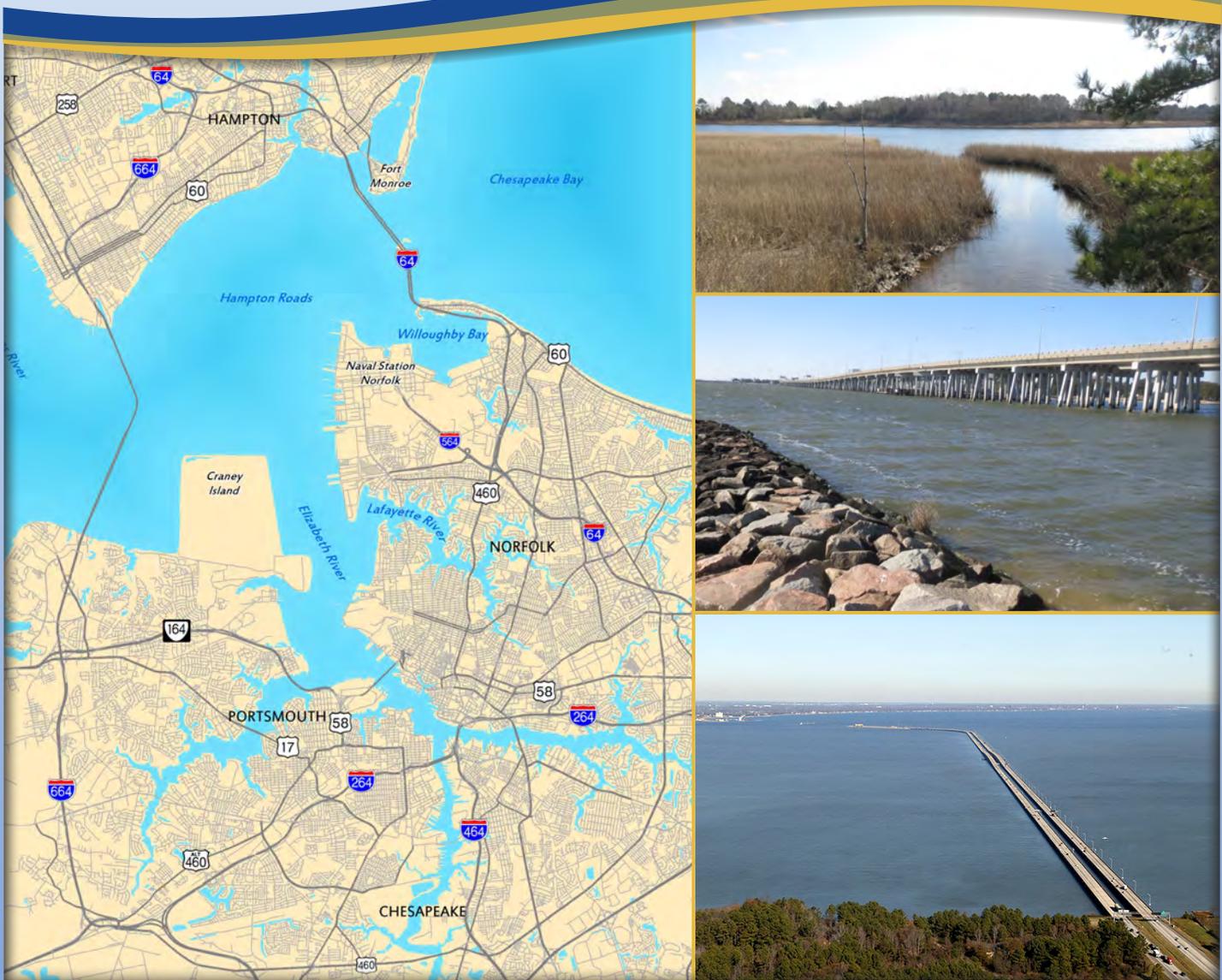


# Environmental Assessment Re-evaluation of the Supplemental Environmental Impact Statement



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
and  
VIRGINIA DEPARTMENT OF TRANSPORTATION

**ENVIRONMENTAL ASSESSMENT**

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**Re-Evaluation of the Hampton Roads Crossing Study  
Supplemental Environmental Impact Statement**

Project #: 0064-965-081, P101; UPC #: 106724

From: Interstate 664 (Exit 264)

To: Interstate 564 (Exit 276)

Submitted Pursuant to 42 U.S.C. 4332(2)(C)

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Director of Program Development  
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**TABLE OF CONTENTS**

**1 PURPOSE AND NEED .....1-1**

1.1 Introduction ..... 1-1

1.2 Reasons for Re-evaluation ..... 1-1

1.3 Study Area ..... 1-1

1.4 Purpose and Need..... 1-2

**2 ALTERNATIVES.....2-1**

2.1 Introduction ..... 2-1

2.2 Alternatives ..... 2-1

2.2.1 Selected Action ..... 2-1

2.2.2 Refined Selected Action ..... 2-2

**3 EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES .....3-1**

3.1 Environmental Justice ..... 3-4

3.1.1 Methodology..... 3-4

3.1.2 Existing Conditions ..... 3-4

3.1.3 Environmental Consequences..... 3-4

3.1.4 Mitigation..... 3-5

3.2 Air Quality ..... 3-6

3.3 Noise ..... 3-6

3.4 Natural Resources ..... 3-6

3.4.1 Waters of the US, Including Wetlands ..... 3-6

3.4.2 Floodplains ..... 3-11

3.4.3 Terrestrial Wildlife and Habitat..... 3-12

3.4.4 Benthic Species ..... 3-13

3.4.5 Threatened and Endangered Species ..... 3-14

3.5 Architectural Resources ..... 3-17

3.5.1 Methods ..... 3-17

3.5.2 Existing Conditions ..... 3-17

3.5.3 Environmental Consequences..... 3-17

3.6 Archaeological Resources ..... 3-18

3.6.1 Methods ..... 3-18

3.6.2 Existing Conditions ..... 3-18

3.6.3 Environmental Consequences..... 3-19

3.6.4	Completion of the Section 106 Process .....	3-19
3.7	Section 4(f) and Section 6(f).....	3-19
3.7.1	Section 4(f) .....	3-19
3.7.2	Section 6(f).....	3-20
3.8	Indirect and Cumulative Effects.....	3-20
3.8.1	Methodology.....	3-20
3.8.2	Indirect Effects .....	3-20
3.8.3	Induced Growth Impact Summary.....	3-21
3.8.4	Cumulative Effects .....	3-21
<b>4</b>	<b>COORDINATION AND COMMENTS .....</b>	<b>4-1</b>
4.1	Agency Coordination.....	4-1
4.2	Public Involvement.....	4-1
4.2.1	Survey and Citizen Information Meetings .....	4-1
4.2.2	Additional Coordination Efforts .....	4-1
<b>5</b>	<b>REFERENCES .....</b>	<b>5-1</b>

**LIST OF TABLES**

Table 3-1:	Impact Matrix.....	3-2
Table 3-2:	Tidal Waterways within Study Areas (Acres) .....	3-7
Table 3-3:	Jurisdictional Ditch (Acres) and Streams (Linear Feet) within Study Areas .....	3-8
Table 3-4:	Wetland Types within Study Areas (Acres).....	3-8
Table 3-5:	Potential Impacts to Tidal and Non-Tidal Waters.....	3-9
Table 3-6:	Potential Wetland Impacts by Cowardin Abbreviation (Acres) .....	3-10
Table 3-7:	Potential Wetland Impact Totals (Acres) .....	3-10
Table 3-8:	Potential Impacts to Benthic Resources (Acres) .....	3-13
Table 3-9:	Terrestrial Threatened and Endangered Species with Habitat in Study Areas.....	3-15
Table 3-10:	Critical Habitat for Atlantic Sturgeon within Study Areas (Acres) .....	3-15
Table 3-11:	Potential Impact to Critical Habitat for Atlantic Sturgeon (Acres).....	3-16
Table 3-12:	Acreage of Architectural Historic Properties Located within the Limits of Disturbance .....	3-17
Table 3-13:	Section 4(f) Use .....	3-20

**LIST OF FIGURES**

Figure 1-1:	Refined Study Area .....	1-3
Figure 2-1:	Refined Selected Action Lane Configurations.....	2-4
Figure 2-2:	Refined Selected Action Typical Sections .....	2-5
Figure 2-3:	Refined Selected Action Approach Bridges Typical Sections.....	2-6

## **LIST OF APPENDICES**

- Appendix A: Refined Selected Action Mapping
- Appendix B: Air Quality Evaluation for HRCS SEIS Re-evaluation Memorandum
- Appendix C: Noise Evaluation for HRCS SEIS Re-evaluation Memorandum
- Appendix D: Agency Correspondence
- Appendix E: Threatened and Endangered Database Results

## **LIST OF ACRONYMS AND ABBREVIATIONS**

AASHTO	American Association of State Highway and Transportation Officials
CCRM	Center for Coastal Resources Management
CFR	Code of Federal Regulations
CIM	Citizen Information Meeting
CMECS	Coastal and Marine Ecological Classification Standard
CTB	Commonwealth Transportation Board
DPS	Distinct Population Segment
E2EM	Estuarine Emergent Wetland
E2FO	Estuarine Forested Wetland
E2RF	Estuarine Intertidal Reef
E2SS	Estuarine Scrub/Shrub Wetland
E2US	Estuarine Unconsolidated Shore
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EIS	Environmental Impact Statement
EJ	Environmental Justice
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FT	Federally Threatened
GIS	Geographic Information Systems
GP	General Purpose
HOT	High Occupancy Toll
HRBT	Hampton Roads Bridge-Tunnel
HRCS	Hampton Roads Crossing Study
HTRAC	Hampton Roads Transportation Accountability Commission
HRTPO	Hampton Roads Transportation Planning Organization
I-564	Interstate 564
I-64	Interstate 64
I-664	Interstate 664
LEDPA	Least Environmentally Damaging Practicable Alternative
LOD	Limits of Disturbance
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NMFS	National Marine Fisheries Service (NOAA Fisheries)
NOAA	National Oceanic and Atmospheric Administration

NRHP	National Register of Historic Places
PEC	Potential Environmental Concern
PEM	Palustrine Emergent
PFO	Palustrine Forested
pJD	Preliminary Jurisdictional Determination
PSS	Palustrine Scrub/Shrub Wetland
PUB	Palustrine Unconsolidated Bottom
ROD	Record of Decision
ROW	Right-of-Way
SAV	Submerged Aquatic Vegetation
SC	Substrate Component
SE	State Endangered
SEIS	Supplemental Environmental Impact Statement
ST	State Threatened
SWM	Stormwater Management
US	United States
USACE	United States Army Corps of Engineers
USC	United States Code
VA	Virginia Route
VA SHPO	Virginia State Historic Preservation Officer
VDGIF	Virginia Department of Game and Inland Fisheries
VDHR	Virginia Department of Historic Resources
VDOT	Virginia Department of Transportation
VIMS	Virginia Institute of Marine Science
VMRC	Virginia Marine Resources Commission
WOUS	Waters of the United States

# **1 PURPOSE AND NEED**

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## **1.1 INTRODUCTION**

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA) as the lead federal agency, is preparing this Environmental Assessment (EA) Re-evaluation for the Hampton Roads Crossing Study (HRCS) Final Supplemental Environmental Impact Statement (Final SEIS), which was prepared in 2017 by FHWA and VDOT. The Re-evaluation considers refinements proposed by VDOT to the Selected Action documented in FHWA's June 12, 2017 Record of Decision (ROD) and is informed by environmental analyses completed since the ROD was issued. The ROD allowed VDOT to advance with more detailed design activities, using more advanced engineering and other analyses. The advanced engineering and analyses sought to refine the Selected Action, for which the U.S. Army Corps of Engineers (USACE) found no reason to disagree that it appeared to be the preliminary Least Environmentally Damaging Practicable Alternative (preliminary LEDPA). This finding and the FHWA ROD were based on the level of detail that can be applied to a National Environmental Policy Act (NEPA) document and the work that followed sought to provide additional information for future procurement, design, and permitting.

This EA addresses the refinements being proposed for the Selected Action since publication of the ROD. Given the scope of the changes being proposed as part of the refinements, along with detailed agency coordination conducted as part of the SEIS (see Chapter 4 of the Final SEIS), VDOT and FHWA agreed that an EA would be an appropriate tool to re-evaluate the Final SEIS to determine if any new significant impacts would occur that were not documented in the Final SEIS. Resources and issues in the Final SEIS not affected by the proposed changes are not addressed in this EA.

## **1.2 REASONS FOR RE-EVALUATION**

On January 10, 2018, the Commonwealth Transportation Board (CTB) approved the designation of high-occupancy toll (HOT) lanes on Interstate 64 (I-64). Since the time that approval was made, VDOT has worked to determine how HOT lanes would be accommodated and function within the I-64 corridor. VDOT and FHWA indicated in the Final SEIS that improvements considered with the HRCS could be implemented and operated as a managed lane, but the management option was not specifically designated as such at the time the ROD was issued. Traffic and associated air quality and noise analyses in the Final SEIS did account for the potential to include managed lanes (see **Appendix B and C** for documentation confirming this assumption).

In order to accommodate the managed lanes, the planning-level Limit of Disturbance (LOD) was widened along the mainline and surrounding the I-64/I-564 interchange. The detailed engineering and analyses that have occurred since the ROD have also identified the need for additional property to be acquired as part of the project to accommodate future construction staging activities.

## **1.3 STUDY AREA**

The study area for this EA Re-evaluation is largely the same as the study area for the Selected Action in the ROD and consists of the I-64 corridor, including interchanges, from just west of the I-664 interchange in Hampton to the interchange with I-564 in Norfolk (**Figure 1-1**). The study area includes the approach/departure bridges and tunnel area of the Hampton Roads Bridge-Tunnel (HRBT) and the bridge

crossings over Willoughby Bay in Norfolk. Minor refinements to the study area have been made since the ROD to account for refinements to the Selected Action (see **Figure 1-1**). The most notable of these refinements is the inclusion of the small peninsula that extends from Willoughby Peninsula near the eastern end of the HRBT and additional area surrounding the I-564 interchange.

#### **1.4 PURPOSE AND NEED**

The purpose and need for this Re-evaluation remains the same as the purpose and need identified in the SEIS. The project purpose is to relieve congestion at the I-64 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 project will address the following needs:

- Accommodate travel demand – capacity is inadequate on the Study Area Corridors, contributing to congestion at the HRBT;
- Improve transit access – the lack of transit access across the Hampton Roads waterway;
- Increase regional accessibility – limited number of water crossings, 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

**Figure 1-1: Refined Study Area**



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## **2 ALTERNATIVES**

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### **2.1 INTRODUCTION**

The Preferred Alternative identified in the Final SEIS was evaluated by FHWA and confirmed as the Selected Action in the ROD. The Selected Action consists of the construction of a consistent six-lane facility along I-64 in the cities of Hampton and Norfolk, including the construction of an additional bridge-tunnel at the HRBT.

This chapter describes proposed refinements to the Selected Action since publication of the ROD. This chapter does not include a No-Build Alternative, as was considered in the SEIS. Per 23 CFR 771.130, FHWA can conduct a re-evaluation of a previous NEPA decision to determine if proposed refinements result in changes to the level of impact documented in the original NEPA document. As this is a re-evaluation, it is considered a “build/no-build” EA. The build condition involves implementing the proposed refinements while the “no-build” condition would result in VDOT and FHWA forgoing implementation of the refinements and deferring to the Selected Action as defined in the ROD.

### **2.2 ALTERNATIVES**

Two alternatives are analyzed in this EA Re-evaluation: the Selected Action (i.e., No-Build as described above) and the Refined Selected Action.

#### **2.2.1 Selected Action**

The Selected Action described in this section is identical to the Selected Action in the ROD.

Within the project limits, I-64 is currently six lanes between I-664 and the Settlers Landing Road Interchange (Exit 267) where an eastbound lane drops. Eastbound I-64 continues with two lanes across the HRBT to I-564. In the westbound direction, I-64 is two lanes from I-564 across the HRBT to the South Mallory Street Interchange (Exit 268) where a third westbound lane begins.

The selected alternative, Alternative A (see Figure 2-4, Final SEIS) will add a third lane in the eastbound direction (also known as the inner loop) beginning just west of the Settlers Landing Road Interchange. Over the water, a new bridge tunnel is proposed to be constructed (see Figure 2-6, Final SEIS) just west of the existing HRBT, which will serve eastbound traffic. This bridge structure will continue to Willoughby Spit, tie into the existing eastbound two-lane cross-section of I-64 where a third lane will be added down to I-564.

In the westbound direction (also known as the outer loop), a third lane will be added to I-64 from I-564 up to Willoughby Spit. As proposed, the existing two-lane westbound lane of the HRBT will be restriped for one lane and the existing two eastbound lanes of the HRBT will be converted to westbound lanes, providing a total of three lanes for westbound traffic (see Figure 2-6, Final SEIS). In the City of Hampton, this three-lane cross-section will tie into the existing three-lane cross-section of I-64 at the South Mallory Street Interchange.

While this configuration and the operational changes were presented in the Final SEIS as the proposed means of achieving a consistent six lane facility between I-664 and I-564, this could change when VDOT issues a Request for Proposals and contractors potentially offer alternate means of achieving a six-lane

facility. *[Note: Since publication of the ROD, VDOT has advanced with the RFP phase of the procurement process. The proposal made under the Refined Selected Action in this EA Re-evaluation represents a step towards advancing the alternative means of achieving the six-lane facility, as was suggested in the ROD. Further modifications to this proposal could be considered as VDOT advances with the procurement process and would be addressed by FHWA, accordingly.]*

A decision has not been made whether tolling will be incorporated into the project. While a decision has not been made, it is expected that tolling would only be used if the capacity being added were utilized as a HOT lane. In 2016, the General Assembly passed HB1069 which requires General Assembly approval before tolls can be placed on existing facilities; accordingly, it is unlikely that the existing General Purpose (GP) lanes would be tolled at this location. *[Note: Since publication of the ROD, CTB has identified HOT lanes as the management option for the corridor. This option is being evaluated in this EA Re-evaluation.]*

In the Final SEIS, an Inventory Corridor was established along the length of the existing HRBT and approaches, extending from the eastern edge of the existing bridge-tunnels to 30 feet beyond the western edge of the bridge-tunnel proposed under Alternative A. The Inventory Corridor represents the area in which the bridge-tunnel will be located and constructed over water as illustrated on Figures 4 through 6 in Appendix B, Final SEIS. While Alternative A has been laid out in a specific location within this corridor for purposes of assessing impacts, the final alignment of the bridge-tunnel within this Inventory Corridor will be determined during final design. The Inventory Corridor will allow greater flexibility when considering options to avoid permanent impacts to Hampton University property. Should the final location of the bridge-tunnel within the Inventory Corridor result in a change to the impacts in the Final SEIS, they will be addressed by FHWA.

VDOT has made the following design commitments to address impacts to specific resources from the selected alternative, and they have been incorporated into the ROD:

- There will be no permanent impact or acquisition of Hampton University property. For illustrative purposes, the Final SEIS identified design options for achieving this commitment; however, a final decision on how this commitment will be achieved will be made during final design.
- There will be no permanent impact or acquisition of the Willoughby Boat Ramp property located adjacent to the westbound lane of I-64 on the Willoughby Spit.
- There will be no permanent impact or acquisition of Navy property, which abuts the eastbound lane of I-64 in the City of Norfolk.
- Right-of-way (ROW) impacts will be minimized within the Phoebus-Mill Creek Terrace Neighborhood Historic District and relocations avoided.

## **Cost**

A planning-level cost estimate of \$3.3 billion was presented in the Final SEIS for the Selected Action. The estimate was presented in 2016 dollars and includes a 40 percent contingency. The cost estimate and supporting documentation for the Selected Action can be found in Appendix B and Appendix C of the *HRCS Alternatives Technical Report* (VDOT, 2016a).

### **2.2.2 Refined Selected Action**

As noted in **Section 1.2**, the Refined Selected Action incorporates HOT lanes and additional area for future construction staging into the project that was identified in the ROD. See **Figure 2-1** for the proposed lane

configurations for the Refined Selected Action. Refined Selected Action plan sheets are included in **Appendix A**.

In order to incorporate CTB's decision for HOT lanes along the corridor into the project, the Refined Selected Action assumes the new capacity extending from the Settlers Landing interchange to the I-564 interchange, as identified in the Final SEIS and ROD, would be HOT lanes. Under the Refined Selected Action, a HOT lane would be located on the inside (median) lane in both directions and tie into the existing HOT lane system between I-564 and I-264. This location keeps the HOT lanes from interfering with existing on and off ramps along the corridor and allows existing traffic patterns (slower traffic to the outside) to continue. No interim access/egress points are proposed for the HOT lanes as part of this EA. Travelers would enter at the eastern or western end of the corridor and travel in the HOT lanes until they reached the end of the corridor.

To ensure a single HOT lane and the overall interstate system can function as intended in each direction and that peak period traffic or other incidents do not overwhelm the system, the Refined Selected Action includes a "drivable shoulder" within the HOT lane system. The drivable shoulder provides a traffic safety improvement strategy that allows VDOT and FHWA to maintain a commitment to confine improvements largely within existing ROW. As illustrated on **Figure 2-2**, this shoulder would be located on the median side of each HOT lane. Further engineering and analyses would determine the exact physical and operating limits of the drivable shoulder. For the purposes of this EA, it is assumed the drivable shoulder would extend the length of the HOT lane corridor and function during the peak traffic periods assumed in the SEIS. This is consistent with the traffic modeling completed for the SEIS and ensures that the worst-case impact has been documented. More information can be found in the HRCS Traffic and Transportation Technical Report (VDOT, 2016f). Traffic volumes (daily volumes) are not expected to significantly increase on either the HOT lanes or GP lanes as a result of the drivable shoulder. The improvement would reduce the number of hours of congestion.

