World Wars, Suffolk became a significant location for military munitions storage. During World War II the Nansemond Ordinance Depot, formerly the Pig Point Ordinance Depot (pre 1929), was ideally located to supply arms to cargo ships in Hampton Roads. During this period, the Depot was the main “munitions depot for the Newport News port of embarkation” (Freitus 2014:63). The depot stored and handled all types of conventional ordnance as well as chemical warfare munitions, both manufactured in the United States and captured during the war. Following World War II, the depot remained active and was eventually transferred to the Department of the Navy in 1950. By 1960 the facility was declared excess government property. The land was parceled out to both the Commonwealth of Virginia and numerous commercial businesses in the region (Freitus 2014).

Following the Civil War, the region that would become Chesapeake remained predominantly rural. However, the northern portion of what is today Chesapeake, in the vicinity of Norfolk which was, at that time, a growing urban center, began to develop as a suburb. Throughout the early twentieth century, the Chesapeake area experienced residential and commercial growth. By the mid-twentieth century, South Norfolk and Norfolk County, of which the Chesapeake region was still a part, experienced annexation from neighboring cities. Between 1950 and 1960, Norfolk County lost nearly 30 square miles of land and over 50,000 residents via annexation. In 1962, the citizens of Norfolk County and South Norfolk voted in a special election to approve a merger of the two localities which had been agreed upon by the governments of each the previous year. In June of 1963 the name “Chesapeake” was chosen for the city newly formed from Norfolk County and South Norfolk ([www.cityofchesapeake.net](http://www.cityofchesapeake.net) 1996-2015).

The original HRBT, now the west bound tunnel, opened on November 1, 1957. The second span of the tunnel was opened in 1976. The HRBT replaced ferry services that once operated between Hampton and Norfolk ([www.roadstothefuture.com](http://www.roadstothefuture.com) 2007). The cities of Hampton and Norfolk, the vicinity of the HRCS Study Area Corridor, are modern urban centers, both relying heavily on military jobs. Hampton is home to more than 140,000 residents, many of whom are employed in the seafood industry, for the federal government (e.g., National Aeronautics and Space Administration) and the military, or in tourism ([www.hampton.gov](http://www.hampton.gov) 2012). Naval Station Norfolk is still in operation and the battleship *USS Wisconsin* is docked in Norfolk ([www.city.data.com](http://www.city.data.com) 2009). In 2014, Portsmouth had an estimated population of 96,004 residents (United States Census Bureau 2015). While the city was once highly dependent on military jobs, modern Portsmouth’s economy is based in an array of industries including federal government, ship repair, marine engineering, health care, food processing, and manufacturing (Portsmouth Virginia Department of Economic Development 2008-2012).

Chesapeake is today a blend of urban and rural centers. The population of Chesapeake rose from 78,000 in 1963 to 226,138 in 2012. Businesses such as Mitsubishi Kasei which operates three plants in the city as well as Household Finance Corporation and QVC continue to be attracted to the area which has a large labor force ([www.cityofchesapeake.net](http://www.cityofchesapeake.net) 1996-2015). In Isle of Wight County, the population is far lower than the urban centers of Hampton, Norfolk, Portsmouth, and Chesapeake. The 2010 federal census indicated that the county had a population of 35,270 residents ([www.co.isle-of-wight.va.us](http://www.co.isle-of-wight.va.us) n.d., accessed September 2015). Suffolk is one of the fastest growing cities in Virginia. Suffolk experienced a 34.6 percent population increase between 2000 and 2011; assuming the same rate of growth, Suffolk has a predicted population of over 150,000 residents by 2030. The government is the largest employer of Suffolk residents, followed by the healthcare, retail, and accommodations industries (Suffolk, Virginia 2013).

## **4. ENVIRONMENTAL AND CURRENT CONDITIONS OVERVIEW**

### **4.1 INTRODUCTION**

The following section offers an overview of the environmental context for the general Study Area associated with the HRCS SEIS and Alternatives A, B, C, and D and is largely based on previous studies. Overall environmental conditions in the APE for Direct Effects have not changed drastically in the recent past. However, development particularly in Hampton near the western terminus of Candidate Build Alternatives B and D and in the vicinity of the I-664/I-64 interchange has added to the urban setting of the general Study Area Corridor. The construction of the Power Plant development as well as improvements to I-64 in the project vicinity have added to the existing built environment documented in work performed by LBA (Sara et al. 1999). The Power Plant is a 480,000+ square foot planned, mixed use retail/entertainment development located in the southeastern quadrant of the intersection of I-64 and Mercury Boulevard in Hampton (<http://www.cordisleasing.com/hamptonroads>). Additional development in the Harborview Section of Suffolk and along the I-664 corridor south of the MMMBT has also impacted the environmental conditions in the APE for Build Alternatives C and D. The remainder of the project APE has been altered little since the initial archaeological studies were conducted in 1999.

### **4.2 PHYSICAL DESCRIPTION AND ENVIRONMENTAL SETTING**

The project is located within the Atlantic Coastal Plain and more specifically portions of the Virginia Peninsula and the Tidewater area. The Atlantic Coastal Plain comprises flat or gently sloping lowland underlain by two terraces: the Dismal Swamp Terrace and the Princes Anne Terrance (Henry et al. 1953). The Study Area Corridor vicinity is characterized by a relatively temperate climate in an otherwise humid subtropical region. Cool coastal winds help keep summer temperatures an average of 77 to 79 degrees (Hatch et al. 1985:1-2; Henry et al. 1953:1-2).

The unique freshwater/saltwater environment found in the Tidewater estuary system has served to create a wide degree of faunal diversity in the region. A wide variety of fish and shellfish species coupled with numerous avian species would have allowed prehistoric inhabitants, not to mention current residents, of the Tidewater area to exploit an abundant food base. Likewise, the cultivation of plants such as corn, beans, and squash and the hunting of mammalian species would have completed a tremendously diverse diet. Oysters, crabs, fresh and saltwater clams, shrimp, mussels, bass, flounder, shad, herring, snapper, sturgeon, and bluefish are among the important riverine and estuary fauna of the tidewater area that would have been exploited by inhabitants of the region (James River Institute for Archaeology 1994; Dent 1995; Stevens 1991).

### **4.3 GEOLOGY, TOPOGRAPHY, AND HYDROLOGY**

The pre-Holocene geology of the Virginia Coastal Plain consists of igneous and metamorphic rocks of Precambrian and Paleozoic age overlain by a series of sedimentary deposits dating to the Cretaceous period. Beginning as early as the Late Cretaceous, a cycle of transgression and regression related to glacial activities and consequent sea level fluctuation is responsible for the formation of these sedimentary layers in the coastal plain. These layers have been named the Mattaponi (Upper Cretaceous/Paleocene), Nanjemoy (Eocene), Calvert (Eocene/Miocene), and Yorktown (Miocene) formations (Teifke 1973:10-11).

The Quaternary has been characterized by the continued deposition of clays, silts, sands, gravels and peat bogs. The Late Pleistocene-Holocene geology of the Virginia Coastal Plain has mostly been characterized by marine transgression onto the land, filling what is today known as the Chesapeake Bay. Sedimentary systems affecting the current Study Area Corridor include fluvial and marine-estuarine depositional systems. Fluvial forces included overbank flow and stream meander resulting in alluvial deposition. Marine-estuarine soil deposition occurs during hurricanes, tidal floods, and longshore currents (Onuschak 1973:111-124). A diverse complex of sands, pebble gravel, and laminated silty clays underlies the upland terraces and gravel deposits are present in large enough quantity for local quarrying.

The Chesapeake Bay and the numerous tidally influenced rivers that flow into the bay characterize the drainage of the Tidewater region. The most recent formation of the Chesapeake Bay began sometime after approximately 15,000 years ago, at the end of the Wisconsin glacial advance. At this time, the ancestral Susquehanna River drained the region; however, as glaciers began to melt and sea level rose, ocean waters began to flow into the Susquehanna valley, eventually creating the estuary that exists today (Dent 1995:73,74).

The APE for Direct Effects for the current build alternatives crosses numerous creeks and wetlands, not to mention the Hampton Roads which is a portion of the mouth of the Chesapeake Bay where the James, Elizabeth, and Nansemond Rivers converge.

#### 4.4 SOILS

Soils documented within the APE for all build alternatives are characterized as being frequently flooded or poorly drained, or have been identified as complexes dominated by urban land. Large portions of the alternatives are located adjacent to modern, urban development, or have been substantially compromised by urban development and construction. A few soil types documented in Chesapeake (8 & 25) as well as several in Suffolk (10A, 10B, 16A, & 16B) and located within the APE for Alternatives C and D are described as level soils that are moderately well drained to well drained. These soil types would have the greatest potential to retain intact cultural deposits within the APE. **Table 10** describes the soils identified within the APE for all four build alternatives. Maps of the APE for each alternative documenting soil types as well as the current environmental conditions are located in **Appendix C**.

**Table 10: Soil Types in the APE for Build Alternatives A, B, C, and D (Web Soil Survey 2015)**

Map Symbol	Soil Type and Class	Slope	Drainage/Erosion Characteristics	Alternative
1	Altavista-Urban land complex	0-3%	Moderately well drained	A, B, C, D
2	Augusta-Urban land complex	0-2%	Somewhat poorly drained.	A, B, C, D
4	Beaches		Misc. area no erosion classification	A, B, D
6	Bohicket muck very frequently flooded	0-1%	Very poorly drained.	A, B, D
10	Dragston-Urban land complex	0-2%	Somewhat poorly drained.	A,B, D
11	Duckston fine sand, frequently flooded	0-2%	Poorly drained.	A, B, D
12	Johnston silt loam, frequently flooded	0-2%	Very poorly drained.	A, B, C, D
15	Munden-Urban land complex	0-3%	Moderately well drained.	A, B, D

Map Symbol	Soil Type and Class	Slope	Drainage/Erosion Characteristics	Alternative
17	Newflat-Urban land complex,	0-2%	Somewhat poorly drained.	A, B, D
20	Seabrook-Urban land complex	0-3%	Moderately well drained.	A, B, D
22	State-Urban land complex	0-3%	Well drained.	A, B, D
24	Tomotley-Urban land complex	0-2%	Poorly drained.	A, B, C, D
26	Udorthents-Dumps complex		Fill no zone of water saturation within a depth of 72 inches	A, B, C, D
27	Urban land		No erosion classification	A, B, C, D
5	Aquents, frequently ponded	0-2%	Poorly drained	C, D
8	Bojac loamy fine sand	0-2%	Well drained	C, D
9	Bojac-Urban land complex	0-2%	Well drained	C, D
14E	Conetoe-Chesapeake-Tetotum complex	2-40%	Very poorly drained	C, D
16	Deloss-Tomotley-Nimmo complex	0-1%	Somewhat poorly drained	C, D
19	Dragston fine sandy loam	0-2%	Somewhat poorly drained	C, D
20	Dragston-Tomotley complex	0-2%	Somewhat poorly drained	C, D
21	Dragston-Urban land complex	0-2%	Moderately well drained	C, D
25	Munden fine sandy loam	0-2%	Moderately well drained	C, D
27	Munden-Urban land complex	0-2%	Moderately well drained	C, D
30	Nawney silt loam	0-1%	Very poorly drained	C, D
37	Rappahannock muck, very frequently flooded	0-1%	Very poorly drained	C, D
43	Tomotley-Deloss complex	0-1%	Poorly drained	C, D
44	Tomotley-Deloss-Urban land complex	0-1%	Poorly drained	C, D
45	Tomotley-Nimmo complex	0-1%	Poorly drained	C, D
47	Tomotley-Urban land-Bertie complex	0-2%	Well drained	C, D
49	Udorthents-Urban land complex	0-45%	N/A	C, D
50	Urban land	0-5%	N/A	C, D
51E	Urban land-Conetoe-Chesapeake-Tetotum complex	2-40%	N/A	C, D
6	Dragston fine sandy loam		Somewhat poorly drained	C, D
10A	Kalmia fine sandy loam, wet substratum	0-2%	Well drained	C, D
10B	Kalmia fine sandy loam, wet substratum	2-6%	Well drained	C, D
15E	Nansemond loamy fine sand	15-30%	Moderately well drained	C, D
16A	Nansemond fine sandy loam	0-2%	Moderately well drained	C, D

Map Symbol	Soil Type and Class	Slope	Drainage/Erosion Characteristics	Alternative
16B	Nansemond fine sandy loam	2-6%	Moderately well drained	C, D
24	Tomotley loam		Poorly drained	A, B, C, D
25	Torhunta loam		Very poorly drained	C, D
29	Weston fine sandy loam		Poorly drained	A, B, C, D
W	Water			A, B, C, D

#### 4.5 CURRENT CONDITIONS IN THE APE

##### 4.5.1 Conditions Assessment – Alternatives A and B – Cities of Hampton and Norfolk

The first segment of Alternatives A and B is located in the cities of Hampton and Norfolk along the existing I-64 corridor. The portion of the Study Area Corridor within Hampton, beginning near the intersection of I-64 and I-664 is characterized as an urban built environment with little open space (**Appendix C: Maps 1-11**). The western terminus of the APE is surrounded by dense retail, residential, and industrial development. Since the late 1990s, several development projects have been realized including the Power Plant and the Peninsula Town Center. Both are characterized as dense retail developments and include a combination of stores, restaurants, and entertainment venues.

In Hampton, as the alternatives progress eastward toward Norfolk, the corridor crosses man-made wetlands and urban development blocks that contain low-rise utilitarian, light industrial, and warehouse facilities. The industrial areas were developed primarily in the 1930s and 1960s and focused on the now-abandoned Chesapeake and Ohio Railroad and later the I-64 corridor (Sara et al. 1999). As the alternative crosses the Hampton River, late nineteenth and early twentieth century development is present. This area, Pasture Point, was listed on the NRHP as a historic district in 2008.

Small areas of open space are present north and south of I-64 as the alternative approaches the west end of the HRBT. These areas include the grounds of Hampton University, the National Cemetery, Hampton Municipal Golf Course (the Woodlands), and Strawberry Banks. The golf course is located on the north side of I-64 and is bounded by East Hampton, a post-World War II residential neighborhood (Sara et al 1999). Also on the north side of I-64 is the Phoebus Historic District, which was listed on the NRHP in 2006. This district abuts the I-64 corridor.

From the east end of the HRBT, the alternative crosses Willoughby Spit and proceeds east to the terminus at the I-64 and I-564 interchange. The terrain in this area is characterized by low lying terraces and wetlands bisected by Oasts and Masons creeks. Willoughby Spit, on the north side of Willoughby Bay, consists of a built environment composed of primarily residential and marine development. On the opposite side of Willoughby Bay is Naval Station Norfolk much of which is characterized by dredge fill and artificial land masses. There are also stretches of undeveloped wetlands, residential development, and modern military housing. At the I-64 and I-564 interchange, the Forest Lawn Cemetery is located on the east and is separated from the I-64 right-of-way by a strip of woods and 4-laned Granby Street.

Soils in Hampton are largely characterized as urban land and in most places Udorthents-Dumps complex which consist of “excavations filled with garbage, trees, metal, fly ash, or dredging (Hampton Roads Planning District Commission [HRPDC] 1994). Soils along the creek crossings are generally

categorized as frequently flooded. In the semi-open spaces located along Build Alternative B, soils range from urban land complexes to stretches of Tetotum silt loam.

Soils in Norfolk are largely marshy and frequently flooded and include soils in the Altavista, Bohicket, Mundon, and Peawicket series as well as those classified as Udorthents. Much of the area categorized as Udorthents are unconsolidated hydraulic fills that have extended shorelines and filled marshy creek areas (Sara et al. 1999). Nearly all of the native vegetation in the APE has been removed and now includes water-tolerant species. Areas classified as Udorthents-Dumps complex are also present within the APE in Norfolk.

Overall, the APE within Build Alternative B is characterized by urban development with very few areas that remain unaltered or that retain environmental integrity. Dense residential, commercial, and industrial development in Hampton has largely disturbed the natural environmental conditions with only few exceptions. Development on Willoughby Spit and associated with Naval Station Norfolk has left very little in terms of natural environment.

#### **4.5.2 Conditions Assessment – Alternatives B and C – Norfolk Naval Station and Portsmouth**

The second portion of Alternative B and a portion of Alternative C are located in the cities of Norfolk and Portsmouth and are sited within Naval Station Norfolk, along the I-564 corridor to the Sewell's Point Terminal, within the Elizabeth River to the northeastern corner of Craney Island, and along Craney Island to an intersection with VA 164 (Western Freeway) in Portsmouth (**Appendix C: Maps 12-19**).

From the I-64/I-564 interchange in Norfolk west along I-564 to the Sewell's Point Terminal at the Elizabeth River, the project APE follows I-564 and crosses Naval Station Norfolk. Naval Station Norfolk is located on an artificially modified peninsula bound by the Elizabeth River on the west and the Hampton Roads on the north. The peninsula is drained primarily by Mason and Boush creeks which have both been artificially channelized (Sara et al. 1999). Soils along the creek crossings are generally categorized as frequently flooded.

The section of I-564 west of its intersection with I-64 is located within Naval Station Norfolk, which comprises areas of open lands, impervious surfaces, as well as some residential development/base housing facilities. The Sewell's Point Golf Course is located on the south side of the proposed transportation corridor, while areas of wooded land are located on the north side. The soils in this section are documented as Udorthents-Dumps Complex which consists of "excavations filled with garbage, trees, metal, fly ash, or dredging (Hampton Roads Planning District Commission [HRDPC] 1994).

As the corridor progresses to the west and through the Naval Station, it traverses areas of Urban Land adjacent to military operations buildings as well as runways. As the corridor turns away from I-564 to the west, it crosses an undeveloped portion of the base which is wooded and open grass. This area is categorized as Urban Land. From here the proposed alternative intersects the Sewell's Point Terminal which is an active shipping terminal. The terminal is heavily industrialized and nearly completely paved.

Overall, the APE within Build Alternatives B and C as it crosses Naval Station Norfolk is characterized by open space coupled with military development which has been built on heavily altered and man-made soils. Very little area in this section would retain natural soil stratigraphy or the potential to yield archaeological deposits.

These two alternatives exit Norfolk and cross the Elizabeth River to the northeastern corner of Craney Island. Craney Island, now joined to the mainland, was once divided from the mainland by Craney Island Creek which flows eastward into the Elizabeth River. What is now referred to most commonly as Craney Island is made up almost entirely of man-made land, particularly in the area of the current project APE and Alternatives B and C. The overall environmental conditions on Craney Island include low-lying land, areas of woodland, as well as operational buildings and development associated with the US Army Disposal Site as well as the Craney Island Naval Fuel Depot. Also located within the project vicinity is a landfill site owned by Portsmouth and located to the north of the Fuel Depot and bounded by the Disposal Site. Soils within the project corridor are predominantly categorized as Udorthents-dumps complex as well as small pockets of Bohicket Muck, poorly-drained Augusta loam-urban land complex, and the frequently flooded Johnston loam.

At the intersection of VA 164, residential development and newly constructed roadways are present. Also of note is the presence of a relatively new railroad spur collocated primarily within the median of VA 164 constructed to service the Portsmouth Marine Terminal. An additional segment, the Virginia VA 164 Corridor, was suggested at a public meeting in the early summer of 2015 and has been included within Alternative B and D (**Appendix C: Map 19-21**). This corridor, beginning at the VA 164/Cedar Lane interchange in Portsmouth and ending at the I-664/VA 164 interchange in Suffolk is characterized by a combination of wooded lands, light industrial, commercial, and residential development. As the corridor continues westward from Cedar Lane and the newly constructed Coast Guard Boulevard, VA 164 is flanked by residential development dating to the 1970s and 80s which continues until reaching Town Point Road and then College Drive where commercial development – including a WaWa Convenience Store, small commercial establishments, and several car dealerships are present. To the north is a relatively new campus associated with Old Dominion University as well as medical office buildings. At the western terminus at I-664, a series of overpasses and on/off ramps dominate the corridor.

Soils in this corridor are dominated by poorly drained Tomotley-urban land complex soils as well as those characterized as Udorthents-dumps. Also of note is the relatively recently constructed rail spur located within the VA 164 median which services the Maersk Portsmouth Marine Terminal facility.

Overall, the APE as it crosses into Portsmouth from Norfolk is characterized by open water, man-made lands, and lands that are low-lying and frequently flooded. Small pockets of natural soil stratigraphy have been noted, but a large majority of the area is categorized as udorthents and urban lands. The corridor and APE along VA 164 is characterized by a combination of older and recent light industrial, commercial, and residential development. There are few drainages or streams that are present within this section.

#### **4.5.3 Conditions Assessment – Alternative C – Hampton, Newport News, Suffolk, and Chesapeake**

The longest segment of Alternative C is located in the cities of Hampton, Newport News, Chesapeake, and Suffolk and follows generally the path of the I-664 corridor from its intersection with I-64 to its terminus at I-264 in Bowers Hill (**Appendix C: Maps 20-40**). Additional portions of Alternative C are coterminous with a portion of Alternative B and have been addressed in Section 4.5.4. A water-based segment of Alternative C which would connect with Alternative B at Craney Island includes an over-water intersection with the existing MMBT.

The portion of the alternative within Hampton, beginning near the intersection of I-64 and I-664 is characterized as an urban built environment with little open space. The corridor crosses two neighborhoods and two industrial parks with soils categorized as udorthents-dumps complex and urban land. The corridor is dominated by several elevated on/off ramps at the I-64 interchange. The northern terminus of the APE is surrounded by dense retail, residential, and industrial development. Since the late 1990s, several development projects have been realized including the Power Plant which is located to the west of the corridor as it trends south toward the MMMBT. The Power Plant is characterized as a dense retail development and includes a combination of stores, restaurants, and entertainment venues.

As the APE progresses to the south toward Newport News and the MMMBT, the corridor crosses man-made lands, wetlands, and urban development blocks that contain low-rise utilitarian, light industrial, and warehouse facilities. In the vicinity of Newmarket Creek, soils are identified as Bohicket Muck. As the corridor crosses into Newport News and particularly in the area south of 39th street, the built environment consists of late-nineteenth to early-twentieth century urban development and on the south by modern industrial and maritime development (Sara et al. 1999). The area is also dominated by the on/off ramps associated with I-664 and the MMMBT entrance.

In proximity to the entrance to the MMMBT the area is entirely commercial and industrial facilities with the exception of King-Lincoln Park located east of I-664. The coal terminal and marine facilities flank I-664 as it enters the MMMBT.

From its landing on the south side of the Hampton Roads, the project corridor crosses the cities of Suffolk and Chesapeake through areas of industrial, commercial, and residential development. As the corridor comes on shore, there is a section of former urban land that has overgrown and is currently characterized by secondary growth. Soils in this area are characterized as poorly drained.

As the corridor continues to the south, it traverses both older and new residential, commercial, and industrial development areas. In the vicinity of College Drive new commercial development including Walmart and associated stores has been constructed on the east side of I-664 while Harborview, developed in the 1990s and early 2000s dominates the west side. Soils within this section of the corridor, which range from poorly drained to well drained, largely comprise soil complexes which include urban land.

Several creeks are located in the vicinity of the corridor and include Streeter Creek, Drum Point Creek, and Bailey Creek. Skeeter Creek which flows into the Hampton Roads is present just east of the I-664 corridor as it comes on land in Suffolk; Drum Point Creek drains the portion of the Study Area Corridor near Pughsville Road and flows eastward to empty into the Western Branch of the Elizabeth River. Further south near the Route 337 (Portsmouth Boulevard) interchange with I-664 the corridor crosses Bailey Creek which also drains eastward. Finally and just south of Dock Landing Road the corridor crosses Goose Creek which forms the headwaters of the Western Branch of the Elizabeth River (Sara et al. 1999). Soil varieties in the vicinity of the creeks and watersheds are poorly drained and in some areas frequently flooded. In these areas, wooded lands and open areas characterize the landscape. Pockets of moderately well drained Munden loams and Dragston-Tomotley complex soils are present in the corridor as it trends to the south into Chesapeake.

Overall, the APE within Alternative C in the cities of Hampton and Newport News is characterized by urban development with very few areas that remain unaltered or that retain environmental integrity. Dense residential, commercial, and industrial development in Hampton and Newport News has largely

disturbed the natural environmental conditions with only few exceptions. As the alternative crosses Hampton Roads and comes on land in Suffolk, the overall environmental conditions change with pockets of wooded land coupled with older and modern industrial, commercial, and residential development flanking the I-664 corridor and its numerous interchanges. Pockets of moderately well drained to well drained soils are present, but most areas have been impacted by the construction of I-664 and the associated developments along the corridor. Areas of wooded or undeveloped land tend to be low-lying, poorly drained, and in some cases frequently flooded.

#### **4.5.4 Conditions Assessment – Alternative D**

Alternative D wholly encompasses all of Alternatives A, B and C (**Appendix C**). Conditions documented above therefore apply to the current conditions within Alternative D and have not been repeated here.

## 5. ASSESSMENT OF ARCHAEOLOGICAL SITE POTENTIAL AND RECOMMENDATIONS

For the purposes of analyzing the four build alternatives in the SEIS, 500-foot-wide Study Area Corridors have been delineated for each alternative. Areas around the interchanges included in the Study Area Corridors vary based on the footprint of proposed modifications. For the purposes of Section 106, the Study Area Corridor for each alternative constitutes the Area of Potential Effects (APE) for Direct Effects, i.e., the area in which there is potential for direct impacts on historic properties to occur. The APE For Direct Effects generally encompasses the defined Limits of Disturbance (LOD) for the project. In locations where the LOD exceeds the APE for Direct Effects, the APE has been adjusted to match the limits of the LOD.

The archaeological assessment included three tasks: identification of previously recorded archaeological resources and limits of previous archaeological survey within the project APE; identification of areas that may require or warrant additional survey during future stages of the project; and determination of the likelihood for the presence of significant archaeological resources within the APE that may be extraordinarily complex, contain human burials, or would be important chiefly for reasons other than information potential. The APE comprises primarily areas of modern development and/or roadway, or is characterized by low-lying or in-filled wetlands. Nearly the entire APE suitable for subsurface archaeological survey was investigated during a 1999 study conducted by Louis Berger and Associates.

### 5.1 ARCHAEOLOGICAL SITE POTENTIAL

Background research conducted as part of the current project included a thorough review of the document entitled *Cultural Resource Survey, Hampton Roads Crossing Study, Candidate Build Alternatives 1, 9, and 2* (Sara et al. 1999) as well as a review of additional information available at the VDHR regarding the level of previous survey coverage for the project APE. Additionally, the VDHR archives were consulted for information on previously recorded archaeological sites present within the APE. The APE for Direct Effects for the HRCS SEIS alternatives was set at 250-feet on either side of the proposed center line for all alternatives and includes additional lands in the areas of proposed interchange improvements. In locations where the LOD as currently defined exceeds the 250-foot wide study corridor, the APE for Direct Effects was amended to be conterminous with the LOD.

Within this APE, there are 51 previously recorded archaeological sites, the majority of which have been recommended not eligible for listing on the NRHP or have been destroyed by construction associated with I-664 or other developments. Of these 51, three (sites 44HT0009 (also 44HT0089), 44HT0090, and 44CS0042) have been documented as potentially eligible for listing and one (44SK0194) is listed on the NRHP. Background research identified 27 individual terrestrial and underwater archaeological surveys that have been conducted within the APE since the late 1970s through present. The methodologies employed by the larger and more pertinent surveys are consistent with the methodology currently recommended by the VDHR for terrestrial surveys further indicating that the probability of identifying additional significant intact archaeological deposits would be considered low within the defined APE. However, even with the numerous previous surveys that have been conducted, several areas have been identified that would warrant additional investigation to verify site deposits and conditions as well as investigated for previously unidentified resources.

A review of the previously recorded sites identified within the Study Area Corridor as well as a review of the history of the region indicates that archaeological sites ranging in date from the Archaic period through the twentieth century could be present within the project APE. However, the probability for identifying new sites containing significant and intact deposits would be considered low because of the predominance of dense urban development present within a large majority of the corridor as well as the intensity of archaeological survey work that has been previously conducted. There are several exceptions, however, and additional investigation would be recommended as documented in the following sections for each Alternative. Sites associated with the Paleo-Indian period would not likely be discovered in the project APE.

Underwater surveys conducted for the water-based portion of these alternatives also did not identify significant underwater cultural resources. A review of the Phase I level underwater survey report (Cox 1999) and associated maps indicates that a survey corridor measuring on average 200 meters in width was utilized for the investigation with multiple and overlapping survey lanes. The survey included intensive magnetometer survey and acoustic remote sensing with target analysis at a level that meets the current standards of the VDHR for underwater investigations. The correlation of these survey corridors to the current APE for Direct Effects indicates that the Phase I level underwater surveys to date have adequately covered the APE for Direct Effects for all four current build alternatives with the exception of the overwater portion of Alternatives C and D commencing at the shoreline in Newport News and trending to the southeast for approximately 0.5-mile and a small area near the proposed overwater interchange with the MMMBT north of Craney Island. In these locations the APE for Direct Effects exceeds the limits of the underwater investigations. Additional underwater survey may be warranted in these locations to sufficiently investigate the potential for submerged cultural resources at such time a preferred alternative is selected (**Figure 4**).

The underwater investigations in 1999 identified 17 targets that may contain significant submerged cultural resources within Candidate Build Alternatives 9 and 9/2 (current Alternatives B, C, and D) and 12 targets that may contain significant submerged cultural resources within Candidate Build Alternatives 1 and 2 (currently Alternatives A, B, and D) (Cox 1999). Additional underwater work was conducted on the 17 targets identified in Candidate Build Alternative 9 and 9/2 (now Alternatives B, C, and D) near Craney Island and the Monitor-Merrimac Bridge Tunnel (Cox 2000) which resulted in the documentation that all 17 targets were related to modern debris. Additional work was not conducted on the 12 underwater targets within the APE for Direct Effects for Candidate Build Alternatives 1 and 2 (now Alternatives A, B and D).

Investigation of the 12 underwater targets located within the water-based portion of Candidate Build Alternatives 1 and 2 (currently Alternatives A, B, and D) and identified during the 1999 survey (Cox 1999) is recommended as is additional investigation of Site 44NR0015, as noted above. It is likely that these targets may be related to the dredging of the Hampton Roads Channel and ultimately construction associated with the HRBT, however the information gleaned at the Phase I level was inconclusive.

### **5.1.1 Potential for Extraordinarily Complex Sites or Sites with Human Burials**

The review of the background research, previously conducted survey, and documentation on previously recorded sites indicates that there is a low potential for the identification of extraordinarily complex sites within the APE of each of the Candidate Build Alternatives. Each of the alternatives has been

surveyed extensively and it is unlikely that new sites, particularly those that would be considered complex would be identified.

However, there are two cemeteries that were identified and noted in the 1999 survey as well as the Veterans' Cemetery in Hampton and the Forest Lawn Cemetery in Norfolk that may have the potential for unmarked burials within the APE. The two cemeteries identified in 1999 include 44CS0093 and 44CS0094. Site 44CS0093 is identified as a Church and was noted as located outside the APE during the 1999 survey work. However, this site is documented within the current APE for Alternative C (**Appendix A**: Map 22). Site 44CS0093 is the location of New Hope Church and the cemetery is still in use. This site was avoided during the construction of I-664. Additional work may be required to delineate and/or identify potentially unmarked burials within the APE should the site be unable to be avoided. Site 44CS0094 is also documented as a cemetery, however no remains or headstones have been identified with this site. It is located within the southeastern quadrant of the cloverleaf at I-664 and Pughsville Road (**Appendix A**: Map 22). Information presented in the 1999 survey report indicated that the cemetery was not re-identified and records on file with the VDOT could not confirm the presence of the cemetery in this location. The previous survey for the I-664 corridor conducted in 1987 indicated that the cemetery should be removed or avoided, however there is no documentation that graves were relocated. Currently this site is outside the APE for Alternative C. If plans change, additional verification may be required. In addition to the previously recorded cemeteries identified above, VDHR #124-5238, a newly recorded twentieth century cemetery associated with the Grove Baptist Church, was identified within the APE for Direct Effects on the south side of VA 164 in Portsmouth (see **Appendix A**: Map 19). Additional work may be required to delineate and/or identify the locations of marked and potentially unmarked burials within the APE should the site be unable to be avoided.

Additional considerations may be warranted for the potential for unmarked burials in the vicinity of the Veterans Cemetery as it abuts the VDOT ROW in Hampton and also for burial features associated with Forest Lawn Cemetery. Currently, Forest Lawn Cemetery is separated from the I-64 corridor by Granby Street and additional burials would seem unlikely in this area. However, should plans exceed the existing VDOT and Granby Street ROW, additional investigation may be warranted in this vicinity.

With the exception of the five known cemetery locations, it appears unlikely that additional sites with the potential for human burials would be identified in the current APE. The APE has been extensively surveyed and exhibits substantial disturbances due to roadway construction as well as urban development.

### **5.1.2 Recommendations For Additional Survey –Alternatives A, B, and D – Hampton and Norfolk**

Candidate Build Alternatives 1 and 2 (now Alternatives A, B, and D) described in the survey report for the 1999 Phase I investigations (Sara et al. 1999) largely coincide with the current APE for Alternatives A, B and D with few variations. During that study, all areas deemed suitable for subsurface testing were investigated and included survey in choice locations in both Hampton and Norfolk. The results of the survey indicated that a large majority of the APE has been disturbed and the potential for intact significant archaeological resources in those areas does not exist. However, in several locations, intact soil deposits were identified and two archaeological sites recommended potentially eligible for listing on the NRHP (Sites 44HT0009 (also 44HT0089) and 44HT0090) (**Appendix A**: Map 17). One additional site, Site 44NR0015 (**Appendix A**: Map 18), the location of a submerged submarine, located on the

eastern bank of the Hampton Roads and south of Willoughby Bay is also recommended as potentially eligible and would warrant additional archaeological investigation to confirm its condition and eligibility. Additional archaeological sites, all of which were previously recorded in the APE were investigated and determined to have been destroyed or not present in the corridor.

As noted above, nearly 100 percent of the APE suitable for subsurface archaeological survey was investigated during the 1999 investigation. This level of survey coverage, coupled with an assessment of current conditions within the APE, resulted in the determination that additional archaeological survey may be required in only a few select portions of the project APE for the current build alternatives. Largely, the APE for these alternatives has been disturbed by modern development and/or road construction or is characterized by low-lying or in-filled wetlands.

Additional Phase I survey is recommended in the vicinity of the Pasture Point Historic District, particularly along Pembroke Ave where I-64 crosses the Hampton River (**Figure 5**) if construction activities are planned for this area. Currently, this section of I-64 is not planned for extensive improvements associated with Alternatives A, B, and D. Portions of the APE along I-64 as the corridor approaches the Hampton River have been largely disturbed and are not recommended for survey. However, the roadway is elevated as it crosses over Pembroke Avenue and there is potential for surviving archaeological deposits in the manicured lawns of residences along Pembroke Avenue and within the Pasture Point Historic District.

Additional survey is also recommended for a small section of open land on the east side of the intersection of I-64/I-564 in Norfolk (**Figure 6**). This section of lightly wooded green space is located adjacent to I-64 and Granby Street west of the Forest Lawn Cemetery. This small section was not included in the 1999 survey efforts. Survey was conducted on the west side of I-64 on Naval Station Norfolk and revealed small pockets of intact soils intermixed with areas of disturbance. It is likely that the area has been disturbed by the construction of I-64 and Granby Street, however subsurface verification is recommended.

Two sites, 44HT0009 (also documented as 44HT0089) and 44HT0090 were recommended as potentially eligible for listing on the NRHP and appear to have suffered little additional disturbance since the 1999 survey. No additional work has been conducted at these sites or along the project corridor since that time. Therefore, it is recommended that Phase II evaluation may be required for Sites 44HT0009 (44HT0089) and 44HT0090 to determine if the sites retain integrity and to determine if they are eligible for listing on the NRHP (see **Appendix A: Map 16**). Archaeological investigations at Site 44HT0009 (44HT0089) have been extensive, however, a systematic and intensive Phase II level investigation should be conducted within the APE at such time that design plans are finalized and if the design appears to impact the site deposits. Site 44HT0090 was recommended potentially eligible for listing on the NRHP under Criterion A and D for its association with Hampton University and also for research potential. Additional Phase II level investigation is recommended for this site to determine the current condition of the site as well as to determine the full potential significance.

### **5.1.3 Recommendations for Additional Survey – Alternatives B, C, and D – Norfolk and Portsmouth**

Candidate Build Alternatives 2 and 9 described in the LBA survey document (Sara et al. 1999), portions of which were reevaluated in 2012, largely coincide with current APE for Alternatives B, C, and D with few variations. During the 1999 study, all areas deemed suitable for subsurface testing were investigated and included survey in choice locations in both Norfolk and Portsmouth. The results of the

survey indicated that a large portion of the APE for this segment as it crosses Naval Station Norfolk and Craney Island in Portsmouth has been disturbed and the potential for intact significant archaeological resources does not exist.

In addition, survey in 2009 conducted by Coastal Carolina Research for a proposed connector road for the US Coast Guard Facility in Portsmouth further investigated a portion of the current APE (Gosser et al. 2009). Sites were identified, however none were considered eligible for listing in the NRHP. An additional survey conducted in 2012 (Barile et al. 2012) addressed slight design changes in the terminus of Candidate Build Alternatives 9 and 2 at the VA 164 interchange in Portsmouth which also identified archaeological deposits, however none were considered significant or eligible for listing in the NRHP. Previous archaeological investigations conducted within the Craney Island Fuel Depot and including the current project APE associated with the HRCS SEIS documented that little archaeological integrity remains within the APE for Direct Effects for the current project corridor. While both of these surveys overlap with portions of the current APE, however, a segment of the current APE is located outside of those areas previously surveyed (**Figure 7**). This segment, located within Alternatives B, C, and D, measures approximately 3,750 feet (0.71-mile) in length and is recommended for survey. However, it should be noted that this segment is located primarily in areas documented as Udorthents-Dumps and also within a known Portsmouth landfill.

Additional survey within the current APE for Alternatives B, C, and D within Naval Station Norfolk, along the east side of Craney Island, and in the vicinity of the Coast Guard Facility in Portsmouth is not recommended. These areas have been sufficiently surveyed utilizing methodologies appropriate to the current standards of the VDHR and through internal studies conducted by the US Navy. With regards to the on-land portions of the Battle of Hampton Roads and Sewell's Point, and the Battle of Craney Island, additional survey is also not recommended. While metal detector survey is often recommended for battlefield resources and was not conducted as part of the previous surveys, the locations of the land-based portions of these battlefields are highly disturbed and located within highly industrialized and developed areas. Metal detector survey would not be productive in these conditions and would not likely provide information significant to the battlefields.

Survey within the VA 164 corridor section of Alternatives B and D is limited to those areas near the intersections of the corridor with Town Point Road and Cedar Lane and in the vicinity of the US Coast Guard Station and Craney Island. No additional survey has been documented with the VDHR for the portion of VA 164 between Cedar Lane and the intersection with I-664. The conditions along this Route vary but include a combination of light industrial, commercial, and residential development. Archaeological survey would be recommended for those areas along the corridor identified as having well drained soils and that have not been disturbed by the varying degrees of development (see **Figure 7**).

#### **5.1.4 Recommendations for Additional Survey – Alternative C and D – Hampton, Newport News, Suffolk, and Chesapeake**

Candidate Build Alternative 9 in the cities of Hampton, Newport News, Suffolk and Chesapeake described in the LBA survey document (Sara et al. 1999) largely coincides with current APE for Alternatives C and D with few variations. During the 1999 study, all areas deemed suitable for subsurface testing were investigated and included survey in choice locations along the survey corridor. In addition, numerous non-related surveys and investigations have taken place within the general vicinity and in some cases intersect with the current APE for the alternative. Generally, all of the

archaeological studies conducted in the vicinity of the project APE meet the current standards of the VDHR in terms of methodology. Shovel testing was employed for all surveys or the methodology included a combination of both shovel testing and reconnaissance level survey.

Since the 1999 survey for Candidate Build Alternative 9 (now Alternatives C and D), there have been some slight changes in the project path and the APE for archaeological investigation. While the majority of suitable areas have been surveyed for archaeological resources, a small deviance has been identified and archaeological survey would be recommended for this area. While it is likely that the area has been disturbed by the construction of I-664, field verification of the soil conditions would be recommended.

The area recommended for additional survey within Alternatives C and D is limited to a small section of wooded land near the southern terminus of the alternatives at the I-64/I-264 interchange in Bowers Hill. In this area – at the Joliff Road, Route 58, I-664 cloverleaf – the former survey corridor is located to the south of the roadway (**Figure 8**). The current APE for Direct Effects shifts the project corridor and APE slightly farther to the north encompassing an area that appears to be previously unsurveyed. While this area is located within the interchange, aerial photography indicates wooded areas as well as areas of open land that may contain intact soil stratigraphy are present. Soils in this area include both poorly drained and well drained soils as well as urban land to the east.

Additional survey may also be warranted in the portion of the APE where the alternative comes on land in Suffolk (**Figure 9**). In this section of the alternative, the current APE extends slightly further to the west and outside of the previous survey area. Soils in this area are well drained and identified as Kalmia loam. Survey conducted in 1999 in this vicinity did not identify archaeological deposits and documented significant twentieth century disturbance and fill. Transects were sited within approximately 120 feet of the edge of pavement in this vicinity. The current APE extends approximately an additional 100 feet to the west and judgmentally placed shovel tests may be excavated to confirm the extent of the disturbance and fill outside the immediate roadway right-of-way. Additional investigation may also be warranted in the vicinity of Site 44CS0042 (**Appendix A: Map 24**). Site 44CS0042 has been recommended as potentially eligible for listing on the NRHP and is within the APE for Direct Effects near the Bowers Hill Interchange.

### **5.1.5 Recommendations for Additional Underwater Archaeological Investigations**

As stated above, limited additional Phase I level underwater archaeological survey is recommended for the overwater portions of Alternatives C and D from the shoreline in Newport News southeast for a distance of approximately 0.54-mile (3900 feet) and near the overwater interchange with the MMBBT where the APE for Direct Effects has extended beyond the area covered by the 1999 underwater investigations (see **Figure 4**). The survey corridor employed during the 1999 study largely encompasses the APE for Direct Effects for the current assessment but in these locations the deviation may warrant additional work. However, it is noted that the probability for the identification of significant submerged resources would be considered low. Previous work in the Hampton Roads channel has revealed significant subsurface disturbances and debris. Should Alternatives A, B, or D be developed, further investigation of the 12 underwater targets identified during the 1999 survey (Cox 1999) within the water-based portions of Candidate Build Alternatives 1 and 2 at the HRBT would be needed as well as further investigation of 44NR0015. It is likely that the 12 targets may be related to the dredging of the Hampton Roads Channel and ultimately construction associated with HRBT; however, the information gleaned at the Phase I level was inconclusive.

## **5.2 POTENTIAL FOR ARCHAEOLOGICAL SITES IMPORTANT FOR REASONS OTHER THAN INFORMATION POTENTIAL WITHIN THE ALTERNATIVES**

The results of the background research and an assessment of current conditions within the APE for each of the four current build alternatives suggest that there is a low potential for the identification of new archaeological sites that would be considered important for reasons other than information potential. The survey conducted in 1999 investigated nearly 100 percent of the area suitable for subsurface testing and identified only two sites, both of which were recommended for further work based upon their information potential: 44HT0009 (44HT0089) and 44HT0090. Additionally, underwater archaeological investigations were conducted throughout the majority of the current APE for Direct Effects and identified a total of 29 targets that may produce significant submerged cultural deposits. Seventeen of these were investigated at the Phase II level and determined to be modern debris. It is unlikely that the investigation of the 12 remaining targets would produce cultural deposits that would be considered significant for reasons other than information potential. There are five cemeteries documented within the APE for Direct Effects as noted in Section 5.1.1. However, it is not likely that archaeological sites or deposits associated with any of these resources would be identified as significant for anything other than information potential.

Overall, It is therefore recommended that there is a low potential for identifying archaeological resources considered chiefly important for reasons other than information potential within the Study Area Corridor defined for the proposed undertaking.

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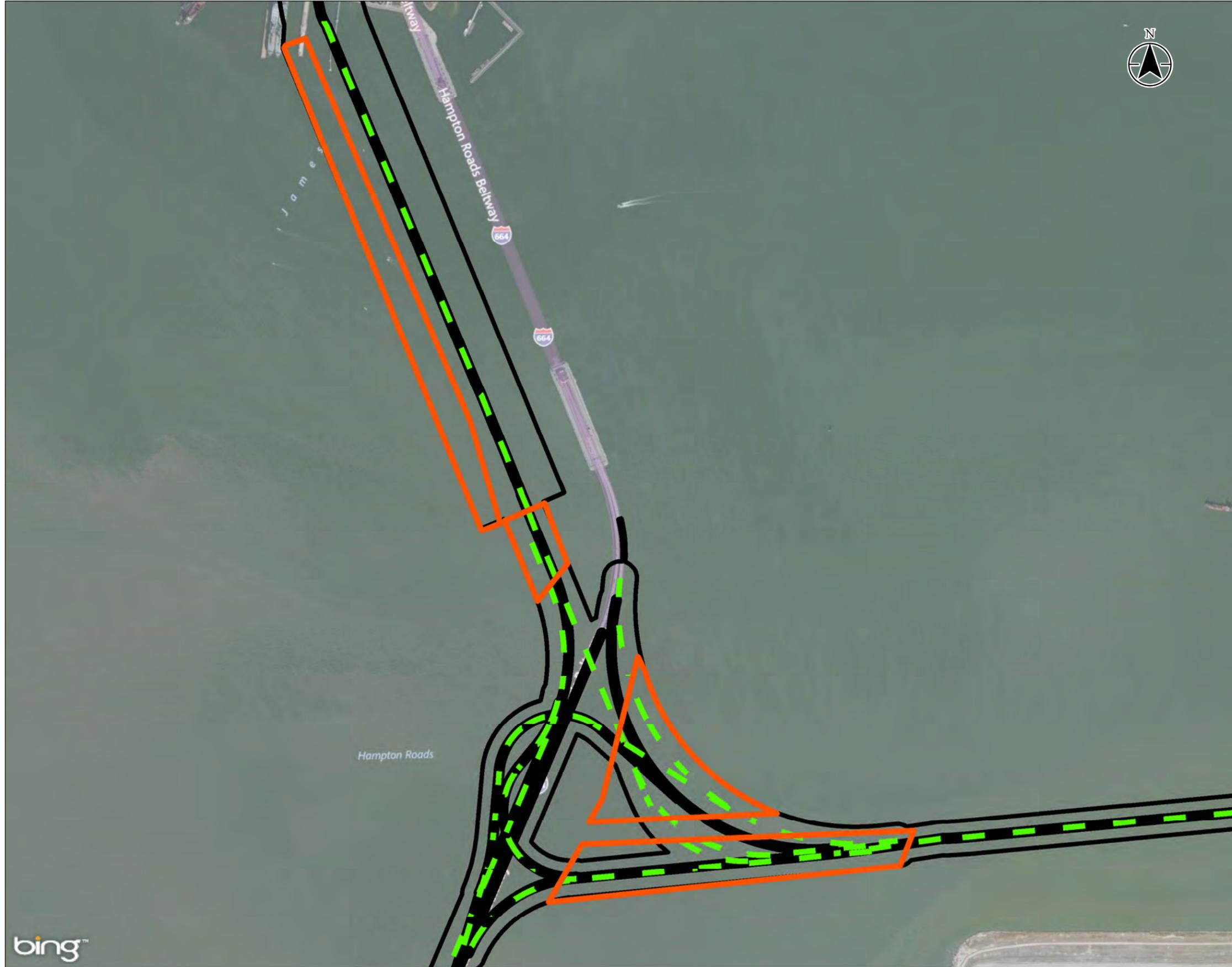


Figure No.  
4

Title  
Areas Recommended for Additional Underwater Archaeological Survey, Alternatives C and D - HRCS SEIS.

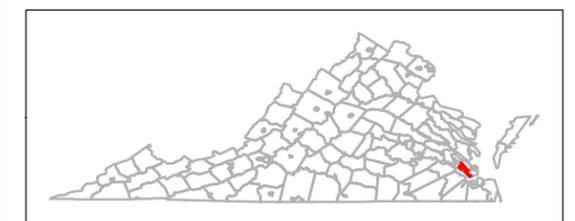
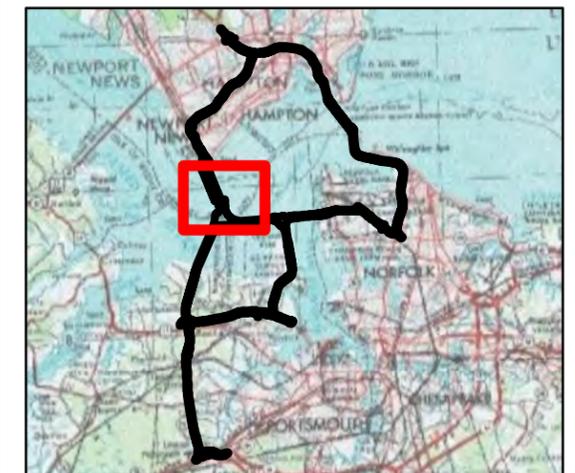
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location  
203400545

County: Newport News  
USGS Quad: Newport News South



- Legend
-  Areas Recommended for Archaeological Survey
  -  Alternative B Centerline
  -  Alternative C Centerline
  -  Alternative D Centerline
  -  Direct APE



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Areas Recommended for Archaeological Survey: digitized by Stantec

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

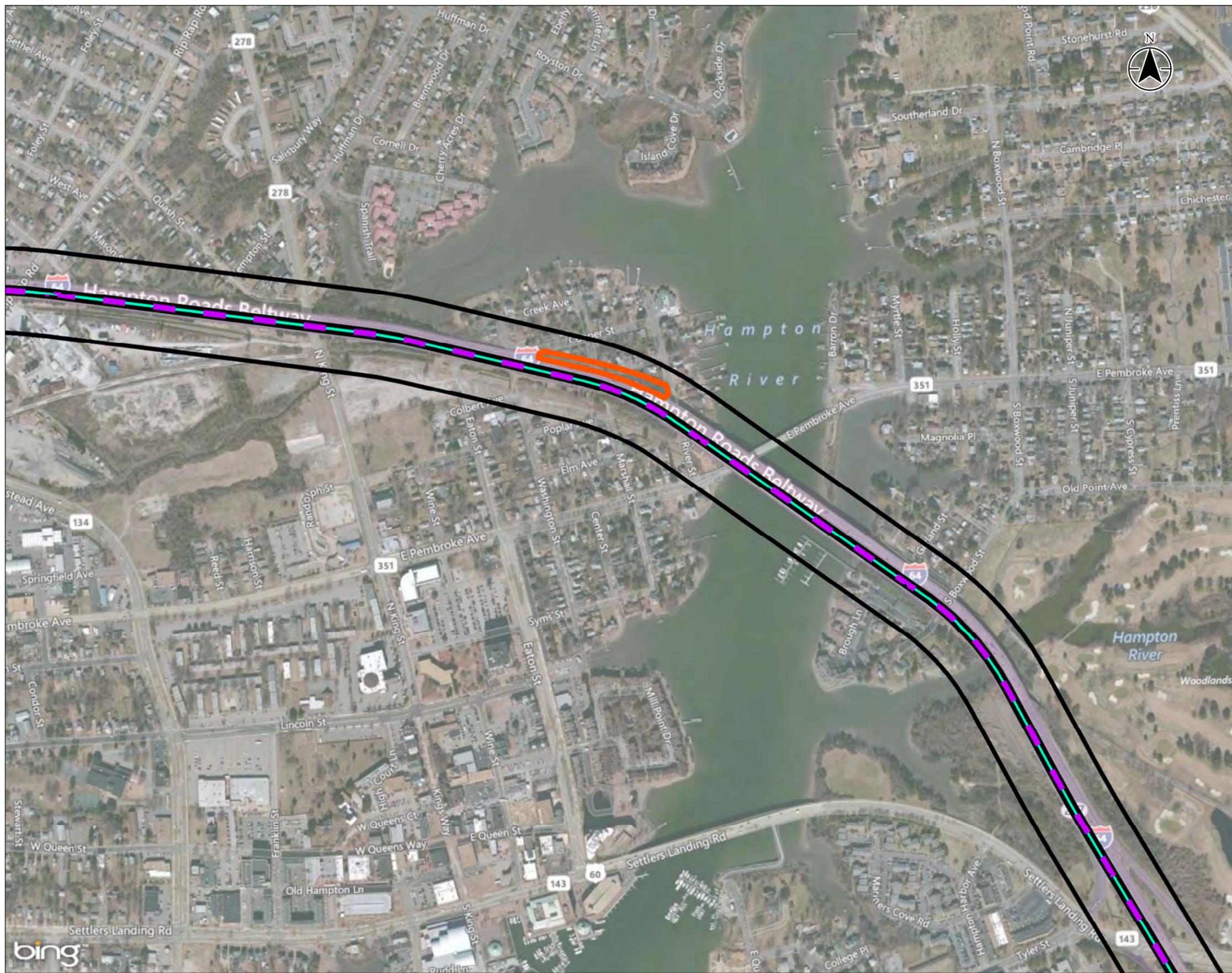
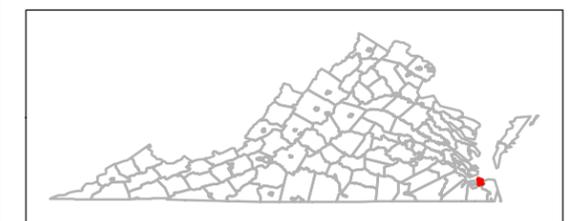
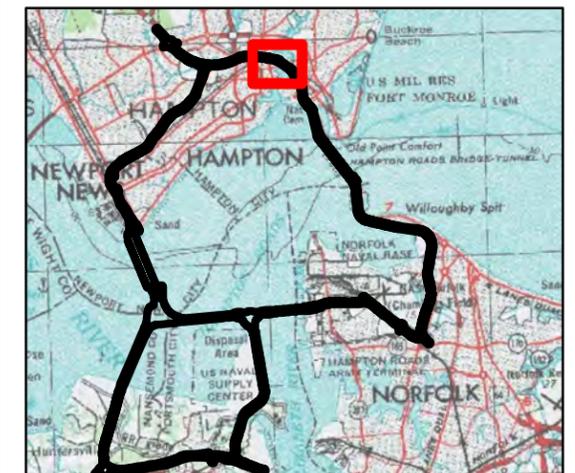


Figure No. 5  
 Title Areas Recommended for Additional Archaeological Survey, Alternatives A, B, and D Hampton - HRCS SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Norfolk Prepared by SWS on 2016-08-04  
 USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Areas Recommended for Archaeological Survey
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative D Centerline
  - Direct APE



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Areas Recommended for Archaeological Survey: digitized by Stantec

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Revised: 2016-08-04 By: sutor

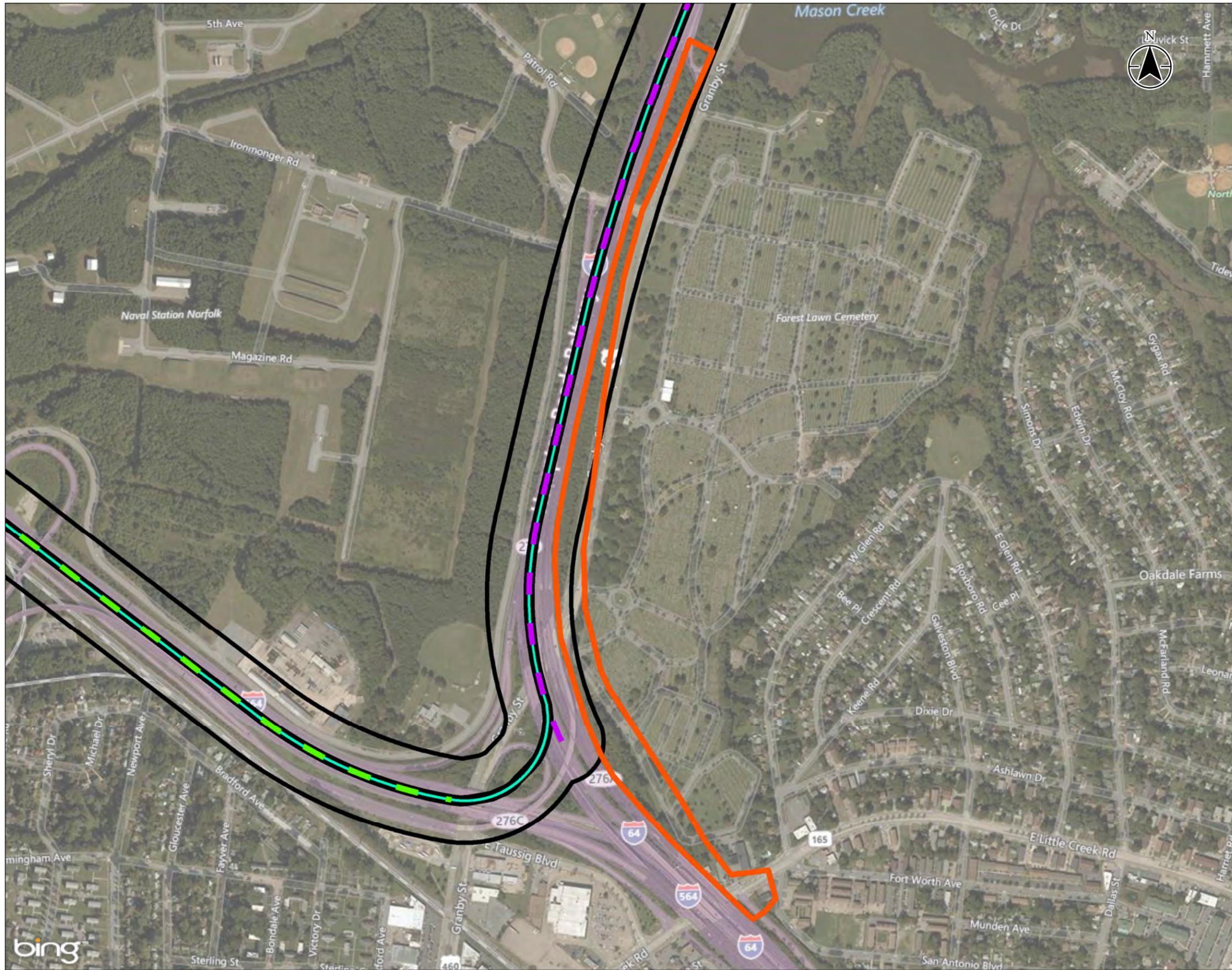


Figure No. 6

Title  
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Norfolk - HRCS SEIS

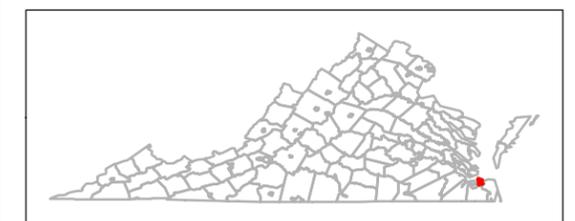
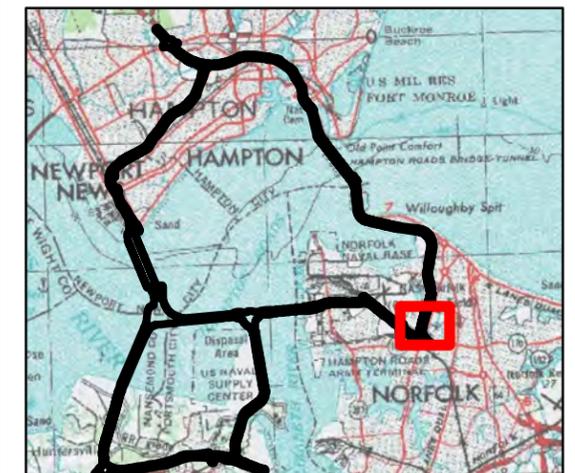
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545

County: Norfolk Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
USGS Quad: Norfolk North Independent Review by EMB on 2016-08-04



- Legend
- Areas Recommended for Archaeological Survey
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline
  - Direct APE



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Areas Recommended for Archaeological Survey: digitized by Stantec

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

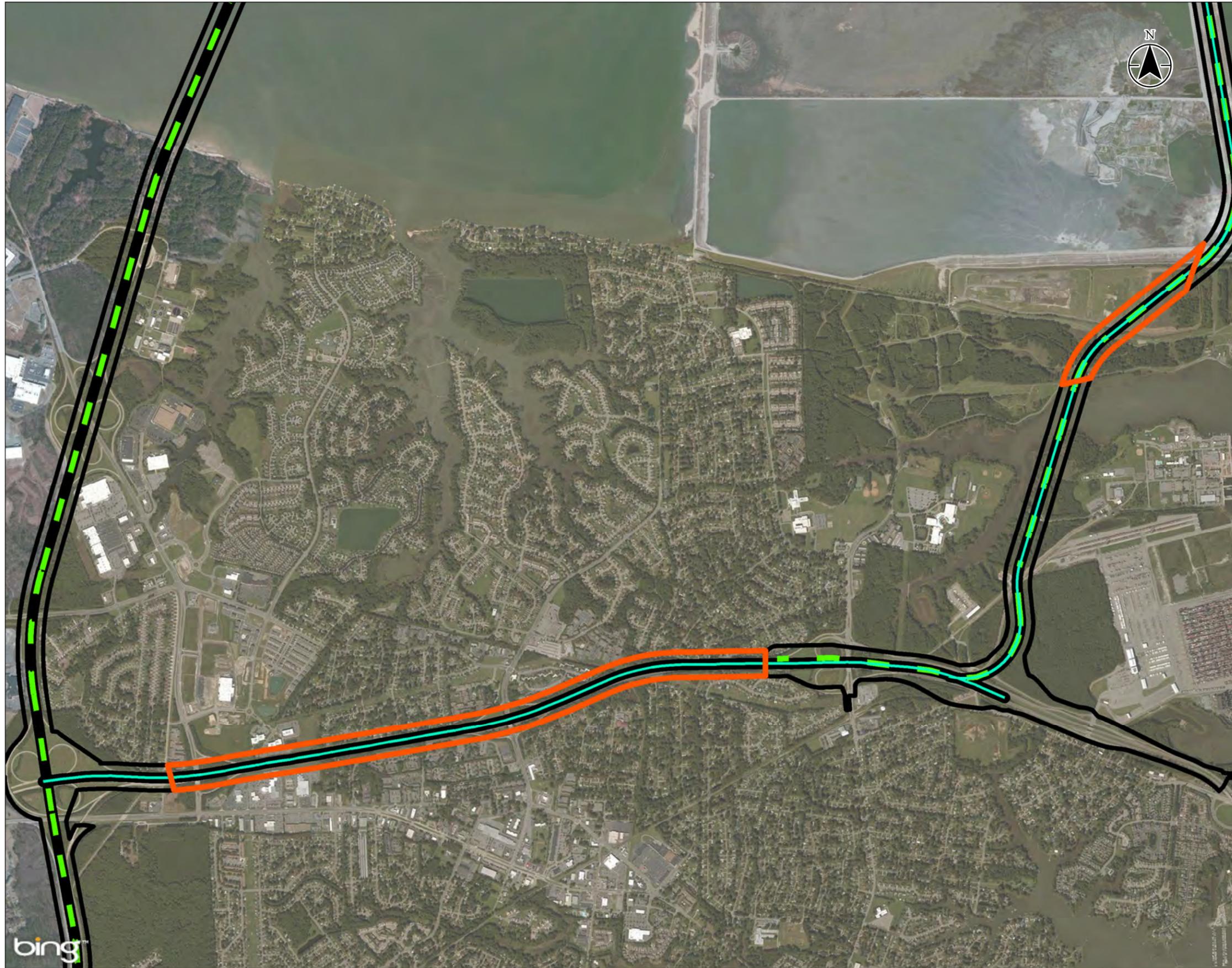


Figure No.  
7

Title  
Areas Recommended for Additional Archaeological Survey, Alternatives , C and D  
**Portsmouth - HRCS SEIS**

Client/Project  
RK&K  
Virginia Department of Transportation

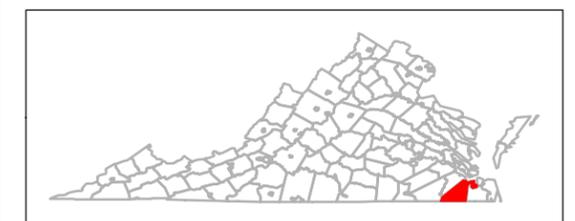
Project Location  
203400545

County: Portsmouth, Suffolk  
USGS Quad: Norfolk North

Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Areas Recommended for Archaeological Survey
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline
  - Direct APE



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Areas Recommended for Archaeological Survey: digitized by Stantec

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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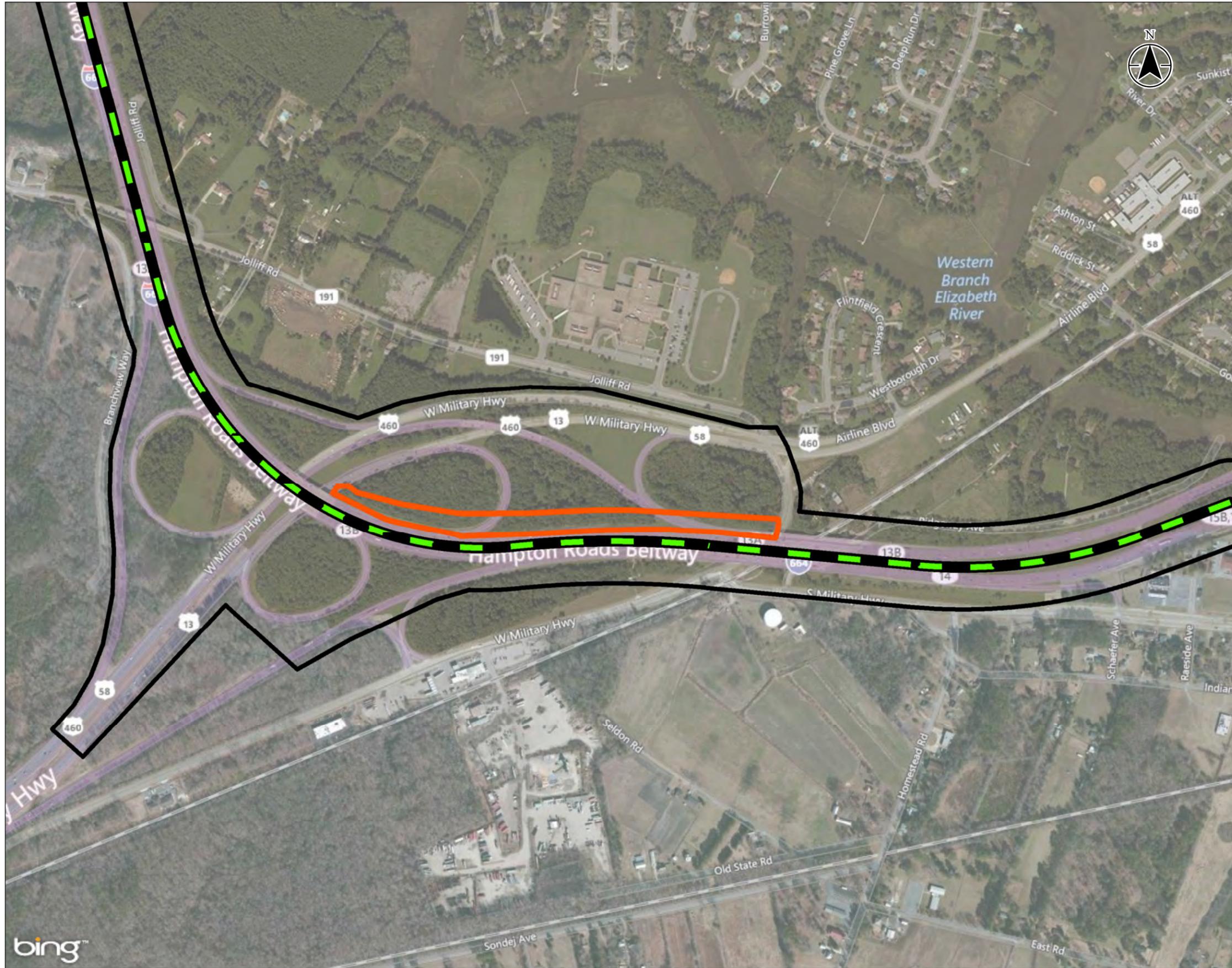
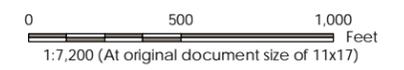
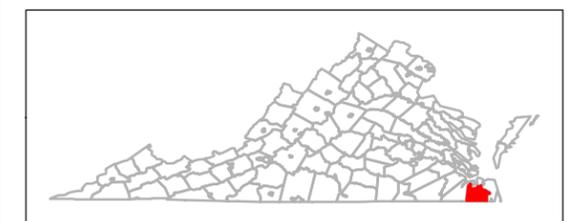


Figure No. 8  
 Title Areas Recommended for Additional Archaeological Survey, Alternatives C and D  
 City of Chesapeake - HRCS SEIS  
 Client/Project RK&K  
 Virginia Department of Transportation  
 Project Location 203400545  
 County: Chesapeake Prepared by SWS on 2016-08-04  
 USGS Quad: Bowers Hill Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
-  Areas Recommended for Archaeological Survey
  -  Alternative C Centerline
  -  Alternative D Centerline
  -  Direct APE



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
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**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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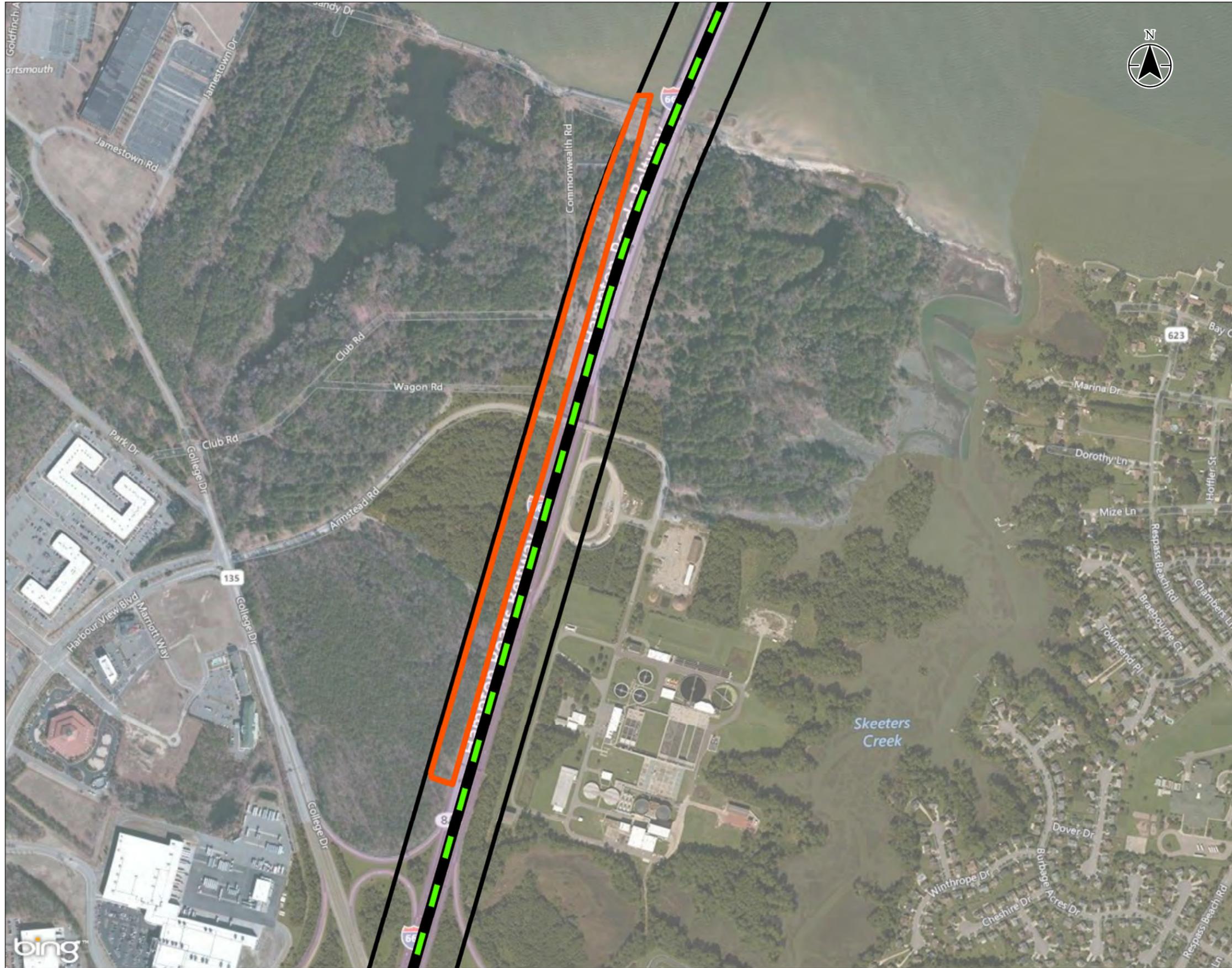


Figure No.  
9

Title  
Areas Recommended for Additional Archaeological Survey, Alternative C and D  
Suffolk - HRCS SEIS

Client/Project  
RK&K  
Virginia Department of Transportation

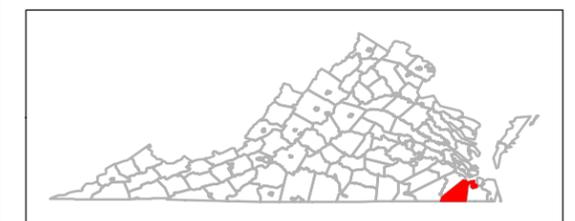
Project Location  
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County: Suffolk  
USGS Quad: Newport News South

Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Areas Recommended for Archaeological Survey
  - Alternative C Centerline
  - Alternative D Centerline
  - Direct APE



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
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**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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### 5.2.1 Battlefield Resources

Some types of archaeological resources associated with battlefields may be considered important chiefly for reasons other than information potential; however, it is unlikely that such archaeological resources exist within the APE for the build alternatives. All alternatives are located within the overall boundaries of two ABPP-defined battlefield resources: the Sewell's Point Battlefield (VDHR #122-5426) and the Hampton Roads Battlefield (VDHR #114-5471), both of which are primarily Civil War naval engagements. The 1813 Battle of Hampton (no DHR number assigned) is located within the APE for Direct Effects for Alternatives A, B, and D and the 1813 Battle of Craney Island (VDHR #124-5267) is located within the APE for Direct Effects for Alternatives B and D.