Under the Refined Selected Action, the typical landside pavement width has been expanded from 126 feet wide described in the Final SEIS to 134 feet wide. This increase accommodates a four-foot buffer to separate the HOT and GP lanes in each direction. The buffer serves to increase the safety and management of the HOT lane system. Refined Selected Action proposed typical sections are shown on **Figures 2-2** and **2-3**. The tunnel typical was also widened to provide similar separation in the confined environment. The separation between HOT and GP lanes is not considered a project commitment but an assumption that could be refined during more detailed design and permitting phases of the project.

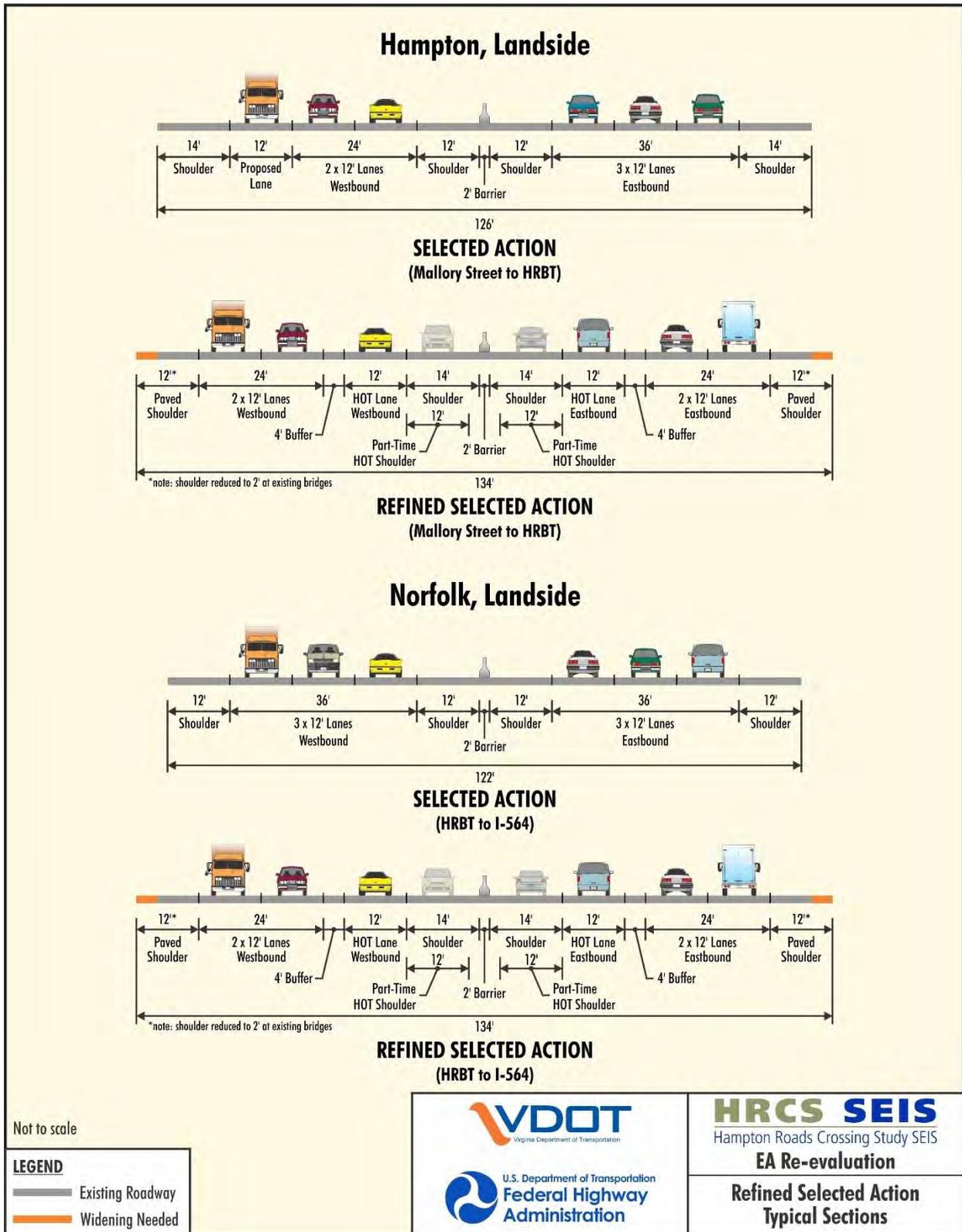
In order to accommodate the HOT lane buffer, the Refined Selected Action includes adjustments to interchanges along the corridor. The modifications would not alter any of the existing movements at the interchanges, but address geometric constraints to allow widening to occur largely within existing ROW. It is not anticipated that an Interchange Modification Report would be required for these adjustments.

The Refined Selected Action includes shared connection ramps at the eastern end of the corridor to provide access to and from the HOT lanes and I-564. The specific placement and design of these ramps would not be determined until later stages of the project. For the purposes of the Re-evaluation, this EA includes an expanded LOD around the I-564 interchange to document a worst-case scenario around the interchange and provide adequate room for additional ramp improvements in the future design. During more detailed phases of design and permitting, it may be possible to refine the engineering assumptions made in this EA and avoid and/or minimize impacts. Should the final location of the ramps result in an increase to the impacts estimated in this EA, they will be addressed by VDOT and FHWA at that time.

Figure 2-1: Refined Selected Action Lane Configurations

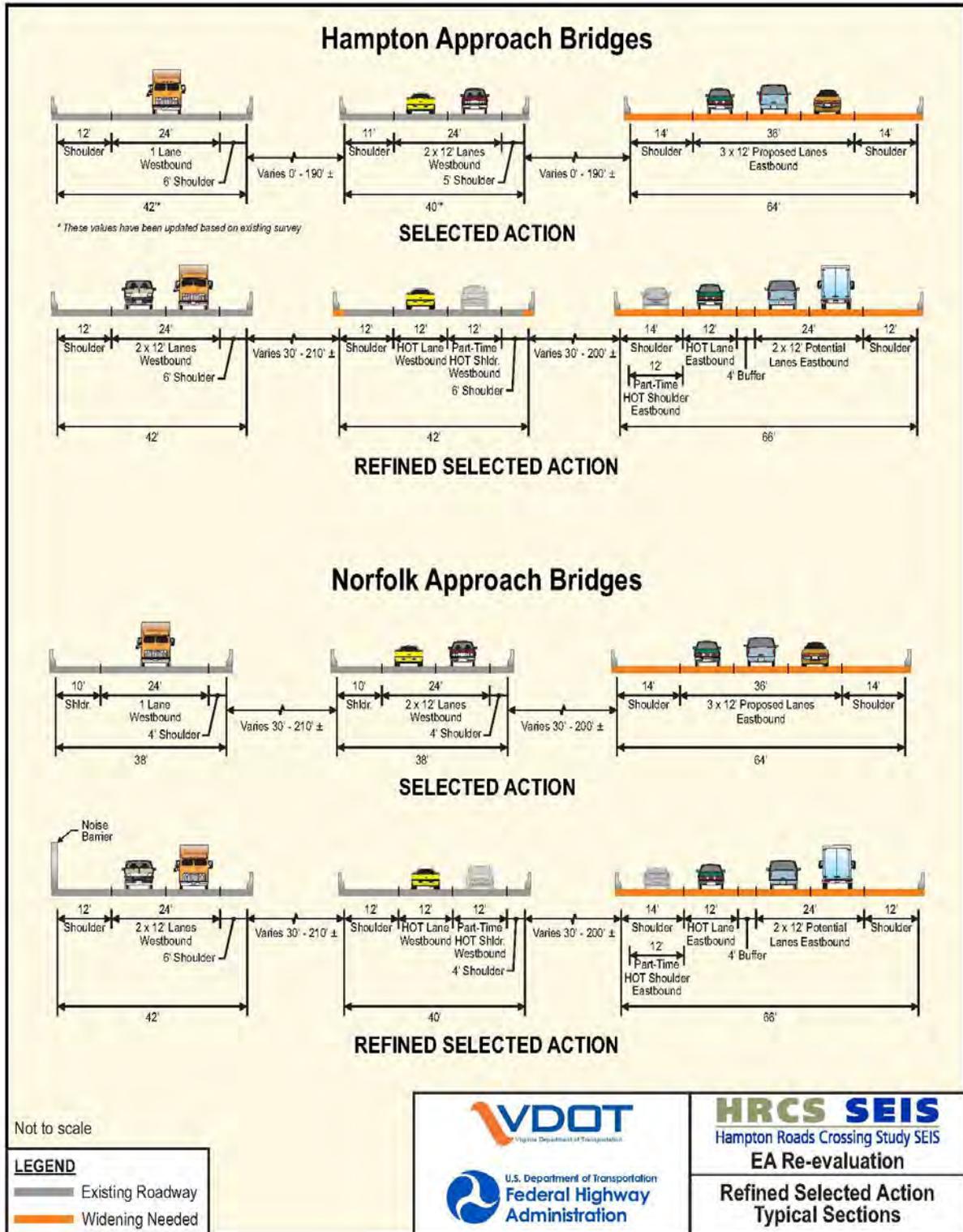


Figure 2-2: Refined Selected Action Typical Sections



This figure includes estimates based on preliminary engineering.

Figure 2-3: Refined Selected Action Approach Bridges Typical Sections



This figure includes estimates based on preliminary engineering.

In addition to the proposed HOT lanes and supporting components, the Refined Selected Action includes the acquisition of an undeveloped area of the Willoughby Spit peninsula for construction staging. The peninsula extends from Willoughby Spit in Norfolk, near the eastern end of the HRBT. This location has easy access to I-64, the local road network, and the water making it ideal for storage of construction equipment, stockpiling of clean fill material, and other construction staging activities.

The study area for the Refined Selected Action has also been expanded to include all of the existing HRBT elements. This will allow for modifications to the design in the future.

The Refined Selected Action confirms that, in the western end of the corridor, improvements would begin and end just west of the Settlers Landing Interchange. While the SEIS and ROD identified I-664 as the western terminus for the study area of the Selected Action, no improvements are considered west of the Settlers Landing Interchange for the Refined Selected Action.

### **Commitments**

Under the Refined Selected Action there would be no changes to the commitments made in the ROD and identified in **Section 2.2.1**.

### **Cost**

The planning-level cost estimate for the Selected Action was identified as \$3.3 billion in the Final SEIS and ROD. No updates have been made to the cost estimate as part of this Re-evaluation. Once the project has advanced to the procurement phase, the project cost will be updated and Hampton Roads Transportation Accountability Commission (HRTAC) will refine funding plans to implement the project improvements.

### **LEDPA**

As noted in **Section 1.1** of this EA, USACE found no reason to disagree that the Selected Action was the preliminary LEDPA. That comment was based on the preliminary wetland identification and engineering included in the SEIS. Since that time, VDOT has field delineated wetlands and streams within the LOD for the Refined Selected Action and is working with USACE to update a preliminary Jurisdictional Determination (pJD) for the corridor. As discussed in **Chapter 3** of the document, this work has refined the understanding of the jurisdictional limits of aquatic resources along the corridor. This data, coupled with the advanced engineering and design considerations included in the Refined Selected Action, have resulted in an increase in wetland impacts compared to those estimated in the SEIS. **Section 3.6.2** of this document discusses the comparative increase between the photointerpreted and field delineated resources.

When the SEIS was initiated VDOT, FHWA, USACE, and other Cooperating Agencies agreed on a method of photointerpretation to preliminarily identify wetlands. It was agreed that while this method was appropriate for the SEIS, it was not exact and would be replaced by data from a pJD to provide a more precise understanding of impacts to aquatic resources associated with the Selected Action and to inform permitting efforts in the future. Therefore, the increase in wetland impacts along the corridor (see **Section 3.6.2**) was not unexpected. Furthermore, the other alternatives retained for analysis in the SEIS had tens to hundreds of acres of additional wetland impacts than what was estimated for the Selected Action. It can be assumed that, if similar improvements proposed in this document were applied to those other alternatives, the impact estimates for these other alternatives would increase proportionately using pJD-

level information and still result in the Refined Selected Action having the least wetland impact of any alternative retained for analysis in the HRCS SEIS.

As part of the advanced engineering and design considerations discussed above, the inclusion of HOT lanes and associated improvements in the Refined Selected Action has increased the width of the corridor. Given the limited length of the Selected Action relative to the other alternatives retained for analysis in the Final SEIS, this widening represents the least impactful option for incorporating HOT lanes into one of the four alternatives retained for analysis in the Final SEIS. The other alternatives would have required refinements to more interchanges and more roadway widening, resulting in proportionally higher impacts.

In some locations, this widening has resulted in an increase in estimate wetland impacts. During more detailed design and the permitting process, avoidance and minimization opportunities would be considered to the extent practicable. As discussed in Chapter 2 of the Final SEIS, additional efforts would be made to determine if additional avoidance and minimization of wetland impacts are practicable. Based on current funding identified by the HRTAC, the project would require revenue generated from the HOT lanes for construction. Therefore, it is assumed that it is no longer practicable to consider avoidance and minimization measures that would eliminate the HOT lanes or associated structures from future design and permitting. Unlike the SEIS, this EA Re-evaluation process does not provide VDOT with an opportunity to request USACE's comment on the Refined Selected Action relative to a preliminary LEDPA determination. However, the analysis included in the EA Re-evaluation demonstrates that the transportation improvements included as part of the Refined Selected Action would remain the least impactful alternative, compared to any of the other alternatives evaluated in the Final SEIS with the same HOT assumptions applied. Despite the increase in impacts associated with the Refined Selected Action, VDOT is confident that it remains the preliminary LEDPA. It is understood that a final LEDPA determination cannot be made by USACE until a permit application is received and that this determination would be informed by more detailed design and analysis, as discussed in Chapter 2 of the Final SEIS.

### **3 EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES**

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This chapter presents the existing environmental conditions and potential impacts (environmental consequences) of the Refined Selected Action for those resources where either the methodologies, existing conditions, or impacts have changed measurably since the Final SEIS. The discussion in this chapter is limited to the data, information, and issues that would have a bearing on possible impacts and mitigation measures of the Refined Selected Action. For the purposes of comparing these changes to those identified in the Final SEIS and ROD, numbers from these previous documents also are presented in this chapter. Please refer to the Final SEIS ([FHWA, 2017a](#)) for a detailed discussion of any resources not described herein.

The Study Area identified in the Final SEIS was modified for this EA Re-evaluation to accommodate the area around the proposed refinements to the Selected Action discussed in **Chapter 2** (see **Figure 1-1**). The study area includes the inventory corridor over water (as developed for the Final SEIS) and has been expanded to include all of the existing bridge-tunnel elements. This corridor approach allows for modifications to the design in the future with the full knowledge of the impacts to those modifications will have on the resources located within the corridor. The expansion of the study area has resulted in a greater amount of some resources present within the Refined Study Area (see Existing Conditions sections within this chapter).

During the planning-level design completed for the Refined Selected Action it was determined that changes to the LOD were required. These changes are necessary to accommodate the refinements proposed since issuance of the ROD. Therefore, the engineering elements of the Refined Selected Action described within this EA Re-evaluation were used to refine the planning-level LOD for performing the environmental analyses documented in the sections below. Specifically, the planning-level LOD was developed from the planning-level grading limits of the Refined Selected Action and includes widened roadway to account for the eight additional feet of buffer (four additional feet in each direction between the HOT and GP lanes), and changes along the mainline and at the I-564 interchange to accommodate the HOT lanes and part-time HOT shoulder. The LOD also provides a more accurate identification of potential impacts associated with noise barrier installation areas than was considered in the SEIS. The LOD over water was expanded to include the eastern approach bridge to the HRBT on the Norfolk side. The expansion of the LOD over water has resulted in a greater amount of impacts to some resources within the Refined Selected Action (see Environmental Consequences sections within this chapter). Like the Final SEIS LOD, an additional 30 feet was used beyond the cut/fill line to account for drainage and other appurtenances.

As in the Final SEIS, the impacts provided in this document are preliminary estimates based on the current refined planning-level engineering. While refinements to the Selected Action have been ongoing, there may be additional activities and features that would occur beyond the LOD, including: signage; maintenance of traffic activities; noise barriers (placement determined by final design noise analysis); and detailed stormwater management (SWM) design. Detailed SWM plans have not been completed as part of the NEPA effort for this study and would occur during final design. The LOD includes a buffer beyond the proposed cut and fill line where SWM facilities may be placed. Alternative plan sheets that show the

LODs for both the Selected Action and the Refined Selected Action as well as the resources evaluated are included in **Appendix A**.

**Table 3-1** compares potential impacts of Alternative A (as presented in the Draft SEIS), the Selected Action (as presented in the Final SEIS/ROD), and the Refined Selected Action (presented herein) and indicates if additional analysis is included in this Re-evaluation.

**Table 3-1: Impact Matrix**

Resource/Topic	Alternative A	Selected Action	Refined Selected Action	Analysis included in this Re-evaluation
<b>Right-of- Way</b> number of properties (acres)	<b>86 (10.3)</b>	<b>73 (6.7)</b>	<b>62 (16.8)</b>	<b>No.</b> The analysis has shown that the worst-case impacts were documented in the SEIS and more detailed information will be available as final design advances.
Residential	24 (0.5)	22 (0.5)	19 (0.4)	
Commercial	6 (1.3)	2 (<0.1)	2 (7.8)	
Industrial	6 (0.9)	6 (0.9)	3 (<0.1)	
Institutional	9 (2.8)	6 (1.1)	5 (<0.1)	
Military	4 (0.6)	0	0 (0)	
Open Space	14 (1.1)	14 (1.1)	14 (7.3)	
Other	23 (3.1)	23 (3.1)	19 (1.2)	
<b>Potential Residential Relocations</b>	<b>9</b>	<b>9</b>	<b>3</b>	
<b>Potential Commercial Relocations</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Other Relocations<sup>1</sup></b>	<b>2</b>	<b>2</b>	<b>2</b>	
<b>Community Facilities (#)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>No.</b> There are no changes to existing community facilities or proposed impacts.
Parks & Recreation	1	0	0	
Place of Worship	0	0	0	
Cemetery	0	0	0	
School / University	1	0	0	
<b>Military Facilities # (acres)</b>	<b>1 (22.4)</b>	<b>0</b>	<b>0</b>	<b>No.</b> The Re-evaluation maintains the commitment to avoid impacts to military facilities.
<b>Number of Census Block Groups with Environmental Justice Populations Present</b>	<b>8</b>	<b>8</b>	<b>11</b>	<b>Yes. (see Section 3.1)</b>
<b>Air Quality</b>	<b>Minor Short-term Impacts</b>			<b>No.</b> The analysis has shown that the worst-case impacts were documented in the SEIS. <b>(see Appendix B and C)</b>
<b>Noise Impacts (#)</b>	<b>953</b>	<b>953</b>	<b>953</b>	
<b>Stream Impacts (linear feet)</b>	<b>N/A<sup>2</sup></b>	<b>N/A<sup>2</sup></b>	<b>1,155</b>	<b>Yes. (see Section 3.4.1)</b>
<b>Wetlands (acres)</b>	<b>7.8</b>	<b>7.6</b>	<b>15.3</b>	<b>Yes. (see Section 3.4.1)</b>

Resource/Topic	Alternative A	Selected Action	Refined Selected Action	Analysis included in this Re-evaluation
Impaired Waterways Crossed (#)	6	3	3	<b>No.</b> There are no new significant impacts that were not identified in the SEIS.
Floodplains (acres)	112.6	149.2	225.3	<b>Yes. (see Section 3.4.2)</b>
Terrestrial Habitat (Forested Area) (acres)	14.9	14.9	32.8	<b>Yes. (see Section 3.4.3)</b>
Benthic Communities	153.9	155.1	206.1	<b>Yes. (see Section 3.4.4)</b>
Threatened & Endangered Species Habitat (acres)	1.0	1.0	2.7	<b>Yes. (see Section 3.4.5 and Appendix E)</b>
Potential Hazardous Materials Sites	98	98	188	<b>No.</b> VDOT has completed additional hazardous materials evaluation. While additional sites have been identified in the corridor, it does not affect the FHWA location decision or VDOT's approach to advancing the project and therefore is not included in this document.  Even though the number of resources has gone up, it is not anticipated that the number of impacts would increase.
Dredge Material (cubic yards)	1,200,000	1,200,000	1,200,000	<b>No.</b> There are no new significant impacts that were not identified in the SEIS.
Section 4(f) Properties (#)	6	2	2	<b>Yes. (see Section 3.8.1)</b>
Farmland	0	0	0	<b>No.</b> There is no farmland in the study area.
Navigable Waters (acres)	147.3	175.9	233.2	<b>No.</b> The potential increase in impacts is due to the expanded LOD over the existing HRBT elements. There are no new significant impacts that were not identified in the SEIS.
Maintained Navigable Channels	12.3	12.3	12.3	
Resource Protection Areas (acres)	1.1	0.9	< 0.1	
Hampton Roads Aquatic Habitat (acres)	155.7	174.4	206.1	
Essential Fish Habitat, Habitat Areas of Particular Concern, and Anadromous Fish Use Areas (acres)	138.4	157.7	218.8	
Submerged Aquatic Vegetation (acres)	1.8	0.1	0.3	

Resource/Topic	Alternative A	Selected Action	Refined Selected Action	Analysis included in this Re-evaluation
Water Quality	Short-term and minor, beneficial long-term impacts			<b>No.</b> There are no new significant impacts that were not identified in the SEIS.
Historic Architecture Resources (#)	6	3	3	<b>Yes. (see Section 3.6)</b>
Archaeology Resources (#)	6	5	8	<b>Yes. (see Section 3.7)</b>
Visual Impacts	Minor to moderate			<b>No.</b> There are no new significant impacts that were not identified in the SEIS.
Energy Requirements and Conservation Potential	Minor energy requirements			<b>No.</b> There are no new significant impacts that were not identified in the SEIS.