However, as has been noted, the potential for identifying archaeological sites associated with either Civil War engagement within the APE is recommended as low as is the potential for identifying sites within the Battle of Craney Island. The potential for identifying intact archaeological deposits associated with the 1813 Battle of Hampton is recommended as extremely low. The land portions of the corridors for all alternatives have been heavily disturbed and exhibit a generally low potential for containing intact, previously unidentified archaeological deposits associated with the identified military engagements; and the underwater surveys associated with the HRCS project as well as others conducted in the general area of the Hampton Roads have not identified significant submerged cultural resources. It is unlikely that significant archaeological resources associated with the four military engagements within the APE for Direct Effects would be identified. If sites were identified, it is also recommended that they would not be significant for reasons other than information potential. Any previously unidentified archaeological resources that may be located and potentially associated with these resources would be documented and evaluated according to their potential to yield significant information and would not likely rise to a level at which they would be chiefly important for reasons other than their potential to contribute information.

#### Battle of Hampton (ABPP No. VA401; no VDHR number assigned)

As defined by the ABPP, the battlefield includes a large portion of Hampton and is located primarily on land (see **Appendix B**: Map 1). The APE forms part of the northern edge of the battlefield area. Much of the area associated with the engagement has been extensively developed. The ABPP lumps the Hampton Battlefield with a group of sites that offer "Commemorative Opportunities," but are "Fragmented or Destroyed and Threats are Marginal or Do Not Apply" (ABPP 2007:62; **Appendix B**). The extensive amount of development that has occurred within this same area has resulted in the significant disturbance and likely destruction of archaeological resource associated with this battle. There is a low potential for identifying archaeological resources associated with this engagement within the APE.

#### Battle of Craney Island (ABPP No. VA400; VDHR #124-5267)

The ABPP has identified the Battle of Craney Island (ABPP #VA400; VDHR #124-5267) as one of 78 battlefields associated with events that had a demonstrable influence on the course, conduct, and results of the War of 1812. The ABPP classifies the Battle of Craney Island as a Class B battlefield, or "site of a military or naval action with a significant objective or result that shaped the strategy, direction, or outcome of a campaign or other operation" (ABPP 2007: 24, 29, 61).

As defined by the ABPP and mapped in the files of the VDHR, the battlefield includes a portion of Craney Island and is located within the bounds of the Craney Island Fuel Depot near the mouth of the Elizabeth River and Craney Creek (see **Appendix B: Map 2**). The battlefield, including the Core, PotNR, and Study Areas, measures approximately 259 acres including the parts of the battlefield on land and over water. The Core Area, which is coterminous with the PotNR area, is approximately 70 acres and located only on land. Three of the proposed alignments associated with the HRCS cross this battlefield. Approximately four acres of the far western portion of the battlefield intersect with the APE for Direct Effects for the project and less than one quarter of the resource, again at the far western boundary, is located within the APE for Indirect Effects for the project.

Previous archaeological investigations conducted within the Craney Island Fuel Depot, the bounds of the Battle of Craney Island, and including the current project APE associated with the HRCS SEIS documented that little archaeological integrity remains within the APE for Direct Effects for the current project corridor. In 2007, during a survey of the Craney Island Fuel Depot conducted by SEARCH, Inc. on behalf of the Navy (Sara et al. 2008), no archaeological sites were identified within the current APE for Direct Effects. Site 44PM0061, located well outside the current APE of the HRCS project but within the bounds of the Battle of Craney Island, was subject to Intensive Level archaeological investigations. This site produced archaeological deposits associated with approximately 300 years of historic occupation at Craney Island (VDHR Site Files, 2016) including materials dating to the period of the War of 1812. This site was determined eligible for listing on the NRHP (Swann and Linville 2009).

Additional investigations were conducted within the project APE and in support of the HRCS project in 2009 by CCR (Gosser et al. 2009) and included both systematic and judgmentally placed shovel testing to confirm both the presence of intact soil profiles as well as the presence of fill associated with the infill of Craney Island. Fill soils are documented as Udorthents and are present within approximately 50 percent of the APE for Direct Effects as it crosses the mapped boundaries of the battlefield resource. The survey corridor included an approximately 500-foot-wide area between VA 164 and the US Army Disposal Area and the 10,000-foot-long area for the collector road widening paralleling VA 164. The CCR survey for the Craney Island Marine Terminal access addressed a large majority of the current APE for Alternatives B, C, and D within the Battle of Craney Island resource boundary. A combination of methodologies was utilized for the survey including shovel testing on 37- to 150-foot intervals as well as selectively placed judgmental shovel tests to identify potentially significant archaeological resources as well as document the presence of disturbed and wet soils. No archaeological deposits were identified within the bounds of the Battle of Craney Island during this survey. Portions of the APE outside of the CCR survey area have been investigated by others and are also categorized as Udorthents-Dumps – a very low probability soil type. A portion of the Direct APE is located within a Portsmouth dump site.

Additional survey was conducted in 2011 by Dovetail Cultural Resource Group (Barile et al. 2012) for the reevaluation of then Candidate Build Alternative 9 to address slight design changes. During this survey, archaeological survey was conducted in select areas. This investigation also included detailed historic research associated with the Battle of Craney Island. The results of this research indicated that the historic landmass of Craney Island has been completely subsumed by the deposition of dredge spoils and man-made lands comprising the modern day Craney Island. The historic island and any potentially associated archaeological deposits have been significantly compromised and likely destroyed by the reconfiguration of Craney Island in the twentieth century.

During this survey, it was determined that very little of the historic footprint of Craney Island exists in any recognizable form and that there is little potential for the identification of significant resources associated with this battle (Barile et al. 2012). The research concluded that the battlefield's integrity of workmanship, feeling, setting, materials, and design had been significantly compromised within the APE for Direct Effects for the project.

An overlay of the earliest available topographic map (Norfolk, 1902) with modern topographic mapping through the USGS Historical Topographic Map Explorer (<http://historicalmaps.arcgis.com/usgs/index.html>) confirms that the current project APE is located to the west of the circa 1812 island and fortifications and that the original historic landscape has been virtually destroyed due to the modern infill and dumping of soils which has created the modern day version of Craney Island (**Appendix D:** Map 1). Overlays prepared utilizing the 1902 topographic map and modern aerial photography also illustrate that the location of the original circa 1812 landmass of Craney Island is located to the east of the APE for Direct Effects for the project while the APE for Indirect Effects just slightly crosses the far western edge of the island.

The Battle of Craney Island, as mapped by the VDHR and documented by the ABPP is located within the bounds of the present day US Naval Supply Center and Fuel Depot at Craney Island. The entire historic footprint of Craney Island has been encompassed by the man-made fill now characterizing modern Craney Island which has affected the resource's overall integrity. Previously conducted archaeological surveys did not produce intact archaeological deposits, and the vicinity of the project APE is characterized by modern land and fill. While an important battle in the War of 1812 resulting in the cessation of any further attacks on the cities of Norfolk and Portsmouth, the Battle of Craney Island battlefield as it is today and within the APE for Direct and Indirect Effects for this project, retains little to no integrity. The resource has been significantly altered and retains no integrity of workmanship, materials, design, setting or feeling. The large majority of the APE for the current build alternatives has been previously surveyed and no archaeological deposits have been identified in the APE for Direct Effects and the probability of identifying resources within the APE for Direct Effects is low. The probability of identifying archaeological sites that would be important for anything other than information potential and associated with this resource is also low.

#### Battle of Sewell's Point (VA001; VDHR #122-5426)

The ABPP (2009) has defined a Study Area of 11,568.96 acres for the battle, 9,878.91 acres of which is classified as PotNR lands (see **Appendix B:** Map 5). Portions of the existing HRBT and MMMBT crossings are located in the PotNR area. The APE for Direct Effects for Alternatives A, B, a very small portion of C, and D intersect the Study and PotNR areas for the Sewell's Point Battlefield. The Core Area of the battlefield is located primarily within the water and extends on land partially within the bounds of Norfolk Naval Station. None of the Core area, as mapped by the ABPP intersects with the APE for Direct Effects for any alternative.

The only land within the ABPP Core Area is focused upon the location of the Confederate battery. This area is located within an active military installation and is entirely excluded from the PotNR lands defined by the ABPP for the resource. This portion of the Core Area is located to the north of Alternatives B, C, and D near the intersection of Admiral Taussig and Terminal boulevards. Salmon (2001:69) noted that "...no sign of the battery now remains, as the area has been developed by the United States Naval Base there."

The Civil War Sites Advisory Commission (CWSAC), classified the battlefield as preservation priority IV.2 (Class D) in 1993 (revised 1997). The ABPP (2009) also noted that "the areas that retain integrity are

located essentially on water. On land, only historic and archaeological resources at Fort Monroe and Fort Wool retain integrity.” Fort Monroe and Fort Wool are located outside of the ABPP Core Area, were not directly involved in the engagement, and are also located outside of the APE for all of the build Alternatives. The probability of identifying archaeological sites that would be important for anything other than information potential and associated with this resource is low.

#### Battle of Hampton Roads (ABPP No. VA008; VDHR 114-5471)

The Battle of Hampton Roads was a Civil War naval engagement, and almost all of the defined battlefield area comprises open water. The ABPP (2009) has defined a Study Area of 46,034.51 acres for the engagement, with 35,040.82 acres defined as PotNR lands (see **Appendix B**: Map 6). Portions of the existing HRBT and MMMBT crossing are located within the PotNR designated portion of the battlefield. Both land- and water-based portions of Alternatives A, B, C, and D are located within the ABPP-defined Core Area for the battlefield. The land-based portions of the battlefield Study Area are concentrated within the bounds of Norfolk Naval Station, at the entrance to the HRBT in Hampton, partially across the southern tip of Fort Monroe, and also include a small portion of the US Naval Supply Center/Fuel Depot in Portsmouth and locations at both entrances to the MMMBT.

The PotNR area associated with this battlefield is limited to the portions of the battlefield within the waterway with the exception of Fort Monroe and Fort Wool. The other land-based portions of the resource have been excluded from the proposed PotNR area. The CWSAC classified the battlefield as preservation priority II.2 (Class B) in 1992. The ABPP (2009) has also noted that “the areas that retain integrity are located essentially on water. On land, only historic and archaeological resources at Fort Monroe and Fort Wool retain integrity.” Fort Monroe and Fort Wool were not directly involved in the engagement, and are also located outside of the APE for direct effects for the HRCS. The probability of identifying archaeological sites that would be important for anything other than information potential and associated with this resource is low.

#### Battle of Big Bethel (ABPP No. VA 003; VDHR 114-5297)

The Battle of Big Bethel was the first Civil War land battle in Virginia and took place on June 10, 1861. The ABPP has defined a Study Area of 121,468 acres for the engagement, with 0.0 acres defined as PotNR lands. The battlefield has been nearly completely destroyed by development and land use not conducive to the preservation of historic features. In addition, the VDHR has determined that the Big Bethel Battlefield is Not Eligible for listing in the NRHP.

### **5.2.2 Other Historic Resources**

The APE for the build alternatives crosses two national historic trails – The Captain John Smith Chesapeake National Historic Trail and the Washington-Rochambeau Revolutionary Route National Historic Trail - both of which are associated with significant events in history. Recently, a portion of the Captain John Smith Chesapeake National Historic Trail in the vicinity of Jamestown was determined eligible for listing in the NRHP under all criteria citing association with numerous historic properties and archaeological sites.

#### Captain John Smith Chesapeake National Historic Trail

The APE for direct effects used for the assessment of the Captain John Smith Chesapeake National Historic Trail (CAJO) was the same one used for other resources examined in the survey (see definition in Section 1.2). Because Hampton Roads is the gateway to the Jamestown area of Virginia, Capt. John Smith passed through the study area on multiple occasions as he sailed from the James out to the

Chesapeake Bay and the Atlantic Ocean. He undertook two major voyages of exploration, both in 1608, which traveled up the Bay to points north of Annapolis.

This period of exploration took place between June 2 and September 7, 1608. The first trip began on June 2<sup>nd</sup> and continued until July 21<sup>st</sup>. After a short break at Jamestown, he sailed again on July 24<sup>th</sup> and returned on September 7<sup>th</sup>. Smith combined these and other journeys to create a guide to the region, a detailed 1612 report titled: "A Map of Virginia." This was supported by his more-famous map graphically illustrating his findings as well as data collected from informants. He distinguished between these sources with Maltese crosses: "The signification of these markes, To the crosses hath been discovered. What [is] beyond is by relation." The report explained further: "...in which map observe this: that as far as you see the little crosses on rivers, mountains, or other places, have been discovered; the rest was had by information of the savages, and are set down according to their instructions (Smith ND)."

Captain John Smith actively sought interaction with the native people, realizing they were the best source of information for his report. Although there were many tribes in the area, he only associated two with the project area during his voyages, the Kecoughtan and the Chesapeake.

Although the English were told of the area occupied by the Chesapeake, they were also told Powhatan had exterminated that tribe. Noting they had "only but heard" of the Chesapeake, John Smith went up the Elizabeth in search. He did not find them and saw only "two or three little garden plots with their houses," and returned to the Hampton Roads in search of people. His map illustrates the Elizabeth as a relatively insignificant waterway and places the village of Chesapeake beyond the Maltese cross marking his limits of exploration. He illustrated the Elizabeth as a single stream, and does not show any of its three major branches (Smith 1608 and Huber 2015).

John Smith identified two tribes in the project area, the Kecoughtan and the Chesapeake. The English were told that Powhatan had destroyed the Chesapeake, and although they explored that area, did not encounter people. Although a Chesapeake village is shown on Smith's map, it is also shown in an area beyond his limits of survey. Previously recorded archaeological sites located within or adjacent to the APE for the CAJO are few. Those sites with Native American components that could be associated with Native American activities within the time period of Smith's journeys include 44HT0027 (Locus 3), 44HT0035, 44HT0089, and 44HT0063. Additional sites include a submerged site – 44SK0006 – located at Pig Point in Suffolk and west of the I-664/MMMBT and 44SK0481 a prehistoric site of unknown affiliation also located to the west of I-664 as it comes on land in Suffolk.

Site 44HT0035 is the site number assigned to the Veterans Affairs complex in which Native American period artifacts and deposits have been identified. Site 44HT0089, located on the point of land at Strawberry Banks in Hampton has been recommended potentially eligible for listing on the NRHP and may represent a Native American settlement that would have been present during Smith's explorations. The Village of Kecoughtan is often projected to be in the vicinity of 44HT0089 and 44HT0035. Although fragments of this village may survive, the general area has been occupied for centuries and is heavily developed.

Site 44HT0063 was noted as having Colonial period materials and possibly Contact period Native American deposits, however, it has likely been destroyed, according to reviews of current aerial photography. According to the interpretive plans and information compiled by the National Park Service there are only two sites – a stop-over site at Old Point Comfort on Fort Monroe and the

possible location of the Village of Kecoughtan – that represent sites potentially associated with the CAJO within the current project APE.

An overlay of current data generated from the National Land Cover Database (2011) indicates that 94 percent of the APE for the assessment of the trail is open water and that 4 percent of the overall APE is developed land. When removing the acres associated with water, the percentage of the shoreline within the APE for the assessment of the CAJO representing developed property is 66 percent (**Appendix D: Map 2**). The shoreline within this APE and in the vicinity of Hampton Roads is one that has been developed for decades. Naval Station Norfolk was established in 1917 immediately after the US entered into WWI. Intensive Residential development in Hampton and in Newport News and in particular along the waterfront of the Hampton Roads began in the early decades of the twentieth century. Waterfront homes and light commercial development characterize almost the entirety of the shoreline in Hampton and Newport News between the HRBT and the MMMBT crossings. In Norfolk, the shoreline within the APE for the assessment of the CAJO is nearly all associated with Naval Station Norfolk, including the tidal wetlands present near Willoughby Spit and Mason Creek on the north. In Portsmouth and Suffolk the man-made Craney Island landform as well as residential and military development is present. In the documentation compiled by the NPS, it is noted that the Hampton Roads is at the entrance of a High Potential Route Segment that extends upstream. However, it should be noted that there are few areas, and no extensive areas, within the APE for the assessment of the CAJO for the HRCS SEIS project that are classified as “Visible Shoreline Generally Evocative of the 17th Century,” a high-ranking criterion for assessing the location’s inclusion in the High Potential Route Segment. Several areas are noted in the Willoughby section of Norfolk as well as to the west of I-664 corridor along the shoreline in Suffolk that are coded as evocative shoreline areas, but they are very small and isolated. Open space is limited and is generally only present on the campus of Tidewater Community College to the west of I-664.

Additionally, the HRBT and the MMMBT as well as other existing transportation features, including the James River Bridge (Route 17) and Chesapeake Bay Bridge Tunnel (Route 13), cross the CAJO. The portion of the CAJO located within the APE for the HRCS SEIS assessment is within a highly industrialized and developed area of Hampton Roads where few remnants of the historic landscape survive. It is not likely that additional significant archaeological sites associated with Smith’s journeys are located within the project APE or that such sites, if identified, would be significant for anything other than information potential.

#### Washington-Rochambeau Revolutionary Route National Historic Trail

The APE for direct effects used for the assessment of the Washington-Rochambeau Revolutionary Route National Historic Trail (W-R NHT) was the same one used for other resources examined in the survey (see definition in Section 1.2). The trail segments follow the routes taken by General Washington and General Rochambeau to and from the Siege of Yorktown during the Revolutionary War. Per the NPS documentation and strategic plan for the trail, the purpose of the W-R NHT is to “identify, preserve, interpret, and celebrate the American and French Alliance in the War for Independence. The mission will focus on three main areas: Improve visibility of the trail and its significance, convey the meaning of the route to the public by improved education and interpretation, and identify management partnerships and processes to create and manage the Washington-Rochambeau National Historic Trail.”

On July 11, 1780, a force of Frenchman consisting of 450 officers and 5,300 enlisted men disembarked in Narragansett Bay off Newport, Rhode Island. This army was under the command of General Jean Baptiste Donatien de Vimeur, comte de Rochambeau. The ensuing collaboration of Franco-American military forces allowed for success culminating with the defeat of British forces under Cornwallis at Yorktown in October 1781. The routes taken by these two forces would cover over 600 miles and traverse through nine states and helped reflect the spirit of the march. Along the way the people of America would come to learn their perceptions of the French were misguided and a true spirit of allied kinship would slowly develop.

Most of the allied force was around Williamsburg by September 25, 1781. Some elements, like the French baggage train, came by land and were still on the road in October. The Siege of Yorktown officially began on October 6<sup>th</sup>, and continued until the British surrender on October 19, 1781 (Selig 2003b).

The only known activities associated with the Washington-Rochambeau Revolutionary Route that seem to have occurred within the project area are the flotilla described (Conley 2014) by British spies that carried the Continental forces of General Washington from Maryland to Virginia on any vessel they could acquire. It is assumed they made various stops along the western shoreline during the journey but no descriptions of where these disembarkations occurred could be located. As illustrated on period maps and documented in historic accounts vessels certainly moved through the Hampton Roads on the way to Yorktown, but information on known stops or potentially associated sites is limited.

The town of Hampton and various residential dwellings would have existed along the shoreline and possibly provided soldiers with temporary respite from their watercourse journey, but again, surviving records do not indicate any areas of known activity within the existing project area. A review of VDHR's V-CRIS database identified only one known archaeological site within the APE that could potentially be associated with the historical themes represented by the W-R NHT. Site 44HT0015, located at the mouth of the Hampton River, is a map projected site associated with potential shipwrecks associated with the Revolutionary War period. As noted in the site form for 44HT0015, "in October 1775, Americans at Hampton sunk a line of vessels across the mouth of the Hampton River, to prevent the British from invading Hampton, an important seaport at that time ...Tenders (were) anchored close to where several vessels had been sunk in the channel of Hampton River, to prevent their surprising us. The channel was not completely stopped...they intended to prevent our completing the work...in the night (the British) cut a passage through the vessels that were sunk" (Pinkney, Nov. 12, 1775, page 2, column 2). This site has not been extensively investigated nor would it be directly impacted by the HRCS project. However, it could be associated with the W-R NHT and its interpretation.

An overlay of current data generated from the National Land Cover Database (2011) indicates that 94% percent of the APE for the assessment of the trail is open water and that 4 percent of the overall APE is developed land (**Appendix D: Map 3**). When removing the acres associated with water, the percentage of the shoreline within the APE for the assessment of the W-R NHT representing developed property is 66 percent. The shoreline within the APE and in the vicinity of Hampton Roads is one that has been developed for decades. US Naval Station Norfolk was established in 1917 immediately after the US entered into WWI. Intensive residential development in Hampton and in Newport News and in particular along the waterfront of the Hampton Roads began in the early decades of the twentieth century. Waterfront homes and light commercial development characterize almost the entirety of the shoreline in Hampton and Newport News between the HRBT and the MMMBT crossings. In Norfolk, the shoreline within the APE for the assessment of the Trail is nearly all associated with Naval Station

Norfolk, including the tidal wetlands present near Willoughby Spit and Mason Creek on the north. In Portsmouth and Suffolk, the man-made Craney Island landform as well as residential and military development is present. Open space is limited and is generally only present on the campus of Tidewater Community College to the west of I-664.

Additionally, the HRBT and the MMMBT as well as other existing transportation features, including the James River Bridge (Route 17) and Chesapeake Bay Bridge Tunnel (Route 13), cross the W-R NHT. The portion of the W-R NHT located within the APE for the HRCS SEIS assessment is within a highly industrialized and developed area of Hampton Roads where few remnants of the historic landscape survive. It is not likely that additional significant archaeological sites associated with the Revolutionary War activity in the project APE are located within the project APE or that such sites, if identified would be significant for anything other than information potential.

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**APPENDIX A:**  
**Previous Archaeological Survey**

**Table A-1: Previous Archaeological Survey – Key to Previous Survey Maps**

VDHR Report #	Conducted by (Bibliographic Reference)	VDHR Report #	Conducted by (Bibliographic Reference)
CS-010	James Madison University-Archaeological Research Center (Sherwood and McCartney 1987)	PM-003	Thunderbird (Thunderbird 1981)
CS-055	Louis Berger & Associates, Inc. (Sara et al. 1999)	PM-037	Panamerican Consultants, Inc. (Lydecker and Tuttle 2000)
CS-074	Dolan Research, Inc. (Cox 2000)	PM-038	Cultural Resources, Inc. (McDonald and Andria 2003)
CS-076	Coastal Carolina Research (Moore et al. 2003)	PM-039	US Army Construction Engineering Research Laboratory (USACER 1990)
HT-023	Virginia Archaeological Services, Inc. (VAS 1989)	PM-043	Cultural Resources, Inc. (McDonald 2002)
HT-045	James River Institute for Archaeology (Magoon et al. 1995)	PM-047	Southeastern Archaeological Research, Inc. (Sara et al. 2008)
HT-006	Archaeological Society of Virginia (Koski-Karell 1982)	PM-053	Coastal Carolina Research (Gosser et al 2009)
NN-050	Geo-Marine, Inc. (Jones and Cox 2008)	PM-075	Dovetail Cultural Resource Group, LLC (Barile et al. 2012)
NN-007	Virginia Research Center for Archaeology (VRCA 1979)	SK-104	Versar Inc. (Versar 2010)
NR-054	R. Christopher Goodwin & Associates, Inc. (Goodwin 1997)	SK-031	James River Institute for Archaeology (McSherry and Lucketti 1992)
NR-058	Tidewater Atlantic Research (Watts 1996a)	SK-035	Espey, Huston & Associates (Outlaw 1990)
NR-060	Tidewater Atlantic Research (Watts 1996b)	SK-058	James River Institute for Archaeology (McSherry, and McCartney 1997)
NR-069	R. Christopher Goodwin & Associates, Inc. (Polglase, et. Al 2002)	SK-077	James River Institute for Archaeology (Fesler et al. 2004)
NR-079	Southeastern Archaeological Research, Inc. (SEARCH 2011)		

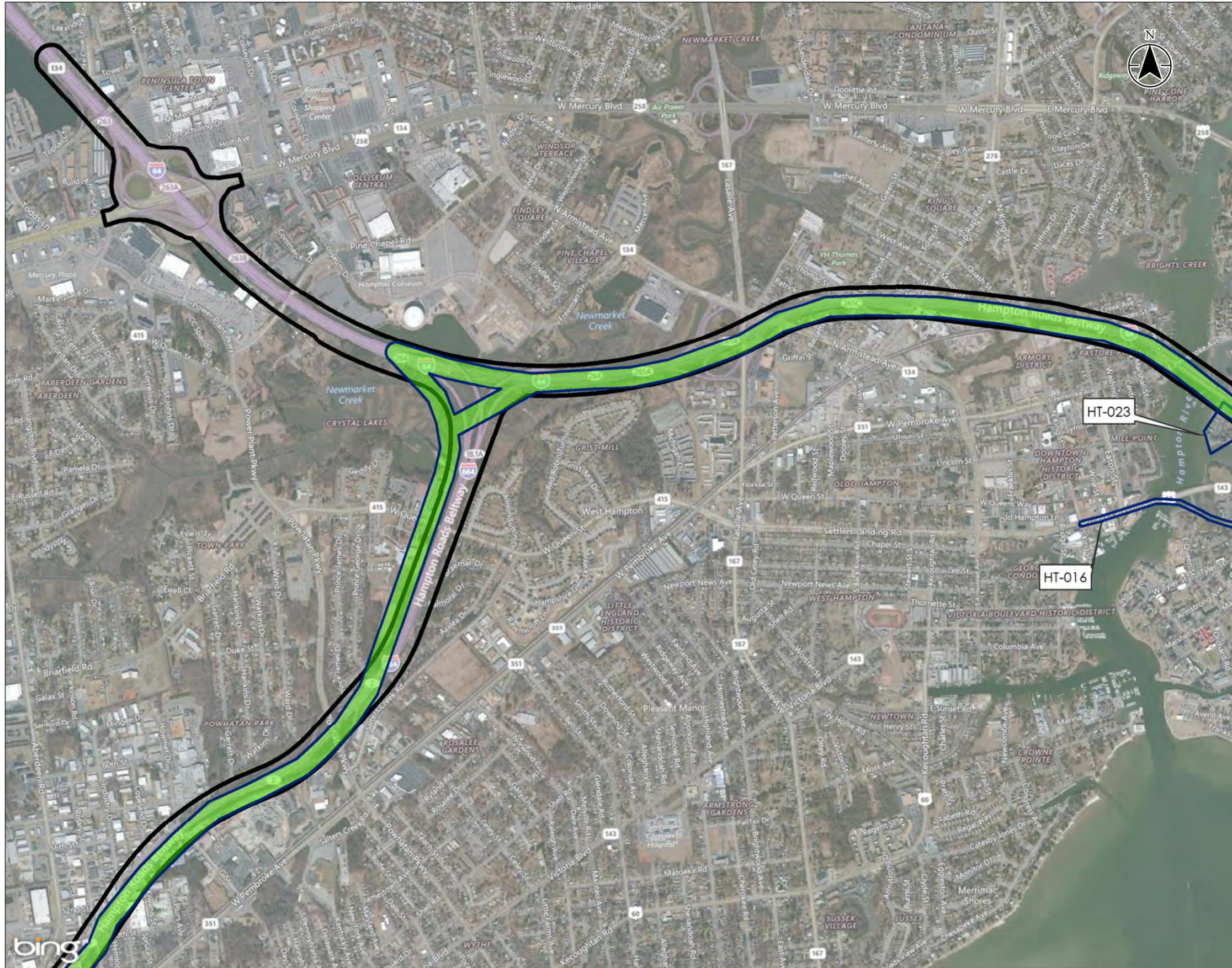
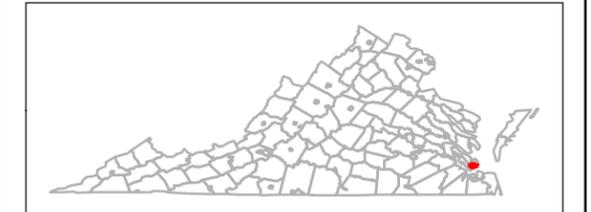


Figure No. Appendix A - 1  
 Title Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Hampton Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News North, Hampton Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



Legend  
 [Black Outline] Direct APE - Alternatives A, B, C, D  
 [Blue Outline] Phase I Survey Coverage  
 [Green Fill] CS-055



Notes  
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet  
 2. Orthoimagery © Bing Maps  
 3. Phase I Survey Coverage: VDHR 2015



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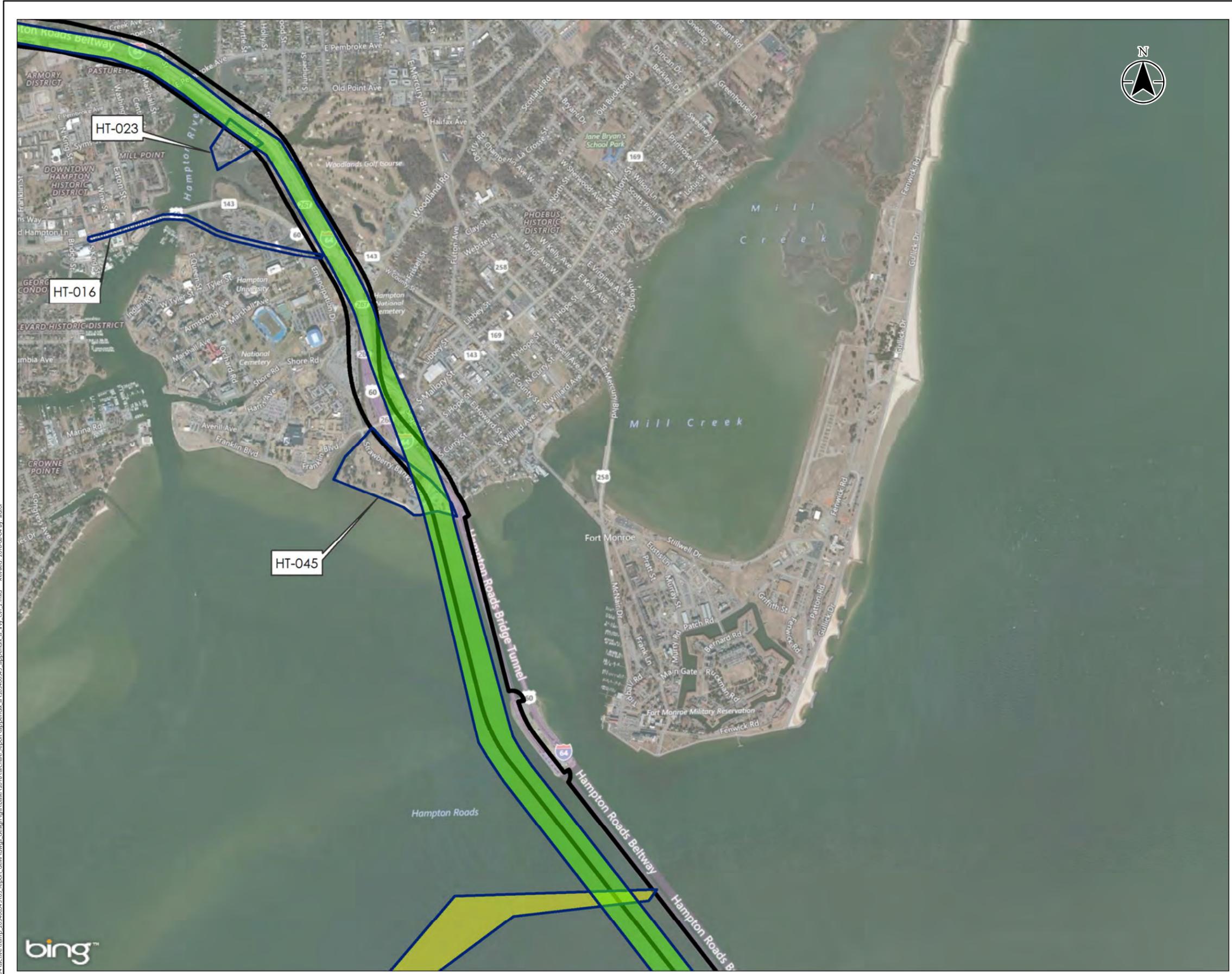


Figure No. Appendix A - 2  
 Title Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Hampton Prepared by SWS on 2016-08-04  
 USGS Quad: Hampton, Norfolk North Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - CS-055
  - NR-058/NR-060



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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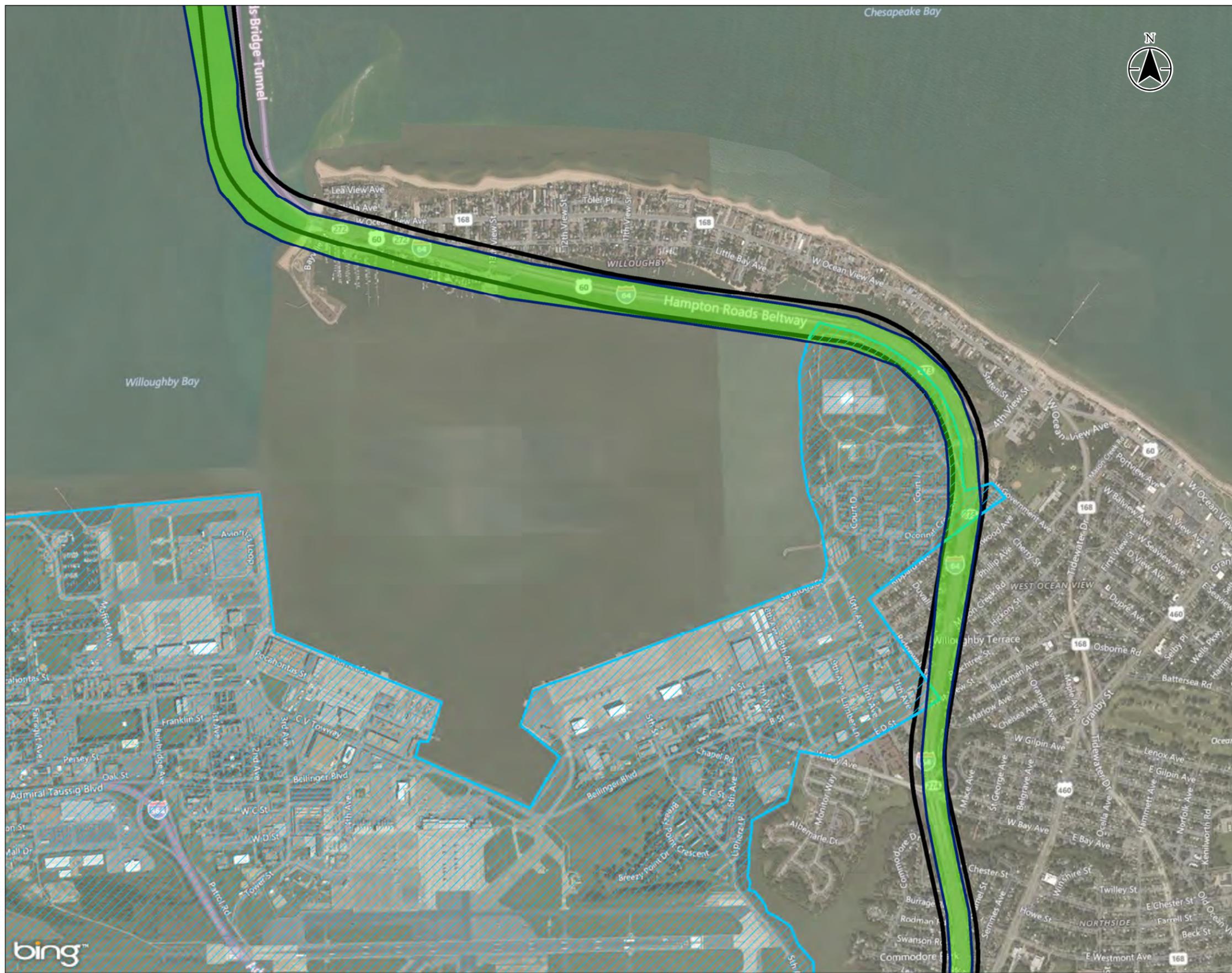