1 Other includes Institutional, Industrial, and Open Space zoning classifications.

2 Value not identified/calculated in the SEIS.

### 3.1 ENVIRONMENTAL JUSTICE

#### 3.1.1 Methodology

The methodology for identification of Environmental Justice (EJ) populations has not changed. Refer to the HRCS Final SEIS for a description of the methodology. The American Association of State Highway and Transportation Officials (AASHTO) *Practitioner’s Handbook: Managing the NEPA Process for Toll Lanes and Toll Roads* (AASHTO, 2016) was utilized as a reference to understand and determine the EJ issues related to tolling. For the purposes of this Re-evaluation, the types of effects considered, based on the AASHTO Handbook, are focused on the potential economic impacts of tolling, economic benefits of tolling, and community impacts.

#### 3.1.2 Existing Conditions

The Refined Study Area intersects with three additional Census Block Groups that meet the definition of a minority or low-income population (Census Block Groups 000300.3, 005500.1, and 005701.3). Therefore, there are a total of 11 Census Block Groups that meet the definition of minority or low-income populations along the Refined Study Area. Refer to the Final SEIS for a description of socioeconomic characteristics within the study area.

#### 3.1.3 Environmental Consequences

As illustrated in the Final SEIS, the majority of the Census Block Groups analyzed in the HRCS SEIS met the definition of minority or low-income populations. Therefore, the proposed improvements to the existing interstate facility that intersects with these Census Block Groups was found to have no disproportionately high or adverse impact to EJ communities. The proposed refinements would not result in any physical changes to the corridor that would change this finding, as documented in the Final SEIS and ROD.

However, under the Refined Selected Action the inclusion of HOT lanes has the potential to alter the use of the existing interstate. As described in **Chapter 2**, the addition of HOT lanes under the Refined Selected

Action would require non-high-occupancy vehicles to pay a toll to use the HOT lanes. The existing GP lanes would remain as is. As stated on page 13 of the ROD, “If HOT lanes are implemented, it is expected that the existing GP lanes would remain free for travelers using the facility at this location; thus, there would be no disproportionate impact from tolls on EJ populations.” FHWA has stated that congestion pricing “places responsibility for travel choices squarely in the hands of the individual traveler, where it can be decided and managed” (FHWA, 2008). While the single-occupancy vehicle is typically the preferred choice of travel, there are benefits to shared passenger transportation alternatives, and travelers may decide to change their travel habits. The combination of the free GP lanes and HOT lanes allows each individual traveler to choose between the free lanes or the tolled lanes based on the value the individual has placed on their time and/or need for a reliable trip. E-ZPass created a new cash-based system (E-ZPass Reload Card) for individuals who previously could not obtain an E-ZPass transponder due to lack of a credit-card, but can now purchase at local convenience stores, such as CVS and 7-Eleven. These options ensure that low-income drivers are not precluded from acquiring an E-ZPass and using the new tolled facilities.

Although the HOT lanes toll cost would be a higher proportion of income for some individuals, other options are available for users to avoid the tolls associated with the HOT lanes that offer flexibility for all income levels. These include the use of the GP lanes, the use of a “flex” electronic transponder which would provide free access to the HOT lanes for carpoolers, as well as transit.

The implementation of HOT lanes along the corridor also could assist in establishing and/or enhancing transit services that serve low-income populations. The HOT lanes could also be utilized by the HRT MAX bus service which would further optimize the number of people and vehicles that travel in the lanes, thus providing added benefit to mobility and reliability. As stated in the November 16, 2015 letter from the Virginia Department of Rail and Public Transportation, while dedicated light rail facilities are not warranted, the Selected Action should support high frequency bus rapid transit service in either a fixed guideway or in shared high occupancy vehicles or HOT lanes. More information may be found in November 16, 2015 letter from the Virginia Department of Rail and Public Transportation (Appendix D of the Final SEIS).

The implementation of the Refined Selected Action would reduce congestion and delays along I-64 within the study area which benefits both minority and non-minority populations as well as low-income and non-low-income populations. Further, the HOT lanes would provide greater choice to users which would benefit all users of the facility.

The impacts associated with the Refined Selected Action would not result in an adverse, let alone disproportionately adverse, impact on minority or low-income populations. The project-related improvements to travel time and reliability would benefit both minority populations and non-minority populations; therefore, no mitigation measures are proposed. The findings of this EA Re-evaluation have not identified any new significant impacts to EJ populations above those already identified in the SEIS.

#### **3.1.4 Mitigation**

Under the Refined Selected Action, there are no changes to the mitigation proposed in the Final SEIS for environmental justice.

### **3.2 AIR QUALITY**

A memorandum was prepared in April 2018 in support of this EA Re-evaluation that summarized the proposed changes to the Refined Selected Action, compared updated traffic projections to those used for the 2016 Draft SEIS, and determined that the air quality analysis presented in the Draft SEIS did not warrant updating because the change in scope and updated traffic would not reasonably be expected to result in any substantive changes to the modeling results and conclusions for each of the analyses that were presented in the 2016 Air Study. Therefore, the results of the previous air quality analysis remain valid and adequately represent the impacts that can be expected from Refined Selected Action. The memorandum and FHWA concurrence are included in **Appendix B**. The findings of this EA Re-evaluation have not identified any new significant air quality impacts above what was already identified in the SEIS.

### **3.3 NOISE**

For the EA Re-evaluation VDOT conducted a loudest-period assessment identical to that completed for the Final SEIS using updated 2040 traffic forecasts applicable to the Refined Selected Action. The assessment and results are included in a memorandum prepared in February 2018. The results indicate that there would be a very minor increase in traffic associated with the Refined Selected Action when compared to Alternative A from the Draft and Final SEIS. Based on FHWA guidance of what is perceptible to the human ear, that minor increase in traffic will result in an imperceptible increase in noise levels for the Refined Selected Action when compared to those earlier versions of Alternative A from the Draft and Final SEIS (a .09 and .20 decibel increase, respectively, on average). Based on this comparison, the noise study results from the SEIS can be used for the Refined Selected Action in this EA Re-evaluation. Further, it is reasonable to conclude that the proposed changes to the project represented by the Refined Selected Action will not have new significant noise impacts not already considered. Based on the results of this assessment, VDOT and FHWA agreed that no additional noise analysis was needed for this EA. The memorandum and FHWA concurrence are included in **Appendix C**.

During final design, a final design noise analysis using final design traffic will be prepared for the Refined Selected Action and any changes to the scope that have been adopted. The results of the final design noise analysis would then be used to support the final decisions on feasible and reasonable noise barriers. The findings of this EA Re-evaluation have not identified any new significant noise impacts above what was already identified in the SEIS.

### **3.4 NATURAL RESOURCES**

#### **3.4.1 Waters of the US, Including Wetlands**

##### **3.4.1.1 Methodology**

The methodology for identification of Waters of the United States (WOUS), including wetlands, has been updated since the Final SEIS. For the SEIS, the agencies agreed to use a proven photointerpretation method to identify these resources, given the size and scope of the alternatives evaluated. Those methods provided adequate comparison among alternatives using high resolution aerial imagery and a digital terrain model, as well as ancillary data sources such as existing land use cover data, National Wetland Inventory mapping, Soil Survey Geographic Database mapped soils data, and National Hydrography Dataset information.

In 2017 following the issuance of the ROD, VDOT conducted field delineations of WOUS, including wetlands, to inform this EA Re-evaluation. The delineation resulted in the USACE issuing a pJD for the Study Area for the Selected Action on September 19, 2017. Following the pJD, VDOT conducted additional WOUS delineations in 2018 to document resources considered in the Refined Study Area. As was done for the Final SEIS, following the completion of the Re-evaluation, VDOT will seek to update the pJD to document any additional WOUS not previously confirmed by the USACE in the Refined Study Area.

WOUS other than wetlands were investigated in accordance with the limits defined in 33 CFR § 328, consistent with standard field delineation methods used to inform a pJD for the USACE. The boundaries of non-tidal waters were set at the ordinary high-water mark.

Shallow water habitat composed of water depths less than 6.6 feet were identified using topography and bathymetry from the Digital Elevation Model developed by the USACE Research and Development Center – Coastal & Hydraulics Laboratory for the Federal Emergency Management Agency (FEMA) Region III, as part of a study to update coastal storm surge elevations.

Wetlands were investigated using routine field methods in accordance with the USACE’s *Wetlands Delineation Manual*, Y-87-I (USACE, 1987); *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (Version 2.0), supplemental guidance issued by the USACE, and wetland guidance issued by the Virginia Marine Resources Commission (VMRC). The limits of wetlands delineated in 2017 were confirmed by the USACE with a pJD issued on September 19, 2017. Limits of VMRC jurisdictional wetlands were confirmed with VMRC staff during site visits conducted in 2017. VDOT will seek to update the pJD received in 2017 to document any additional wetlands identified in the Refined Study Area that have not been previously confirmed by the USACE, following the completion of this Re-evaluation.

**3.4.1.2 Existing Conditions**

As more-accurate field data exists as a result of the WOUS delineations completed for this Re-evaluation, the tidal waterway and non-tidal stream existing condition values have been updated from those reported in the ROD. **Table 3-2** provides a comparison of the tidal waterways and shallow water habitat in the Selected Action Study Area (using the identification methods used in the Final SEIS) and Refined Study Area (using the more accurate field delineation data collected since issuance of the ROD). The overall increase in identified tidal waterway acreage results from an increase in study area size as well as more-accurate identification methods for the Re-evaluation.

**Table 3-2: Tidal Waterways within Study Areas (Acres)**

<b>Waterbody</b>	<b>Selected Action Study Area<sup>1</sup></b>	<b>Refined Study Area<sup>2</sup></b>
Brights Creek	0.6	< 0.1
Hampton River	11	8
Hampton Roads	203	299
Johns Creek	0.7	0.2
Mason Creek	5	4.2
Newmarket Creek	14	5.3
Oastes Creek	1	1.1
Unnamed Tributary to Hampton River	2	0

<b>Waterbody</b>	<b>Selected Action Study Area<sup>1</sup></b>	<b>Refined Study Area<sup>2</sup></b>
Unnamed Tributary to Oastes Creek 1	0.3	0.7
Unnamed Tributary to Oastes Creek 2	0.3	0.2
Willoughby Bay	56	24.2
<b>Total</b>	<b>294</b>	<b>343</b>
Shallow Water Habitat <sup>3</sup>	103	95.6

<sup>1</sup> Identified in the Final SEIS using available National Hydrography Dataset (NHD) information and photointerpretation methods.

<sup>2</sup> Identified in the EA Re-evaluation using on-site WOUS delineations.

<sup>3</sup> Shallow water habitat is a subset of the total tidal water acres.

No streams were identified in the Final SEIS using photointerpretation. As described in Appendix H, page H-156 of the Final SEIS, for the Draft SEIS the presence of WOUS was determined through photointerpretation, which did not identify any ephemeral streams. This method was reviewed by the United States Environmental Protection Agency, USACE and other Cooperating Agencies before this analysis was initiated. It was agreed that this method would provide sufficient information to identify a Preferred Alternative and possibly a preliminary LEDPA. It was agreed that the Selected Alternative would undergo a formal delineation through which all jurisdictional and ephemeral streams would be delineated. Thus, using data obtained from the 2017 and 2018 WOUS delineations, non-tidal jurisdictional ditches and streams have been identified in the Refined Study Area. **Table 3-3** provides a comparison between the jurisdictional ditches and streams in the Selected Action Study Area in the Final EIS, and those identified in the Refined Study Area.

**Table 3-3: Jurisdictional Ditch (Acres) and Streams (Linear Feet) within Study Areas**

<b>Water Type</b>	<b>Selected Action Study Area<sup>1</sup></b>	<b>Refined Study Area<sup>2</sup></b>
Jurisdictional Ditch (Acres)	N/A	1.0
Ephemeral Stream (Linear feet)	N/A	1,297
Intermittent Stream (Linear feet)	N/A	568
Perennial Stream (Linear feet)	N/A	515
Tidal Stream (Linear feet)	N/A	31

<sup>1</sup> Identified using available NHD information and photointerpretation methods. Value not identified/calculated in the SEIS.

<sup>2</sup> Identified using on-site WOUS delineations.

**Table 3-4** provides a comparison of acreage totals between wetlands identified in the Selected Action Study Area using photointerpretation, and the Refined Study Area using field delineations. However, a direct comparison between the study area values cannot be made, as the Selected Action Study Area includes areas not delineated as part of the Re-evaluation. Therefore, the values reported for the Refined Study Area should be considered the true resource inventory as the project advances.

**Table 3-4: Wetland Types within Study Areas (Acres)**

<b>Cowardin Abbreviation</b>	<b>Cowardin/VMRC Classification</b>	<b>Selected Action Study Area<sup>2</sup></b>	<b>Refined Study Area<sup>3</sup></b>
E2EM <sup>1</sup>	Estuarine Emergent/VMRC Saltmarsh and Reed Grass Communities	31.9	16.9
E2FO	Estuarine Forested	0	0.2

Cowardin Abbreviation	Cowardin/VMRC Classification	Selected Action Study Area <sup>2</sup>	Refined Study Area <sup>3</sup>
E2RF	Estuarine Intertidal Reef	0	0.1
E2SS	Estuarine Intertidal Scrub/Shrub/VMRC Saltbush Community	0	1
E2US	Estuarine Intertidal Unconsolidated Shore	1	11.3
PEM <sup>1</sup>	Palustrine Emergent	21	9.2
PFO <sup>1</sup>	Palustrine Forested	15	3.3
PUB <sup>1</sup>	Palustrine Unconsolidated Bottom	6.6	3.3
PSS <sup>1</sup>	Palustrine Scrub/Shrub	0.6	3
<b>Total</b>		<b>76.1</b>	<b>48.3</b>

<sup>1</sup> Combines previously reported subclasses and modifiers into one reported value for each class system.

<sup>2</sup> Identified using photointerpretation methods.

<sup>3</sup> Identified using on-site WOUS delineations.

### 3.4.1.3 Environmental Consequences

**Table 3-5** provides a summary of the tidal and non-tidal waterbodies that would be impacted by the two alternatives, as well as the total area of shallow water habitat within the tidal waters. Impacts have been quantitatively identified using the same methods utilized in the Final SEIS.

**Table 3-5: Potential Impacts to Tidal and Non-Tidal Waters**

Waterbody	Selected Action <sup>1</sup>	Refined Selected Action <sup>2</sup>
Tidal (Acres)	176	233
Shallow Water Habitat (Acres)	47	70
Jurisdictional Ditch (acres)	N/A <sup>3</sup>	0.1
Tidal Stream (Linear Feet)	N/A <sup>3</sup>	0
Intermittent Stream (Linear Feet)	N/A <sup>3</sup>	1,128
Perennial Stream (Linear Feet)	N/A <sup>3</sup>	27

<sup>1</sup> Identified using available NHD information and photointerpretation methods in the SEIS.

<sup>2</sup> Identified using on-site WOUS delineations.

<sup>3</sup> Value not identified/calculated in the SEIS.

Improvements proposed with the Selected Action would impact approximately 176 acres of tidal waters, based on NHD and photointerpretation data, including 47 acres of shallow water habitat in Hampton Roads Harbor and Willoughby Bay along I-64. Impacts from the Refined Selected Action are slightly higher with impact increases occurring along Johns Creek, at the Mallory Street Interchange in Hampton, where mainline, bridge, and ramp improvements are proposed. Tidal water impacts increase along the HRBT, and in Willoughby Bay, where additional roadway width is necessary to accommodate the noise barriers, HOT lanes and buffer.

The LOD over tidal waters for both the Selected Action and Refined Selected Action assumes the worst-case scenario of a total fill/impact of these jurisdictional features. However, the bridge sections over tidal waters would be constructed of trestles on piles. The amount of fill in the waters would be restricted to

the location of installed piles. The footprint of the bridge itself is significantly larger than the impact area to be permitted, thus reducing the permitted impact values below those reported in **Table 3-5**.

No tidal stream impacts are anticipated with the planning-level design of the Refined Selected Action. The non-tidal impacts would be the result of culvert extensions and/or roadway fill occur along I-64 in Hampton and Norfolk. These would occur to unnamed tributaries to Mason Creek, and streams connected to stormwater systems in Norfolk, including on the north side of the I-564 interchange near the Forest Lawn Cemetery. A relatively small impact is anticipated to a jurisdictional ditch located south of Settlers Landing Road on the east side of I-64 in Hampton.

Both the Selected Action and Refined Selected Action would impact estuarine and palustrine wetland systems. Potential wetland impacts within the LOD for the Selected Action and the Refined Selected Action are presented in **Table 3-6** and **Table 3-7**. The estuarine unconsolidated bottom category has been excluded from these impact tables and is included in the tidal acreage provided in **Table 3-5**. Impacts are listed by Cowardin abbreviation per alternative in **Table 3-6**. Wetland impacts per alternative are grouped into broader categories in **Table 3-7**: tidal wetlands (estuarine); non-tidal vegetated wetlands (palustrine); and non-tidal open water.

**Table 3-6: Potential Wetland Impacts by Cowardin Abbreviation (Acres)**

Cowardin Abbreviation <sup>1</sup>	Selected Action <sup>2</sup>	Refined Selected Action <sup>3</sup>
E2EM <sup>1</sup>	4.7	5.4
E2FO	0.0	0.0
E2RF	0.0	<0.1
E2SS	0.0	0.2
E2US <sup>1</sup>	0.5	6.8
PEM <sup>1</sup>	0.2	0.9
PFO <sup>1</sup>	2.1	0.6
PUB <sup>1</sup>	0.1	0.8
PSS <sup>1</sup>	0.0	0.6
<b>Total</b>	<b>7.6</b>	<b>15.3</b>

<sup>1</sup> Combines previously reported subclasses and modifiers into one reported value for each class system.

<sup>2</sup> Identified using photointerpretation methods.

<sup>3</sup> Identified using on-site WOUS delineations.

**Table 3-7: Potential Wetland Impact Totals (Acres)**

Impact Type	Selected Action <sup>1</sup>	Refined Selected Action <sup>2</sup>
Tidal Wetlands	5.2	12.4
Non-tidal Vegetated Wetlands	2.3	2.1
Non-tidal Open Water	0.1	0.8
<b>Total</b>	<b>7.6</b>	<b>15.3</b>

<sup>1</sup> Identified using photointerpretation methods.

<sup>2</sup> Identified using on-site WOUS delineations.

Using the more accurate delineation data to compare both alternatives, the Refined Preferred Alternative would potentially impact approximately 7.2 more acres of tidal wetlands and 0.7 acre more non-tidal open water than the Selected Action. There is an approximately 0.2 acre decrease in non-tidal vegetated wetland impacts with implementation of the Refined Selected Action. The increases in wetland impacts are described below:

- The widened LOD at the Mallory Street interchange to accommodate the needed ramp improvements and bridge widening resulted in an impact to approximately 1.4 acres of wetlands located within the loop ramp that were not previously impacted by the Selected Action (**Figure 3 in Appendix A**);
- Use of the landside staging area at the western end of Willoughby Spit resulted in approximately one additional acre of impact to wetlands (**Figure 5 in Appendix A**);
- Expansion of the LOD at the 4<sup>th</sup> View interchange to include the access ramps resulted in approximately one additional acre of impact to wetlands (**Figure 6 in Appendix A**);
- Expansion of the LOD surrounding West Bay Avenue to accommodate ramp improvements and roadway widening resulted in approximately 1.3 acres of additional impact to wetlands (**Figure 6 in Appendix A**);
- Expansion of the LOD along Granby Street and through the I-564 interchange resulted in approximately 0.9 acres of additional impact to wetlands (**Figure 8 in Appendix A**); and
- Additional wetland impacts totaling approximately 2 acres occur throughout the I-64 corridor as a result of widening to accommodate the HOT lanes and part-time drivable shoulder.

Impacts to wetlands have increased for the Refined Selected Action compared to the Selected Action due to the implementation of HOT lanes and other refinements. However, had Alternatives B, C, or D been chosen as the Preferred Alternative and carried forward with HOT lanes as well as similar refinements, impacts to wetlands would also have increased by a similar degree for any of those alternatives. Alternatives B, C, and D impacted between 72 and 120 acres of wetlands in the Final SEIS, which was substantially more than both Alternative A (7.6 acres) and the Refined Selected Action (14.8 acres). The findings of this EA Re-evaluation have not identified any new significant impacts to aquatic resources above those already identified in the SEIS.

#### **3.4.1.4 Mitigation**

Under the Refined Selected Action, there are no changes to the mitigation proposed in the Final SEIS for WOUS and wetland impacts.

### **3.4.2 Floodplains**

#### **3.4.2.1 Methodology**

The amount of, and impact to, 100-year floodplains within the Refined Study Area was determined using the same methods utilized in the Final SEIS.

#### **3.4.2.2 Existing Conditions**

Under the Refined Selected Action there are 418 acres of floodplain present within the study area.

#### **3.4.2.3 Environmental Consequences**

The Refined Selected Action would impact approximately 225 acres of floodplain, 112 more acres than the Selected Action in the ROD. The majority of the increased impacts would occur in the vicinity of the

I-64/I-564 interchange. However, the actual encroachment for the Refined Selected Action may be less than that based upon the total extent of fill required for construction and the use of bridges at the major waterways. Causeways may be used to support tunnel construction. The findings of this EA Re-evaluation have not identified any new significant impacts that were not already identified in the SEIS.