Figure No. **Appendix A - 4**

Title  
**Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCs-SEIS**

Client/Project  
**RK&K  
 Virginia Department of Transportation**

Project Location 203400545

County: Norfolk Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04

USGS Quad: Norfolk North Independent Review by EMB on 2016-08-04



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - NR-069
  - CS-055



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCs SEIS**  
 Hampton Roads Crossing Study SEIS

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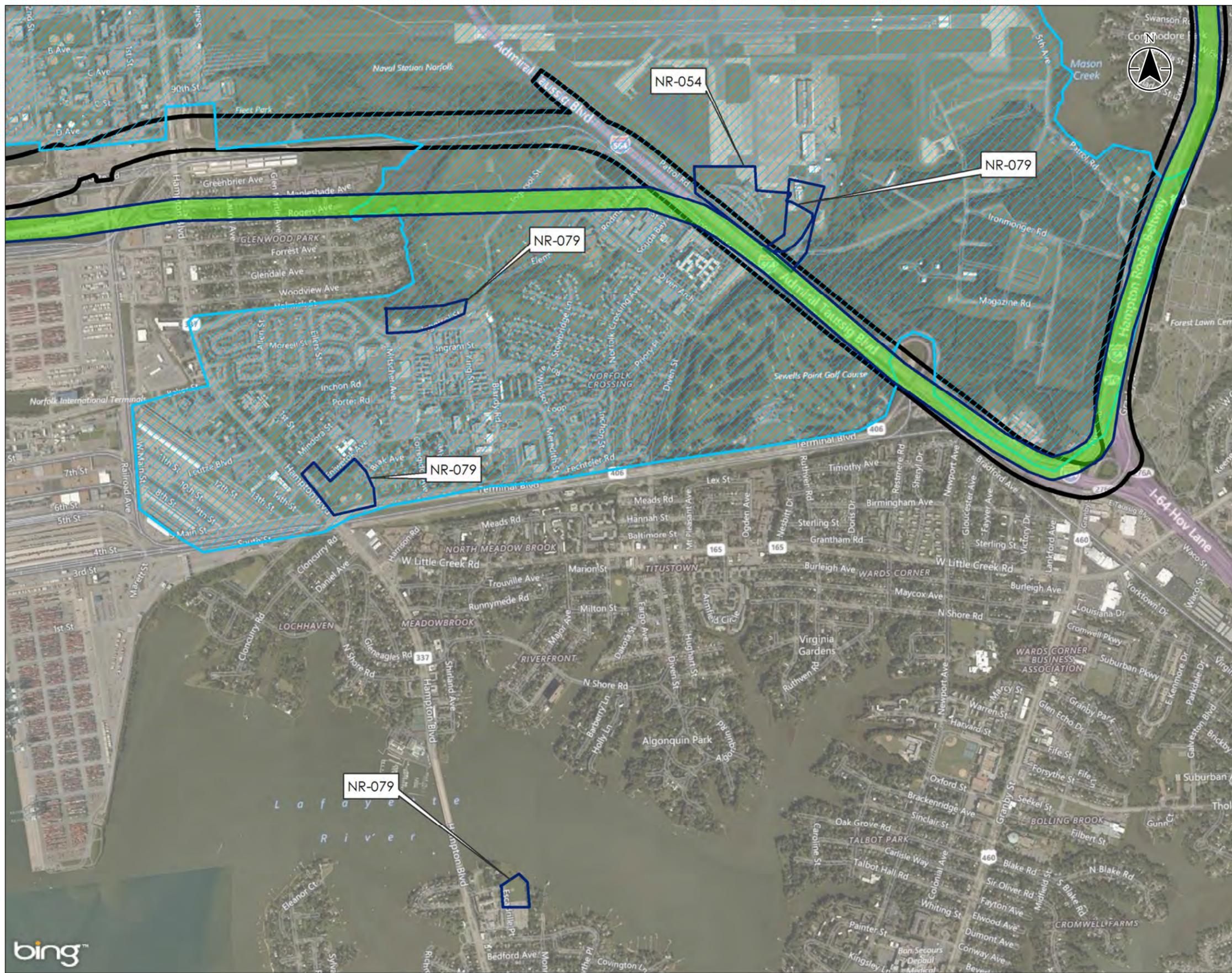
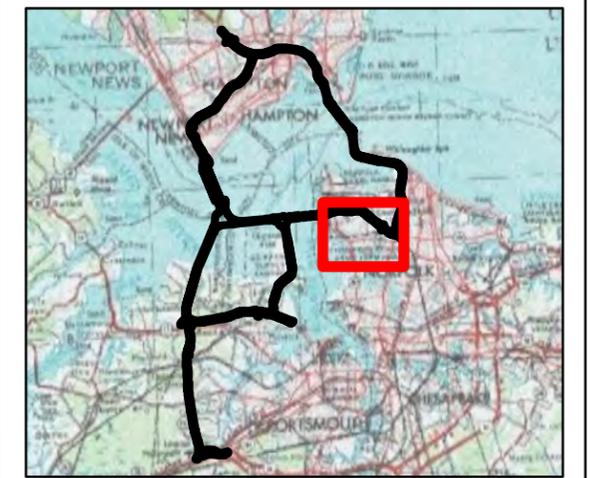


Figure No. Appendix A - 5  
 Title Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Norfolk Prepared by SWS on 2016-08-04  
 USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - NR-069
  - CS-055



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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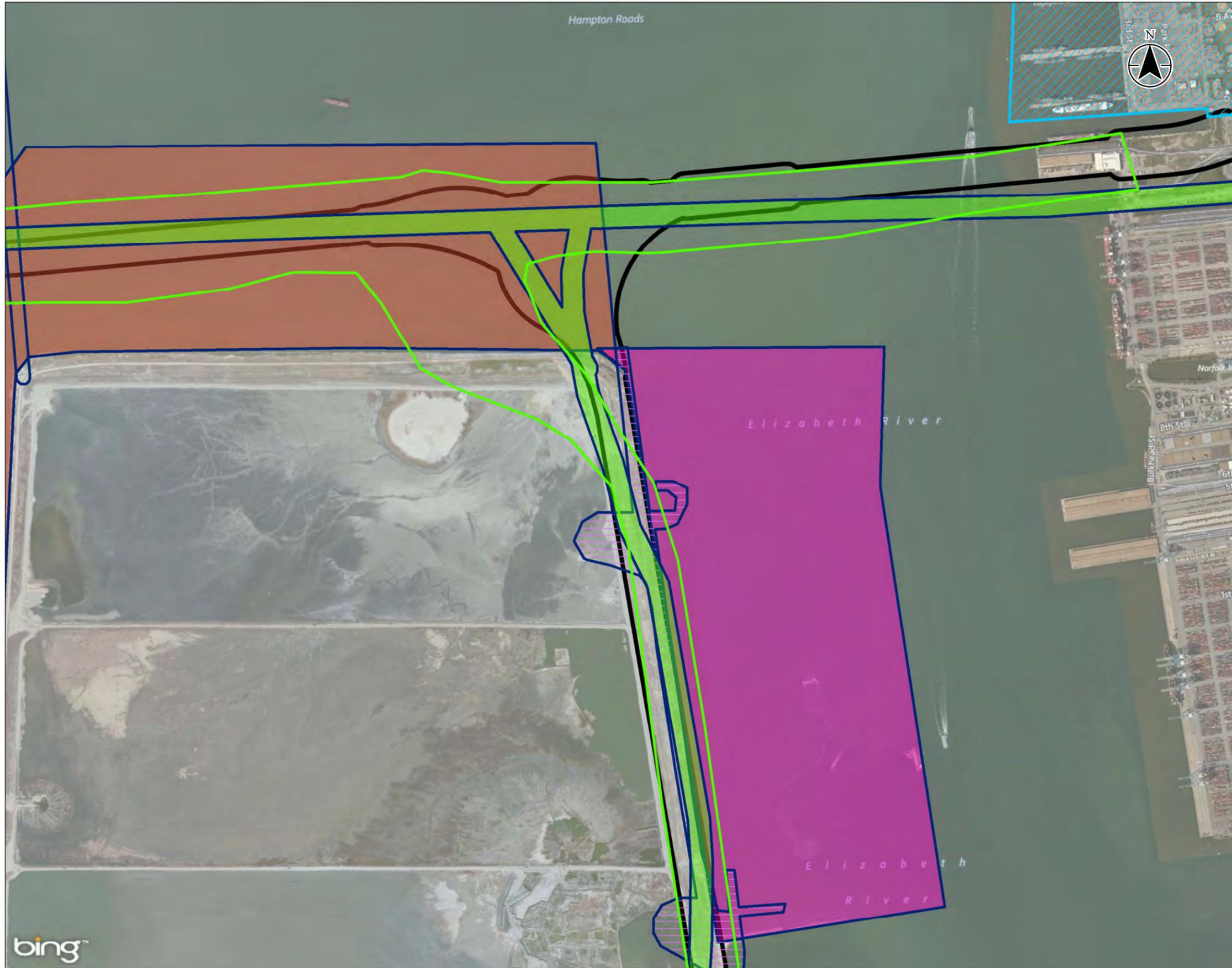


Figure No. **Appendix A - 6**

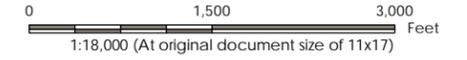
Title  
**Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCs-SEIS**

Client/Project  
**RK&K  
 Virginia Department of Transportation**

Project Location 203400545

County: Portsmouth Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04

USGS Quad: Newport News South, Norfolk North Independent Review by EMB on 2016-08-04



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - CS-074
  - NR-069
  - CS-055
  - PM-037
  - PM-039
  - PM-053



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

HRCs SEIS

Hampton Roads Crossing Study SEIS

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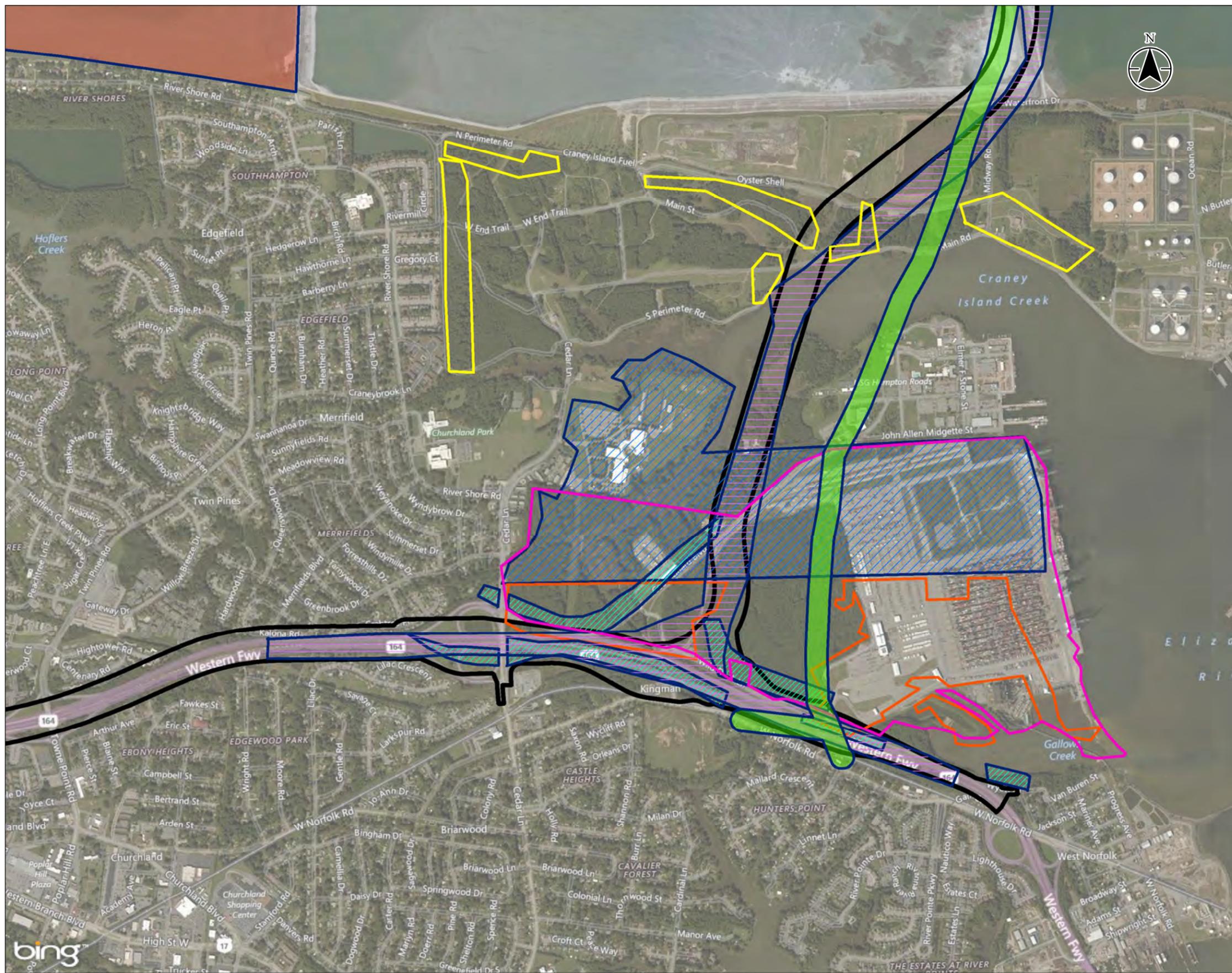
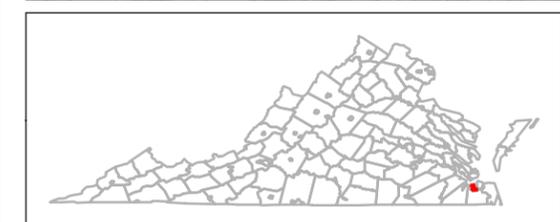
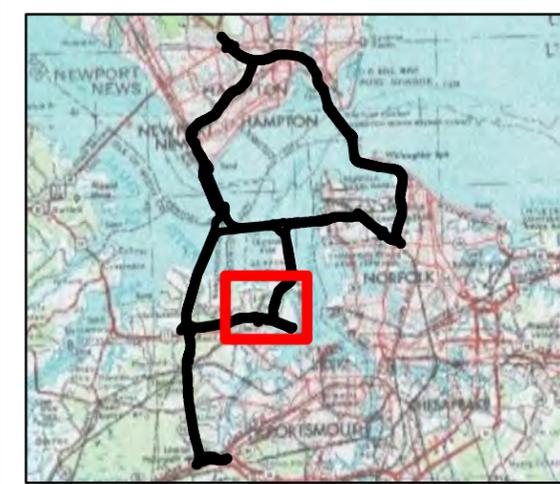


Figure No. Appendix A - 7  
 Title Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South, Norfolk North Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



Legend

	Direct APE - Alternatives A, B, C, D		PM-039
	Phase I Survey Coverage		PM-043
	CS-055		PM-047
	PM-037		PM-053
	PM-038		PM-075
			PM-003



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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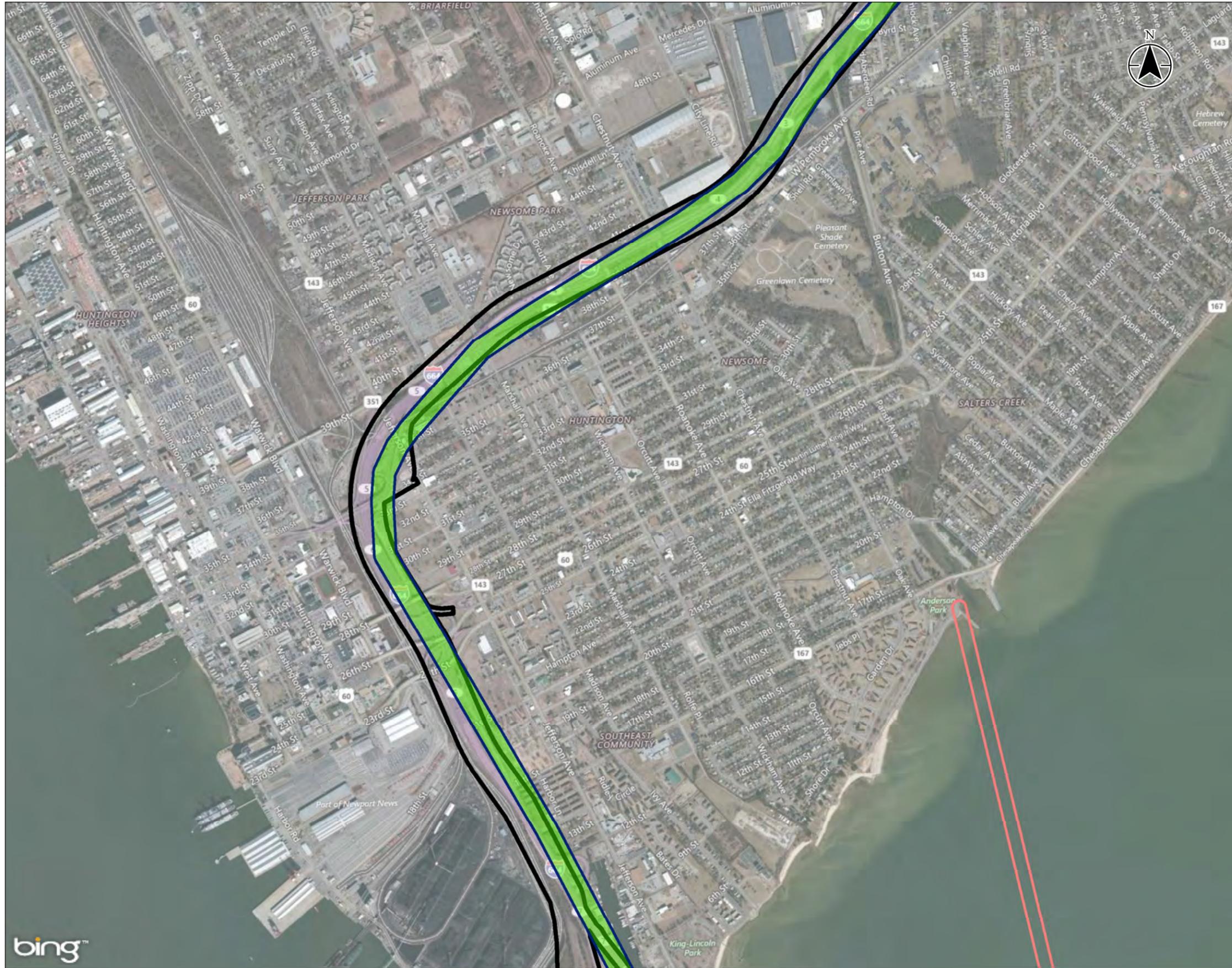


Figure No. **Appendix A - 8**

Title  
**Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS**

Client/Project  
**RK&K  
 Virginia Department of Transportation**

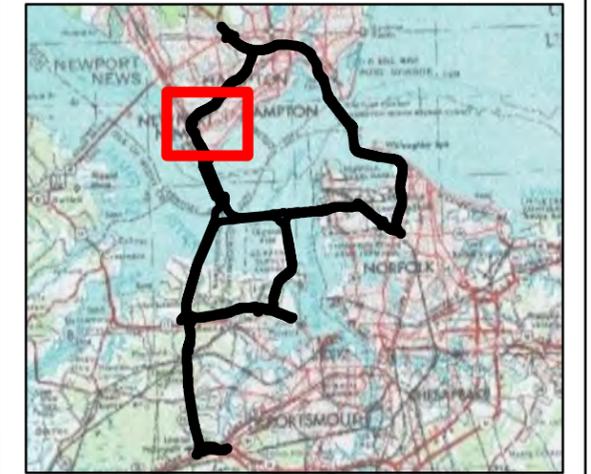
Project Location 203400545

County: Hampton, Newport News Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04

USGS Quad: Newport News North, Newport News South



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - CS-05
  - NN-05



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Figure No. **Appendix A - 9**

Title  
Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCs-SEIS

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545

County: Hampton, Newport News  
Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04

USGS Quad: Newport News North, Newport News South



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - CS-074
  - CS-055
  - NN-050
  - PM-039
  - NN-007



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS



Figure No. Appendix A - 10  
 Title Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Suffolk, Portsmouth Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 USGS Quad: Newport News South Independent Review by EMB on 2016-08-04



Legend

	Direct APE - Alternatives A, B, C, D		SK-104
	Phase I Survey Coverage		SK-058
	CS-074		PM-039
	CS-055		
	NN-050		
	NN-007		



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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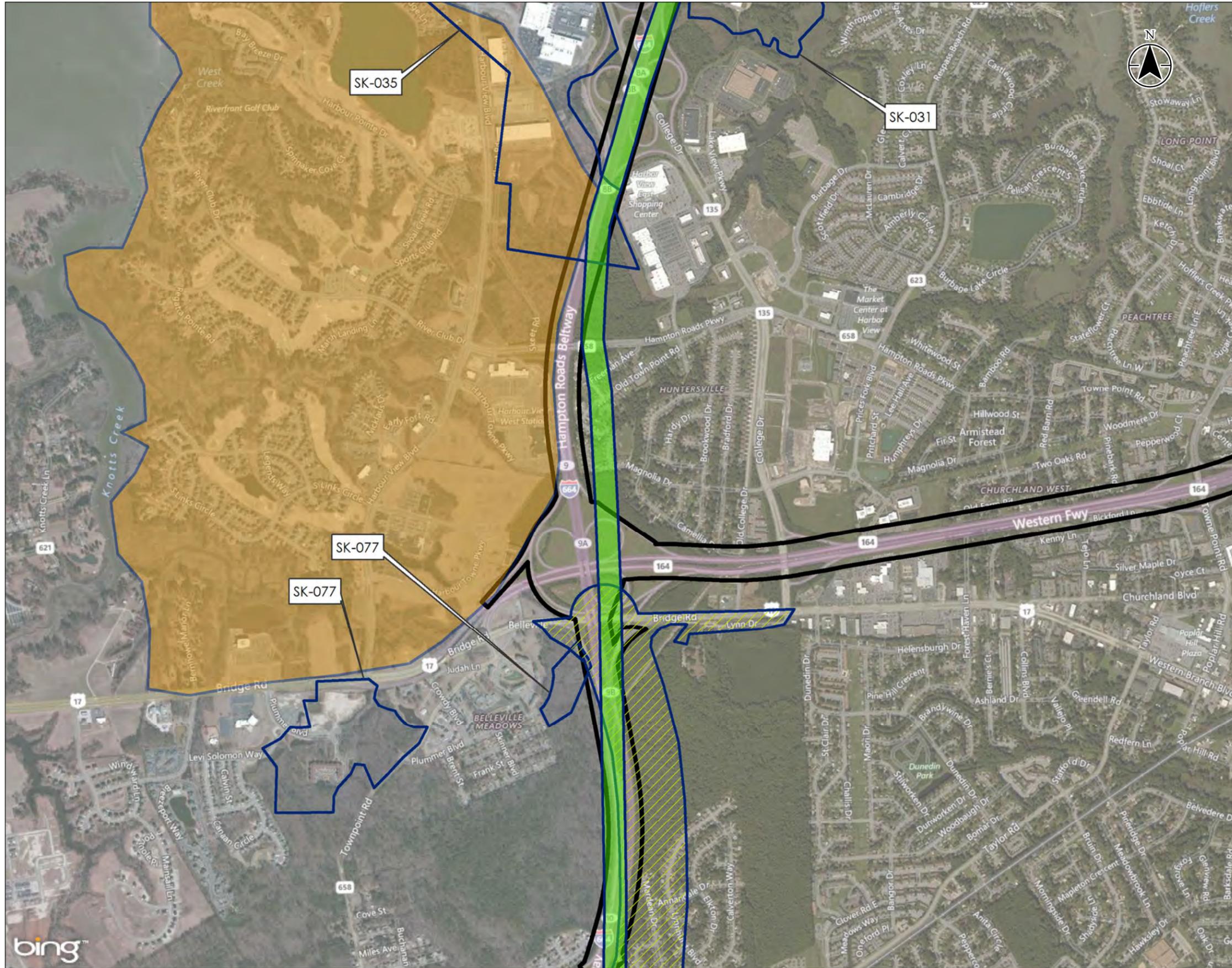
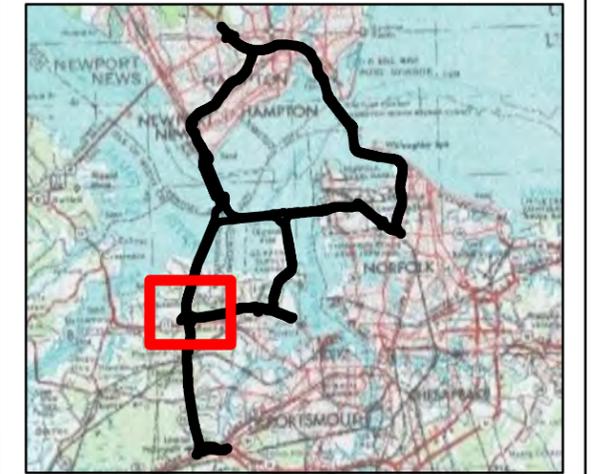


Figure No. Appendix A - 11  
 Title Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Suffolk, Portsmouth, Chesapeake Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04  
 USGS Quad: Newport News South, Bowers Hill



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - CS-074
  - CS-010
  - CS-055
  - SK-058



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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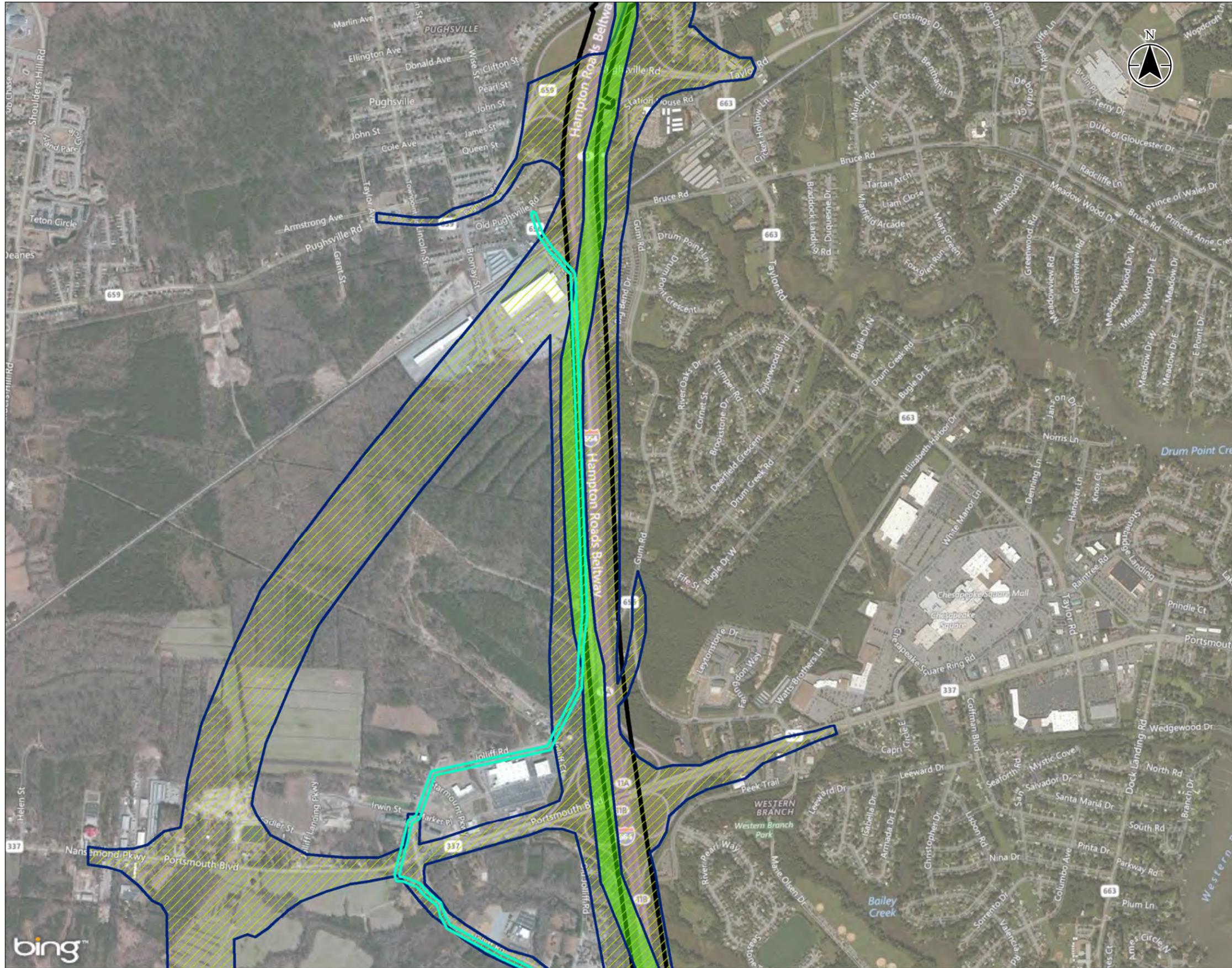


Figure No. **Appendix A - 12**

Title  
**Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS**

Client/Project  
**RK&K  
 Virginia Department of Transportation**

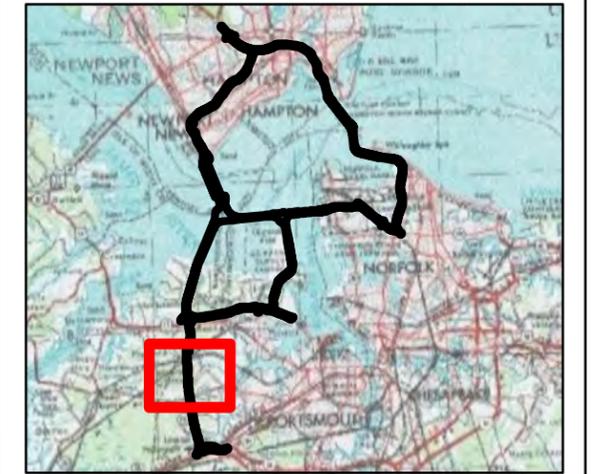
Project Location 203400545

County: Suffolk, Portsmouth, Chesapeake Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04

USGS Quad: Bowers Hill



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - CS-076
  - CS-010
  - CS-055



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015



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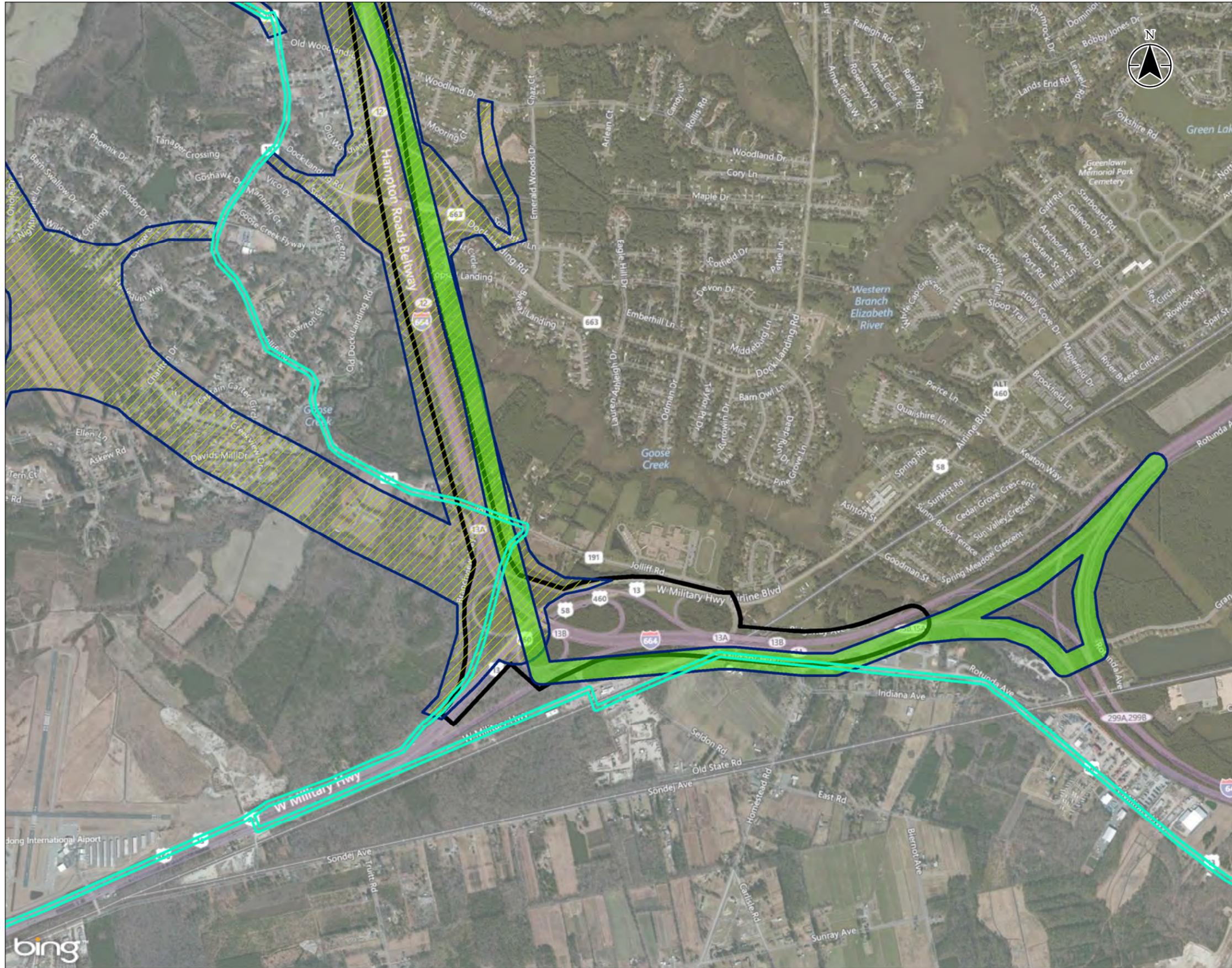


Figure No. **Appendix A - 13**

Title  
**Previous Survey Coverage Areas in Relation to Alternatives A, B, C and D HRCS-SEIS**

Client/Project  
**RK&K  
 Virginia Department of Transportation**

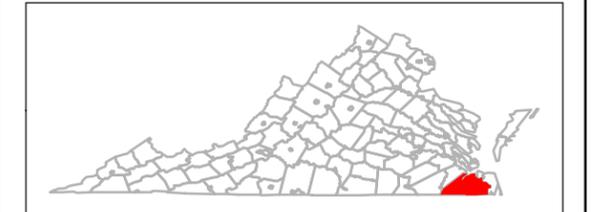
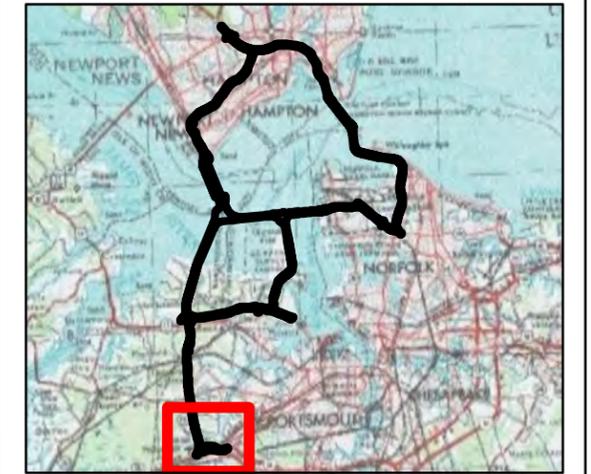
Project Location 203400545

County: Suffolk, Portsmouth, Chesapeake Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04

USGS Quad: Bowers Hill



- Legend
- Direct APE - Alternatives A, B, C, D
  - Phase I Survey Coverage
  - CS-076
  - CS-010
  - CS-055