#### **3.4.2.4 Mitigation**

Under the Refined Selected Action, there are no changes to the mitigation proposed in the Final SEIS for floodplain impacts.

### **3.4.3 Terrestrial Wildlife and Habitat**

#### **3.4.3.1 Methodology**

The same methods utilized in the Final SEIS to assess potential terrestrial wildlife and habitat were utilized for the Refined Study Area for this Re-evaluation.

#### **3.4.3.2 Existing Conditions**

The majority of the existing land cover within the Refined Study Area consists of developed lands, with the next largest land cover type being open water, and only a small percentage made up of natural terrestrial communities. Large areas of terrestrial habitat are uncommon and fragmented as residential, commercial, industrial, government/military, and open water areas are common, resulting in predominantly low-quality edge habitat.

Some areas within the Refined Study Area retain characteristics of natural vegetation (e.g., wetland and waterbody margins, protected areas) and may support more unique wildlife. Although these forested areas are fragmented by surrounding roadways, common wildlife species capable of adapting to habitat fragmentation such as rabbits, eastern gray squirrels, and a number of common non-migratory bird species could inhabit these areas, as they have done throughout the region.

Fragmented terrestrial habitat located within the Refined Study Area that was not included within the Selected Action Study Area exists within the I-564 interchange. Specifically, forested patches occur between the ramps of I-64, loop ramps to I-564, and along Granby Street at the interchange with I-64. Within Naval Station Norfolk property, the roadway and bounding fence lines impede wildlife movement between these forested areas and to the larger contiguous forested patches located to the north and west. The vegetated areas located within the median of the roadways at the interchange, are mowed and maintained areas, and provide poor habitat to terrestrial species.

The peninsula located at the western end of Willoughby Spit in Norfolk, which is being considered for a potential construction staging area for the Refined Selected Action, ranges in elevation from 0 to 8 feet. It does not contain forested habitat. The vegetated areas contain a mix of grass species. The western and southern edges of the peninsula contain intertidal zone foraging habitat where insects, marine worms, and other terrestrial and aquatic invertebrates may exist. However, in its existing condition, the peninsula provides suboptimal foraging habitat. Multiple individuals of one shorebird species, the killdeer (*Charadrius vociferus*), were observed on site during the habitat assessment.

#### **3.4.3.3 Environmental Consequences**

As previously discussed, terrestrial habitat is limited within the Refined Study Area due to an urbanized/suburbanized fragmented landscape with varying degrees of clearing and development. Because the Refined Selected Action extends further east than the Selected Action along I-64 past the I-

564 interchange, it has a higher amount of terrestrial habitat (forested habitat) impact. Under the Selected Action 14.9 acres would be impacted. Under the Refined Selected Action 32.8 acres of terrestrial habitat would be impacted.

However, the narrow corridors of terrestrial habitat within existing ROW and immediately adjacent to it that would be impacted with either the Selected Action or the refined Selected Action are not part of any larger contiguous tracts of habitat. Rather, they are components of the fragmented landscape. Existing I-64 poses a substantial barrier to wildlife movement. Increasing the width of the roadway within the highly urbanized areas of Hampton and Norfolk by approximately eight to twelve feet, as proposed with the Refined Selected Action, would not greatly exacerbate this problem. Therefore, impacts to these areas would not alter the condition or function of the surrounding habitat. The findings of this EA Re-evaluation have not identified any new significant impacts that were not already identified in the SEIS.

**3.4.3.4 Mitigation**

Under the Refined Selected Action, there are no changes to the mitigation proposed in the Final SEIS for terrestrial wildlife and habitat impacts.

**3.4.4 Benthic Species**

**3.4.4.1 Methodology**

The methodology for evaluation of benthic species has not changed since the Final SEIS.

**3.4.4.2 Existing Conditions**

There are no Baylor Grounds for public shellfish harvesting within the Refined Study Area. The entire over-water areas of the Refined Study Area in Hampton Roads Harbor are considered potential hard clam habitat. Throughout these areas the bottom is composed of sand, mud, or a combination suitable for hard clams. There are approximately 298 acres of clam habitat present within the Refined Study Area.

The blue crab is an important part of the trophic web using underwater grass beds or Submerged Aquatic Vegetation (SAV) as nursery areas and foraging grounds for feeding. Approximately 4 acres of SAV beds have been mapped within the Refined Study Area.

**3.4.4.3 Environmental Consequences**

Potential impacts within the LOD of each alternative is presented in **Table 3-8**. Areas of impact apply to potential habitat and protected areas for each of the three commercially significant species (hard clam, blue crab, and eastern oyster) and would also apply to the benthic infauna. Neither the Selected Action, nor the Refined Selected Action, would require impacts to public use lands, oyster reefs, oyster sanctuaries, or areas with approved, private shellfishing leases. The findings of this EA Re-evaluation have not identified any new significant impacts above those already identified in the Final SEIS.

**Table 3-8: Potential Impacts to Benthic Resources (Acres)**

Resource	Selected Action	Refined Selected Action
Hard Clam Habitat <sup>1</sup>	155.1 <sup>2</sup>	206.1
Public Clamming Grounds <sup>3</sup>	0	0
Blue Crab Habitat/SAV <sup>4</sup>	0.1	0.3
Blue Crab Sanctuary <sup>5</sup>	0	0

Resource	Selected Action	Refined Selected Action
Oyster Reefs <sup>5</sup>	0	0
Oyster Sanctuary <sup>5</sup>	0	0
Public Baylor Grounds <sup>5</sup>	0	0
Private Shellfishing Leases <sup>6</sup>	0	0

Sources and Notes: All shellfish impacts are within a Condemnation Zone, including hard clams and eastern oysters.

<sup>1</sup> The entire footprint beneath each alternative is considered potential hard clam habitat because the entire bottom is composed of sand, mud, or a combination suitable for hard clams (NOAA, 2015 and NOAA, 2017).

<sup>2</sup> Value approximated in the Final SEIS.

<sup>3</sup> CCRM, 2017).

<sup>4</sup> VIMS, 2017.

<sup>5</sup> VMRC, 2018.

<sup>6</sup> Approved leases. Low density eastern oysters may be present; however, no high quality eastern oyster habitat, sanctuary, or reefs are present (CCRM, 2017 and VIMS, 2017).

#### **3.4.4.4 Mitigation**

Under the Refined Selected Action, there are no changes to the mitigation proposed in the Final SEIS for benthic species impacts.

### **3.4.5 Threatened and Endangered Species**

#### **3.4.5.1 Methodology**

In accordance with the methodology used for the Final SEIS, the following databases were re-visited to inform this document:

- US Fish and Wildlife Services’ Information for Planning and Conservation Database;
- Virginia Department of Game and Inland Fisheries’ Virginia Fish and Wildlife Information Service database; and
- Virginia Department of Conservation and Recreation’s Department of Natural Heritage Database.

These reviews were completed to confirm there were no changes to the list of species reported to occur, or potentially occur, within the Selected Action Study Area, and to obtain an updated list of species for the Refined Study Area. No new species were identified for the Refined Study Area not already identified for the Selected Action Study Area in the Final SEIS (see **Appendix F**). As the species lists were the same, VDOT completed habitat assessments for the Refined Study Area using the same methods utilized for the Final SEIS.

#### **3.4.5.2 Existing Conditions**

As with the Selected Action Study Area, potential habitat was verified within the Refined Study Area for all federally- and state-listed terrestrial threatened and endangered species mapped within the vicinity (**Table 3-9**). Habitat Verification was based upon an understanding of the life histories of the listed species and results of the offsite and field analysis performed as part of the SEIS and EA.

**Table 3-9: Terrestrial Threatened and Endangered Species with Habitat in Study Areas**

Group	Species	Listing
Shorebirds	Piping Plover	FT/ST <sup>1</sup>
	Wilson’s Plover	SE
	Red Knot	FT/ST <sup>1</sup>
Waterbird	Gull-billed Tern	ST
Mammals	Northern Long-Eared Bat	FT/ST <sup>1</sup>
	Little Brown Bat	SE
	Tri-colored Bat	SE

Notes: FT = Federally-Threatened. ST = State-Threatened. SE = State-Endangered.

<sup>1</sup> Species was only federally-listed at the time coordination was completed for the SEIS. However, as of April 1, 2016, VDGIF regulations officially recognize the federal list of threatened and endangered species, which listed this species as threatened, hence state threatened status was added to its list of statuses.

The area in which data was collected for the study focused on a more limited area based on the refinements to the limits of the project. Therefore, the amount of identified bat habitat in the Refined Study Area is reduced from that reported in the Final SEIS. Bat habitat in the Refined Study Area is located primarily in the forested areas along I-64 in Hampton.

The National Marine Fisheries Service (NMFS) issued a proposed rule on June 2, 2016 declaring all portions of the James River, from Boshers Dam west of Richmond downstream to the mouth of the river, as critical habitat for the federally- and state-endangered Chesapeake Bay Distinct Population Segment (DPS) of Atlantic sturgeon. This area encompassed the Selected Action Study Area in the Final SEIS. Therefore, at that time, approximately 202 acres of the Selected Action Study Area was identified as proposed critical habitat for the species (**Table 3-10**). However, on September 18, 2017, the NMFS issued a final rule designating critical habitat for the Chesapeake Bay DPS. In Virginia, the final rule only designated occupied areas in the following rivers within the Chesapeake Bay DSP: Potomac, Rappahannock, York, Pamunkey, Mattaponi, and James.

With the NMFS final rule designation, critical habitat was not designated for Hampton Roads Harbor where the Refined Study Area is located, thus confirming that no critical habitat for any species occurs in the Refined Study Area.

**Table 3-10: Critical Habitat for Atlantic Sturgeon within Study Areas (Acres)**

Species	Selected Action Study Area	Refined Study Area
Atlantic Sturgeon	202 <sup>1</sup>	0 <sup>2</sup>

<sup>1</sup> Proposed critical habitat by NMFS.

<sup>2</sup> Confirmed critical habitat with NMFS’ September 18, 2017 final rule.

**3.4.5.3 Environmental Consequences**

As with the Selected Action, the Refined Selected Action could potentially impact federally- and state-listed threatened and endangered species and their habitat. Suboptimum foraging habitat for federally and state-listed shorebirds is present within the Refined Selected Action LOD. The term shorebird used in the Final SEIS and this EA includes those species which feed primarily on invertebrates found in, or adjacent to, intertidal habitats or shallow waters. Common prey items include marine worms, insects, small crabs, clams, and oysters.

As with the Selected Action, the majority of the intertidal areas within the Refined Selected Action LOD have been fragmented or altered by the presence of the current roadways and development. Many intertidal areas are dominated by common reed, rendering them unsuitable for foraging by shorebirds in their current vegetative state. Mudflats areas are generally limited in size, and it is anticipated that the majority of these estuarine areas would be bridged, like their current state, thereby minimizing impact to shorebird foraging habitat present.

The potential construction staging area on Willoughby Spit does provide potential habitat for shorebird species. However, this area does not provide suitable foraging or nesting habitat for waterbird species including the state-threatened, gull-billed tern. The term waterbird used in the Final SEIS and this EA refers to those species living on around marine waters, excluding waterfowl species which are ecologically dependent on wetlands.

Summer roosting habitat has been confirmed for bat species within the Refined Selected Action LOD (Northern Long-Eared Bat, Little brown bat, and Tri-colored bat) east of I-64 in the vicinity of Settlers Landing Road in Hampton and 4<sup>th</sup> View Street in Norfolk. However, the forested habitat in these locations are fragmented. The Refined Selected Action would not measurably change the quality of the habitat. Furthermore, no confirmed maternity roosts or hibernacula are located within a 2-mile radius of the Refined Selected Action LOD, further limiting the potential effects on the species.

As discussed in **Section 3.4.5.2**, with the NMFS' final rule, the Refined Selected Action Study Area, and therefore the Refined Selected Action's LOD, does not contain designated critical habitat for the Atlantic sturgeon (**Table 3-11**).

The findings of this EA Re-evaluation have not identified any new significant impacts that were not already identified in the SEIS.

**Table 3-11: Potential Impact to Critical Habitat for Atlantic Sturgeon (Acres)**

Species	Selected Action	Refined Selected Action
Atlantic Sturgeon	158 <sup>1</sup>	0 <sup>2</sup>

<sup>1</sup> Potential critical habitat reported in the Final SEIS.

<sup>2</sup> Confirmed critical habitat within the Refined Selected Action's LOD with NMFS' September 18, 2017 final rule.

**3.4.5.4 Mitigation**

Under the Refined Selected Action, there are no changes to the mitigation proposed in the Final SEIS for threatened and endangered species impacts.

### **3.5 ARCHITECTURAL RESOURCES**

#### **3.5.1 Methods**

The methods used to identify architectural resources on or eligible for listing on the National Register of Historic Places (NRHP) and assess project effects on these historic properties have not changed since the Final SEIS.

#### **3.5.2 Existing Conditions**

The existing conditions for architectural resources have not changed since the Final SEIS.

#### **3.5.3 Environmental Consequences**

The acreage of architectural historic property land within the LODs for the Selected and Refined Selected Actions is listed in **Table 3-12**. This acreage is based on the identified NRHP boundary for historic properties. For historic districts, all area within the historic district boundary was included in the acreage value, regardless of whether the area is considered a contributing element of the district.

**Table 3-12: Acreage of Architectural Historic Properties Located within the Limits of Disturbance**

<b>Resource</b>	<b>Selected Action</b>	<b>Refined Selected Action</b>
Phoebus–Mill Creek Terrace Neighborhood Historic District	0.7	0.8
Battle of Hampton Roads	164.2	246.8
Battle of Sewell’s Point	137.2	179.1

In December 2016 the Virginia State Historic Preservation Officer (VA SHPO) concurred with FHWA that the Selected Action would alter but not diminish any of the characteristics that qualify the Phoebus-Mill Creek Terrace Neighborhood Historic District (VDHR Inventory No 114- 5002) for listing on the NRHP. Under the Refined Selected Action, the improvements and associated LOD have been modified adjacent to the historic district and therefore would impact 0.1 more acres of the district compared to the Selected Action. There continues to be no use of property from parcels that are contributing elements to the NRHP-listed historic district. Under the terms of Stipulation I.F of the Section 106 Programmatic Agreement executed for the HRCS, once design plans for adding capacity to the HRBT are more fully developed, VDOT will reassess the effects of the project on the Phoebus–Mill Creek Terrace Neighborhood Historic District, coordinate its updated findings with the VA SHPO, and consult further to resolve any adverse effects.

The LOD for the Refined Selected Action contains an additional 40.8 acres and 22.8 acres, respectively, within the historic property boundaries of the Battle of Hampton Roads (VDHR Inventory No. 114-5471) and the Battle of Sewell’s Point (VDHR Inventory No. 122-5426) than the LOD of the Selected Action, yet the acreage associated with the Refined Selected Action remains a very small percentage of these approximately 35,000- and 10,00-acre historic properties, respectively. Proposed construction under the Refined Selected Action is similar to the construction proposed for the Selected Action. Therefore, VDOT believes the VA SHPO’s December 2016 determination that the battlefields will not be adversely affected is just as applicable to the Refined Selected Action. Under the terms of Stipulation I.F of the Section 106 Programmatic Agreement executed for the HRCS, once design plans for adding capacity to the HRBT are more fully developed, VDOT will reassess the effects of the project on the battles of Hampton Roads and Sewell’s Point, coordinate its updated findings with the VA SHPO, and consult further to resolve any

adverse effects. Subsequent to the FHWA's issuance of the ROD for the HRCS, VDOT completed underwater archaeological survey of the HRBT inventory corridor associated with the Refined Selected Action. Following review of the survey findings, the VA SHPO concurred in August 2017 that the corridor contains no significant archaeological sites associated with the battles of Hampton Roads and Sewell's Point (see **Appendix D**).

The Area of Potential Effects (APE) for indirect effects that was defined for the Selected Action and surveyed for architectural resources includes the small peninsula that extends from Willoughby Peninsula in Norfolk that has been identified as a potential construction staging area for the project. The indirect APE for the Selected Action also includes any areas where architectural resources may be affected indirectly by the proposed use of this peninsula for staging. None of the twenty architectural resources that are either listed in the NRHP, determined by the VA SHPO to be eligible for listing, or assumed by the FHWA and VDOT to be eligible for listing for the purposes of applying the requirements of Section 106 to the HRCS are located on or in proximity to the proposed construction staging area.

The Refined Selected Action includes new ramps at the eastern end of the corridor to provide direct access to and from the I-64 HOT lanes and I-564. The specific placement and design of these ramps would not be determined until later stages of project development. There is one architectural historic property in the vicinity of the proposed ramps, Forest Lawn Cemetery (VDHR Inventory No. 122-0531), that warrants special consideration as the details of the Refined Selected Action are developed. The VA SHPO concurred with FHWA in December 2016 that the Selected Action would not alter any characteristics of the cemetery that qualify it for listing on the NRHP. The expanded LOD associated with the Refined Selected Action does not encroach upon the historic property boundaries of the cemetery, but the potential for indirect effects on the cemetery cannot be assessed properly until the design of the ramps is determined in later stages of project development. Under the Refined Selected Action, the placement and height of the ramps would need to be designed in a manner that minimizes any increase in the view of highway infrastructure from the cemetery in order to ensure the project has no adverse effect on the cemetery. It may be necessary to assess the potential effects of the ramps during design by modeling the view from the cemetery with visualizations and line of sight perspectives. The line of sight perspectives should be done both with and without the existing vegetation within the expanded LOD at the I-64/I-564 interchange.

## **3.6 ARCHAEOLOGICAL RESOURCES**

### **3.6.1 Methods**

The methods used to identify archaeological resources on or eligible for listing on the NRHP and assess project effects on these historic properties have not changed since the Final SEIS.

### **3.6.2 Existing Conditions**

Based on background research in the VA SHPO's archives, the Final SEIS identified eight archaeological sites previously recorded as being located within or in close proximity to the LOD of the Selected Action. Pursuant to Stipulation II of the Section 106 Programmatic Agreement executed by the FHWA, the VA SHPO, and VDOT for the HRCS in April 2017, VDOT conducted terrestrial and underwater field survey of the LOD for the Selected Action in May 2017. The underwater portion of this survey also included the expanded HRBT inventory corridor associated with the Refined Selected Action. In March 2018, VDOT conducted additional archaeological survey of the small peninsula that extends from Willoughby Peninsula in Norfolk that has been added as a potential construction staging area for the Refined Selected

Action. Upon reviewing the results of each survey, the SHPO concurred with VDOT in August 2017 and May 2018 that none of the archaeological sites confirmed by field survey to be located within the LOD of the Selected Action or the small peninsula extending from Willoughby Peninsula are eligible for listing on the NRHP.

### **3.6.3 Environmental Consequences**

The LOD at the I-64/I-564 interchange, expanded to accommodate new ramps providing direct access to and from the I-64 HOT lanes and I-564, is the only area of the Refined Selected Action in which efforts to identify archaeological historic properties have not been completed. Prior to project construction, the process described in Stipulation II of the Section 106 Programmatic Agreement executed by the FHWA, the VA SHPO, and VDOT for the HRCS would be completed to identify any archaeological sites within this area, assess the effects of the Refined Selected Action on any archaeological historic properties, and determine and implement appropriate treatment measures for any sites that would be adversely affected. Based on the information contained in the technical report prepared for the Selected Action, *HRCS Archaeological Assessment (April 2016; revised July 2016)*, VDOT believes that any archaeological historic properties that might be located in this area of the Refined Selected Action would likely be important chiefly for the information they contain.

### **3.6.4 Completion of the Section 106 Process**

The requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended) (54 U.S.C. 306108) were met administratively for the HRCS by FHWA when it executed a Programmatic Agreement with the VA SHPO and VDOT in April 2017. The Programmatic Agreement stipulates further consultation among VDOT, the VA SHPO, and other parties regarding project design and describes the measures that FHWA and VDOT will take to avoid, minimize, or mitigate Project effects on architectural and archaeological historic properties during further development and implementation of the Refined Selected Action.

## **3.7 SECTION 4(F) AND SECTION 6(F)**

### **3.7.1 Section 4(f)**

The Section 4(f) properties that were impacted under the Selected Action were revisited for this EA Re-evaluation to determine if any additional Section 4(f) properties occur within, or adjacent to, the Refined Study Area and LOD. The Refined Selected Action would not impact any additional properties protected under Section 4(f). Of the three Section 4(f) properties impacted under the Selected Action, one would have reduced impact under the Refined Selected Action (Phoebus-Mill Creek Terrace Neighborhood Historic District) and two would experience an increase (Battle of Hampton Roads and Battle of Sewell's Point). The Section 4(f) properties that were identified and analyzed are summarized in **Table 3-13**. While the acreage of use from Refined Selected Action has increased for the two battlefields, the type of use has not changed.

**Table 3-13: Section 4(f) Use**

<b>Section 4(f) Property</b>	<b>Acreage of Use - Selected Action</b>	<b><i>De minimis</i> Impact (Selected Action)</b>	<b>Acreage of Use - Refined Selected Action</b>	<b><i>De minimis</i> Impact (Refined Selected Action)</b>
Phoebus-Mill Creek Terrace Neighborhood Historic District (no contributing elements)	0.7	No; No Section 4(f) Use	0.8	No; No Section 4(f) Use
Battle of Hampton Roads	164	Yes	246.8	Yes
Battle of Sewell's Point	137	Yes	179.1	Yes

**3.7.2 Section 6(f)**

In the Final SEIS, only one Section 6(f) property was identified in proximity to the Selected Action’s LOD. The Willoughby Boat Ramp (formerly the Norfolk Boat Ramp), was established using a grant from the Land and Water Conservation Fund and thus qualifies for protection under Section 6(f). However, through design commitments made by VDOT, no acquisition of land or impacts to facilities of the Willoughby Boat Ramp was required as part of the Selected Action. FHWA confirmed these commitments for the Selected Action in the ROD. VDOT continues to maintain these commitments, and no land or impacts to facilities of the Willoughby Boat Ramp or other Section 6(f) properties would occur as part of the Refined Selected Action.

**3.8 INDIRECT AND CUMULATIVE EFFECTS**

**3.8.1 Methodology**

The methodology for the re-evaluation of indirect and cumulative effects remains the same as that utilized in the Final SEIS.

**3.8.2 Indirect Effects**

The indirect effects of HOT lanes on EJ populations were evaluated in the Final SEIS. While the direct impacts of HOT lanes to EJ populations have gone up slightly (see **Section 3.2**), there is no measurable increase in indirect impacts under the Refined Selected Action. HOT lanes could indirectly benefit EJ populations and all other users of GP lanes by improving travel time and reliability from diverting some traffic to the HOT lanes (see correspondence from the Department of Rail and Public Transportation in Appendix D of the Final SEIS). The existing GP lanes would remain free for all users. Accordingly, no disproportionately high and adverse indirect impacts to low-income populations from tolling would occur.

Like in the Final SEIS, the temporary and permanent ROW requirements for both the Selected and Refined Selected Action would be limited to minimal acquisition adjacent to the existing interstate; therefore, the actions would have minimal indirect effects on land use and community cohesion. Similar to the Selected Action, the Refined Selected Action would have indirect impacts to socioeconomic resources, including EJ populations.

The implementation of HOT lanes within the corridor could indirectly benefit EJ populations and all other users of GP lanes by improving travel time and reliability from diverting some traffic to HOT lanes. A minimum of two GP lanes would remain free for all users in the corridor, and no tolls would be incurred

with use of these lanes along I-64 and at the HRBT. Accordingly, no disproportionately high and adverse indirect impacts to low-income populations from tolling is anticipated to occur.

The Refined Selected Action would have indirect impacts to natural and historic resources similar to those of the Selected Action. The direct effects to wetlands, streams, forested lands, floodplains, benthic habitat under the Refined Selected Action would be slightly greater than the Selected Action due to the minor increase in length of the action and the widened footprint; therefore, the indirect effects to these resources would be greater in comparison. However, the increase in impact is slight and by adhering to the mitigation measures proposed in the Final SEIS, indirect impacts are anticipated to be the same as those summarized in the Final SEIS. VDOT would adhere to the local, state, and federal regulations governing construction impacts in these areas and use of standard erosion and sediment control and SWM measures and their associated required monitoring protocols. The indirect effects of the Refined Selected Action to historic properties is similar to that of the Selected Action.

### **3.8.3 Induced Growth Impact Summary**

There are no changes to induced growth between the Selected Action and the Refined Selected Action. The findings of this EA Re-evaluation have not identified any new significant impacts that were not already identified in the SEIS.

### **3.8.4 Cumulative Effects**

The Cumulative Impacts Study Area established and analyzed in the Final SEIS was sized to permit consideration of the cumulative effects of the actions under review with this EA Re-evaluation. There are no measurable changes to the cumulative effects presented in the Final SEIS.

An additional cumulative effect is expected with the addition of HOT lanes under the Refined Selected Action. When combined with the HOT lanes of the adjacent High Rise Bridge and I-564 conversion projects, the Refine Selected Action would have an increased positive economic and environmental effect due to improvements and expansion of regional connectivity. The addition of HOT lanes along the I-64 corridor would provide greater mobility options, encourage use of transit and carpooling, improve the efficiency of the roadway, and reduce congestion. HOT lanes also have the potential to help improve air quality where they are implemented as they reduce congestion and idle time of vehicles. These benefits would be cumulatively expanded when combined with the other area HOT lane projects. The findings of this EA Re-evaluation have not identified any new significant impacts that were not already identified in the SEIS.

## **4 COORDINATION AND COMMENTS**

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### **4.1 AGENCY COORDINATION**

At the onset of this Re-evaluation VDOT and FHWA notified the Cooperating and Participating Agencies of the scope and timeline for this Re-evaluation (see **Appendix D**). Specific coordination with the USACE was completed for the work required to update the pJD for wetlands and WOUS.

### **4.2 PUBLIC INVOLVEMENT**

#### **4.2.1 Survey and Citizen Information Meetings**

A round of Citizen Information Meetings (CIM) were held in June 2018. The CIMs were held at the Ocean View Elementary School, in Norfolk, and the St. Mary Star of the Sea School, in Hampton, both accessible by transit and handicapped accessible. The meetings were an open house format; team members were on hand to answer questions and discuss the study with attendees. Several large display boards were used to convey an overview of the study and updates from the Re-evaluation. Copies of the EA Re-evaluation were available at the meetings for the public to view. A narrated PowerPoint video was also available for viewing. Each attendee received a brochure and a comment sheet containing the same questions as the online survey. Comments could be provided orally with a stenographer, written at the meeting, or written and mailed in during the 30-day comment period. Comments gathered through the survey were combined with those obtained at the CIMs to inform FHWA's decision on the improvements proposed with the Refined Selected Action. The findings will be documented in VDOT's request for approval of this EA Re-evaluation.

#### **4.2.2 Additional Coordination Efforts**

##### **4.2.2.1 Mailing List**

A mailing list was developed to identify owners of parcels within the Refined Study Area. This list was evaluated to determine those parcels where access was needed to complete environmental studies. Six property access letters were mailed pursuant to §33.1-94 of the Code of Virginia. VDOT mailed letters to the property owners to inform them of upcoming field work that may occur on their property to inform this Re-evaluation. In the letters, VDOT requested the property owners to notify other tenants, if also living or working on the property, about potential activities. The letters included contact information for the VDOT Project Manager in the event that the property owner had concerns regarding entry or wanted to request advanced notification prior to field work being conducted on the property. Requests for advanced notice or other information was noted by the project team and honored during field visits.

##### **4.2.2.2 Website**

Information regarding the HRCS, including the EA Re-evaluation and all technical documentation, is available to the public through the following VDOT websites:

<http://hamptonroadscrossingstudy.org/>

<http://www.hrbtexpansion.org/>

The websites are continually updated as new information becomes available.

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[http://hamptonroadscrossingstudy.org/documents/201608/finaltechnicalreports/hazmat\\_technical\\_memo.pdf](http://hamptonroadscrossingstudy.org/documents/201608/finaltechnicalreports/hazmat_technical_memo.pdf).
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[https://webapps.mrc.virginia.gov/public/maps/chesapeakebay\\_map.php](https://webapps.mrc.virginia.gov/public/maps/chesapeakebay_map.php).

# HRCS SEIS

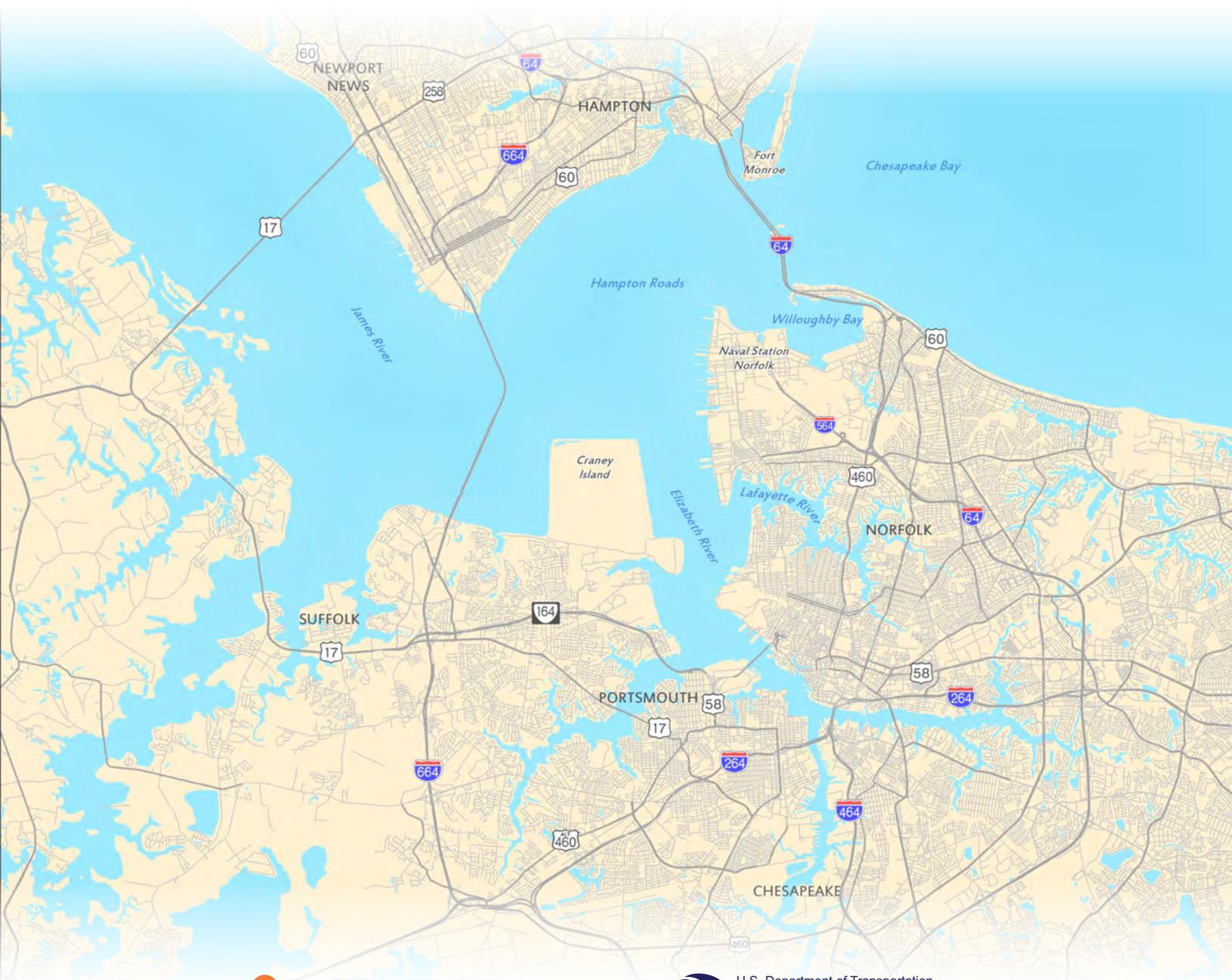
Hampton Roads Crossing Study SEIS

Environmental Assessment Re-evaluation of the Supplemental Environmental Impact Statement

## Appendix A:

Appendix A

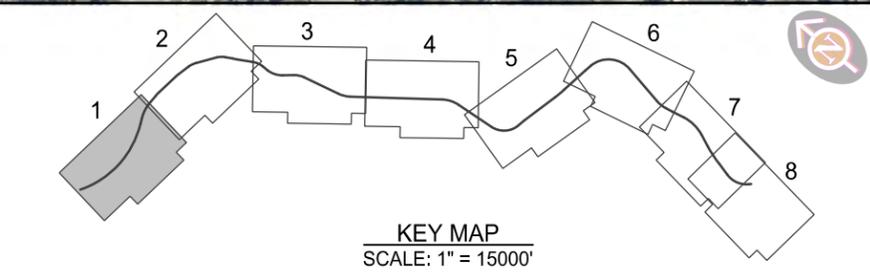
### Refined Selected Action Mapping





**LEGEND**

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	PROPOSED STRUCTURES		SURVEYED PARCEL BOUNDARIES
	PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION		POTENTIAL NOISE BARRIERS
	PROPOSED LIMIT OF DISTURBANCE SELECTED ACTION		IMPACTED NOISE RECEPTORS
	WETLANDS / WATERS		EXISTING GP LANE
	FEDERAL PROPERTIES		PROPOSED GP LANE
	HISTORIC PROPERTIES		PROPOSED HOT LANE
			PROPOSED PART-TIME HOT SHOULDER



Note:  
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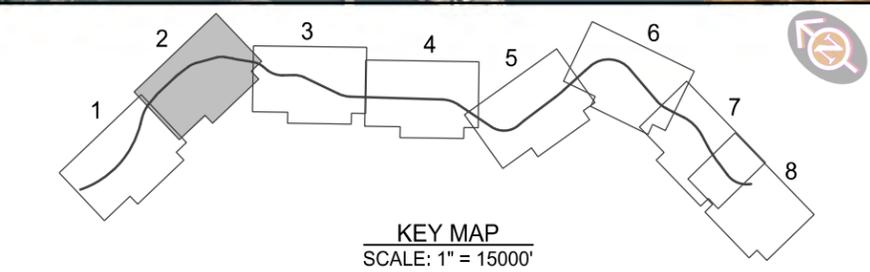
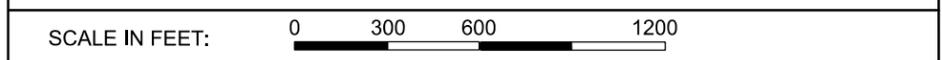
**REFINED SELECTED ACTION**

**VDOT** JUNE 2018

U.S. Department of Transportation **Federal Highway Administration** Figure 1



LEGEND	
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	PROPOSED STRUCTURES
	PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION
	PROPOSED LIMIT OF DISTURBANCE SELECTED ACTION
	WETLANDS / WATERS
	FEDERAL PROPERTIES
	HISTORIC PROPERTIES
	PARKS
	SURVEYED PARCEL BOUNDARIES
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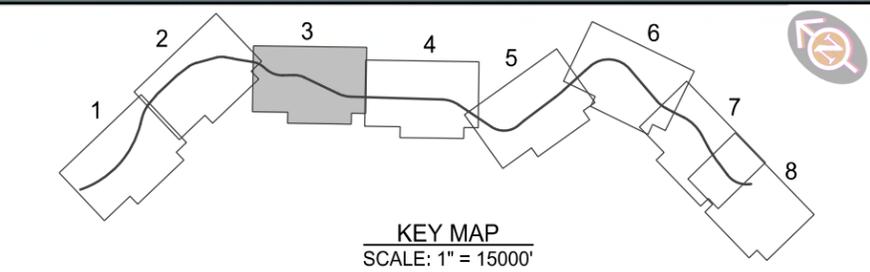
U.S. Department of Transportation  
**Federal Highway Administration** Figure 2



**LEGEND**

PROPOSED ROADWAY IMPROVEMENTS	PARKS
PROPOSED STRUCTURES	SURVEYED PARCEL BOUNDARIES
PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION	POTENTIAL NOISE BARRIERS
PROPOSED LIMIT OF DISTURBANCE SELECTED ACTION	IMPACTED NOISE RECEPTORS
WETLANDS / WATERS	EXISTING GP LANE
FEDERAL PROPERTIES	PROPOSED GP LANE
HISTORIC PROPERTIES	PROPOSED HOT LANE
	PROPOSED PART-TIME HOT SHOULDER

SCALE IN FEET: 0 300 600 1200



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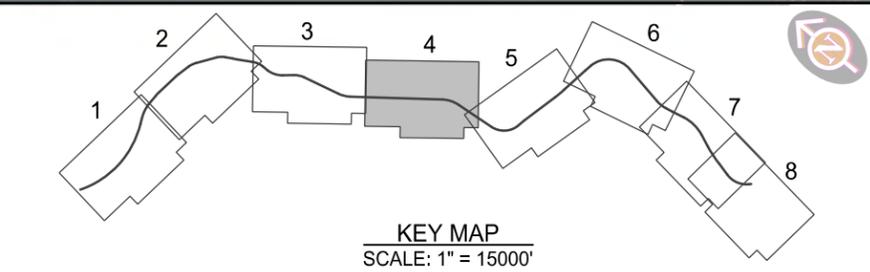
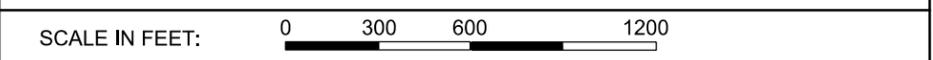
**REFINED SELECTED ACTION**

	JUNE 2018
	Figure 3



**LEGEND**

PROPOSED ROADWAY IMPROVEMENTS	PARKS
PROPOSED STRUCTURES	SURVEYED PARCEL BOUNDARIES
PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION	POTENTIAL NOISE BARRIERS
PROPOSED LIMIT OF DISTURBANCE SELECTED ACTION	IMPACTED NOISE RECEPTORS
WETLANDS / WATERS	EXISTING GP LANE
FEDERAL PROPERTIES	PROPOSED GP LANE
HISTORIC PROPERTIES	PROPOSED HOT LANE
	PROPOSED PART-TIME HOT SHOULDER



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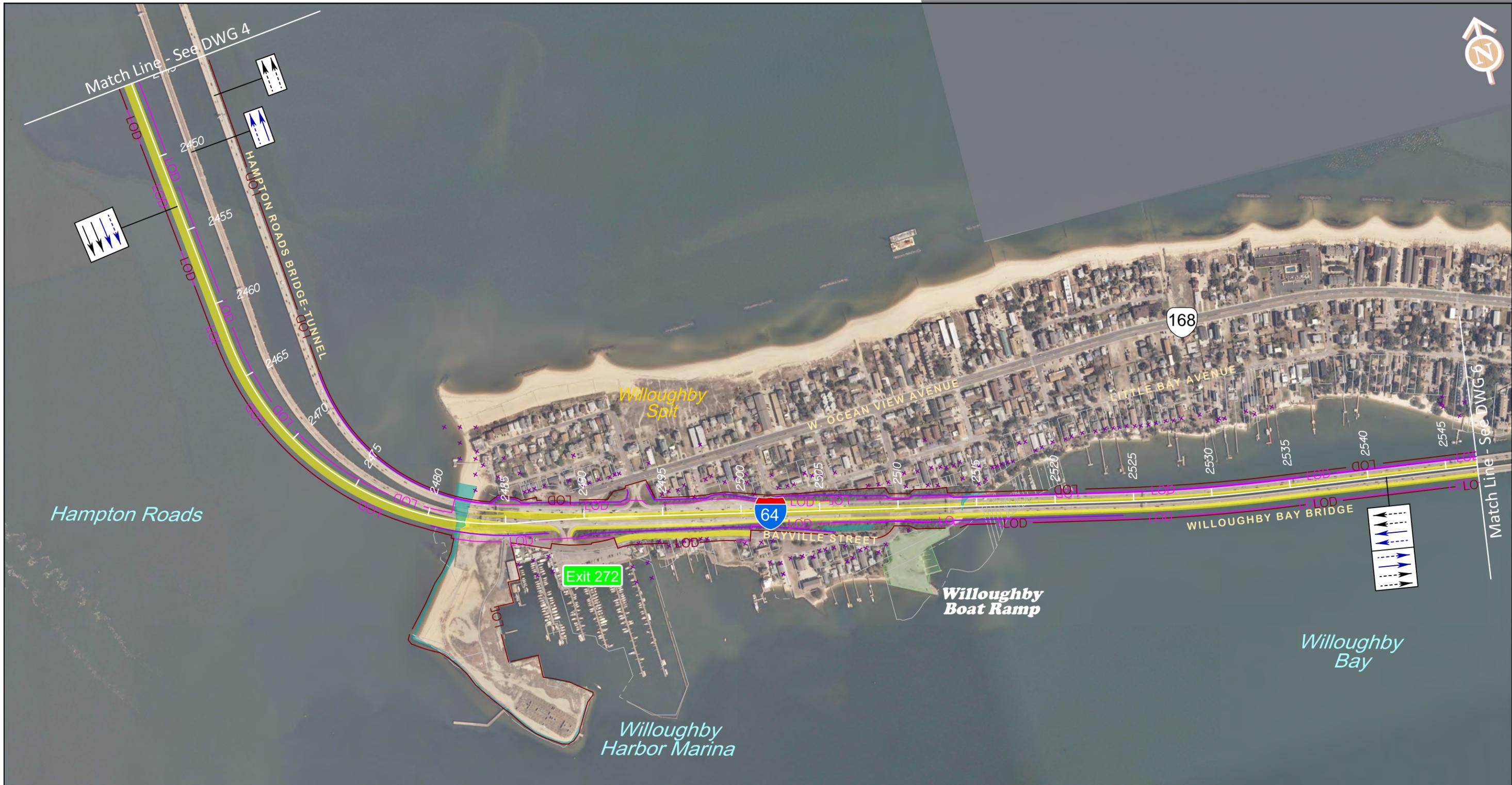
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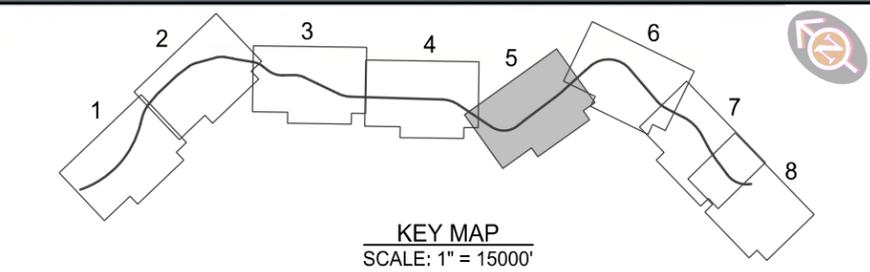
U.S. Department of Transportation **Federal Highway Administration** Figure 4



**LEGEND**

PROPOSED ROADWAY IMPROVEMENTS	PARKS
PROPOSED STRUCTURES	SURVEYED PARCEL BOUNDARIES
PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION	POTENTIAL NOISE BARRIERS
PROPOSED LIMIT OF DISTURBANCE SELECTED ACTION	IMPACTED NOISE RECEPTORS
WETLANDS / WATERS	EXISTING GP LANE
FEDERAL PROPERTIES	PROPOSED GP LANE
HISTORIC PROPERTIES	PROPOSED HOT LANE
	PROPOSED PART-TIME HOT SHOULDER