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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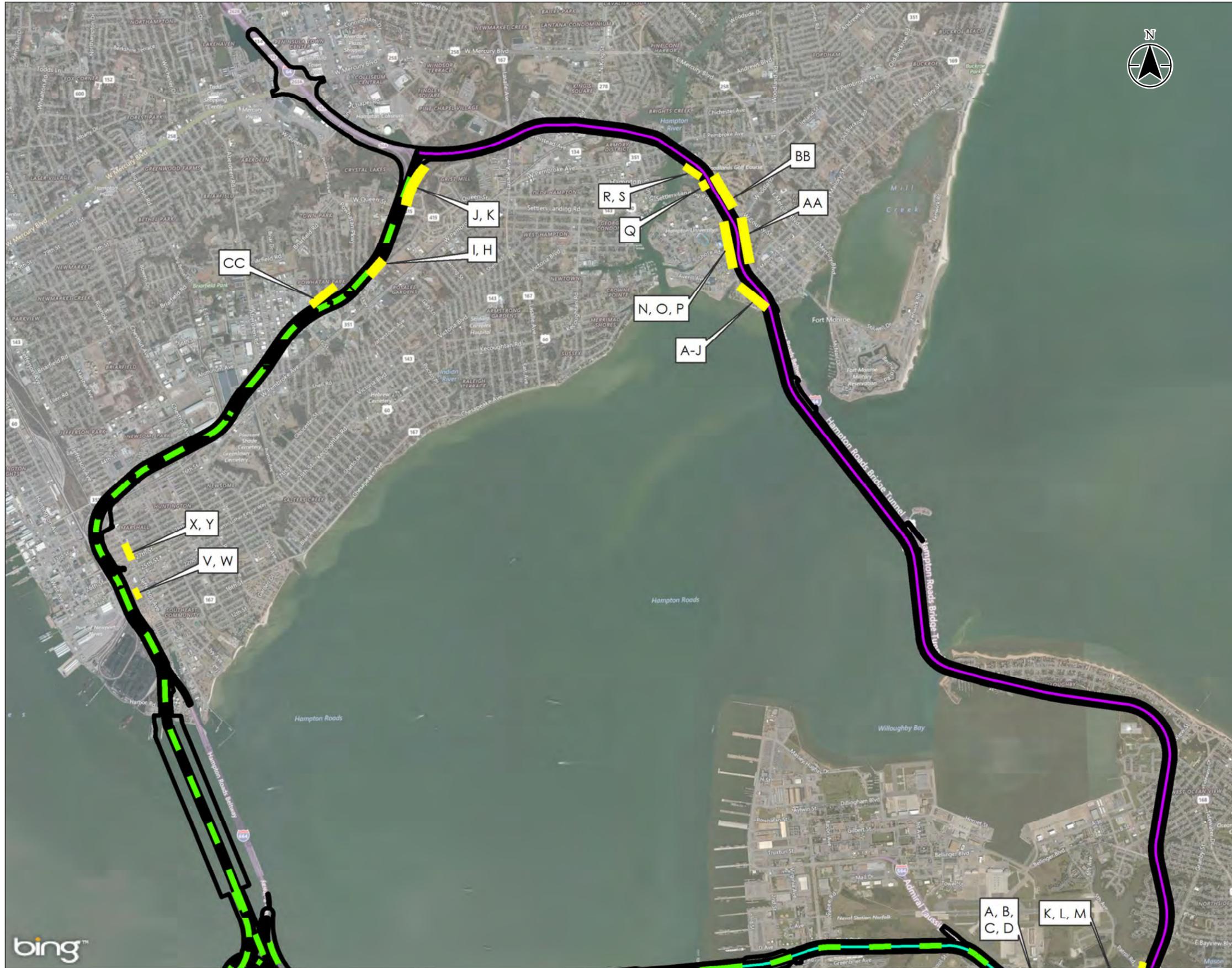
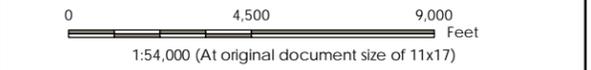


Figure No. Appendix A - 14  
 Title Survey Transects from 1999 Investigation in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Hampton, Newport News, Norfolk  
 Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04  
 USGS Quad: Newport News North, Hampton, Newport News South, Norfolk North



- Legend
- Direct APE - Alternatives A, B, C, D
  - 1999 Survey Areas
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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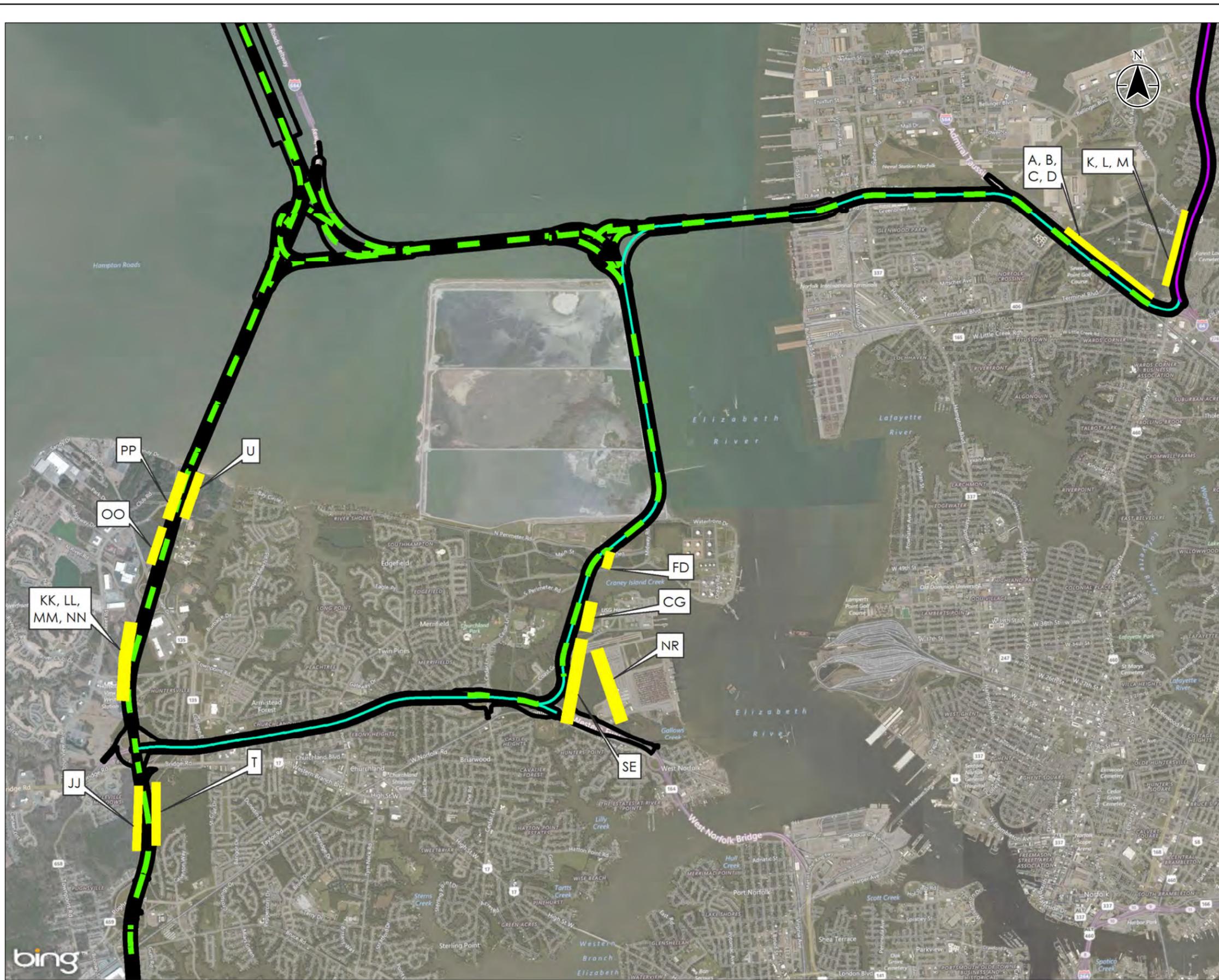
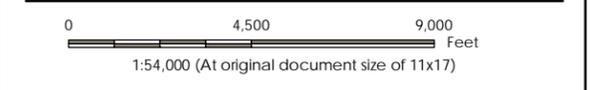
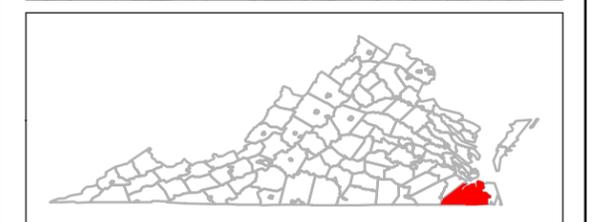
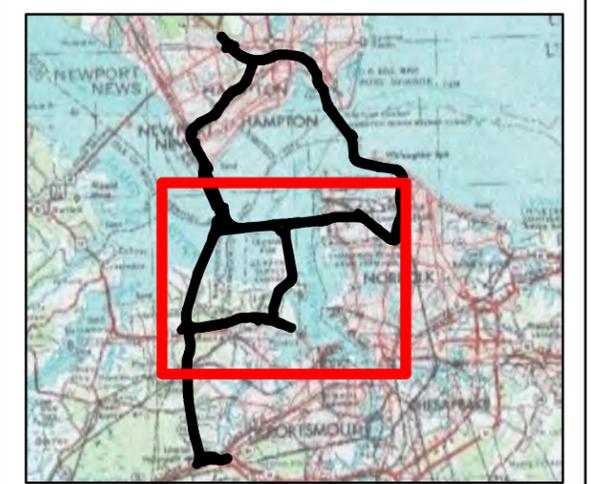


Figure No. Appendix A - 15  
 Title Survey Transects from 1999 Investigation in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Norfolk, Suffolk, Chesapeake, Portsmouth Prepared by SWS on 2016-08-04 Technical Review by AJL on 2016-08-04 Independent Review by EMB on 2016-08-04  
 USGS Quad: Newport News South, Norfolk North, Bowers Hill, Norfolk South



- Legend
- Direct APE - Alternatives A, B, C, D
  - 1999 Survey Areas
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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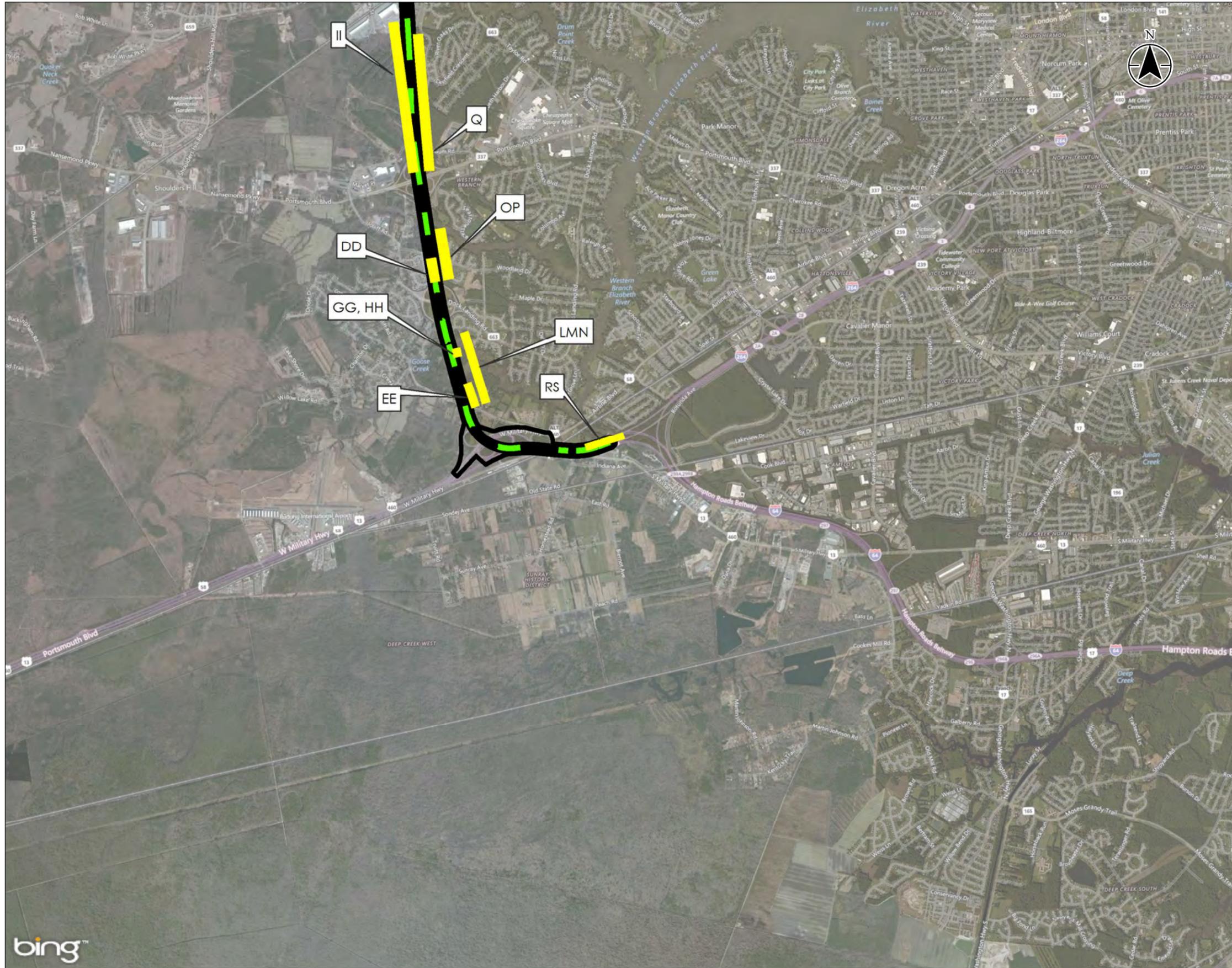


Figure No. Appendix A - 16  
 Title Survey Transects from 1999 Investigation in Relation to Alternatives A, B, C and D HRCS-SEIS  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Chesapeake, Suffolk, Portsmouth  
 Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04  
 USGS Quad: Bowers Hill, Norfolk South, Lake Drummond NW, Deep Creek



- Legend
- Direct APE - Alternatives A, B, C, D
  - 1999 Survey Areas
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Figure No. Appendix A - 17

Title  
Previously Recorded Archaeological Sites  
in Relation to Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

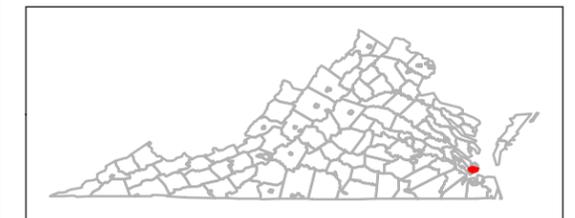
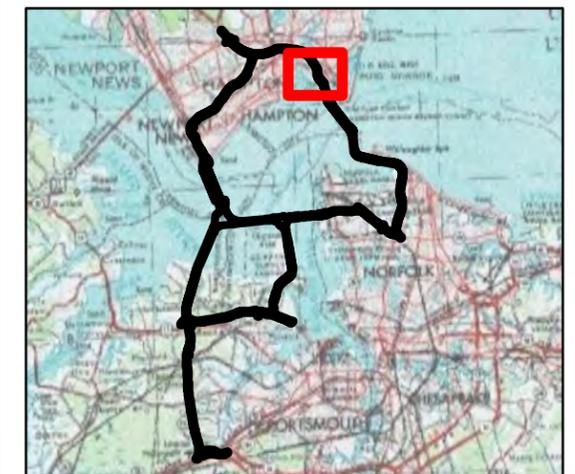
Project Location 203400545

County: Hampton, Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
USGS Quad: Hampton Independent Review by EMB on 2016-08-04



Legend

- Limits of Disturbance
- Direct APE - Alternatives A, B, C, D
- Archaeological Resources
- Architectural Resources
- Alternative A Centerline
- Alternative B Centerline
- Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

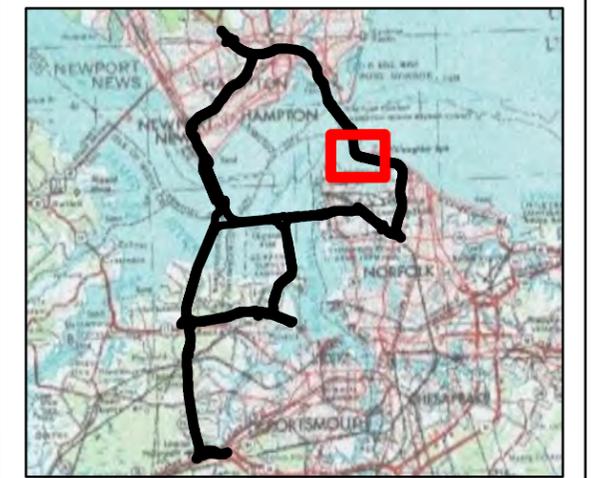
**HRCS SEIS**  
Hampton Roads Crossing Study SEIS



Figure No. Appendix A - 18  
 Title Previously Recorded Archaeological Sites in Relation to Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Norfolk Prepared by SWS on 2016-08-04  
 USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Limits of Disturbance
  - Direct APE - Alternatives A, B, C, D
  - Archaeological Resources
  - Architectural Resources
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative D Centerline



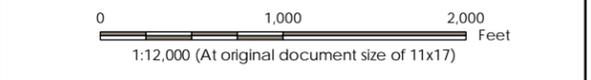
- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

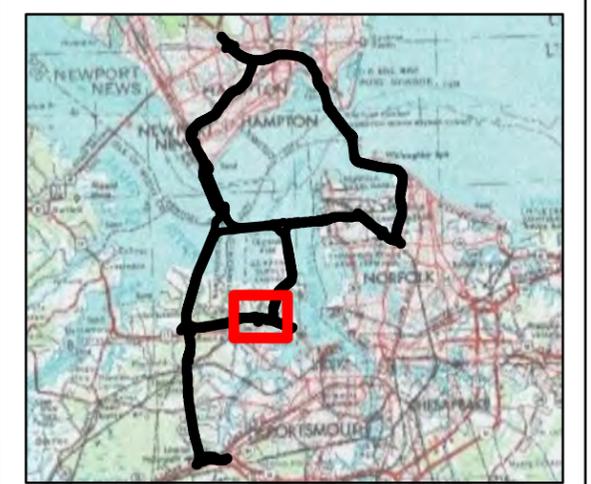
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Figure No. Appendix A - 19  
 Title Previously Recorded Archaeological Sites in Relation to Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Portsmouth USGS Quad: Newport News South, Norfolk North, Bowers Hill, Norfolk South  
 Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Limits of Disturbance
  - Direct APE - Alternatives A, B, C, D
  - Archaeological Resources
  - Architectural Resources
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

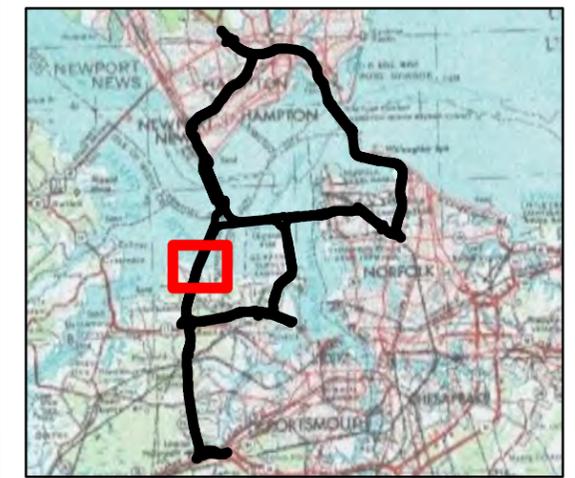
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Figure No. Appendix A - 20  
 Title Previously Recorded Archaeological Sites in Relation to Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Suffolk, Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Limits of Disturbance
  - Direct APE - Alternatives A, B, C, D
  - Archaeological Resources
  - Architectural Resources
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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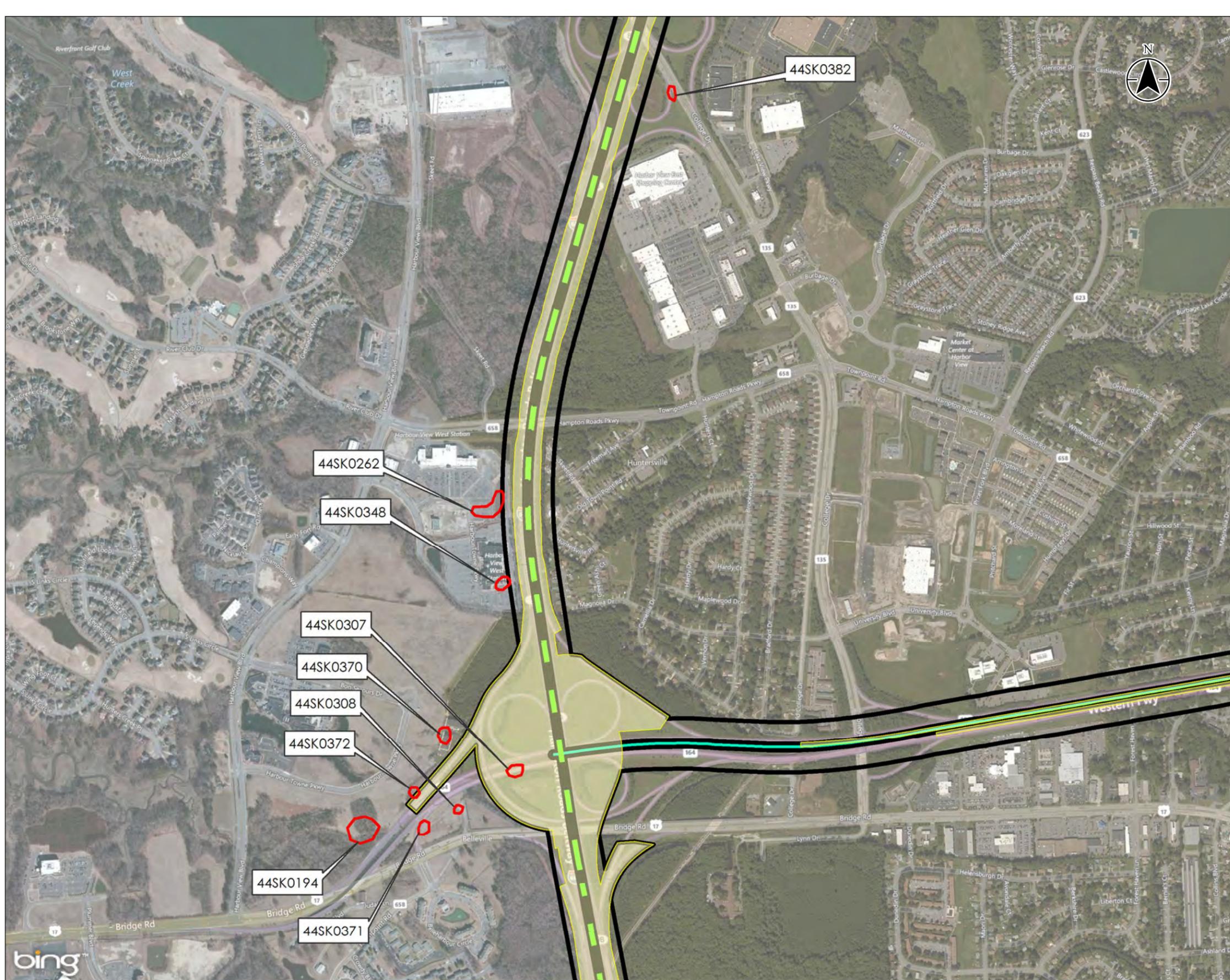
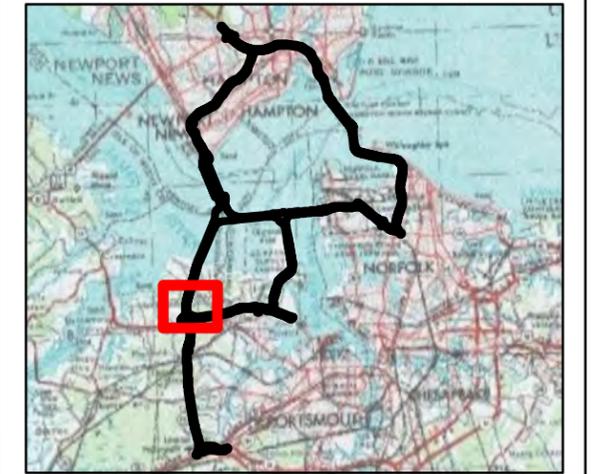


Figure No. Appendix A - 21  
 Title Previously Recorded Archaeological Sites in Relation to Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Suffolk, Portsmouth, Chesapeake Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South, Technical Review by AJL on 2016-08-04  
 Bowers Hill Independent Review by EMB on 2016-08-04



- Legend
- Limits of Disturbance
  - Direct APE - Alternatives A, B, C, D
  - Archaeological Resources
  - Architectural Resources
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Figure No. Appendix A - 22

Title  
Previously Recorded Archaeological Sites  
in Relation to Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

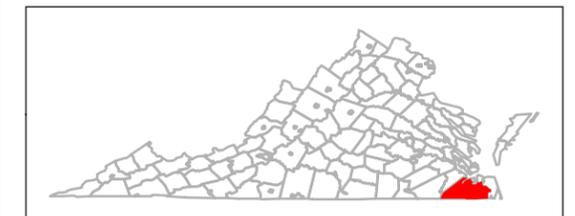
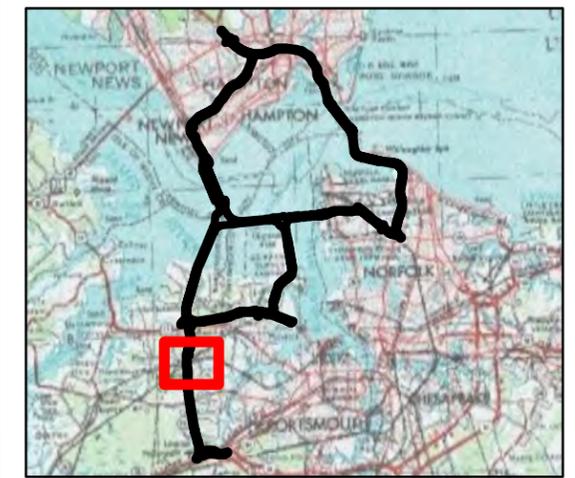
Project Location 203400545

County: Suffolk, Chesapeake Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
USGS Quad: Bowers Hill Independent Review by EMB on 2016-08-04



Legend

- Limits of Disturbance
- Direct APE - Alternatives A, B, C, D
- Archaeological Resources
- Architectural Resources
- Alternative C Centerline
- Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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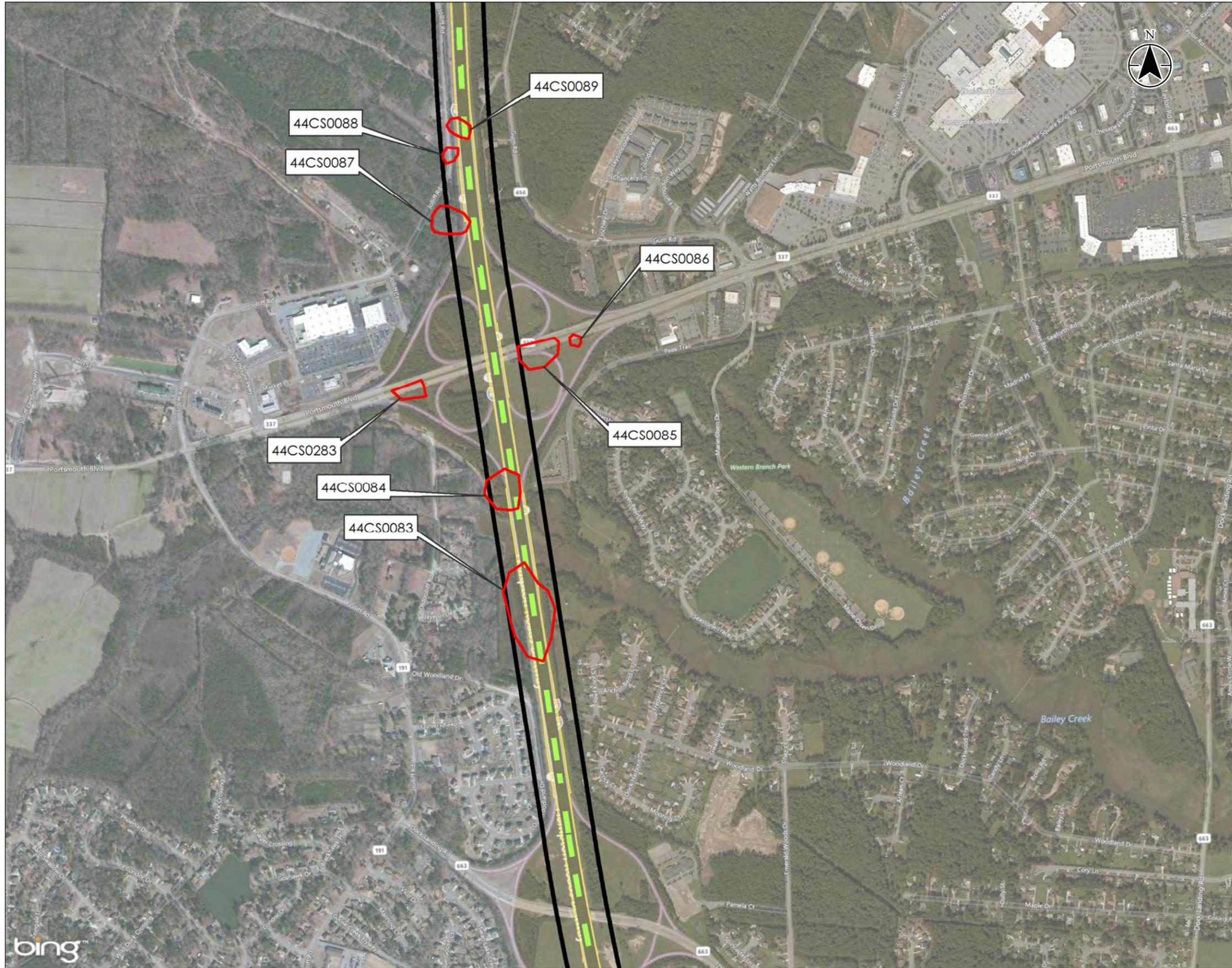
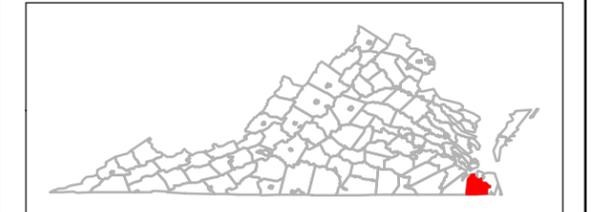
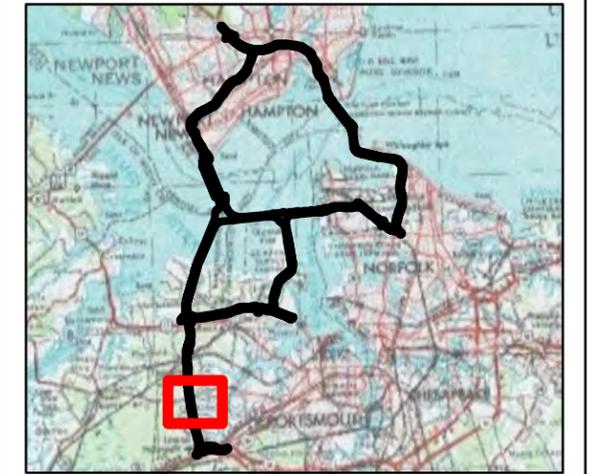


Figure No. Appendix A - 23  
 Title Previously Recorded Archaeological Sites in Relation to Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Chesapeake, Portsmouth, USGS Quad: Bowers Hill  
 Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Limits of Disturbance
  - Direct APE - Alternatives A, B, C, D
  - Archaeological Resources
  - Architectural Resources
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

**HRC S SEIS**  
 Hampton Roads Crossing Study SEIS

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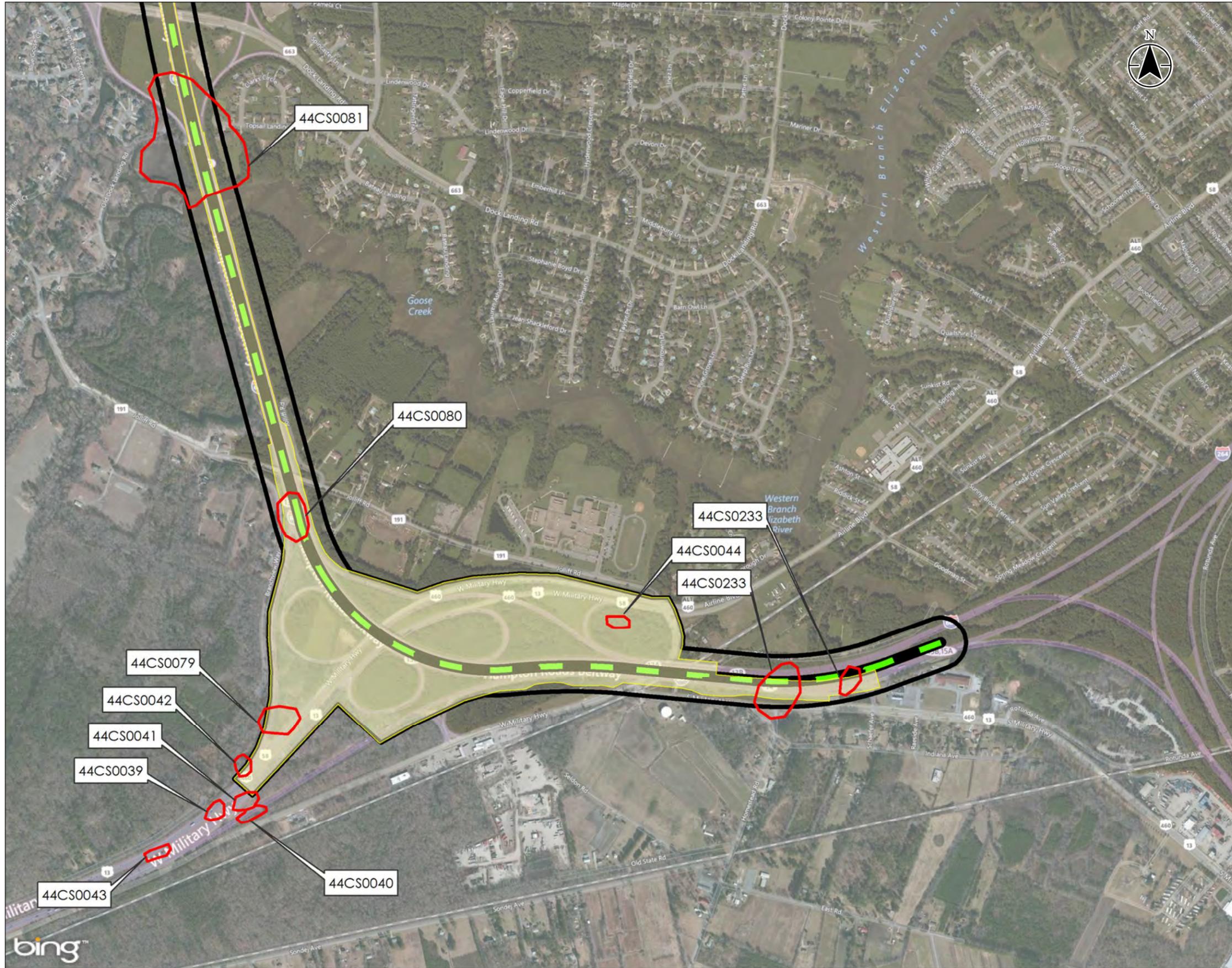


Figure No. **Appendix A - 24**

Title  
**Previously Recorded Archaeological Sites  
in Relation to Alternatives A, B, C and D**

Client/Project  
**RK&K  
Virginia Department of Transportation**

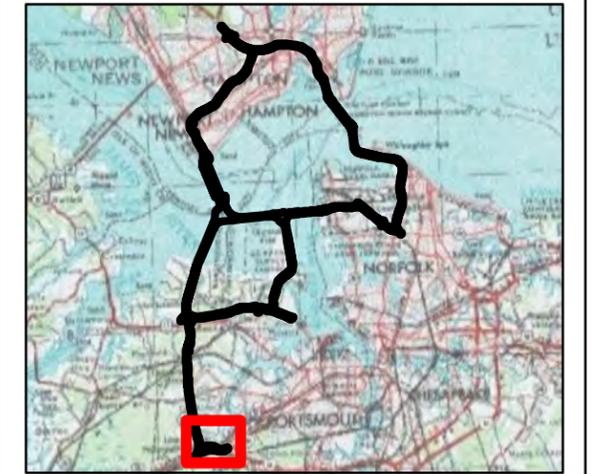
Project Location 203400545

County: Chesapeake Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04

USGS Quad: Bowers Hill



- Legend**
- Limits of Disturbance
  - Direct APE - Alternatives A, B, C, D
  - Archaeological Resources
  - Architectural Resources
  - Alternative C Centerline
  - Alternative D Centerline



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Archaeological Resources: VDHR 2016

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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**APPENDIX B:**  
**Battlefields and Other Resources – Maps**



Figure No.