SCALE IN FEET: 0 300 600 1200



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**VDOT** JUNE 2018

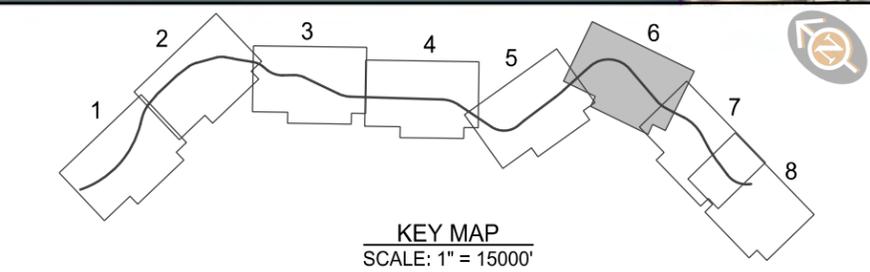
U.S. Department of Transportation **Federal Highway Administration** Figure 5



**LEGEND**

	PROPOSED ROADWAY IMPROVEMENTS		PARKS
	PROPOSED STRUCTURES		SURVEYED PARCEL BOUNDARIES
	PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION		POTENTIAL NOISE BARRIERS
	PROPOSED LIMIT OF DISTURBANCE SELECTED ACTION		IMPACTED NOISE RECEPTORS
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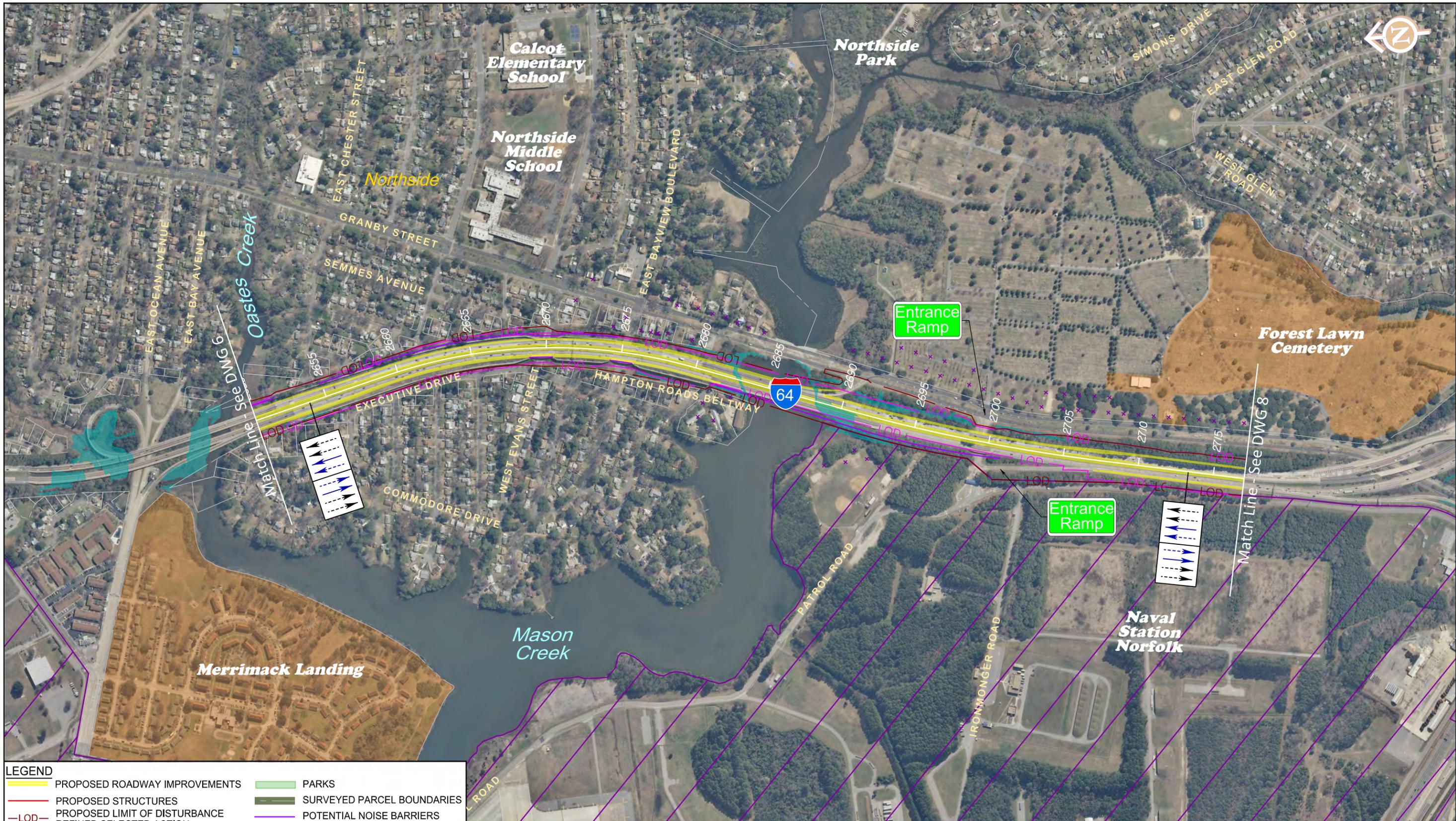
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**REFINED SELECTED ACTION**

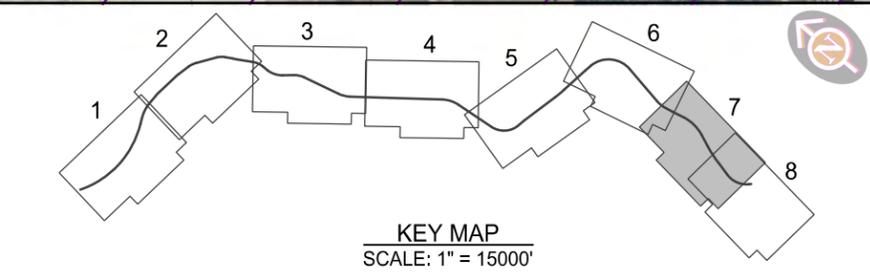
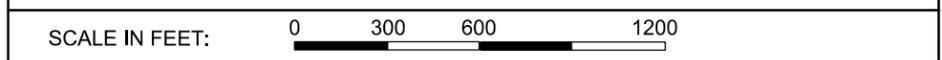
	JUNE 2018
	Figure 6

Match Line - See DWG 7



**LEGEND**

	PROPOSED ROADWAY IMPROVEMENTS		PARKS
	PROPOSED STRUCTURES		SURVEYED PARCEL BOUNDARIES
	PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION		POTENTIAL NOISE BARRIERS
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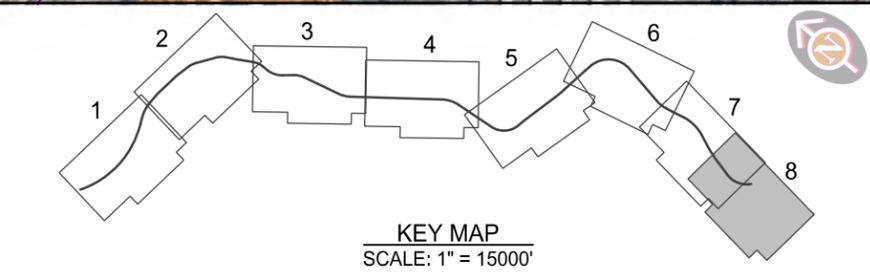
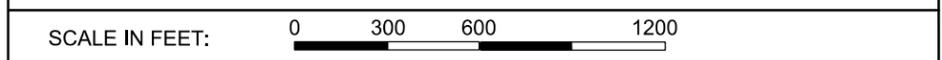
**HRCS SEIS**  
Hampton Roads Crossing Study SEIS

**REFINED SELECTED ACTION**

	JUNE 2018
	Figure 7



LEGEND	
	PROPOSED ROADWAY IMPROVEMENTS
	PROPOSED STRUCTURES
	PROPOSED LIMIT OF DISTURBANCE REFINED SELECTED ACTION
	PROPOSED LIMIT OF DISTURBANCE SELECTED ACTION
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<b>HRCS SEIS</b> Hampton Roads Crossing Study SEIS	
REFINED SELECTED ACTION	
	JUNE 2018
	Figure 8

# HRCS SEIS

Hampton Roads Crossing Study SEIS

Environmental Assessment Re-evaluation of the Supplemental Environmental Impact Statement

## Appendix B:

### Air Quality Evaluation for HRCS SEIS Re-evaluation Memorandum



Appendix B



## HMMH

77 South Bedford Street  
Burlington, Massachusetts 01803  
781.229.0707  
www.hmmh.com

## MEMORANDUM

---

**To:** Scott Smizik, Jim Ponticello, VDOT  
**Cc:** Travis Comer, Maggie Berman, Eric Almquist, RK&K  
**From:** Philip DeVita, HMMH  
**Date:** April 12, 2018  
**Subject:** Air Quality Evaluation for HRCS SEIS Reevaluation  
**Reference:** HMMH Project No. 308880.001

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This memo summarizes the significance of recent changes in the HRCS SEIS Reevaluation of the Refined Preferred Alternative (henceforth referred to as: Refined Preferred Alternative) to the conclusions reached in the air quality study for the *2016 Draft Supplemental Environmental Impact Statement (DSEIS)* and the *2017 Final Supplemental Environmental Impact Statement (FSEIS)*.

The approach to the air quality analysis for the Refined Preferred Alternative was to compare the new traffic projections to the projections used for the 2016 DSEIS, for which a detailed Air Quality Technical Report was prepared. The Refined Preferred Alternative includes two general purpose lanes, one HOT lane, and one HOT auxiliary shoulder that is open during peak hours for the length of the corridor in each direction. The purpose of this study is to review the traffic changes for the Refined Preferred Alternative and determine if the results and conclusions in the *2016 Air Quality Technical Report* referenced in the April 17, 2017 FSEIS result in any substantive changes to the modeling results and conclusions, and if updates to the air quality analyses are warranted. Per the *Traffic, Air, and Noise Analyses Update Memorandum (March 8, 2017)*, the Hampton Roads Transportation Planning Organization (HRTPO) released an updated travel demand model (2040) after the DSEIS air quality analysis was prepared using the 2034 travel demand model. Therefore, it was necessary to compare the 2034 HRTPO travel demand model and the 2040 HRTPO raw model output to determine if there would be any substantive changes to the modeling results and conclusions. The memo stated that updates to the air analyses presented in the DSEIS were not warranted for the FSEIS. Therefore, the DSEIS Alternative A is used for comparison purposes to the Refined Preferred Alternative.

### Summary

An update to the air quality analysis as presented in the DSEIS is not warranted for the Refined Preferred Alternative as the changes in scope to the HRCS would not affect the results of the analyses for each pollutant to the extent that they would meet the criteria specified in the VDOT Resource Document<sup>1</sup> under Protocol 2.3.1 for an update to an air analysis to be warranted. That is, the scope changes are not expected to result in any *substantive* changes as defined in the VDOT Resource Document as they would not significantly affect the DSEIS modeling results and/or analysis to the degree that it would change a finding, determination or conclusion that all applicable requirements for the air quality analysis for the project would still be met. In other words, as no substantive changes would be expected if the air quality analysis presented in the DSEIS were to be updated for the Refined Preferred Alternative based on the changes in scope for the HRCS, an update to the air quality analysis is not warranted under Protocol 2.3.1 of the VDOT Resource Document. More specifics are provided below for Protocol 2.3.1 and its application for each pollutant.

*Substantive Change Test under Protocol 2.3.1 of the VDOT Resource Document:* The VDOT Resource Document includes a number of protocols for the preparation of project-level analyses by or on behalf of the Department,

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<sup>1</sup> Available at: [http://www.virginiadot.org/projects/environmental\\_air\\_section.asp](http://www.virginiadot.org/projects/environmental_air_section.asp). Note the VDOT Resource Document was subjected to interagency consultation with FHWA, EPA and others before it was finalized in 2016.

one of which addresses when updates to air quality studies that have already been completed are needed<sup>2</sup>. That protocol makes reference to what would be considered “substantive” changes as defined in the VDOT Resource Document. Specifically:

- Protocol 2.3.1 of the VDOT Resource Document states (*emphasis added*):  
*For project-level air quality analyses previously completed, updates or revisions to the modeling, analysis and/or documentation are not typically conducted unless both:*
  1. *The overall NEPA document is being re-evaluated or supplemented for air quality reasons, in which case the US DOT (in consultation with Department air quality staff as appropriate) may request an update, and*
  2. *A review by Department air quality staff (in consultation with FHWA, as appropriate) concludes that a new or revised analysis is warranted as changes in the models, methods and/or assumptions from the original analysis would be considered **substantive** by the definition provided in this document.*
  
- A “substantive” change is defined in the VDOT Resource Document as<sup>3</sup>:  
*“... one that would significantly affect the modeling results and/or the analysis to the degree that it would change a finding, determination or conclusion that all applicable requirements for the air quality analysis for the project would be met and the project cleared.”*

The application of this protocol is summarized below for each pollutant.

- For CO, the change in traffic volumes was not to the extent that it would change the principal conclusion from the DSEIS, namely that the NAAQS would be met, therefore no substantive change may reasonably be expected for the CO analysis.
  - For interchanges and intersections, worst-case volumes were assumed for the DSEIS that generally exceeded the forecast volumes for the Refined Preferred Alternative, so a re-analysis would result in even lower forecast concentrations.
  - Additionally, re-assessments were conducted for specific components of the DSEIS CO analysis, namely the ranking of intersections for analysis and application of the FHWA-VDOT 2016 Programmatic Agreement for CO studies, as well as the tunnel analysis.
    - The intersections identified in a revised ranking using the updated forecasts were determined to be ones that would still be cleared by the *2016 FHWA-VDOT Programmatic Agreement for Project Level Air Quality Studies for Carbon Monoxide (PA)*.
    - The tunnel analysis presented in the DSEIS was updated for this review, with the results showing that the applicable air quality standards would still be met.
- For mobile source air toxics (MSATs), the updated traffic again would not result in substantive changes in the results as presented with the DSEIS. This conclusion is notwithstanding recent changes in federal guidance<sup>4</sup> to include two additional contaminants to the list of MSATs.
- For GHGs, the updated traffic would not result in substantive changes in the results as presented with the DSEIS.

---

<sup>2</sup> The VDOT Resource Document specifies models, methods and assumptions/data to be applied in project-level analyses to be conducted by or for the Department as well as various related protocols. It was reviewed in inter-agency consultation with FHWA (both Headquarters and Division offices), the Environmental Protection Agency (EPA) and others before being finalized in 2016.

<sup>3</sup> p.8, Section 1.3 “Definition of Substantive Change”

<sup>4</sup> See: [https://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/](https://www.fhwa.dot.gov/environment/air_quality/air_toxics/)

FAQS: [https://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/policy\\_and\\_guidance/moves\\_msat\\_faq.cfm](https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm)

More detailed assessments for each pollutant as well as indirect and cumulative effects are presented below.

### **CO Analyses**

A summary of the review for the Carbon Monoxide (CO) analyses of interchanges, intersections and the tunnel is provided first, followed by detailed assessments.

*CO Interchange/ Intersection Analysis Summary:* A conservative worst-case analysis methodology was applied for the DSEIS that purposefully over-estimates traffic volumes, emissions and resulting ambient concentrations. Given this conservative methodology, a substantial increase in traffic volumes would be needed to warrant re-modeling a worst-case CO analysis, given the wide margin between the background concentrations and the applicable national ambient air quality standards (NAAQS) established by EPA as documented in the DSEIS. That is, the traffic forecasts for the scope for the Refined Preferred Alternative would have to substantially exceed not just the original forecasts for the DSEIS but also the assumed worst-case traffic volumes applied in the DSEIS analysis. As noted below, the traffic forecasts for the Refined Preferred Alternative are higher than for the DSEIS. However, based on the weight of evidence (slightly higher forecast traffic volumes, wide margins between background concentrations and the NAAQS, and the set of worst-case assumptions applied for the CO analysis for the DSEIS) including the detailed assessment presented below, a re-analysis for CO for the Refined Preferred Alternative would not reasonably be expected to change the conclusion presented in the DSEIS that the CO NAAQS would be met by the project. This is true even if the locations for the CO analyses were to be changed. *As no substantive change to the conclusion reached in the CO analysis for the DSEIS would reasonably be expected for the Refined Preferred Alternative, Protocol 2.3.1 of the VDOT Resource Document is not met, and therefore an updated intersection/interchange analysis for CO is not warranted for the Refined Preferred Alternative.*

*CO Tunnel Analyses Summary:* As noted below, the traffic forecasts for the Refined Preferred Alternative are higher than the DSEIS. As a result, the emissions and resulting ambient concentrations for CO as modeled in the tunnel analyses also would be expected to increase for the Refined Preferred Alternative relative to the DSEIS. Also, as presented in the detailed assessment below for the tunnel, a re-analysis results in the same conclusion that the applicable standards would still be met. Therefore, CO for the Refined Preferred Alternative would not change the conclusion presented in the DSEIS that the CO NAAQS would be met by the project. *Because no substantive change to the conclusion reached in the CO analysis for the DSEIS would reasonably be expected for the Refined Preferred Alternative, Protocol 2.3.1 of the VDOT Resource Document is not met, and therefore an updated tunnel analysis for CO is not warranted for the Refined Preferred Alternative.*

Additional detail is provided below for the CO analyses in separate sections for interchanges, intersections and the tunnel.

### **Detailed Assessments for CO**

**Interchanges:** The quantitative CO analysis modeled five worst-case interchanges for Build Alternatives A, B, C, and D. The interchanges for each build alternative were ranked by worst-case volumes for the mainline traveling through each interchange. A worst-case modeling approach was used for the analysis. Worst-case assumptions were applied to overestimate the CO emissions and concentrations for the Build Alternatives. As part of the approach for worst-case screening modeling, default worst-case volumes (e.g. theoretical per lane maximums) were applied as specified in the VDOT Resource Document. The worst-case volumes are intended to reflect over-capacity operating conditions, which is taken as level of service (LOS) E. These worst-case traffic volumes were *significantly* higher than the design (and opening) year modeled volumes. The modeled worst-case concentrations were less than the CO NAAQS using the worst-case assumptions.

**Table 1** below shows the Alternative A DSEIS 2040 Average Daily Traffic (ADT) volumes at each affected interchange along the study corridor compared to the Refined Preferred Alternative 2040 ADT volumes. The comparison shows the Refined Preferred Alternative 2040 volumes for Refined Preferred Alternative are generally between 5 and 36 percent higher than the DSEIS 2040 volumes at each of the affected interchanges. **Table 2** presents the forecast peak hourly traffic volumes and assumed worst-case volumes used in the screening modeling for the interchanges. The results shows that even though hourly volumes increased for the Refined Preferred Alternative at two of the three interchanges, they are still well below the worst case hourly volumes used in the

**Table 1: ADT Volumes at Ranked Alternative A Interchanges**

Ranking	Interchanges	DSEIS 2040 Build Alternative A ADT	2040 Refined Preferred Alternative ADT	Percentage Difference (Refined Preferred Alternative compared to DSEIS)
1	I-64 and I-664 (northern Termini)	236,300	253,800	7.4
2	I-564 and Route 460 and I-64	219,900	236,500	7.5
3	I-64 and Route 167 LaSalle Avenue	173,400	193,000	11.3
4	I-64 and Route 60 Woodland Road	158,600	180,300	13.7
5	I-64 and S. Malory Street	147,500	167,300	13.4
6	I-64 and 4th View Street	142,900	159,100	11.3
7	I-64 and 274 W. Bay Avenue	134,700	150,800	12.0
8	I-564 and Route 406	79,800	84,700	6.1
9	I-564 and Bainbridge	34,800	47,300	35.9

**Table 2: Comparison of Forecasted Peak Hour Traffic Volumes and Assumed Worst Case Peak Hour Volumes for Screening Modeling**

Interchange	Direction	DSEIS 2040 Build Alt A ADT	2040 Refined Preferred Alternative ADT	Modeled Worst-Case Volumes	Roadway Speeds	Lanes
I-64 and I-664 (northern Termini)	East	4,570	5,025	14,400	55	6
	West	4,695	5,115	14,400	55	6
	North	5,445	5,580	9,600	55	4
	South	5,090	5,150	9,600	55	4
	<b>Total</b>	<b>19,800</b>	<b>20,870</b>	<b>48,000</b>		
I-564 and Route 460 and I-64	East	9,440	8,980	14,400	55	6
	West	4,050	3,845	14,400	55	6
	North	6,270	5,950	9,600	55	4
	South	1,530	1,650	12,000	35	5
	<b>Total</b>	<b>21,290</b>	<b>20,425</b>	<b>50,400</b>		
I-64 and Route 167 LaSalle Avenue	East	5,170	5,720	9,600	55	4
	West	5,920	5,940	9,600	55	4
	North	2,325	2,280	7,200	45	3
	South	1,035	955	7,200	35	3
	<b>Total</b>	<b>14,450</b>	<b>14,985</b>	<b>33,600</b>		

*Notes:*

1. Although all of the ADTs for I-64 interchanges increased for the Refined Preferred Alternative (2+1+1 case) compared to the Original Alt A, the I-564/I-64/Route 460 interchange maximum peak hour volumes decreased slightly while the maximum peak hour volumes increased for the 2+1+1 condition at the other two interchanges. This difference at the I-564/I-64/Route 460 interchange is mainly due to the traffic of a few of the individual roadway links, where ADT increased, but peak hour traffic decreased in the AM, PM, or both. This is most likely the result of slightly different traffic forecasting methodologies being employed between the different Alternative A revisions.

screening modeling. It should be noted, ADT increased at the I-564 and Route 460 interchange, however the slightly lower peak hourly volumes are an artifact of the slightly different traffic methodologies being employed between the Alternative revisions.