**Appendix B - 1**

Title  
 ABPP Data for Battle of Hampton (War of 1812)  
 in Relation to Alternatives A, B, C and D  
 HRCS-SEIS

Client/Project

RK&K  
 Virginia Department of Transportation

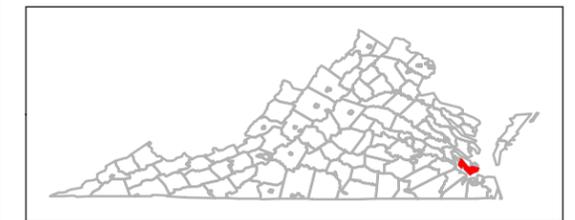
Project Location 203400545

County: Hampton, Newport News, Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News North, Technical Review by AJL on 2016-08-04  
 Hampton, Newport News South, Independent Review by EMB on 2016-08-04  
 Norfolk North



Legend

- Direct APE - Alternatives A, B, C, D
- Study Areas
- Core Areas
- Alternative A Centerline
- Alternative B Centerline
- Alternative C Centerline
- Alternative D Centerline



Notes

1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
2. Orthimagery © Bing Maps
3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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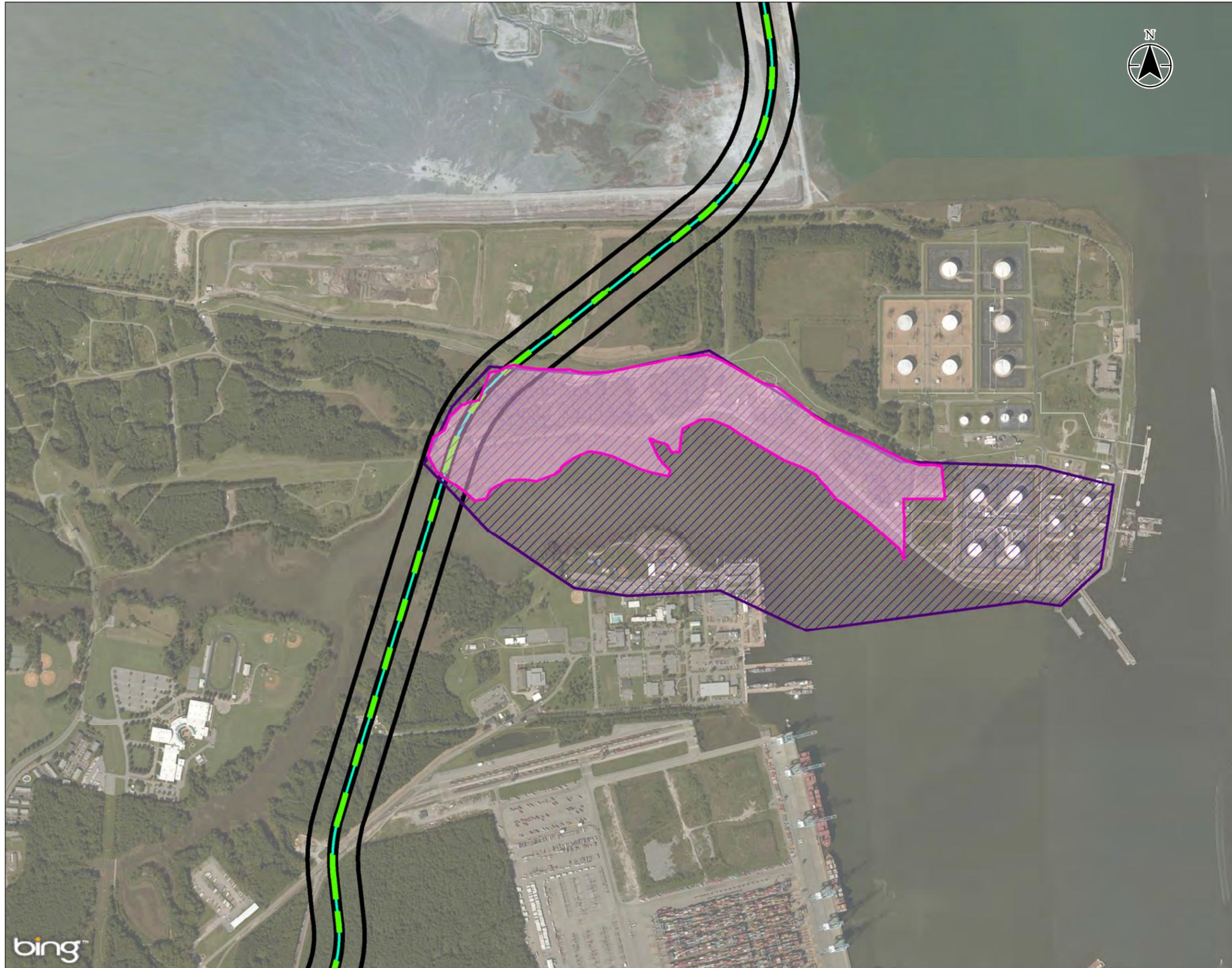


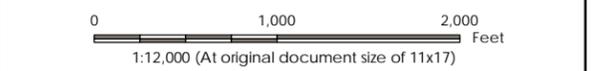
Figure No. **Appendix B - 2**

Title  
**ABPP Data for Battle of Craney Island  
 in Relation to Alternatives A, B, C and D  
 HRCS-SEIS**

Client/Project  
**RK&K  
 Virginia Department of Transportation**

Project Location 203400545

County: Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South, Technical Review by AJL on 2016-08-04  
 Norfolk North, Norfolk South, Bowers Hill Independent Review by EMB on 2016-08-04



- Legend
- Direct APE - Alternatives A, B, C, D
  - Potential NR Areas
  - Core Areas
  - Study Areas
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Figure No.

**Appendix B - 3**

Title

ABPP Data for Battle of Sewell's Point  
in Relation to Alternatives A, B, C and D  
HRCS-SEIS

Client/Project

RK&K  
Virginia Department of Transportation

Project Location

203400545

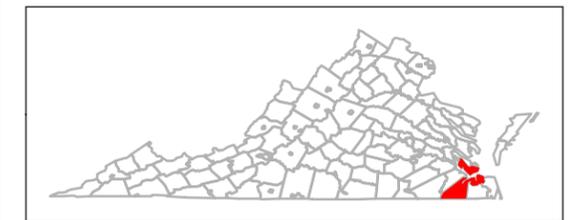
County: Hampton, Newport News,  
Portsmouth, Norfolk, Suffolk  
USGS Quad: Newport News North,  
Hampton, East of Hampton,  
Newport News South, Norfolk North,  
Little Creek

Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

-  Direct APE - Alternatives A, B, C, D
-  Study Areas
-  Core Areas
-  Potential NR Areas
-  Alternative A Centerline
-  Alternative B Centerline
-  Alternative C Centerline
-  Alternative D Centerline



Notes

1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
2. Orthoimagery © Bing Maps
3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

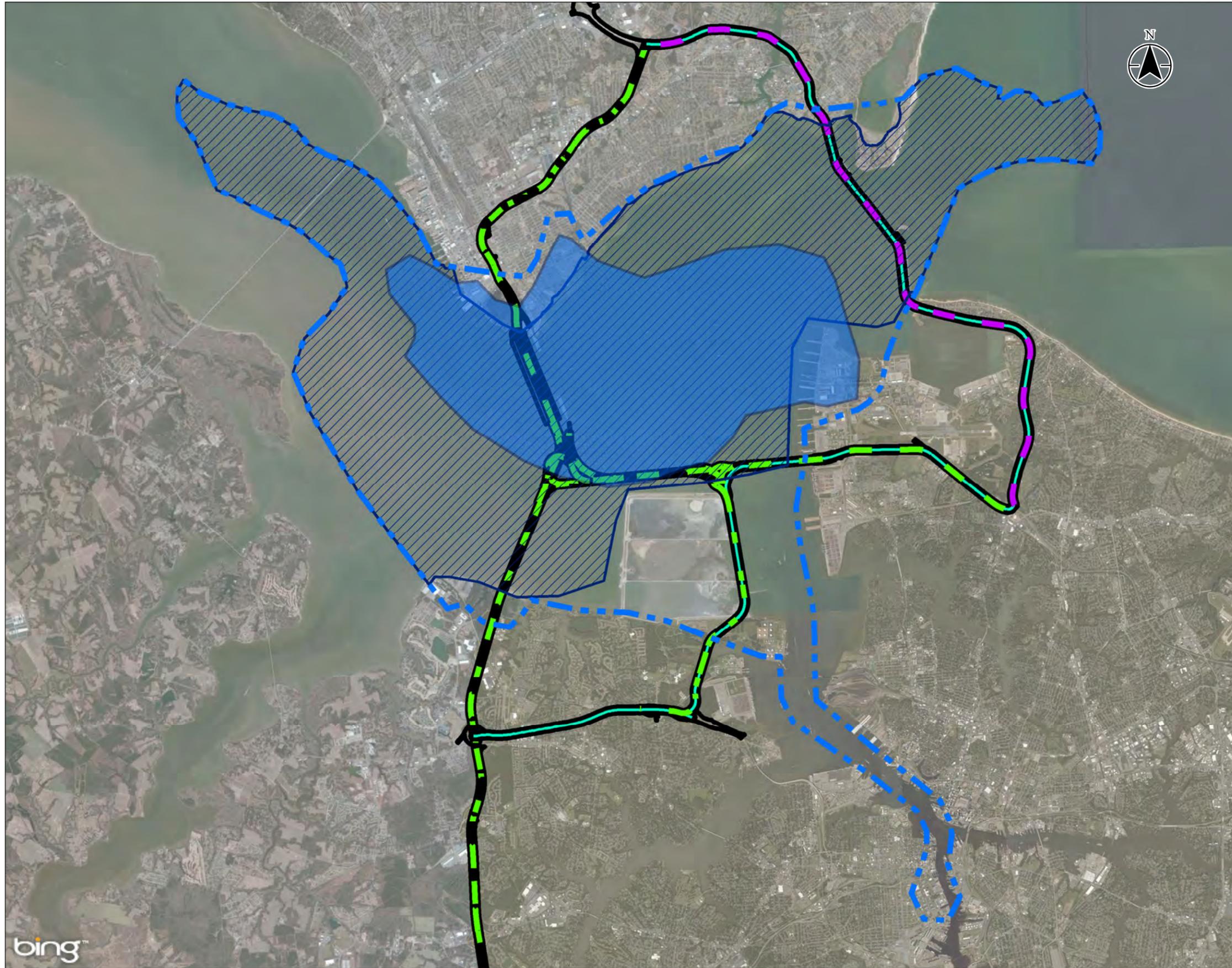


Figure No.

**Appendix B - 4**

Title  
 ABPP Data for Battle of Hampton Roads  
 in Relation to Alternatives A, B, C and D  
 HRCS-SEIS

Client/Project

RK&K  
 Virginia Department of Transportation

Project Location 203400545

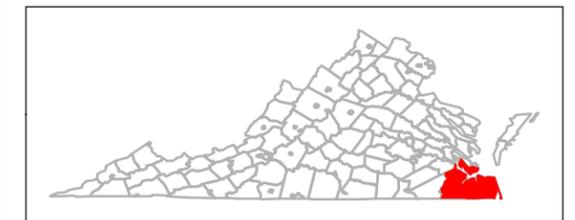
County: Hampton, Newport News, Portsmouth, Norfolk, Isle of Wight, Suffolk, Chesapeake, Virginia Beach  
 Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04

USGS Quad: Mulberry Island, Newport News North, Hampton, East of Hampton, Benn's Church, Newport News South, Norfolk North, Little Creek, Chuckatuck, Bowers Hill, Norfolk South, Kempville



Legend

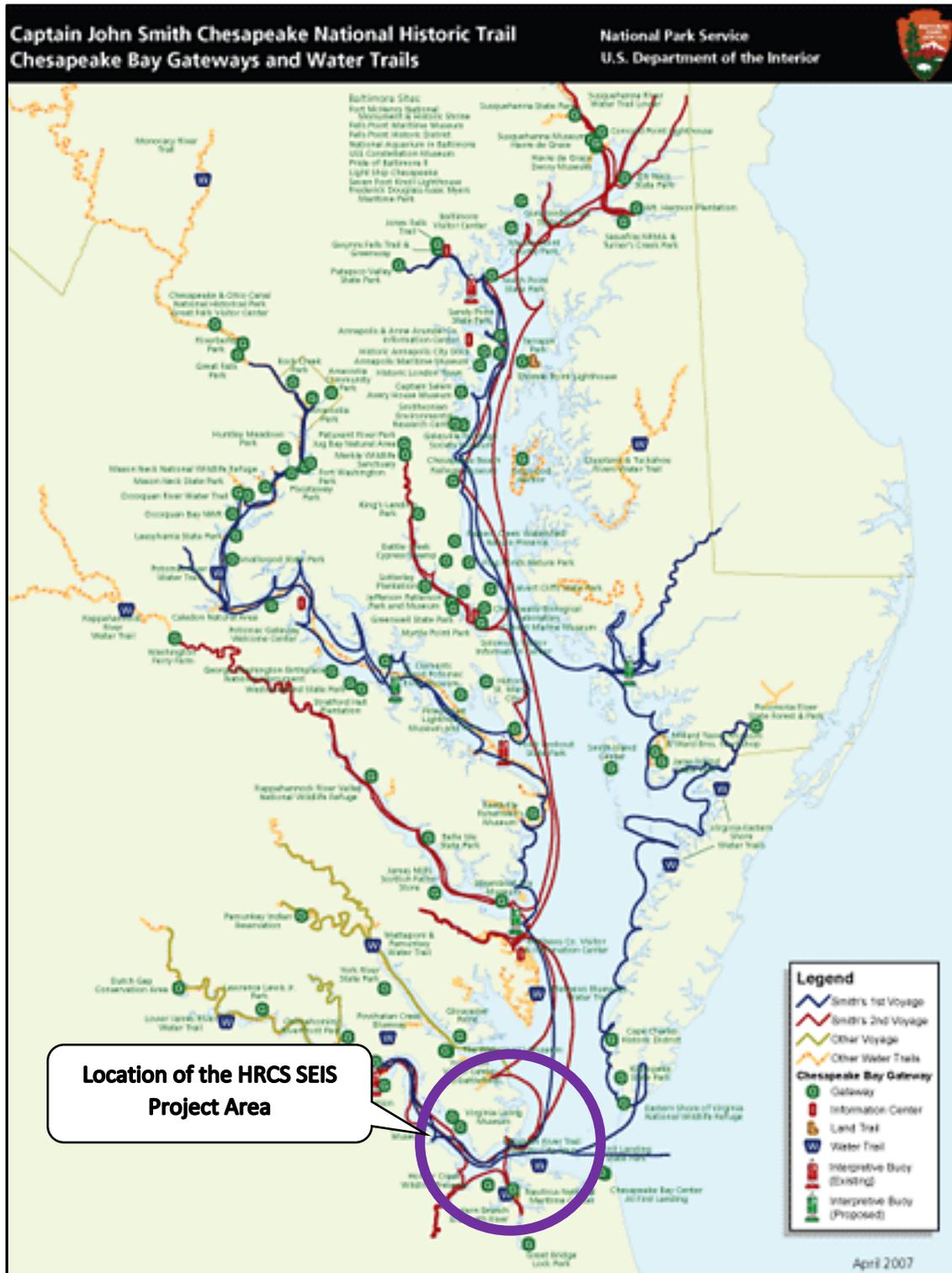
- Direct APE - Alternatives A, B, C, D
- Core Areas
- Study Areas
- Potential NR Areas
- Alternative A Centerline
- Alternative B Centerline
- Alternative C Centerline
- Alternative D Centerline



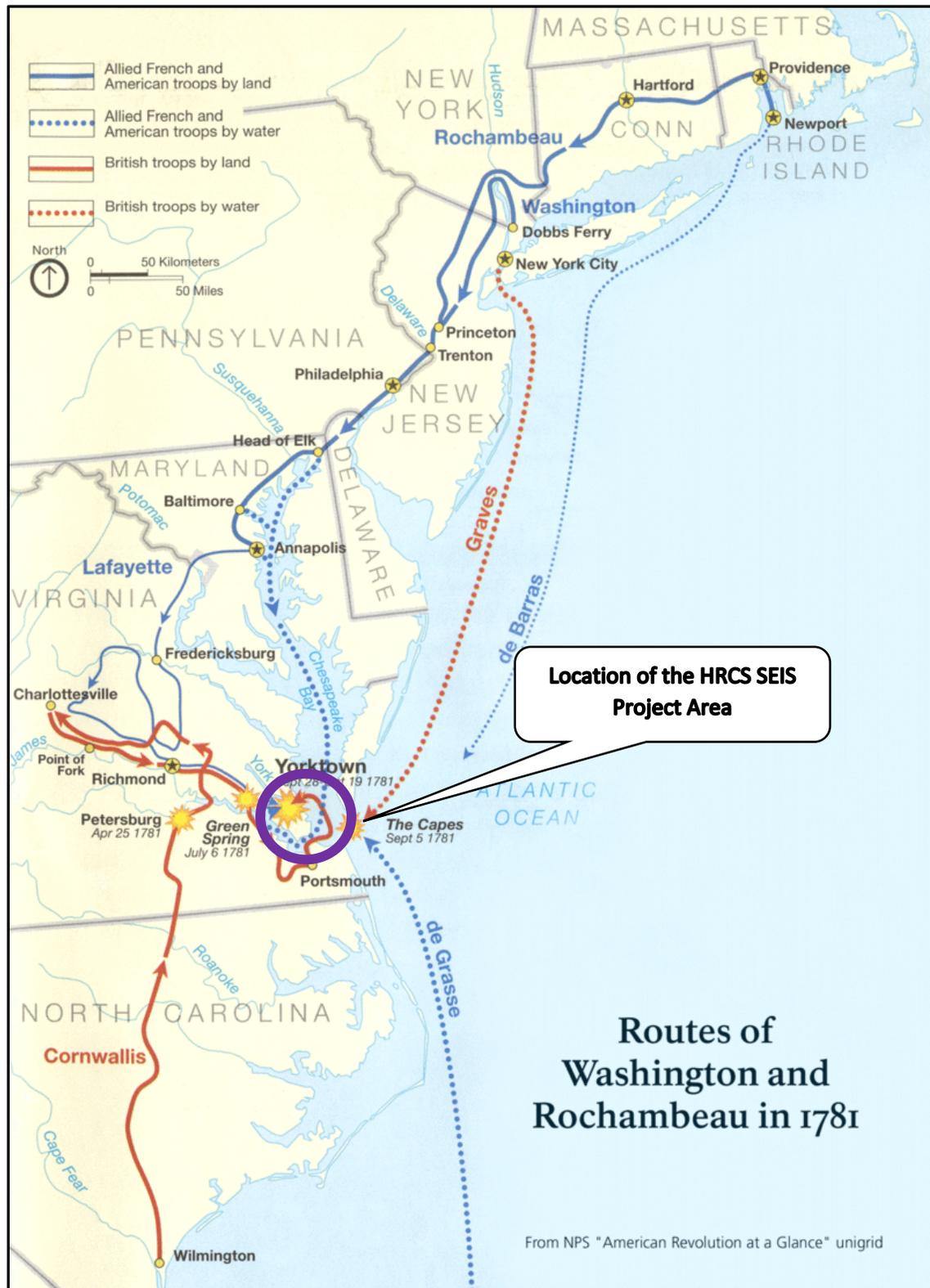
- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Phase I Survey Coverage: VDHR 2015

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Appendix B: Map B-5. Captain John Smith Chesapeake National Historic Trail ([www.nps.gov](http://www.nps.gov)).



Appendix B: Map B-6. Washington-Rochambeau Revolutionary Route National Historic Trail  
([https://en.wikipedia.org/wiki/Washington%E2%80%93Rochambeau\\_Revolutionary\\_Route#/media/File:W-RSimpleMap.gif](https://en.wikipedia.org/wiki/Washington%E2%80%93Rochambeau_Revolutionary_Route#/media/File:W-RSimpleMap.gif) )

**APPENDIX C:**  
**Current Conditions**



Map No. **Appendix C - 1**

Title  
Current Conditions within Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545

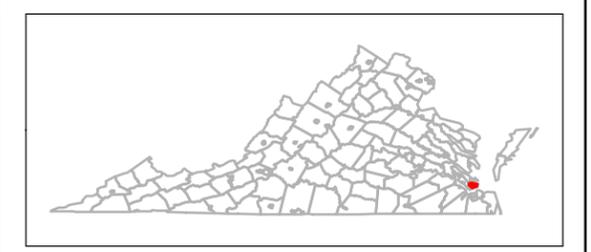
County: Hampton Prepared by SWS on 2016-08-04

USGS Quad: Newport News North Technical Review by AJL on 2016-08-04

Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
    - 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



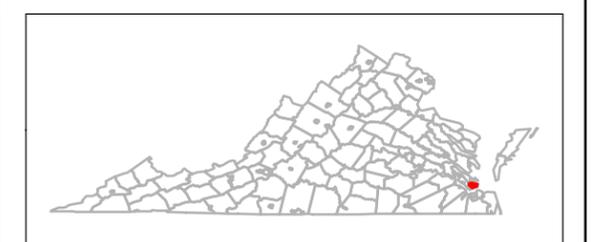
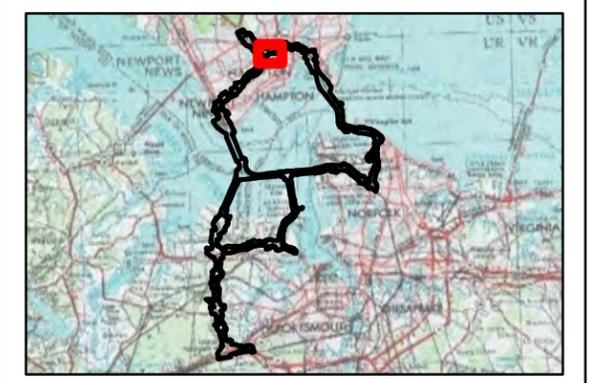
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Map No. Appendix C - 2  
 Title Current Conditions within Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Hampton Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News North, Hampton Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



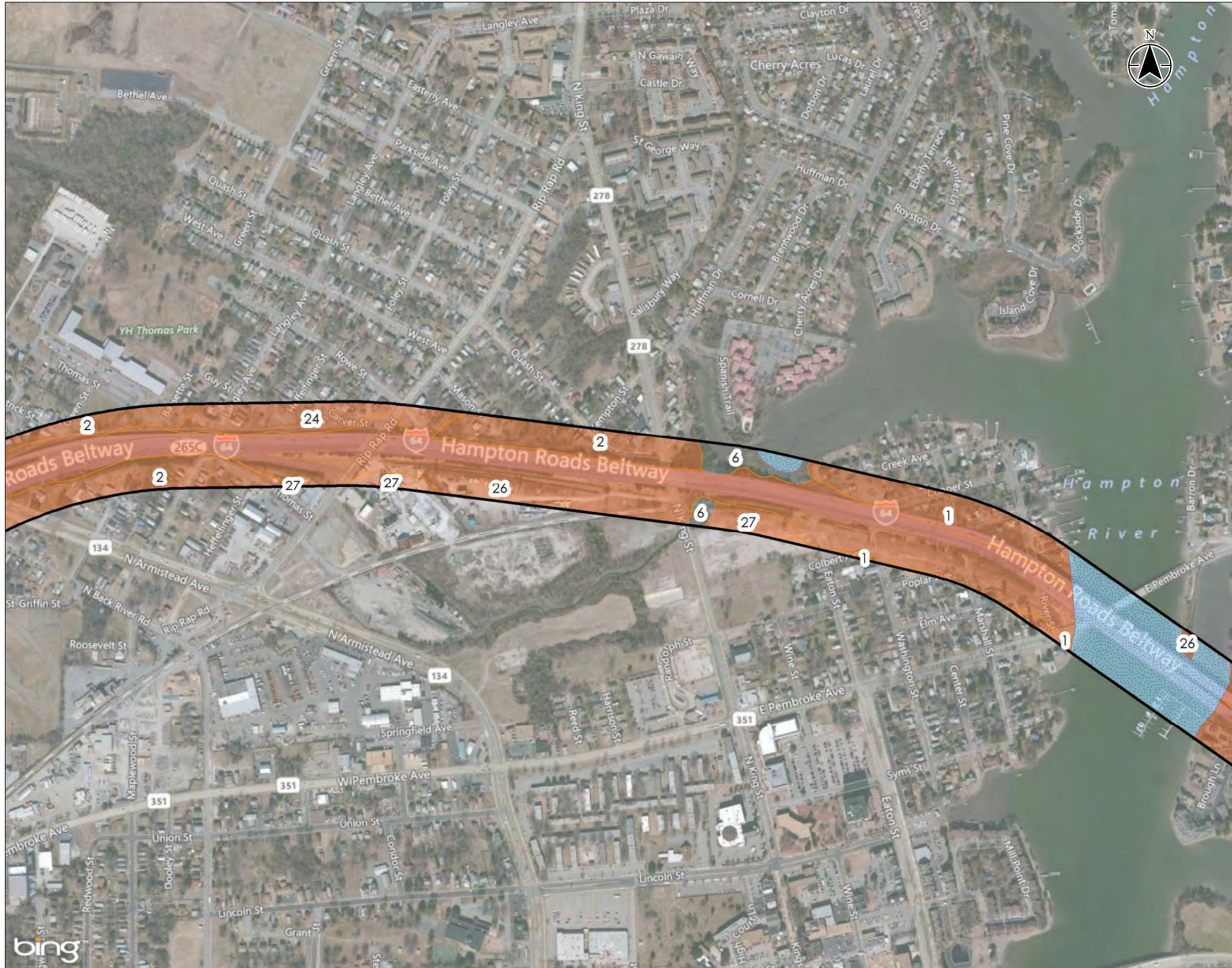
- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCSS SEIS**  
 Hampton Roads Crossing Study SEIS

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Map No. **Appendix C - 3**

Title **Current Conditions within Alternatives A, B, C and D**

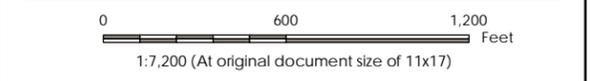
Client/Project **RK&K Virginia Department of Transportation**

Project Location **203400545**

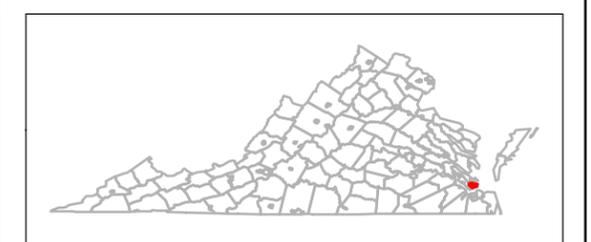
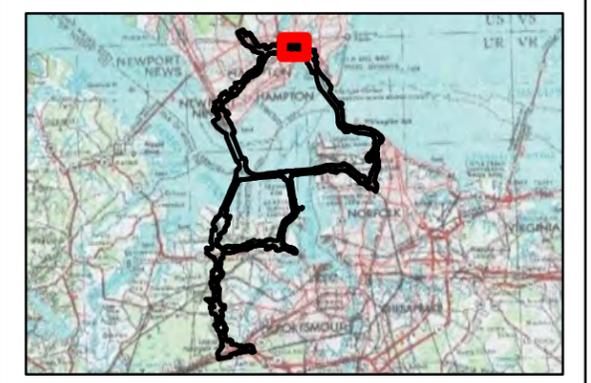
County: Hampton **Prepared by SWS on 2016-08-04**

USGS Quad: Hampton **Technical Review by AJL on 2016-08-04**

**Independent Review by EMB on 2016-08-04**



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils: 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No. **Appendix C - 4**

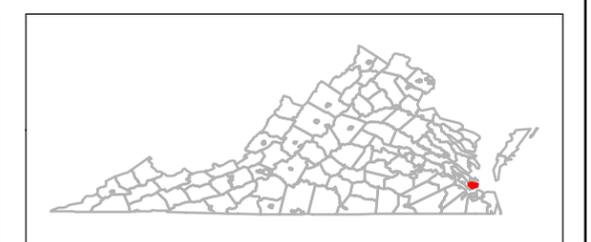
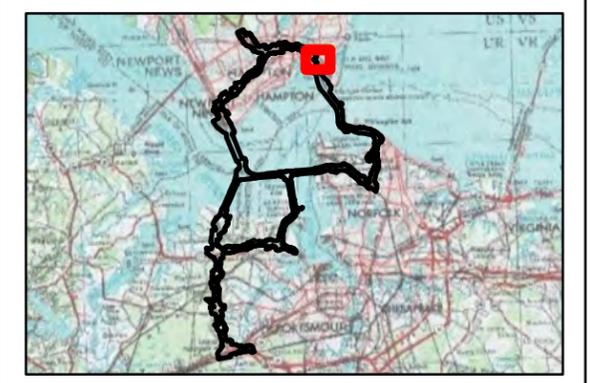
Title  
Current Conditions within  
Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Hampton Prepared by SWS on 2016-08-04  
USGS Quad: Hampton Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
    - 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No. Appendix C - 5

Title Current Conditions within Alternatives A, B, C and D

Client/Project RK&K Virginia Department of Transportation

Project Location 203400545

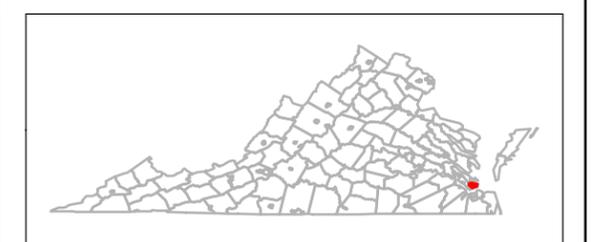
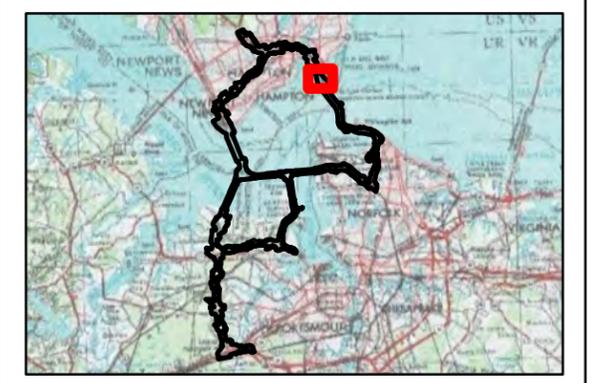
County: Hampton Prepared by SWS on 2016-08-04

USGS Quad: Hampton Technical Review by AJL on 2016-08-04

Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils: 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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Map No.  
**Appendix C - 6**

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Title  
 Current Conditions within  
 Alternatives A, B, C and D

---

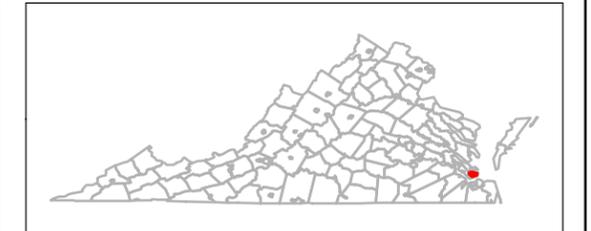
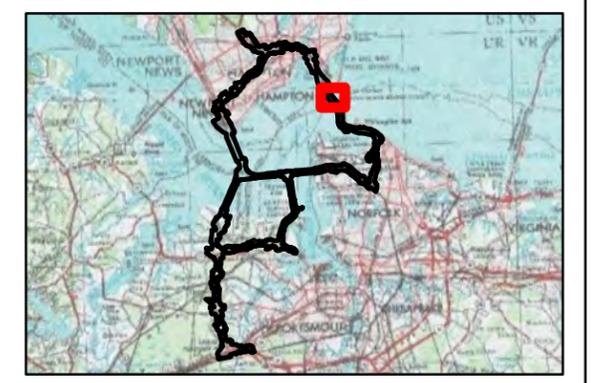
Client/Project  
 RK&K  
 Virginia Department of Transportation

---

Project Location 203400545  
 County: Between Hampton and Norfolk Prepared by SWS on 2016-08-04  
 USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No.  
**Appendix C - 7**

Title  
Current Conditions within  
Alternatives A, B, C and D

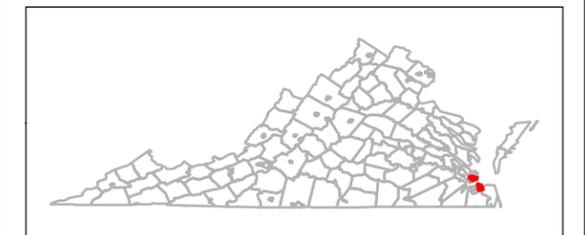
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Between Hampton and Norfolk Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS



Map No.  
Appendix C - 8

Title  
Current Conditions within  
Alternatives A, B, C and D

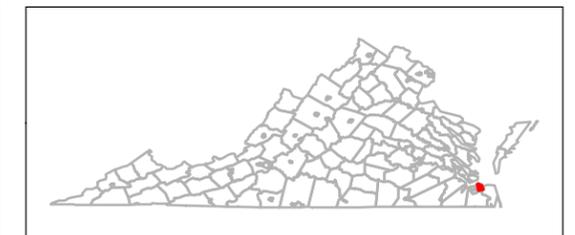
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Norfolk Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

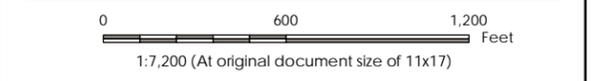


Map No. **Appendix C - 9**

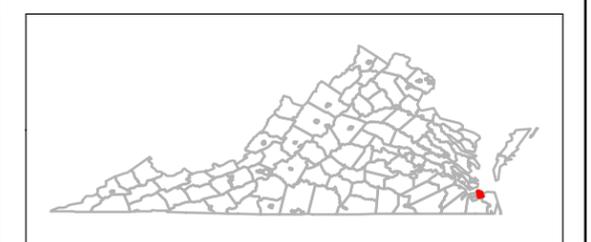
Title  
**Current Conditions within Alternatives A, B, C and D**

Client/Project  
**RK&K  
Virginia Department of Transportation**

Project Location 203400545  
County: Norfolk Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types

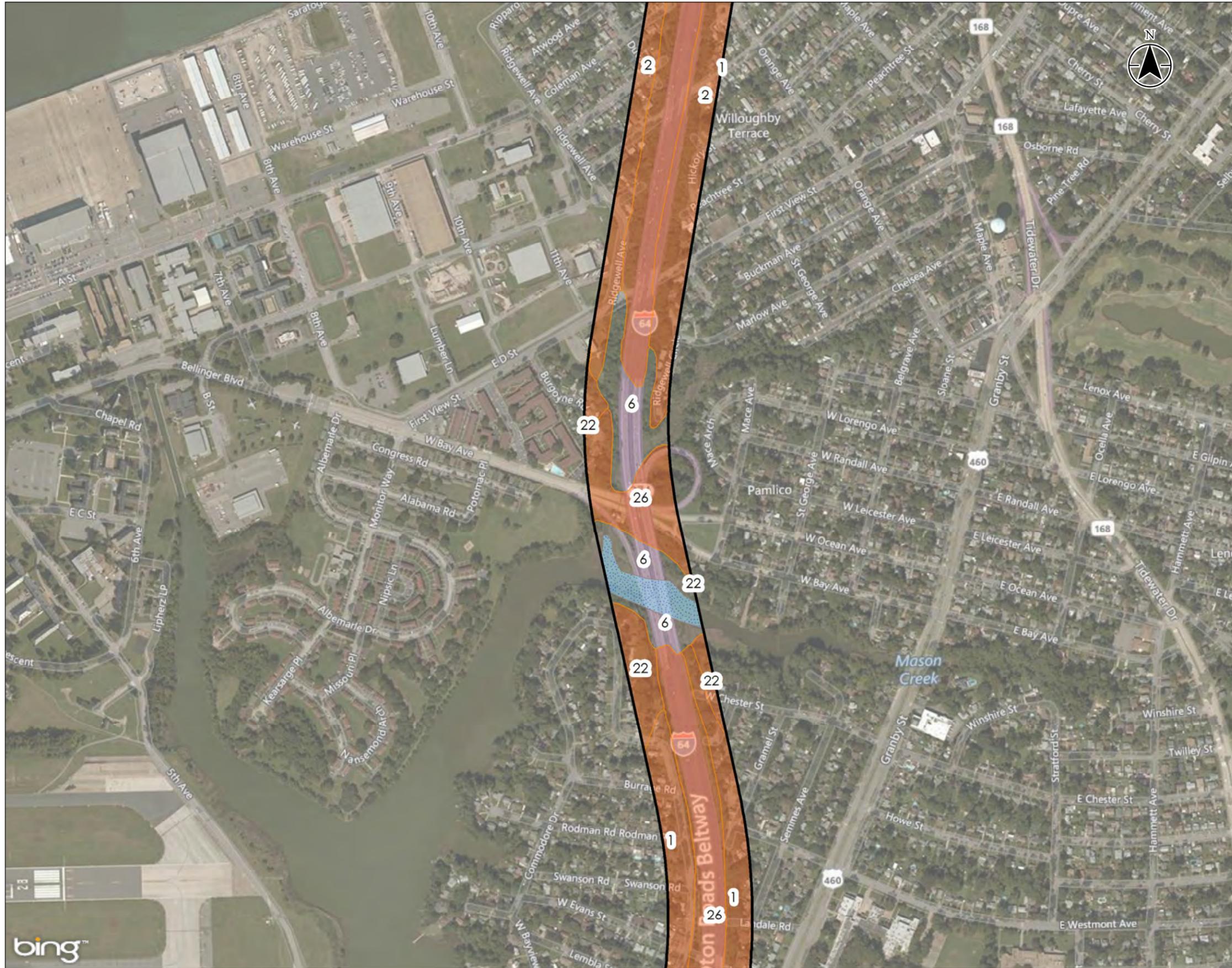


- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS

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Map No. **Appendix C - 10**

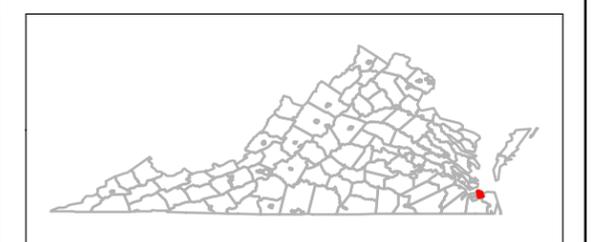
Title  
Current Conditions within  
Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Norfolk Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No.  
Appendix C - 11

Title  
Current Conditions within  
Alternatives A, B, C and D

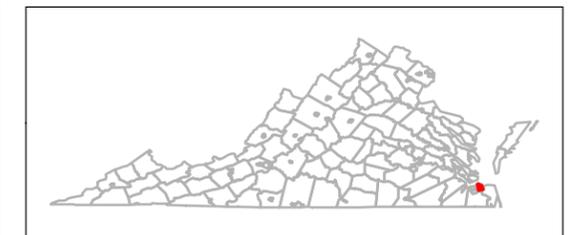
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Norfolk Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

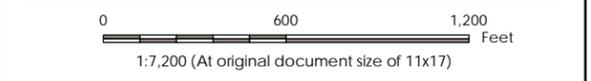


Map No. **Appendix C - 12**

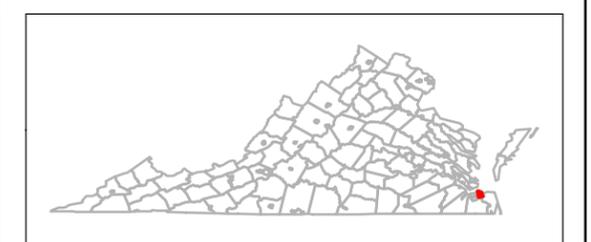
Title  
Current Conditions within Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Norfolk Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No.  
Appendix C - 13

Title  
Current Conditions within  
Alternatives A, B, C and D

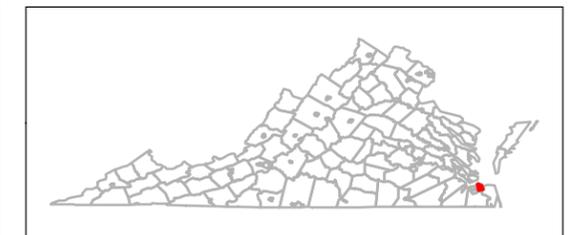
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Norfolk Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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Map No.  
**Appendix C - 14**

Title  
Current Conditions within  
Alternatives A, B, C and D

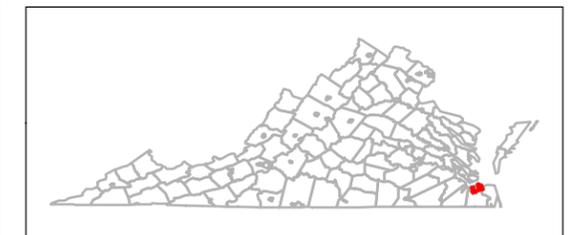
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
 County: Between Norfolk and Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

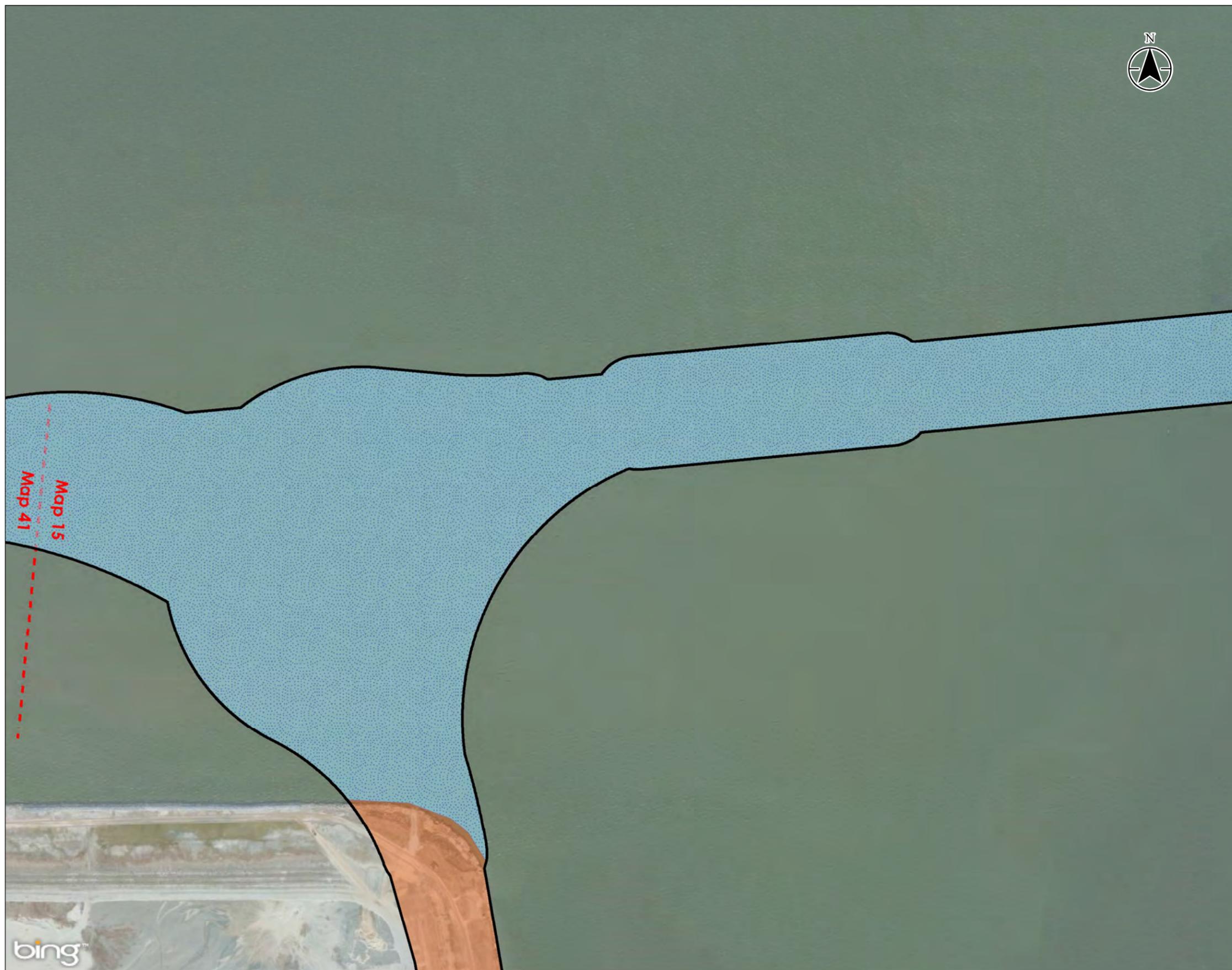
- Direct APE
- Water
- Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS

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Map No.  
**Appendix C - 15**

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Title  
 Current Conditions within  
 Alternatives A, B, C and D

---

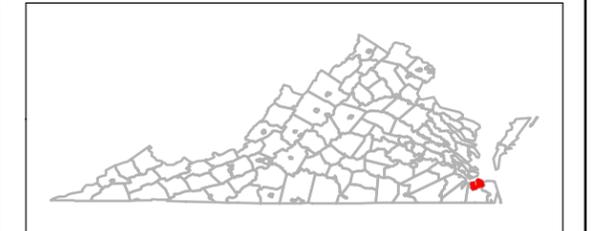
Client/Project  
 RK&K  
 Virginia Department of Transportation

---

Project Location 203400545  
 County: Between Norfolk and Portsmouth  
 USGS Quad: Norfolk North



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No. **Appendix C - 16**

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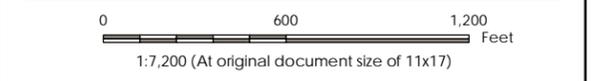
Title  
**Current Conditions within Alternatives A, B, C and D**

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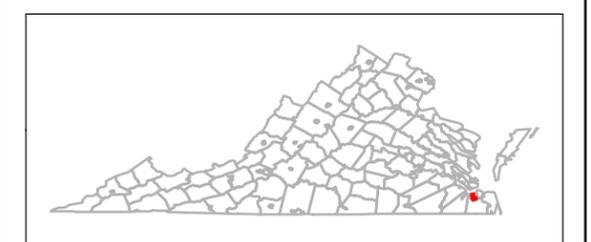
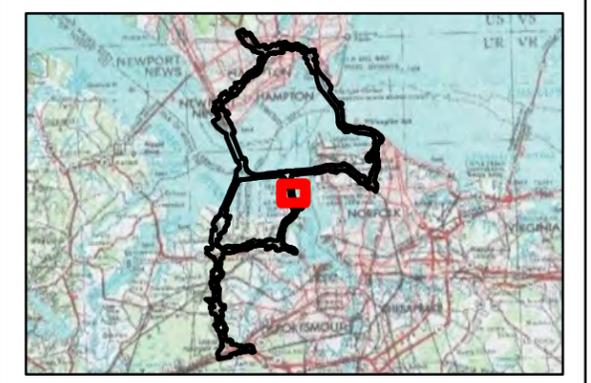
Client/Project  
**RK&K  
Virginia Department of Transportation**

---

Project Location 203400545  
 County: Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No.  
**Appendix C - 17**

Title  
Current Conditions within  
Alternatives A, B, C and D

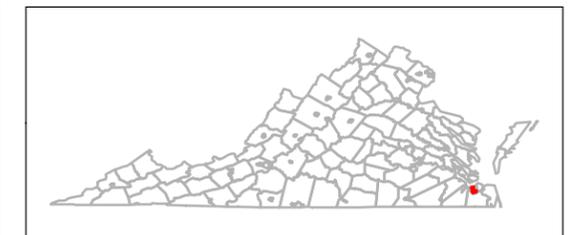
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Portsmouth Prepared by SWS on 2016-08-04  
USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

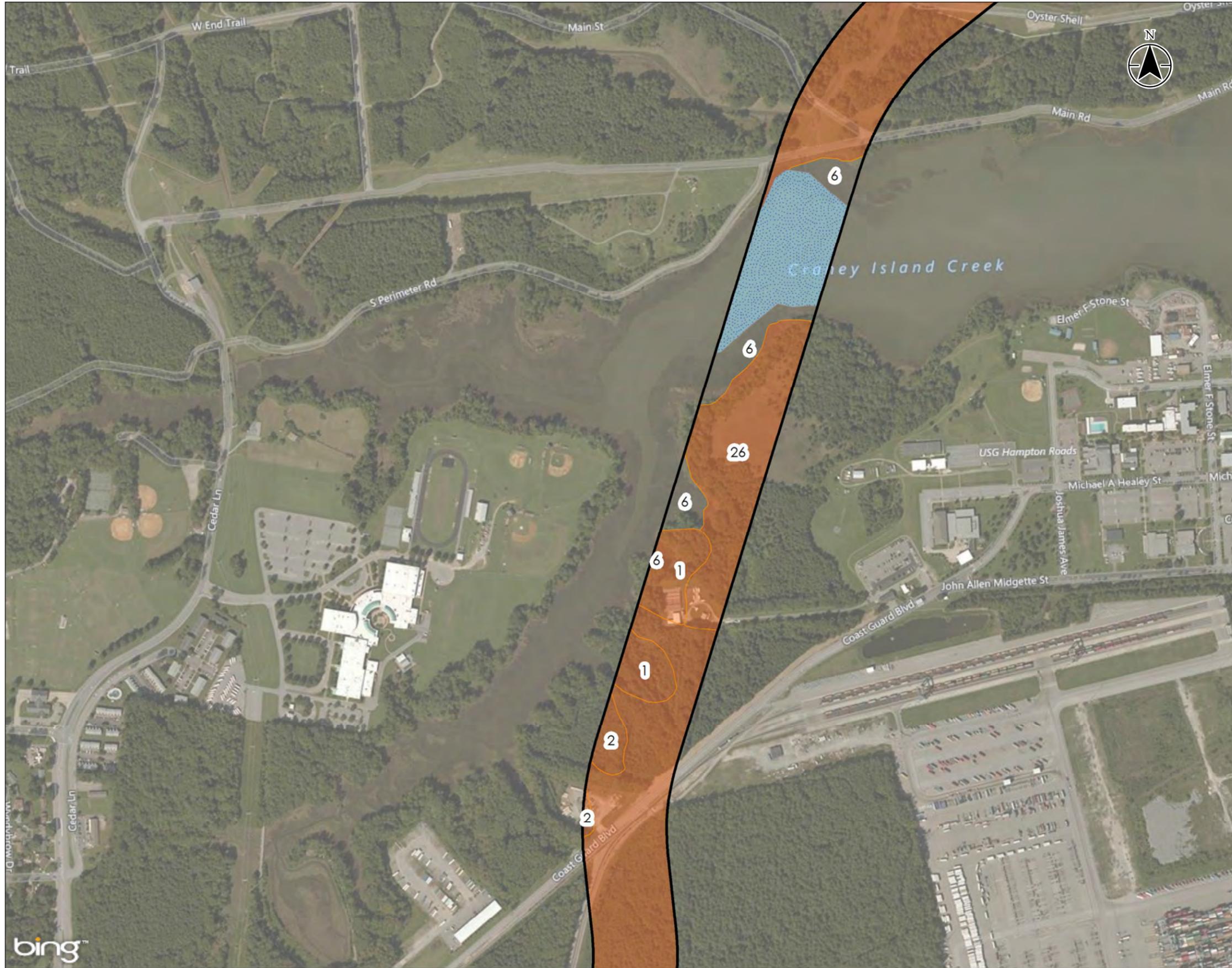
- Direct APE
- Water
- Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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Map No. **Appendix C - 18**

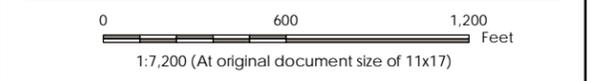
Title  
Current Conditions within  
Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

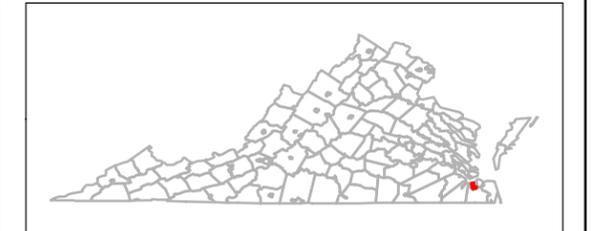
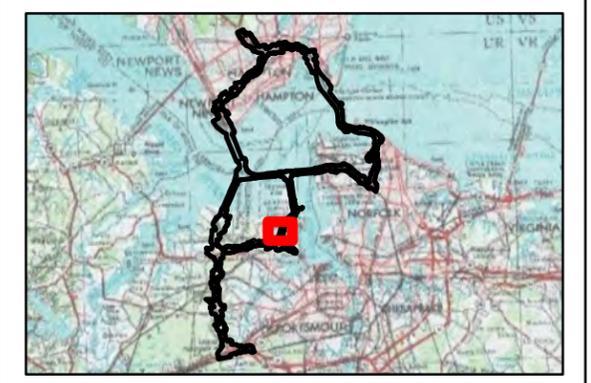
Project Location 203400545

County: Portsmouth  
USGS Quad: Newport News South,  
Norfolk North, Bowers Hill, Norfolk South

Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No. **Appendix C - 19**

Title  
Current Conditions within Alternatives A, B, C and D

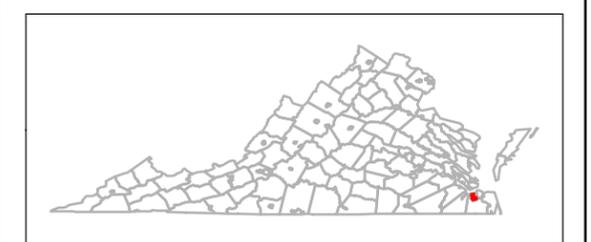
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545

County: Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South, Technical Review by AJL on 2016-08-04  
 Norfolk North, Bowers Hill, Norfolk South Independent Review by EMB on 2016-08-04



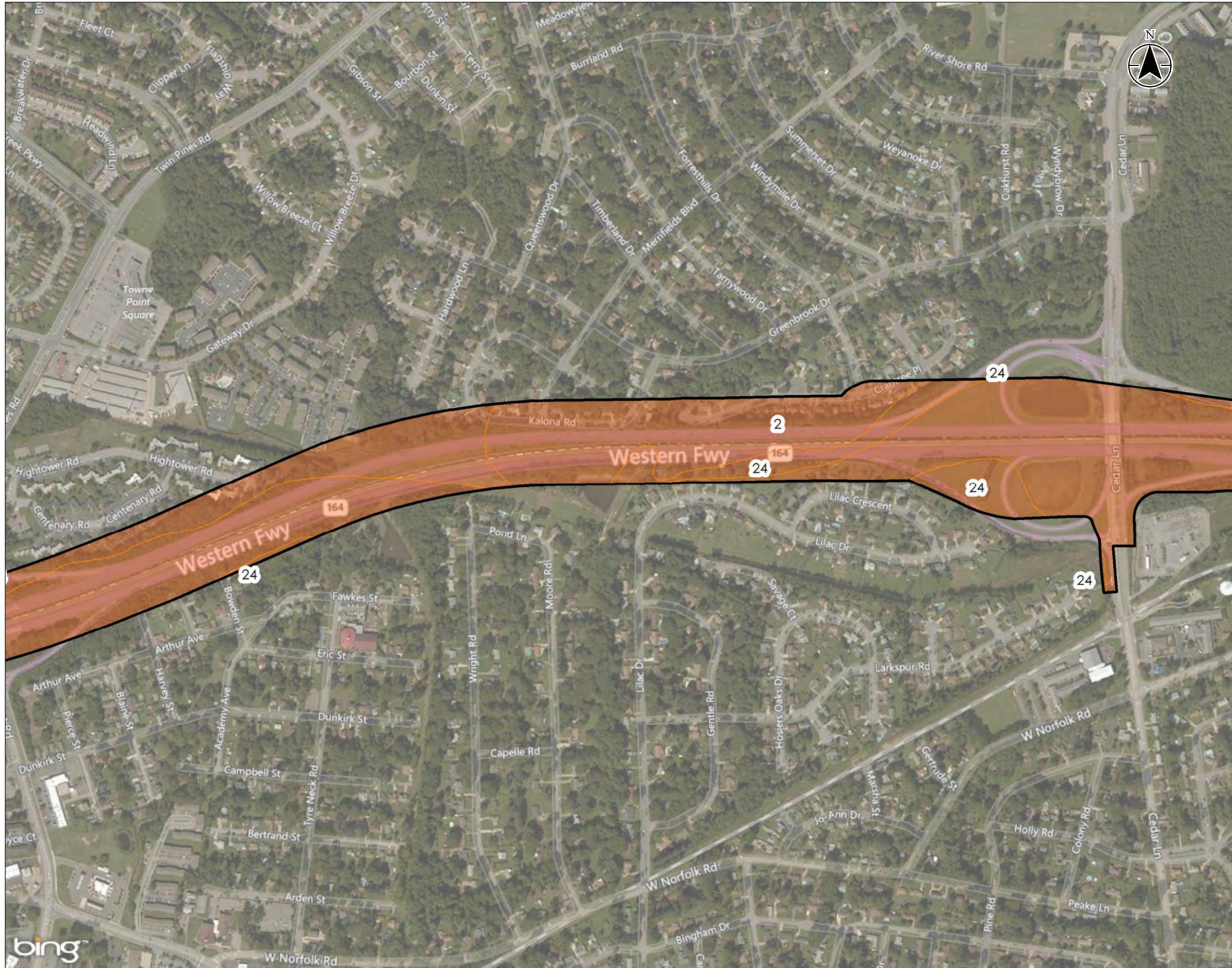
- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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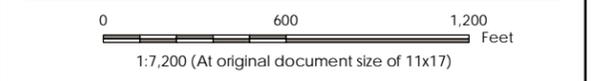
Map No. **Appendix C - 20**

Title  
**Current Conditions within Alternatives A, B, C and D**

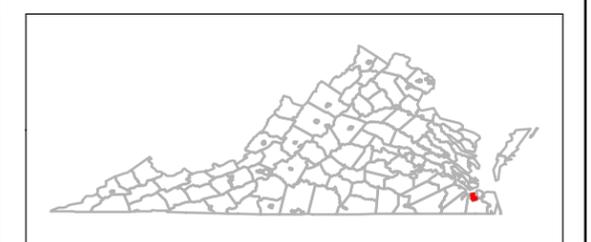
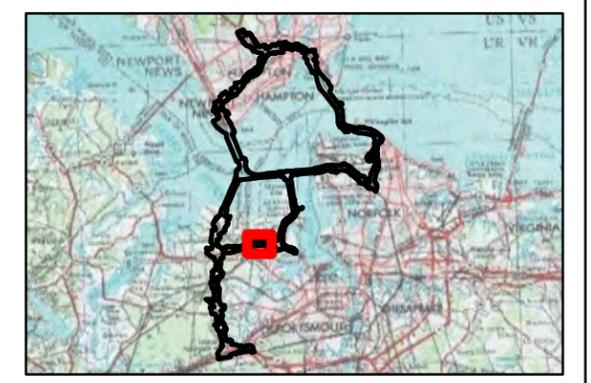
Client/Project  
**RK&K  
Virginia Department of Transportation**

Project Location 203400545

County: Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South, Technical Review by AJL on 2016-08-04  
 Bowers Hill Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No.  
Appendix C - 21

Title  
Current Conditions within  
Alternatives A, B, C and D

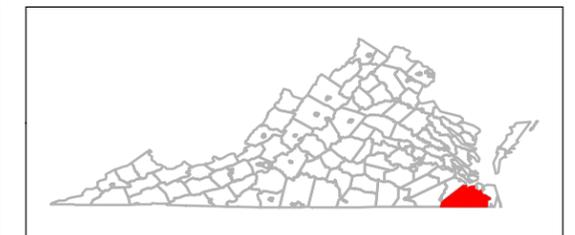
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Portsmouth, Suffolk, Chesapeake  
USGS Quad: Bowers Hill  
Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types

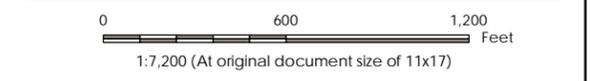


- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

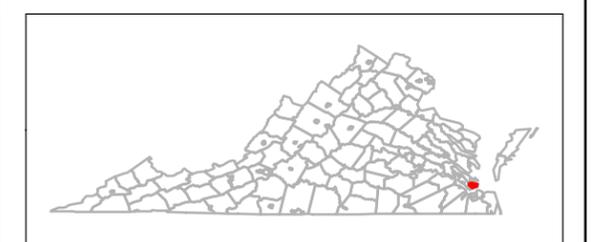
**HRCs SEIS**  
Hampton Roads Crossing Study SEIS



Map No. Appendix C - 22  
 Title Current Conditions within Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Hampton Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News North, Hampton Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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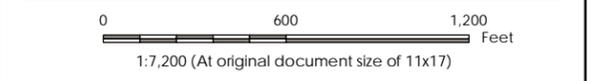
Map No. **Appendix C - 23**

Title  
Current Conditions within  
Alternatives A, B, C and D

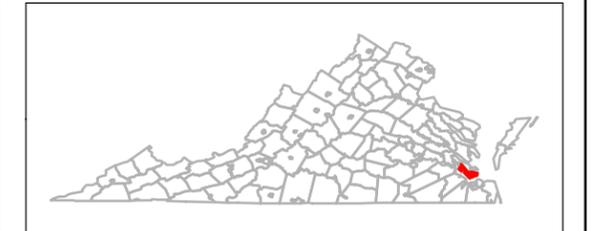
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545

County: Hampton, Newport News Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News North, Technical Review by AJL on 2016-08-04  
 Newport News South Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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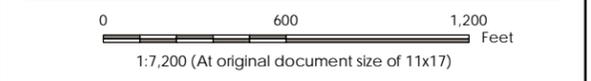


Map No. **Appendix C - 24**

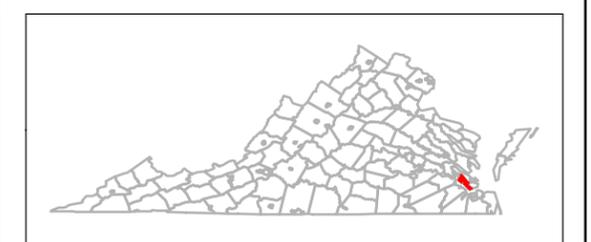
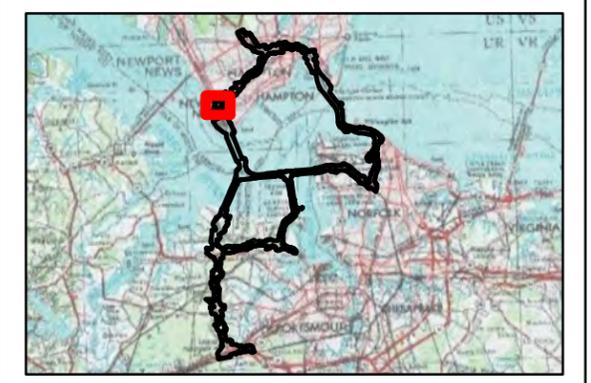
Title  
Current Conditions within  
Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Newport News Prepared by SWS on 2016-08-04  
USGS Quad: Newport News South Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS

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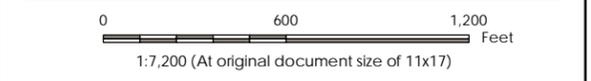


Map No. **Appendix C - 25**

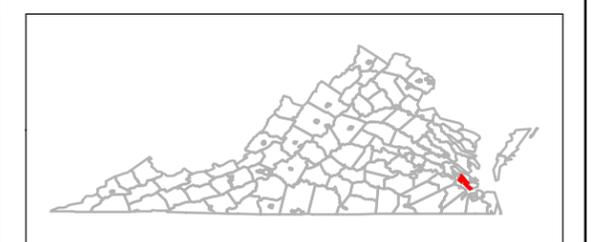
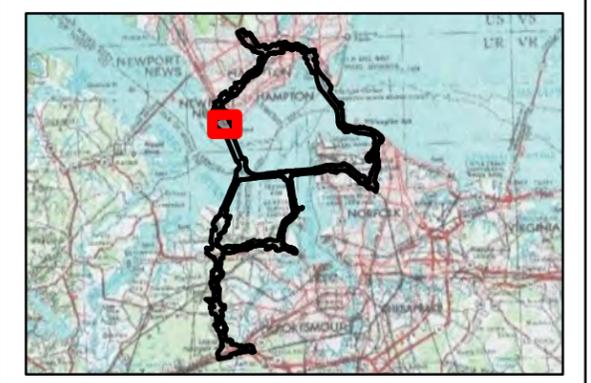
Title **Current Conditions within Alternatives A, B, C and D**

Client/Project **RK&K Virginia Department of Transportation**

Project Location **203400545**  
 County: Newport News Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No.  
**Appendix C - 26**

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Title  
 Current Conditions within  
 Alternatives A, B, C and D

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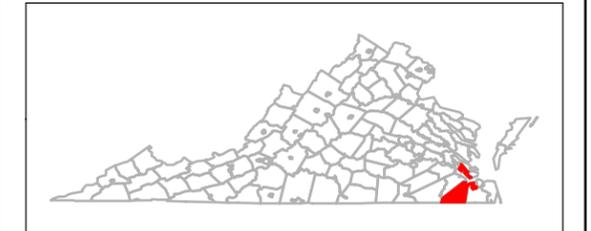
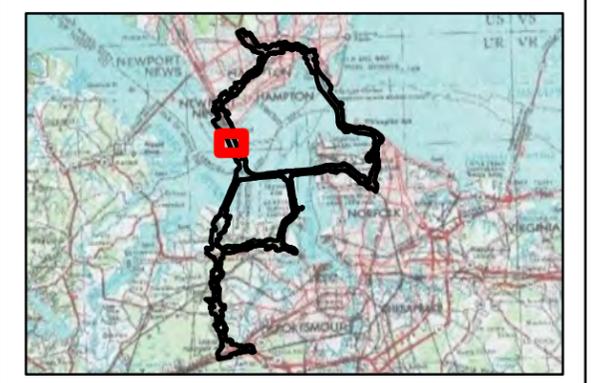
Client/Project  
 RK&K  
 Virginia Department of Transportation

---

Project Location 203400545  
 County: Between Newport News, Suffolk, and Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types

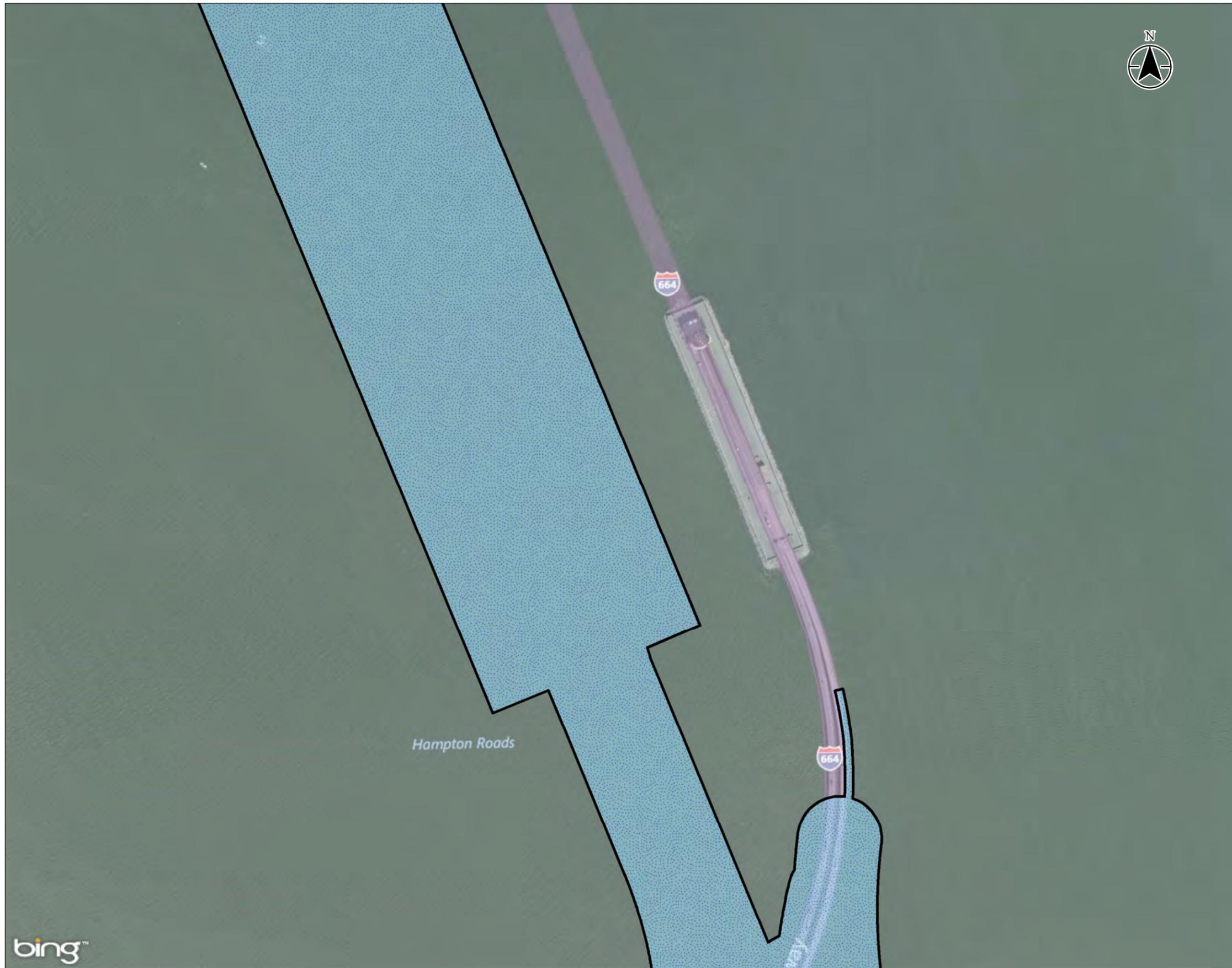


- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Map No.  
**Appendix C - 27**

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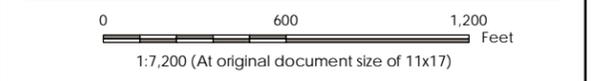
Title  
 Current Conditions within  
 Alternatives A, B, C and D

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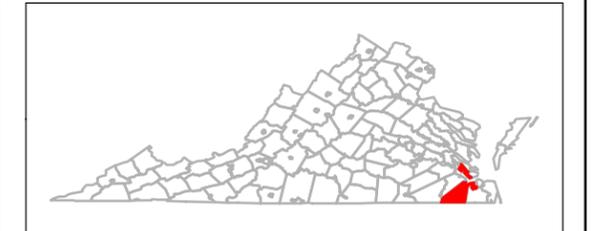
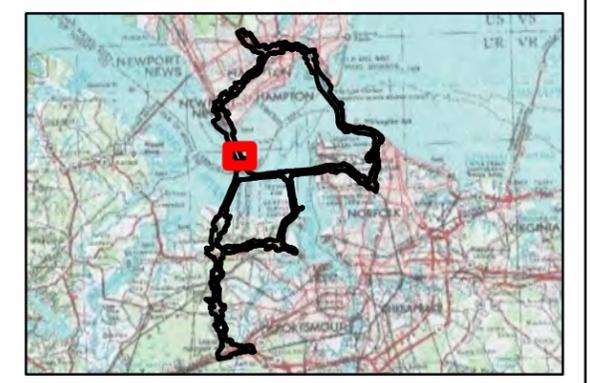
Client/Project  
 RK&K  
 Virginia Department of Transportation

---

Project Location 203400545  
 County: Between Newport News, Suffolk, and Portsmouth  
 USGS Quad: Newport News South



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS



Map No.  
**Appendix C - 28**

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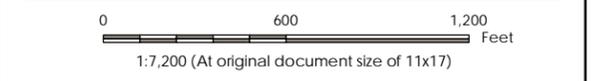
Title  
 Current Conditions within  
 Alternatives A, B, C and D

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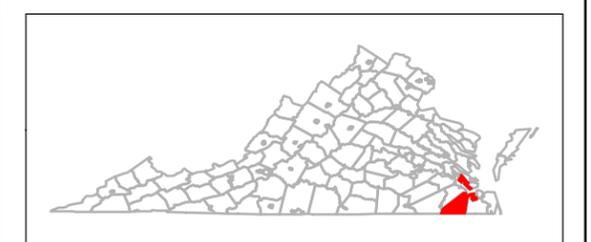
Client/Project  
 RK&K  
 Virginia Department of Transportation

---

Project Location 203400545  
 County: Between Newport News, Suffolk, and Portsmouth  
 USGS Quad: Newport News South



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
 Hampton Roads Crossing Study SEIS

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Map No. **Appendix C - 29**

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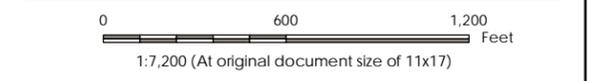
Title  
Current Conditions within  
Alternatives A, B, C and D

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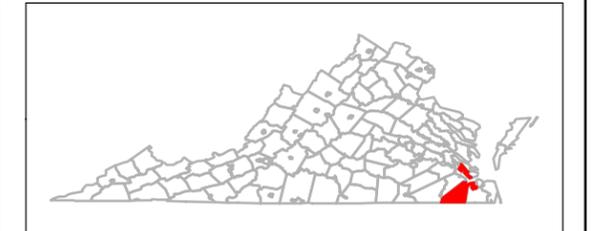
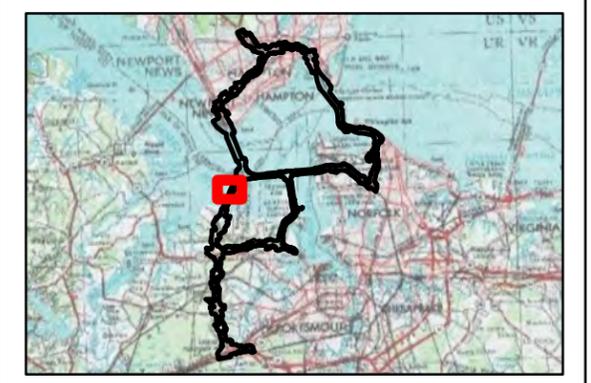
Client/Project  
RK&K  
Virginia Department of Transportation