Therefore, even though the Refined Preferred Alternative ADT volumes are higher than the DSEIS 2040 volumes at each interchange, the peak hourly volumes are still well below the conservative worst-case volumes assumed in the DEIS for the CO modeling at each interchange, therefore, CO concentrations modeled in the DSEIS are still worst-case. Therefore, the conclusions presented in the DSEIS for the interchanges remain worst-case compared to the Refined Preferred Alternative traffic data, and no further analysis is recommended.

**Intersections:** The CO analysis also examined signalized intersections affected by each of the Study Alternatives. An analysis of the LOS and peak hourly volumes was evaluated for each Alternative to confirm the worst-case intersection locations for potential CO hot-spot analyses. These intersections were ranked for each Alternative using peak AM and PM volumes as well as LOS criteria as specified in *EPA's Guidelines for Modeling Carbon Monoxide from Roadway Intersections*. The three highest ranked intersections by LOS and the higher of the AM or PM peak hourly volumes were summarized for each Alternative. The *2016 FHWA-VDOT Programmatic Agreement for Project-Level Air Quality Analyses for CO* was then applied to screen out these worst-case intersections. Each of the worst-case intersections in the DSEIS met the thresholds specified in the 2016 Programmatic Agreement. Therefore, detailed CO hot-spot modeling was not required. A similar analysis was conducted using the Refined Preferred Alternative 2040 traffic data where the signalized intersections were ranked again by the higher of the AM or PM peak hourly volumes and LOS. The results of the updated LOS and peak AM and PM rankings are presented in **Table 3** and **Table 4**, respectively.

**Tables 3 and 4** include a comparison of the DSEIS Alternative A and Refined Preferred Alternative 2040 traffic data for the top three worst-case intersections for LOS and Peak AM/PM hourly volumes, respectively. **Table 3** shows that the same top three intersections result for each Alternative. The delay, peak AM/PM hourly traffic, LOS, and ADT generally increase for the same intersections for the Refined Preferred Alternative in 2040 with the exception of I-64 SB Ramps at S Mallory Street, which shows a slight improvement in delay, LOS and peak hourly volumes. In addition, the worst-case LOS at Settlers Landing at I-64 NB on-ramp is expected to operate at an LOS of F; however, as shown in **Table 3**, the thresholds in the 2016 Programmatic Agreement with FHWA, and by reference the 2009 Programmatic Agreement were still met for all the worst-case intersections. **Table 4** shows that the worst case peak AM/PM hourly traffic and ADT increased at two intersections and slightly decreased at one intersection (VA-

**Table 3: Worst Case Intersections Ranked by LOS (Top Three)**

LOS Rank <sup>3</sup>	Intersection	DSEIS 2040 Alt A				2040 Refined Preferred Alternative					
		Delay (s)	LOS	Peak AM/PM	ADT Worst Case @ Intersection	Delay (s)	LOS	Peak AM/PM	ADT Worst Case @ Intersection	Peak AM/PM Lane <sup>2</sup>	Intersection Skew Angle
1(1)	Settlers Landing Road at I-64 NB On Ramp	79.0	E	2,805	26,800	85.5	F	2,960	38,400	987	69
2(3) <sup>1</sup>	I-64 SB Ramps at S Mallory Street	63.4	E	1,175	8,400	43.3	D	1,110	14,600	555	79
3(2) <sup>1</sup>	Ocean View Ave at Fourth View Street	47.8	D	2,222	25,330	45.3	D	2,475	28,220	619	78

Notes:

1. I-64 SB Ramps at S Mallory Street were ranked second in LOS intersections for the 2040 DSEIS and is ranked third in the 2040 Refined Preferred Alternative. Similar, with the Ocean View Ave at Fourth Street which was ranked third in the DSEIS and is now ranked second with the 2040 Refined Preferred Alternative.
2. The 2016 VDOT Programmatic Agreement with FHWA which references screening criteria (primarily design year average daily traffic (59,000 ADT) and intersection skew angle(60 degrees or more) in the 2009 VDOT Programmatic Agreement with FHWA, which includes worst case modeling of 1037 vehicles per hour per lane.
3. LOS rankings in parenthesis denote updated Refined Preferred Alternative rankings.

**Table 4: Worst Case Intersection Ranked by Peak AM/PM Hourly Traffic (Top Three)**

Peak AM/PM Rank <sup>1</sup>	Intersection	DSEIS 2040 Alt A				2040 Refined Preferred Alternative				
		Delay (s)	LOS	Peak AM/PM	ADT Worst Case @ Intersection	Delay (s)	LOS	Peak AM/PM	ADT Worst Case @ Intersection	Intersection Skew Angle
1(1)	LaSalle Avenue at Armistead Avenue	26.9	C	3,970	<b>34,000</b>	28.3	C	4,040	<b>50,200</b>	64
2(2)	VA-134 at I-64 WB On Ramp	23.9	C	3,565	<b>47,200</b>	24.8	C	3,625	<b>46,300</b>	73
3(3)	Settlers Landing Road at E Tyler Street	25.2	C	3,305	<b>21,400</b>	26.1	C	3,615	<b>39,000</b>	71

Notes:

- LOS rankings in parenthesis denote updated Refined Preferred Alternative rankings.

134 at I64 WB on Ramp) for the Refined Preferred Alternative 2040 compared to the DSEIS. However, for each of the worst-case intersections identified under the Refined Preferred Alternative, the 2016 Programmatic Agreement thresholds were still met; therefore, the worst-case intersections were screened out and detailed CO hot-spot modeling is still not required. The conclusions presented in the DSEIS for the intersections therefore remain unchanged with the Refined Preferred Alternative traffic data, and no further analysis is recommended.

**Tunnel:** Table 5 presents an updated analysis for the tunnel, which reflects new peak hour and Annual Average Daily Traffic (AADT) traffic volumes for the Refined Preferred Alternative in 2040. The results of the tunnel analysis include a comparison to the DSEIS Alternative A 2040 results. As shown in the table, the AADTs increased approximately 13 percent, while peak hourly traffic increased approximately 6 percent for the Refined Preferred Alternative compared to the DSEIS Alternative A in 2040. As a result, the worst-case peak hour CO concentrations increased between 1.7 and 1.9 ppm in comparison to the DSEIS Alternative A. The incident idling analysis results remained unchanged for the two alternatives because the tunnel lengths and number of lanes remained the same. The Refined Preferred Alternative results are still below the NAAQS and the idling analysis results remain unchanged, thereby the conclusions presented in the DSEIS for the tunnel analysis remain unchanged, and no further analysis is recommended.

For background, Alternative A would construct a new tunnel carrying the eastbound lanes approximately 200 feet west of the existing tunnel. The tunnel assessment in the DSEIS demonstrated that air quality in the new tunnels would be controlled consistent with current federal standards as well as FHWA/EPA guidelines for CO concentrations in tunnels. Compliance with the 1-hour CO NAAQS and the FHWA/EPA 15-minute exposure level was demonstrated by addressing the two worst-case scenarios. These included (1) the peak-hour traffic for routine tunnel operations, and (2) an incident that stops traffic such as an accident or vehicle breakdown.

A conservative speed of 10 mph was assumed for the worst-case peak hour traffic. The incident scenario worst-case was characterized by stopped, bumper-to-bumper vehicles in all lanes with engines idling. The *FHWA Revised Guidelines for the Control of CO Levels in Tunnels* was used to assess the tunnel air quality. Calculations using the tunnel dimensions, ventilation system, data, and traffic emissions and assumptions estimated the CO concentration inside the tunnel. If the standards are met inside the tunnel, it can be concluded that emissions from the tunnel portals would also be below the CO standard and guideline level in the ambient air outside the tunnel.

**Table 5: Alternative A Tunnel Calculation Comparison**

	2040 DSEIS Alternative A				2040 Refined Preferred Alternative			
	HRBT Eastbound 1 & 2	HRBT Eastbound Lane 3	HRBT Westbound 1 & 2	HRBT Westbound 3 & 4	HRBT Eastbound 1 & 2	HRBT Eastbound Lane 3	HRBT Westbound 1 & 2	HRBT Westbound 3 & 4
<b>Traffic Assumptions</b>								
AADT <sup>1</sup>	45,866	22,933	34,450	34,450	63,600	12,800	64,900	12,700
Worst Case Speeds	0 and 10 mph	0 and 10 mph	0 and 10 mph	0 and 10 mph	0 and 10 mph	0 and 10 mph	0 and 10 mph	0 and 10 mph
<b>Calculations for Peak Hour</b>								
Peak Hour ADT from Traffic Report <sup>2</sup>	3,313	1,657	2,488	2,488	3,200	2,065	3,200	1,810
Vehicle Miles Traveled <sup>3</sup>	4,643.2	2,322.3	3,487.0	3,485.6	4,484.8	2,894.1	4,484.8	2,536.7
Concentrations with background values from VDOT (ppm) <sup>4</sup>	10.1	10.1	8.1	8.1	<b>9.8</b>	<b>12.0</b>	<b>9.8</b>	<b>6.4</b>
Percent of 120 ppm Tunnel Standard	8.38%	8.39%	6.73%	6.72%	<b>8.15%</b>	<b>10.02%</b>	<b>8.15%</b>	<b>5.37%</b>
Percent of 35 ppm 1-hr CO NAAQS	28.72%	28.76%	23.06%	23.06%	<b>27.94%</b>	<b>34.36%</b>	<b>27.94%</b>	<b>18.41%</b>
<b>Calculations for Incident Idling</b>								
Idle Vehicle Capacity <sup>5</sup>	740	370	510	510	740	370	510	510
Concentrations with background values from VDOT (ppm) <sup>4</sup>	3.01	3.01	2.73	2.73	3.01	3.01	2.73	2.73
Percent of 120 ppm Tunnel Standard	3%	3%	2%	2%	3%	3%	2%	2%
Percent of 35 ppm 1-hr CO NAAQS	9%	9%	8%	8%	9%	9%	8%	8%

**Notes:**

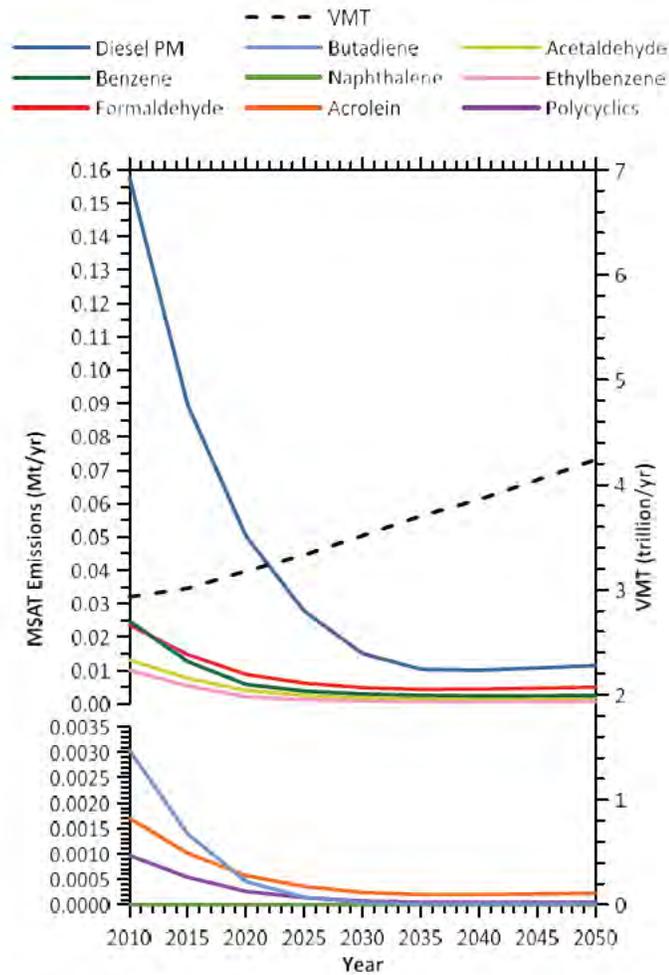
1. Based on estimated AADT from traffic analysis for each Alternative in each direction.
2. Based on worst-case peak hour AM or PM from traffic analysis
3. Based on Peak Hour ADT x Tunnel Length
4. PPM concentration plus 1-hour VDOT CO background value of 2.1 ppm
5. Assumes 20 feet per vehicle per lane

**MSAT Analysis**

There are two key components to the MSAT evaluation. First, as noted above, the traffic forecasts for the Refined Preferred Alternative are higher than for the DSEIS. As a result, MSAT emissions would be expected to increase for the Refined Preferred Alternative relative to the DSEIS. A detailed assessment of this component is provided in the subsection below.

The second component is that FHWA issued updated guidance for MSAT analyses in late 2016, as previously referenced. The updated guidance makes no material changes to the modeling approach, however two pollutants (acetaldehyde and ethylbenzene) have been added to the list of MSATs to be assessed, bringing the total to nine from seven specified in the previous version of FHWA’s guidance. **Figure 1** (excerpted below) from the 2016 guidance clearly shows how emissions of these pollutants are expected to decline over the next few decades, with

**Figure 1: FHWA Projected National MSAT Emission Trends 2010 – 2050 For Vehicles Operating on Roadways Using EPA’s MOVES2014a Model**



**Source:** Figure 1 excerpted from FHWA “Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents”, memorandum dated October 18, 2016, from the Acting Director, Office of Natural Environment (Ref. HEPN-10). See: [https://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/policy\\_and\\_guidance/msat/2016msat.pdf](https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/2016msat.pdf) (accessed 2/13/2017)

the same general downward trend applying for the two added pollutants as it does for the original seven. This general downward trend is reflected in project-level MSAT analyses, including that for the HRCS DSEIS.

With the increase in forecast traffic and downward trends in emissions for the added MSATs, a re-analysis for MSATs for the Refined Preferred Alternative would not reasonably be expected to change the conclusions presented in the DSEIS. *Since no substantive change to the conclusion reached in the MSAT analysis for the DSEIS would reasonably be expected for the Refined Preferred Alternative, Protocol 2.3.1 of the VDOT Resource Document is not met and an updated MSAT analysis is not warranted.*

#### Detailed Assessment for MSATs

In accordance with the latest MSAT guidance at the time of the DSEIS, the study area was characterized as a project with “higher potential MSAT effects” since the projected design-year traffic is expected reach the AADT threshold of 140,000 to 150,000. Therefore, a quantitative assessment was conducted for the affected network consistent with FHWA guidance. The affected networks for each alternative and analysis year were developed

using daily volume change and travel time change for congested and uncongested links for which reliable data was available. The EPA MOVES2014a model was then utilized to obtain the MSAT emissions for Existing, Build and No-Build Interim Year, and Build and No-Build Design Year for each Alternative. The results showed that all of the MSAT emissions are expected to increase slightly for the Build Alternative scenario conditions when compared to the No-Build conditions for the Interim and Design Years. All MSAT emissions are expected to significantly decline in the Interim and Design Years when compared to Existing conditions. The highest increases in MSAT emissions occurred with Alternative D while the lowest increase occurred with Alternative A.

The most recent Hampton Roads Regional Traffic model (2040) was applied to the Affected Network for the Refined Preferred Alternative. The model results reflected higher traffic volumes within the Affected Network which correlated to higher annual vehicle miles traveled (AVMT) compared to the DSEIS Alternative A. As shown in **Table 6**, AVMT for the Refined Preferred Alternative was estimated at 3,608 million. **Table 6** also compares the AVMT of the DSEIS Alternative A and the Refined Preferred Alternative. The comparison shows that Refined Preferred Alternative AVMT of 3,608 million is higher than the DSEIS Alternative A of 3,236 million, which correlates to approximately 11 percent more AVMT under the Refined Preferred Alternative.

Therefore, with the expected increase in AVMT for the Refined Preferred Alternative, it is also expected that MSAT emissions for each pollutant would also be higher compared to the DSEIS. It should be mentioned that after the DSEIS submittal in July 2016, FHWA revised the MSAT guidance in October of that year. The new guidance requires the use of MOVES2014a, which was used in the DSEIS MSAT analysis, and added two additional pollutants to the analysis; Acetaldehyde and Ethylbenzene. The two new pollutants (acetaldehyde and ethylbenzene) added to FHWA’s 2016 updated guidance were not included in the quantitative analysis. However, because the trends of these two pollutants over time closely resemble the trends for benzene and formaldehyde, the foregoing conclusions for the MSAT pollutants analyzed would also apply to acetaldehyde and ethylbenzene. As shown above, AVMT is expected to be higher with the Refined Preferred Alternative compared to the DSEIS, which would result in higher MSAT emissions for the seven pollutants evaluated compared to the DSEIS. However, although the results could still be higher than those presented in the DSEIS for the MSAT, the magnitude of the MSAT emissions is still relatively small especially when compared to the opening and design years and significantly lower than in the base year. Thus, even though projected MSATs may increase with the Refined Preferred Alternative compared to the DSEIS, any increase observed in 2028 and 2040 from the No-Build to the Build scenario are not considered significant, especially since emissions of all MSATs are expected to be significantly lower in future years than in the base year. Therefore, even with the increases in AVMT and MSAT emissions with the HRCS Refined Preferred Alternative compared to the DSEIS, *no substantive change to the conclusions reached in the MSAT analysis for the DSEIS would reasonably be expected for the Refined Preferred Alternative; therefore Protocol 2.3.1 of the VDOT Resource Document is not met and an updated MSAT analysis is not warranted for the Refined Preferred Alternative.*

**Table 6: Refined Preferred Alternative MSAT Comparison**

	Annual Vehicle Miles Traveled (Millions of AVMT)	Acrolein (TPY)	Benzene (TPY)	1,3 Butadiene (TPY)	Diesel PM (TPY)	Formaldehyde (TPY)	Naphthalene (TPY)	Polycyclic Organic Matter (TPY)
DSEIS 2040 Build Alternative A	3,236.30	0.104	1.88	0.006	4.17	2.23	0.199	0.07
2040 Refined Preferred Alternative	3,607.50	a	a	a	a	a	a	a
Difference AVMT	+371.30	a	a	a	a	a	a	a
Difference Percent	+11.5%	a	a	a	a	a	a	a
Notes: (a) denotes emissions were not estimated, however based on the increase in AVMT with the Refined Preferred Alternative, emissions are expected to be higher compared to the DSEIS 2040 Build Alternative A, however no substantive change to the conclusions presented in the DSEIS are expected.								

## Greenhouse Gas (GHG) Analysis

In summary, even though there is an increase in forecast traffic volumes as noted above, an update to the GHG analysis provided in the DSEIS is not warranted even though the modeled impacts would also increase. The increase in traffic volumes and model impacts are not expected to change the conclusions presented in the DSEIS. Therefore, *as no substantive change to the conclusion reached in the GHG analysis for the DSEIS would reasonably be expected for the Refined Preferred Alternative, Protocol 2.3.1 of the VDOT Resource Document is not met and an updated GHG analysis is not warranted for the Refined Preferred Alternative.*

### Detailed Assessment for GHGs

As shown in the DSEIS, GHGs under the No-Build and Build conditions are correlated to VMT (expressed as AVMT in the MSAT analysis), average vehicle speeds and travel duration. VMT in the region is expected to increase between 2015 and 2040. Nationally, the Energy Information Administration (EIA) estimates that VMT will increase by approximately 38 percent between 2012 and 2040. While VMT (expressed as AVMT) is expected to increase for both the Build and No-Build Alternatives, this improvement in vehicle emission rates will help mitigate the increase in VMT. In addition, average vehicle speeds are expected to be higher for the Build Alternatives when compared to the No-Build in all scenarios. By reducing congestion and increasing speeds, vehicle travel duration and the associated amount of fuel combustion and associated emissions will decrease, minimizing the impacts of GHGs.

**Table 6** shows the projected 2040 AVMTs for the DSEIS Build Alternative A and the Refined Preferred Alternative. As discussed in the DSEIS, GHG emissions from vehicles using roadways are a function of distance traveled (AVMT), vehicle speed, and road grade. The AVMT for the Refined Preferred Alternative is projected to increase by 371 million miles compared to DSEIS Build Alternative A, therefore GHG emissions are also expected to be higher compared to the DSEIS. It should be noted that with two general purpose lanes, one HOT lane, and one HOT shoulder that is open during peak hours under the Refined Preferred Alternative; average vehicle speeds would remain the same or improve during peak hours compared to the DSEIS. As noted in the DSEIS, GHG emissions rates decrease with speed over the range of average speeds encountered in this corridor while fuel consumption and GHG emissions would be expected to increase at very high speeds above the range of speeds expected in this corridor. Therefore, the higher average speeds would result in lower GHG emissions, which would mitigate the increase expected with the increase in AVMT. Consistent with the findings in the DSEIS, vehicle speeds for the Refined Preferred Alternative would still be higher when compared to the No Build scenario and is still expected to reduce congestion and travel duration, especially during peak hours, and minimize impacts of GHGs. Since the DSEIS submittal in July 2016, the Council on Environmental Quality (CEQ) finalized the greenhouse gas and climate change guidance for NEPA submittals in August of 2016. Per Section V of *CEQ Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA* (August 2016) and corresponding FHWA Webinar material (September 2016), the guidance applies to new proposed federal agency actions where an EA or EIS commences on or after August 5, 2016, and does not apply retroactively to completed EAs and EISs. Since this project was initiated well before the effective date of the new CEQ GHG Guidance, VDOT collaborated with FHWA on the applicability of it to this project and has advised that a quantitative GHG analysis is not needed. As an update, the 2016 CEQ federal guidance was recently withdrawn addressing greenhouse gas analyses and climate change<sup>5</sup> and no longer applies; however the qualitative assessment presented for the DSEIS satisfies the current Department protocol (VDOT Resource Document, Section 4.7) for a qualitative greenhouse gas (GHG) analyses for projects involving an EIS.