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Project Location 203400545  
 County: Between Newport News, Suffolk, and Portsmouth Prepared by SWS on 2016-08-04  
 USGS Quad: Newport News South Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04

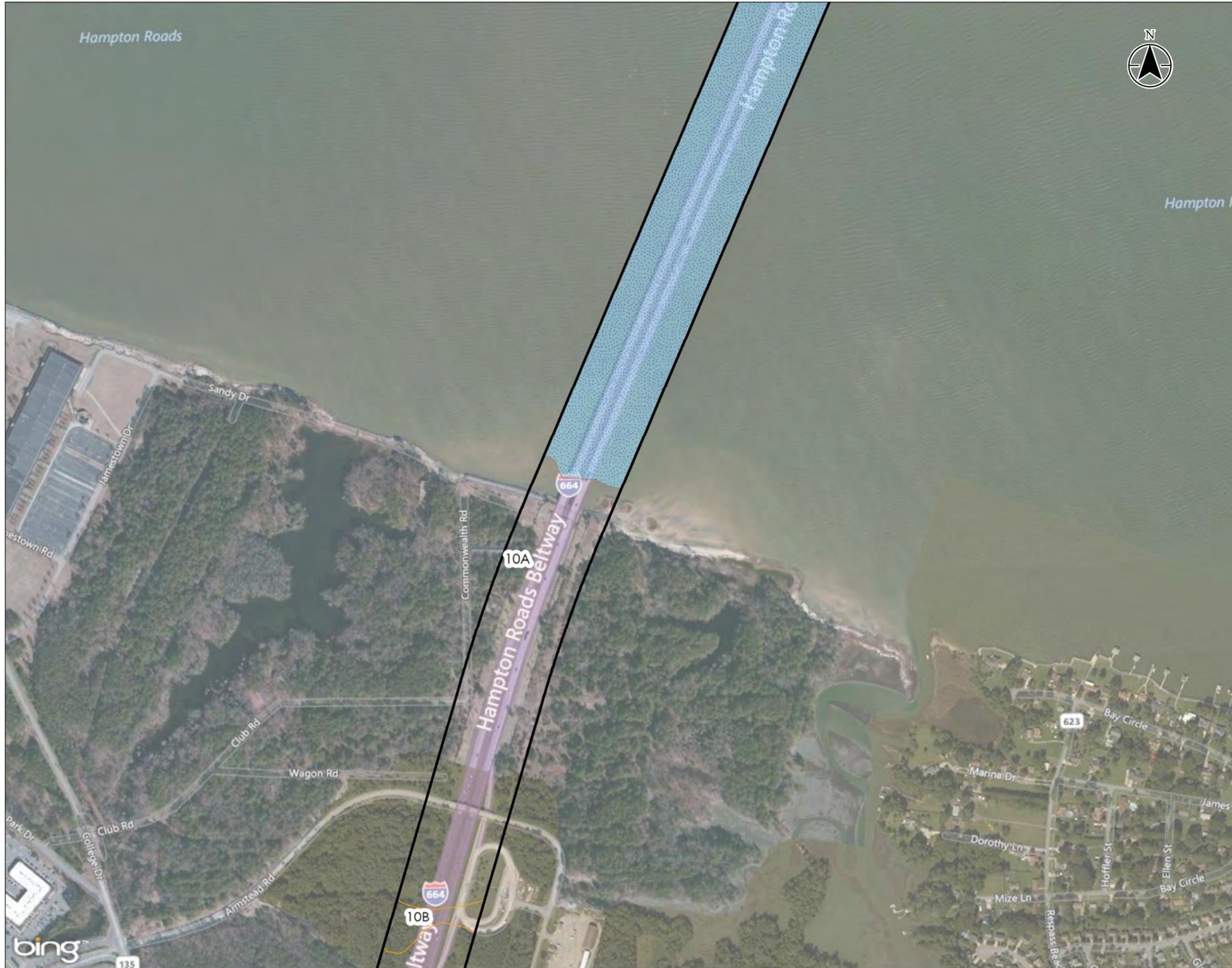


- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey





Map No.  
Appendix C - 30

Title  
Current Conditions within  
Alternatives A, B, C and D

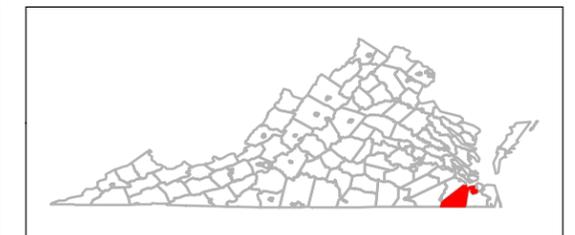
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Suffolk, Portsmouth  
USGS Quad: Newport News South  
Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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Map No.  
Appendix C - 31

Title  
Current Conditions within  
Alternatives A, B, C and D

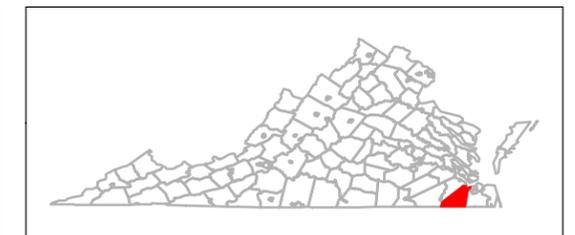
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Suffolk, Prepared by SWS on 2016-08-04  
USGS Quad: Newport News South, Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS



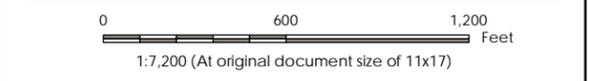
Map No. **Appendix C - 32**

Title  
Current Conditions within  
Alternatives A, B, C and D

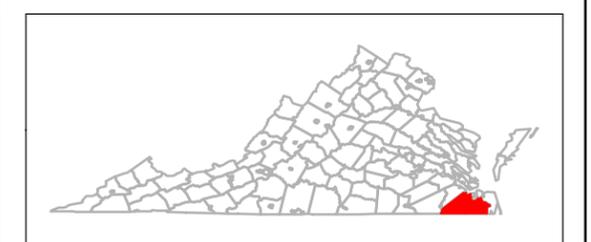
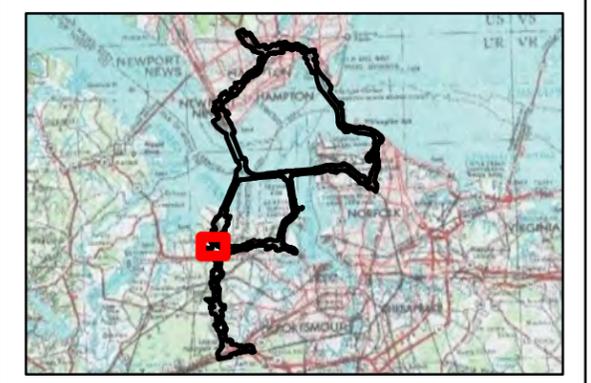
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545

County: Suffolk, Prepared by SWS on 2016-08-04  
 Chesapeake, Technical Review by AJL on 2016-08-04  
 USGS Quad: Newport News South, Independent Review by EMB on 2016-08-04  
 Bowers Hill



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

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Map No.  
**Appendix C - 33**

Title  
Current Conditions within  
Alternatives A, B, C and D

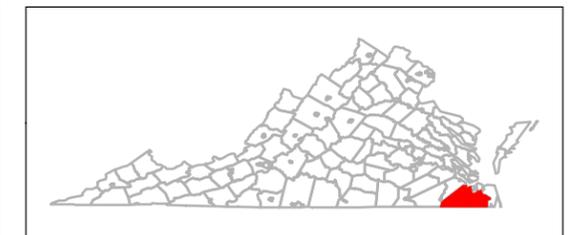
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Suffolk, Prepared by SWS on 2016-08-04  
Chesapeake Technical Review by AJL on 2016-08-04  
USGS Quad: Bowers Hill Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS



Map No. Appendix C - 34

Title  
Current Conditions within  
Alternatives A, B, C and D

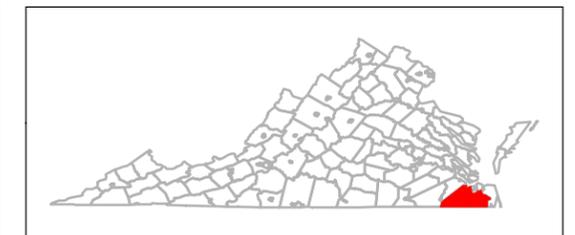
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Suffolk, Chesapeake  
USGS Quad: Bowers Hill  
Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



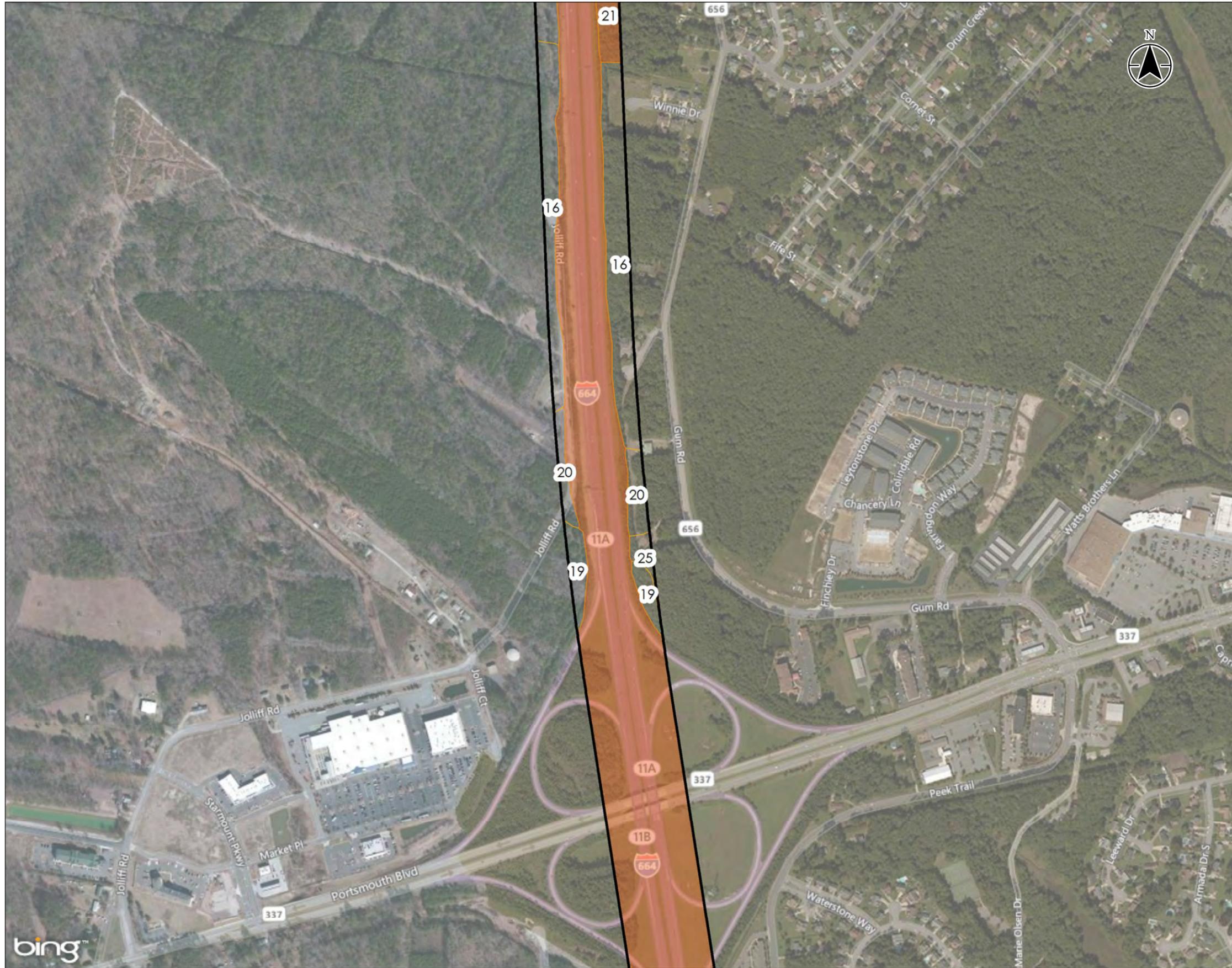
Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS



Map No.  
Appendix C - 35

Title  
Current Conditions within  
Alternatives A, B, C and D

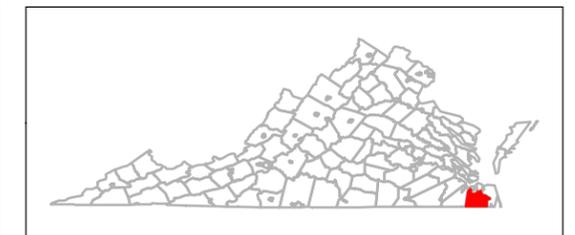
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Chesapeake Prepared by SWS on 2016-08-04  
USGS Quad: Bowers Hill Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



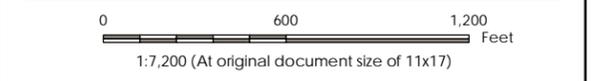
- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
Hampton Roads Crossing Study SEIS

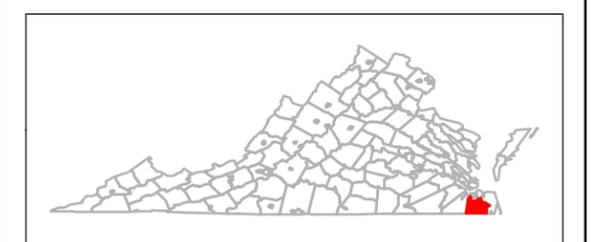
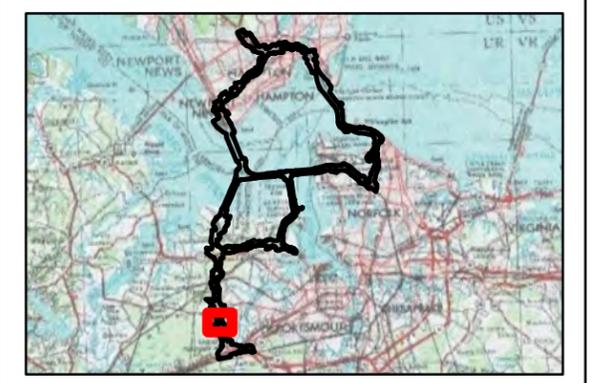
V:\2014\active\temp\_203400545\05\_report\_dmw\dwgs\_design\gis\basin\_2016\archae\_report\appendix\_c.mxd Revised: 2016-08-04 By: sutor



Map No. Appendix C - 36  
 Title Current Conditions within Alternatives A, B, C and D  
 Client/Project RK&K Virginia Department of Transportation  
 Project Location 203400545  
 County: Chesapeake Prepared by SWS on 2016-08-04  
 USGS Quad: Bowers Hill Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCs SEIS**  
 Hampton Roads Crossing Study SEIS

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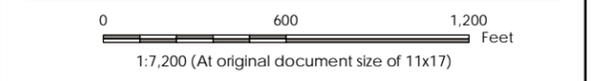


Map No. **Appendix C - 37**

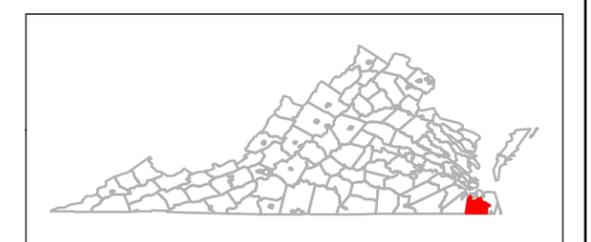
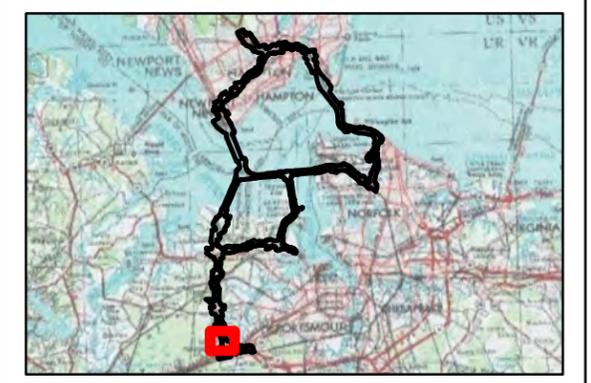
Title  
Current Conditions within Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Chesapeake Prepared by SWS on 2016-08-04  
USGS Quad: Bowers Hill Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey



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Map No. **Appendix C - 38**

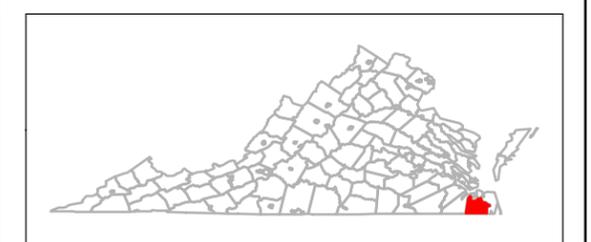
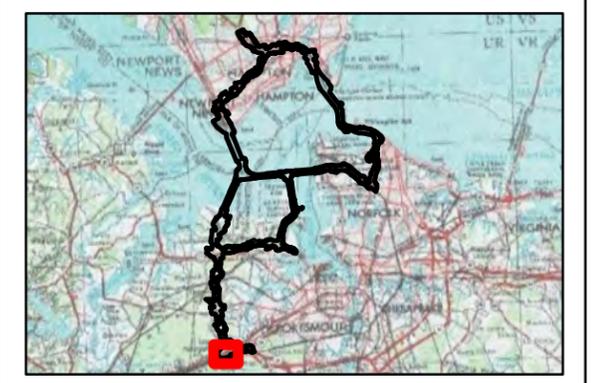
Title  
Current Conditions within Alternatives A, B, C and D

Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Chesapeake Prepared by SWS on 2016-08-04  
USGS Quad: Bowers Hill Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Water
  - Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
  - Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

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Map No.  
Appendix C - 39

Title  
Current Conditions within  
Alternatives A, B, C and D

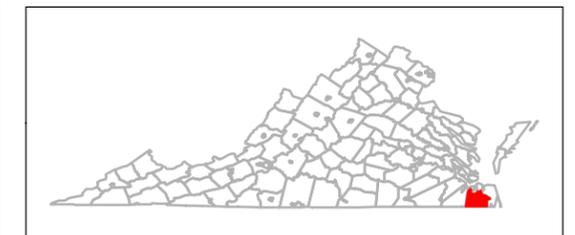
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Chesapeake Prepared by SWS on 2016-08-04  
USGS Quad: Bowers Hill Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

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Hampton Roads Crossing Study SEIS

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Map No.  
**Appendix C - 40**

Title  
Current Conditions within  
Alternatives A, B, C and D

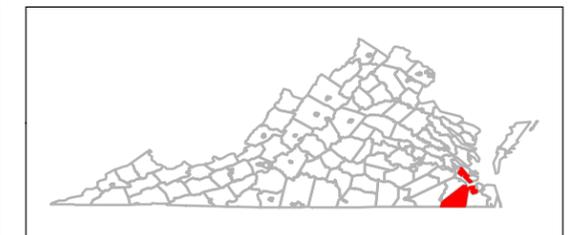
Client/Project  
RK&K  
Virginia Department of Transportation

Project Location 203400545  
County: Between Newport News, Suffolk, and Portsmouth  
USGS Quad: Newport News South  
Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
1, 2, 9, 10, 15, 17, 18, 20, 21, 22,  
24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. Web Soil Survey

**HRCS SEIS**  
Hampton Roads Crossing Study SEIS





Map No.  
**Appendix C - 41**

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Title  
 Current Conditions within  
 Alternatives A, B, C and D

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Client/Project  
 RK&K  
 Virginia Department of Transportation

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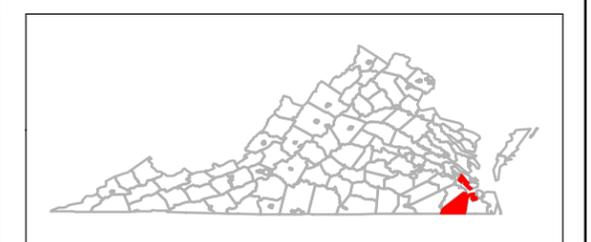
Project Location 203400545  
 County: Between Newport News, Suffolk, and Portsmouth  
 USGS Quad: Newport News South, Norfolk North

Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04

0 600 1,200 Feet  
 1:7,200 (At original document size of 11x17)

Legend

- Direct APE
- Water
- Urban/Disturbed Soils:  
 1, 2, 9, 10, 15, 17, 18, 20, 21, 22, 24, 26, 27, 44, 47, 49, 50, 51E, 52,
- Soil Types



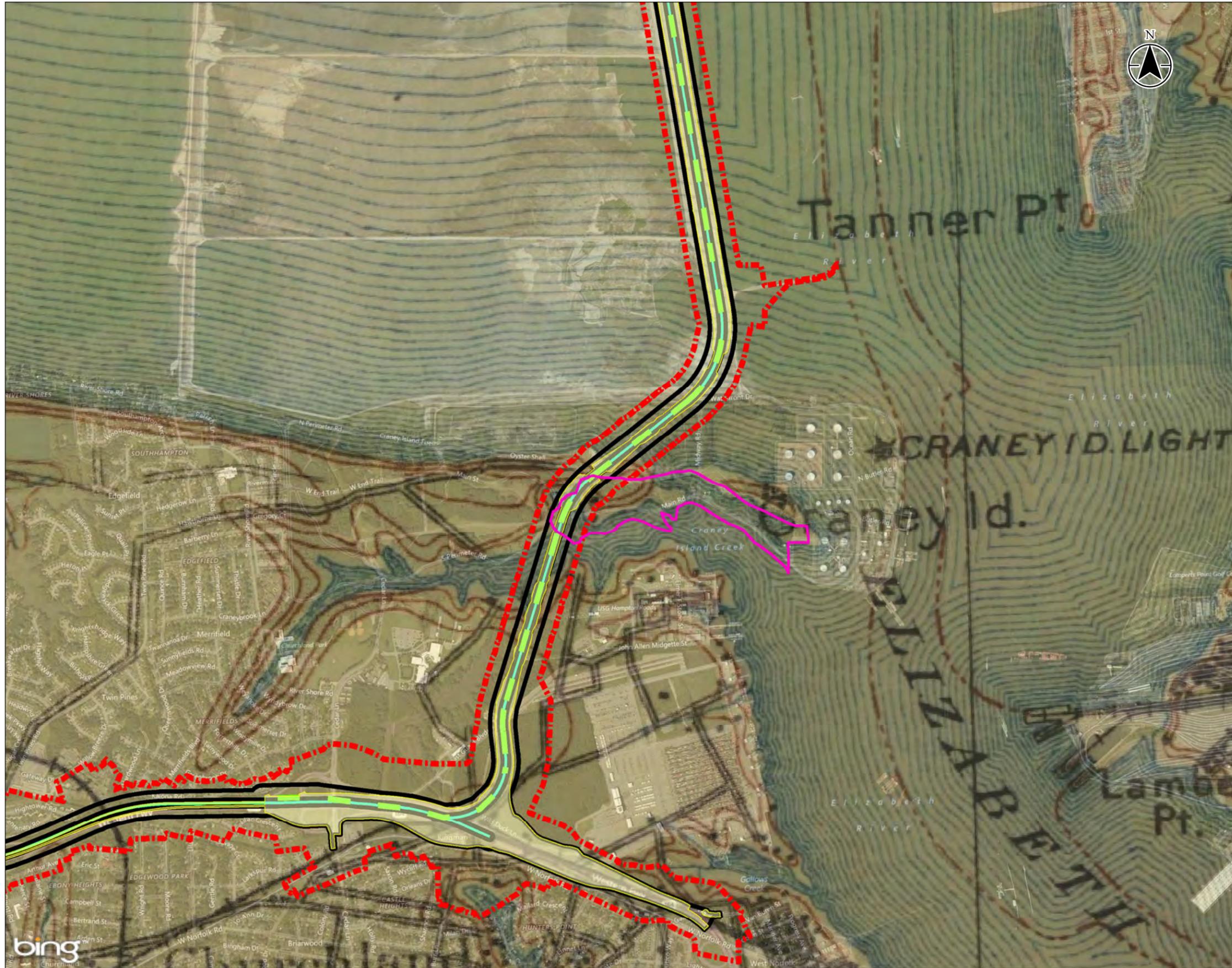
Notes

1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
2. Orthoimagery © Bing Maps
3. Web Soil Survey



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**APPENDIX D:**  
**Other Supporting Maps**



Map No. **Appendix D - 1**

Title  
 Overlay of Norfolk, Virginia 1902 Topographic Map on  
 Modern Aerial Photography  
 Battle of Craney Island DHR#124-5267

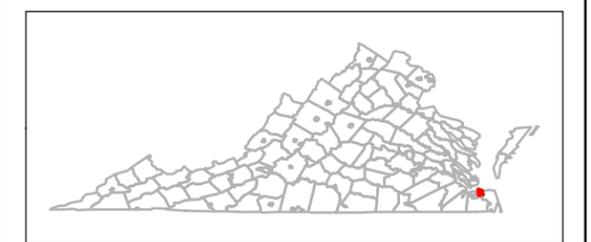
Client/Project  
 RK&K  
 Virginia Department of Transportation

Project Location 203400545

County: Norfolk Prepared by SWS on 2016-08-04  
 USGS Quad: Norfolk North Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Limits of Disturbance
  - Direct APE
  - Indirect APE
  - Potential NR Areas
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline

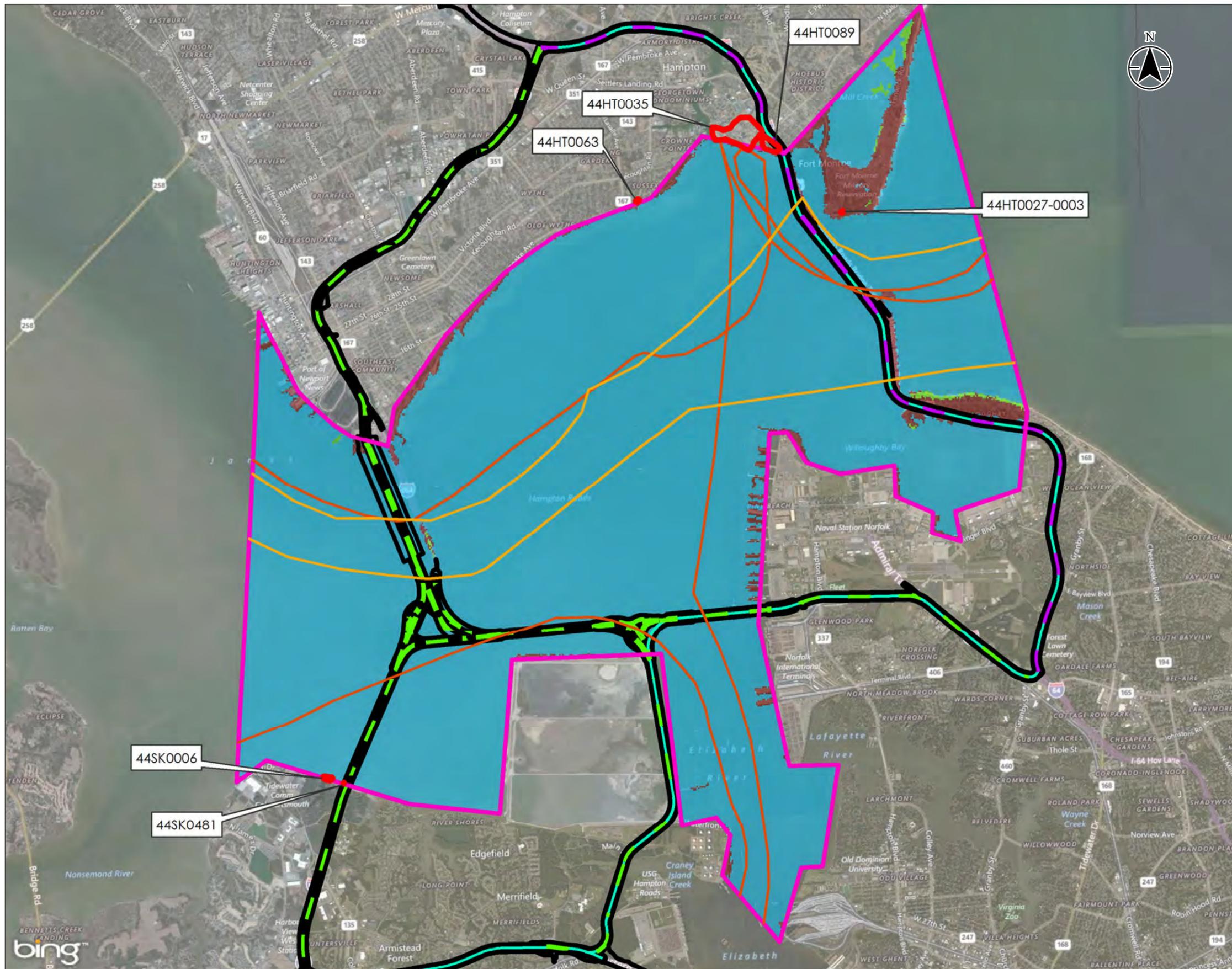


- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. 1902 Topographic Map - USGS



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Map No. **Appendix D-2**

Title  
Additional Resources Investigated  
Captain John Smith Chesapeake National Historic Trail

Client/Project  
RK&K  
Virginia Department of Transportation

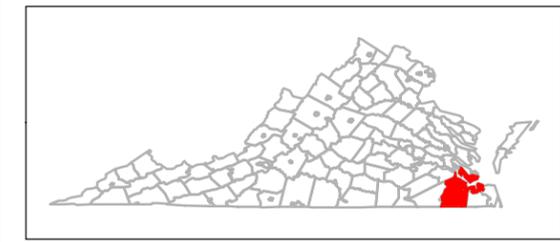
Project Location 203400545

County: Newport News, Hampton, Isle of Wight, Suffolk, Chesapeake, Portsmouth, Norfolk  
USGS Quad: Newport News North, Hampton, East of Hampton, Newport News South Norfolk, Little Creek, Bowers Hill, Norfolk South, Kempsville

Prepared by SWS on 2016-08-04  
Technical Review by AJL on 2016-08-04  
Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - Archaeological Resources
  - APE for Assessment
  - First Voyage (Captain John Smith Chesapeake National Historic Water Trail)
  - Second Voyage (Captain John Smith Chesapeake National Historic Water Trail)
  - Water
  - Developed Land
  - Undeveloped Land
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



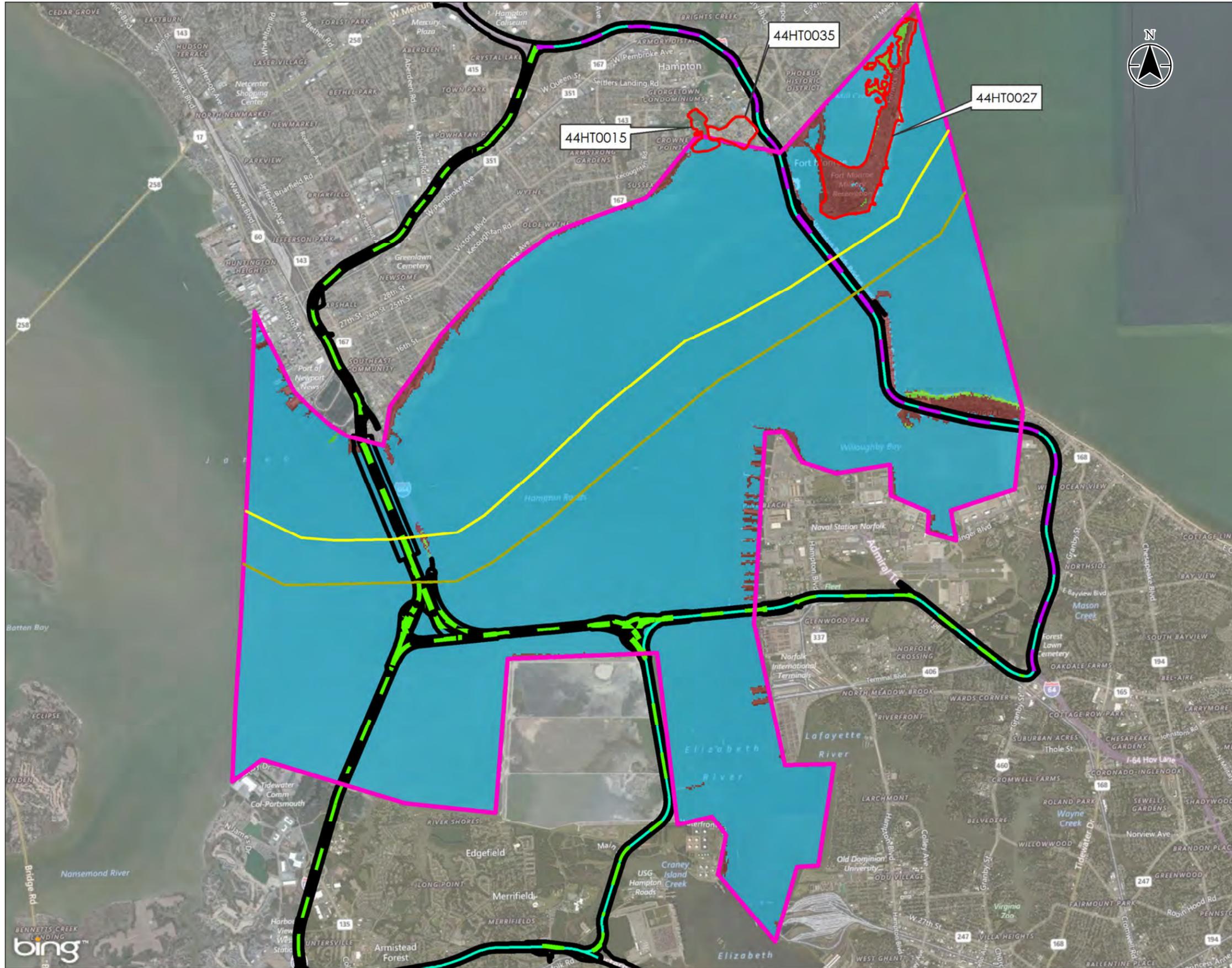
- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. National Landcover Dataset, 2011 - USGS  
<http://landcover.usgs.gov/uslandcover.php>

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Map No. **Appendix D - 3**

Title  
 Additional Resources Investigated  
 Washington Rochambeau Revolutionary Route  
 National Historic Trail

Client/Project  
 RK&K  
 Virginia Department of Transportation

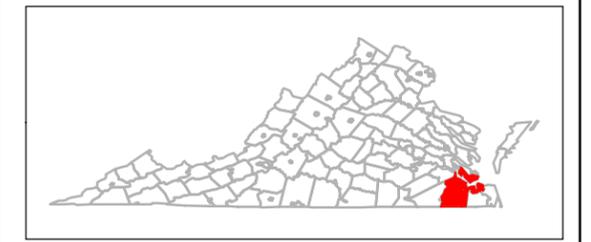
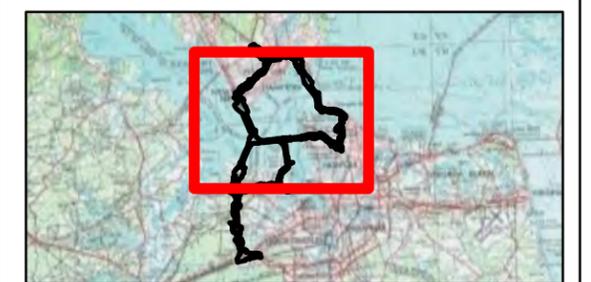
Project Location 203400545

County: Newport News, Hampton, Isle of Wight, Suffolk, Chesapeake, Portsmouth, Norfolk  
 USGS Quad: Newport News North, Hampton, East of Hampton, Newport News South Norfolk, Little Creek, Bowers Hill, Norfolk South, Kempsville

Prepared by SWS on 2016-08-04  
 Technical Review by AJL on 2016-08-04  
 Independent Review by EMB on 2016-08-04



- Legend
- Direct APE
  - APE for Assessment
  - American Route  
Washington Rochambeau Revolutionary Route  
National Historic Trail
  - French Route  
Washington Rochambeau Revolutionary Route  
National Historic Trail
  - Water
  - Developed Land
  - Undeveloped Land
  - Alternative A Centerline
  - Alternative B Centerline
  - Alternative C Centerline
  - Alternative D Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Orthoimagery © Bing Maps
  3. National Landcover Dataset, 2011 - USGS  
<http://landcover.usgs.gov/uslandcover.php>

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