In summary, the conclusions presented in the DSEIS for the GHG analysis remain unchanged for the Refined Preferred Alternative traffic volumes, AVMT and vehicle speeds, and no further analysis is recommended.

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<sup>5</sup>See: <https://www.federalregister.gov/documents/2017/04/05/2017-06770/withdrawal-of-final-guidance-for-federal-departments-and-agencies-on-consideration-of-greenhouse-gas>

### **Indirect Effects and Cumulative Impacts (IECI) Analysis**

In summary, even with the increase in traffic volumes as noted above, an update to the *qualitative* IECI analysis provided in the DSEIS is not warranted since the expected impacts would not substantially change the conclusions in the DSEIS. Specifically:

1. Air quality impacts from CO will not cause or contribute to violations of the CO NAAQS;
2. MSAT emissions from the affected network will be significantly lower than they are today; and
3. Since EPA has designated the region to be in attainment of all of the NAAQS, the potential for cumulative impacts associated with the project is not expected to be significant.

*As no substantive change to the conclusion reached in the IECI analysis for the DSEIS would reasonably be expected for the Refined Preferred Alternative, Protocol 2.3.1 of the VDOT Resource Document is not met and an updated IECI analysis is not warranted for the Refined Preferred Alternative.*

**From:** [Smizik, Scott \(VDOT\)](#)  
**To:** [Eric Almquist](#); [Travis R. Comer](#)  
**Cc:** [Maggie Berman](#)  
**Subject:** FW: HRBT EA Reevaluation  
**Date:** Tuesday, February 13, 2018 7:52:20 AM

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**Scott Smizik**

Desk: (804) 371-4082  
Cell: (804) 306-0920

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**From:** Sundra, Ed (FHWA) [mailto:Ed.Sundra@dot.gov]  
**Sent:** Tuesday, February 13, 2018 7:48 AM  
**To:** Ponticello, James (VDOT) <Jim.Ponticello@VDOT.Virginia.gov>  
**Cc:** Smizik, Scott (VDOT) <Scott.Smizik@vdot.virginia.gov>  
**Subject:** RE: HRBT EA Reevaluation

Jim,

I concur with the findings of the noise study. In summary, the study demonstrates that there will be a very minor increase in traffic associated with Refined Preferred Alternative A, which is the subject of the EA Reevaluation, when compared to Alternative A from the DSEIS and Alternative A from the FSEIS. Based on FHWA guidance of what is perceptible to the human ear, that minor increase in traffic will result in an imperceptible increase in noise levels for Refined Preferred Alternative A when compared to those earlier versions of Alternative A from the DSEIS and FSEIS (a .09 and .20 dBA increase, respectively, on average). Because of these results, the noise study conducted for the SEIS can be used to establish anticipated noise levels for Refined Preferred Alternative A in the EA Reevaluation. Further, as these results demonstrate, it is reasonable to use the noise study conducted for the SEIS to determine whether the proposed changes to the project represented by Refined Preferred Alternative A will have new significant impacts not already considered. Consistent with the protocol on other projects, once the NEPA process is completed, a final design noise analysis using final design traffic will be prepared for Alternative A and any changes to the scope that have been adopted. The results of the final design noise analysis will then be used to support the final decisions on feasible and reasonable noise barriers.

If you have any questions, do not hesitate to contact me.

Ed Sundra  
Acting Assistant Division Administrator  
FHWA Virginia Division  
(804) 775-3357

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**From:** Ponticello, James (VDOT) [mailto:Jim.Ponticello@VDOT.Virginia.gov]  
**Sent:** Tuesday, February 06, 2018 5:06 PM

**To:** Sundra, Ed (FHWA) <Ed.Sundra@dot.gov>  
**Cc:** Smizik, Scott (VDOT) <Scott.Smizik@vdot.virginia.gov>  
**Subject:** RE: HRBT EA Reevaluation

Ed,

Attached is a memo summarizing the findings of the HRCS EA noise study re-evaluation. Please advise if you concur with these findings.

Thanks

**Jim Ponticello**  
Air Quality & Noise Program Manager

Environmental Division | Virginia Department of Transportation | 1401 E. Broad Street, Richmond, VA 23219 | (804) 371-6769 phone | [jim.ponticello@vdot.virginia.gov](mailto:jim.ponticello@vdot.virginia.gov)

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**From:** Sundra, Ed (FHWA) [<mailto:Ed.Sundra@dot.gov>]  
**Sent:** Monday, January 22, 2018 1:45 PM  
**To:** Ponticello, James (VDOT)  
**Cc:** Smizik, Scott (VDOT)  
**Subject:** RE: HRBT EA Reevaluation

Jim,

I concur with your proposed approach for addressing air and noise in the HRCS EA Re-evaluation.

Ed

---

**From:** Ponticello, James (VDOT) [<mailto:Jim.Ponticello@VDOT.Virginia.gov>]  
**Sent:** Monday, January 22, 2018 1:19 PM  
**To:** Sundra, Ed (FHWA) <[Ed.Sundra@dot.gov](mailto:Ed.Sundra@dot.gov)>  
**Subject:** RE: HRBT EA Reevaluation

Ed,

Yes, I would agree. I'll be sure to more clearly indicate that moving forward.

Thanks

**Jim Ponticello**  
Air Quality & Noise Program Manager

Environmental Division | Virginia Department of Transportation | 1401 E. Broad Street, Richmond, VA 23219 | (804) 371-6769 phone | [jim.ponticello@vdot.virginia.gov](mailto:jim.ponticello@vdot.virginia.gov)

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**From:** Sundra, Ed (FHWA) [<mailto:Ed.Sundra@dot.gov>]  
**Sent:** Monday, January 22, 2018 11:40 AM  
**To:** Ponticello, James (VDOT)  
**Subject:** RE: HRBT EA Reevaluation

Jim,

Before I respond and to make sure we are on the same page, how are you using 'substantially higher' and 'substantive changes' in your email below? I would tend to define substantially higher in this context as 3 dB(A) or more and a substantive change as one that results in a violation or exceedance of the standards. Are we in agreement in this regard?

Ed

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**From:** Ponticello, James (VDOT) [<mailto:Jim.Ponticello@VDOT.Virginia.gov>]  
**Sent:** Friday, January 19, 2018 10:31 AM  
**To:** Sundra, Ed (FHWA) <[Ed.Sundra@dot.gov](mailto:Ed.Sundra@dot.gov)>  
**Cc:** Smizik, Scott (VDOT) <[Scott.Smizik@vdot.virginia.gov](mailto:Scott.Smizik@vdot.virginia.gov)>  
**Subject:** HRBT EA Reevaluation

Ed,

As discussed, VDOT is planning to reevaluate the Record of Decision for the Hampton Roads Crossing Study (HRCS) issued June 12, 2017. The revised Preferred Alternative includes two general purpose lanes, one HOT lane, and one HOT shoulder that would be open during peak hours (as defined in the 2016 SEIS) for the length of the I-64 corridor in each direction between I-664 and I-564, and updated traffic will be prepared for this alternative. VDOT believes that the air & noise studies that were completed in July 2016 for the Draft SEIS (and subsequently confirmed to be worst-case for the 2017 Final SEIS) may remain valid for this purpose, and we are planning to prepare a technical memorandum comparing traffic used in the July 2016 air & noise studies to that for the Preferred Alternative to better determine if this holds true.

For noise, we plan to compute loudest-hour noise levels for each section of I-64 in each peak period for the Preferred Alternative, and compare those to the loudest-hour noise levels that were computed for Alternatives A&B in the July 2016 noise study. If we find that the majority of the peak-hour noise levels for the Preferred Alternative result in lower, equivalent, or not **substantially higher** noise levels, then we can safely conclude that the July 2016 noise study is still valid to make an informed NEPA decision. If the Preferred Alternative results in **substantially higher** noise levels within the project corridor, then additional detailed noise analysis may be warranted.

For air quality, we plan to compare the traffic used in the July 2016 air study for the analysis of

CO, MSAT, the tunnels, and GHGs to the updated traffic prepared for the Preferred Alternative. Consistent with the VDOT Resource Document, we expect to be able to show that the updated traffic would not reasonably be expected to result in any substantive changes to the modeling results and conclusions for each of the respective analyses that were presented in the July 2016 Air Study. If substantive changes are expected for any of the air quality analyses, then additional analyses may be warranted.

Please advise if you concur with this proposed approach. Once the technical memorandum is complete, we will share it with you make sure you concur with the findings.

Thanks

**Jim Ponticello**  
Air Quality & Noise Program Manager

Environmental Division | Virginia Department of Transportation | 1401 E. Broad Street, Richmond, VA 23219 | (804) 371-6769 phone | [jim.ponticello@vdot.virginia.gov](mailto:jim.ponticello@vdot.virginia.gov)

# HRCS SEIS

Hampton Roads Crossing Study SEIS

Environmental Assessment Re-evaluation of the Supplemental Environmental Impact Statement

## Appendix C:

### Noise Evaluation for HRCS SEIS Re-evaluation Memorandum



Appendix C



**HMMH**

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**MEMORANDUM**

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**To:** Scott Smizik, Jim Ponticello, VDOT

**Cc:** Travis Comer, Maggie Berman, Eric Almquist, RK&K

**From:** Christopher Menge

**Date:** February 5, 2018

**Subject:** Noise Evaluation for HRCS SEIS Reevaluation

**Reference:** HMMH Project No. 308880.001

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This memo summarizes the significance of recent changes in the HRCS Preferred Alternative to the noise levels and noise study conclusions reached in the 2016 Draft and 2017 Final Supplemental Environmental Impact Statement (SEIS).

The approach to the noise analysis for the HRCS SEIS reevaluation of the refined Preferred Alternative was to compare the new traffic projections for the refined Preferred Alternative to the projections used for the 2016 SEIS, for which a detailed Noise Technical Report was prepared. The refined Preferred Alternative includes two general purpose lanes, one HOT lane, and one HOT shoulder that is open during peak hours (as defined in the SEIS) for the length of the corridor in each direction. The purpose of this study is to review the traffic changes for the refined Preferred Alternative and determine if results in the 2016 Noise Technical Report referenced in the April 17, 2017 Final SEIS are still worst case, and if updates to the noise analyses are warranted.

In the Draft SEIS, sound levels at study area receivers were computed explicitly from the provided peak hour traffic data for Build Alternatives B, C and D. In the loudest-period assessment, which determines overall sound levels at a reference distance from each major segment of the mainline highways, the AM peak hour was consistently louder than the PM peak hour for all alternatives, so the AM peak hour traffic was used for all noise analysis. It was also determined during this assessment that the traffic for I-64 in Alternative A was similar to that for Alternative B, such that the reference noise levels averaged for I-64 segments were different by only 0.16 decibels, a very small amount. (The Alternative A sound levels were higher than those for Alternative B.) The study team agreed that this made the two alternatives effectively equivalent along I-64. Therefore, only Alternative B was evaluated in detail, and all of the conclusions about noise along I-64 for Alternative B were applied to Alternative A as well.

For this Reevaluation, HMMH conducted an identical loudest-period assessment with the updated 2040 traffic that's applicable to the refined Preferred Alternative. The I-64 AM peak hour traffic volumes are slightly higher with the refined Preferred Alternative 2040 forecast than for the previously-studied alternatives. Table 1 provides a summary of the total AM peak hour traffic volumes (eastbound and westbound combined) used in the loudest-period analysis for Draft SEIS Alternatives A and B, Final SEIS Alternative A, and the refined Preferred Alternative. Truck percentages were nearly identical among the different alternatives, so those differences did not affect the loudest-period assessment and therefore are not shown in the table.

**Table 1 Total 2040 AM Peak Hour Traffic Volumes for Mainline Sections of I-64 Projected for Different Project Study Alternatives**

I-64 Mainline Roadway Section between Interchanges	Traffic Seg. # EB, WB*	Total Bidirectional Traffic Volume – 2040 AM Peak Hour			
		Draft SEIS		Final SEIS Alt. A	Refined Pref. Alt. A
		Alt. B	Alt. A		
I-664 to LaSalle Ave., Hampton	102, 228	11,250	11,345	10,950	11,455
Rip Rap Rd. to Woodland Rd., Hampton	108, 222	8790	9040	8740	9080
Mallory St., Hampton to Ocean View Ave., Norfolk	113, 217	9455	9790	9515	9965
Ocean View Ave. to 4 <sup>th</sup> View St., Norfolk	117, 213	9430	9765	9495	9950
4 <sup>th</sup> View St. to Bay Ave., Norfolk	121, 209	8770	9080	8805	9230
Bay Ave. to Grady St. ramp, Norfolk	123, 206	9580	9920	9615	10,060
West of I-564	125, 204	9410	9760	9500	10,000

\* Segment numbers provided for reference to traffic and loudest-period assessment spreadsheets, as needed.

Since the I-64 traffic volumes are slightly higher with the refined Preferred Alternative 2040 forecast, computed loudest-period sound levels were also slightly higher. The reference levels for the I-64 mainline segments averaged 0.09 decibels higher than for the Draft SEIS Alternative A, and 0.25 decibels higher than Alternative B. The levels for the refined Preferred Alternative averaged 0.20 decibels higher than those for the Final SEIS Alternative A. The greatest deviation from the Draft SEIS Alternative B reference levels in any segment of I-64 was 0.36 decibels. Table 2 below summarizes the predicted average sound level increases. Therefore, the refined Preferred Alternative noise levels and noise study conclusions are essentially the same as to those reported in the Draft SEIS for Alternatives A and B and in the Final SEIS for Alternative A. And, the noise study findings and conclusions would not change.

**Table 2 Average Increase in Refined Preferred Alternative I-64 Mainline Noise Levels Relative to Previous Alternatives**

Previous I-64 Alternatives Evaluated	Refined Preferred Alternative Average Increase in Noise Levels (dBA, L <sub>eq</sub> )
Draft SEIS Alternative B	0.25
Draft SEIS Alternative A	0.09
Final SEIS Alternative A	0.20

The reason that the addition of the shoulder travel lanes during peak hours in the refined Preferred Alternative would not increase noise levels more than a fractional amount is due to the worst-case nature of the noise analysis performed for the Draft SEIS. For the loudest-period noise calculations, that study used the projected peak-hour traffic volumes together with the free-flow speed of 55 mph on all I-64 mainline and HOT lanes, even if such high speeds may likely not be achieved with such peak hour volumes. Such an approach overstates the potential noise impact somewhat, because traffic noise levels increase with both increasing traffic volume and speed. The projected peak hour traffic volumes for the refined Preferred Alternative are only very slightly higher than those projected for the Draft and Final SEIS studies. For the refined Preferred Alternative, the

projected 2040 AM peak hour volumes averaged only about five percent higher than those for Alternative B in the Draft SEIS. Such small traffic volume increases affect noise levels very slightly, an imperceptible amount.

**From:** [Smizik, Scott \(VDOT\)](#)  
**To:** [Eric Almquist](#); [Travis R. Comer](#)  
**Cc:** [Maggie Berman](#)  
**Subject:** FW: HRBT EA Reevaluation  
**Date:** Tuesday, February 13, 2018 7:52:20 AM

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**Scott Smizik**

Desk: (804) 371-4082  
Cell: (804) 306-0920

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**From:** Sundra, Ed (FHWA) [mailto:Ed.Sundra@dot.gov]  
**Sent:** Tuesday, February 13, 2018 7:48 AM  
**To:** Ponticello, James (VDOT) <Jim.Ponticello@VDOT.Virginia.gov>  
**Cc:** Smizik, Scott (VDOT) <Scott.Smizik@vdot.virginia.gov>  
**Subject:** RE: HRBT EA Reevaluation

Jim,

I concur with the findings of the noise study. In summary, the study demonstrates that there will be a very minor increase in traffic associated with Refined Preferred Alternative A, which is the subject of the EA Reevaluation, when compared to Alternative A from the DSEIS and Alternative A from the FSEIS. Based on FHWA guidance of what is perceptible to the human ear, that minor increase in traffic will result in an imperceptible increase in noise levels for Refined Preferred Alternative A when compared to those earlier versions of Alternative A from the DSEIS and FSEIS (a .09 and .20 dBA increase, respectively, on average). Because of these results, the noise study conducted for the SEIS can be used to establish anticipated noise levels for Refined Preferred Alternative A in the EA Reevaluation. Further, as these results demonstrate, it is reasonable to use the noise study conducted for the SEIS to determine whether the proposed changes to the project represented by Refined Preferred Alternative A will have new significant impacts not already considered. Consistent with the protocol on other projects, once the NEPA process is completed, a final design noise analysis using final design traffic will be prepared for Alternative A and any changes to the scope that have been adopted. The results of the final design noise analysis will then be used to support the final decisions on feasible and reasonable noise barriers.

If you have any questions, do not hesitate to contact me.

Ed Sundra  
Acting Assistant Division Administrator  
FHWA Virginia Division  
(804) 775-3357

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**From:** Ponticello, James (VDOT) [mailto:Jim.Ponticello@VDOT.Virginia.gov]  
**Sent:** Tuesday, February 06, 2018 5:06 PM

**To:** Sundra, Ed (FHWA) <Ed.Sundra@dot.gov>  
**Cc:** Smizik, Scott (VDOT) <Scott.Smizik@vdot.virginia.gov>  
**Subject:** RE: HRBT EA Reevaluation

Ed,

Attached is a memo summarizing the findings of the HRCS EA noise study re-evaluation. Please advise if you concur with these findings.

Thanks

**Jim Ponticello**  
Air Quality & Noise Program Manager

Environmental Division | Virginia Department of Transportation | 1401 E. Broad Street, Richmond, VA 23219 | (804) 371-6769 phone | [jim.ponticello@vdot.virginia.gov](mailto:jim.ponticello@vdot.virginia.gov)

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**From:** Sundra, Ed (FHWA) [<mailto:Ed.Sundra@dot.gov>]  
**Sent:** Monday, January 22, 2018 1:45 PM  
**To:** Ponticello, James (VDOT)  
**Cc:** Smizik, Scott (VDOT)  
**Subject:** RE: HRBT EA Reevaluation

Jim,

I concur with your proposed approach for addressing air and noise in the HRCS EA Re-evaluation.

Ed

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**From:** Ponticello, James (VDOT) [<mailto:Jim.Ponticello@VDOT.Virginia.gov>]  
**Sent:** Monday, January 22, 2018 1:19 PM  
**To:** Sundra, Ed (FHWA) <[Ed.Sundra@dot.gov](mailto:Ed.Sundra@dot.gov)>  
**Subject:** RE: HRBT EA Reevaluation

Ed,

Yes, I would agree. I'll be sure to more clearly indicate that moving forward.

Thanks

**Jim Ponticello**  
Air Quality & Noise Program Manager

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**From:** Sundra, Ed (FHWA) [<mailto:Ed.Sundra@dot.gov>]  
**Sent:** Monday, January 22, 2018 11:40 AM  
**To:** Ponticello, James (VDOT)  
**Subject:** RE: HRBT EA Reevaluation

Jim,

Before I respond and to make sure we are on the same page, how are you using 'substantially higher' and 'substantive changes' in your email below? I would tend to define substantially higher in this context as 3 dB(A) or more and a substantive change as one that results in a violation or exceedance of the standards. Are we in agreement in this regard?

Ed

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**From:** Ponticello, James (VDOT) [<mailto:Jim.Ponticello@VDOT.Virginia.gov>]  
**Sent:** Friday, January 19, 2018 10:31 AM  
**To:** Sundra, Ed (FHWA) <[Ed.Sundra@dot.gov](mailto:Ed.Sundra@dot.gov)>  
**Cc:** Smizik, Scott (VDOT) <[Scott.Smizik@vdot.virginia.gov](mailto:Scott.Smizik@vdot.virginia.gov)>  
**Subject:** HRBT EA Reevaluation

Ed,

As discussed, VDOT is planning to reevaluate the Record of Decision for the Hampton Roads Crossing Study (HRCS) issued June 12, 2017. The revised Preferred Alternative includes two general purpose lanes, one HOT lane, and one HOT shoulder that would be open during peak hours (as defined in the 2016 SEIS) for the length of the I-64 corridor in each direction between I-664 and I-564, and updated traffic will be prepared for this alternative. VDOT believes that the air & noise studies that were completed in July 2016 for the Draft SEIS (and subsequently confirmed to be worst-case for the 2017 Final SEIS) may remain valid for this purpose, and we are planning to prepare a technical memorandum comparing traffic used in the July 2016 air & noise studies to that for the Preferred Alternative to better determine if this holds true.

For noise, we plan to compute loudest-hour noise levels for each section of I-64 in each peak period for the Preferred Alternative, and compare those to the loudest-hour noise levels that were computed for Alternatives A&B in the July 2016 noise study. If we find that the majority of the peak-hour noise levels for the Preferred Alternative result in lower, equivalent, or not **substantially higher** noise levels, then we can safely conclude that the July 2016 noise study is still valid to make an informed NEPA decision. If the Preferred Alternative results in **substantially higher** noise levels within the project corridor, then additional detailed noise analysis may be warranted.

For air quality, we plan to compare the traffic used in the July 2016 air study for the analysis of

CO, MSAT, the tunnels, and GHGs to the updated traffic prepared for the Preferred Alternative. Consistent with the VDOT Resource Document, we expect to be able to show that the updated traffic would not reasonably be expected to result in any substantive changes to the modeling results and conclusions for each of the respective analyses that were presented in the July 2016 Air Study. If substantive changes are expected for any of the air quality analyses, then additional analyses may be warranted.

Please advise if you concur with this proposed approach. Once the technical memorandum is complete, we will share it with you make sure you concur with the findings.

Thanks

**Jim Ponticello**  
Air Quality & Noise Program Manager

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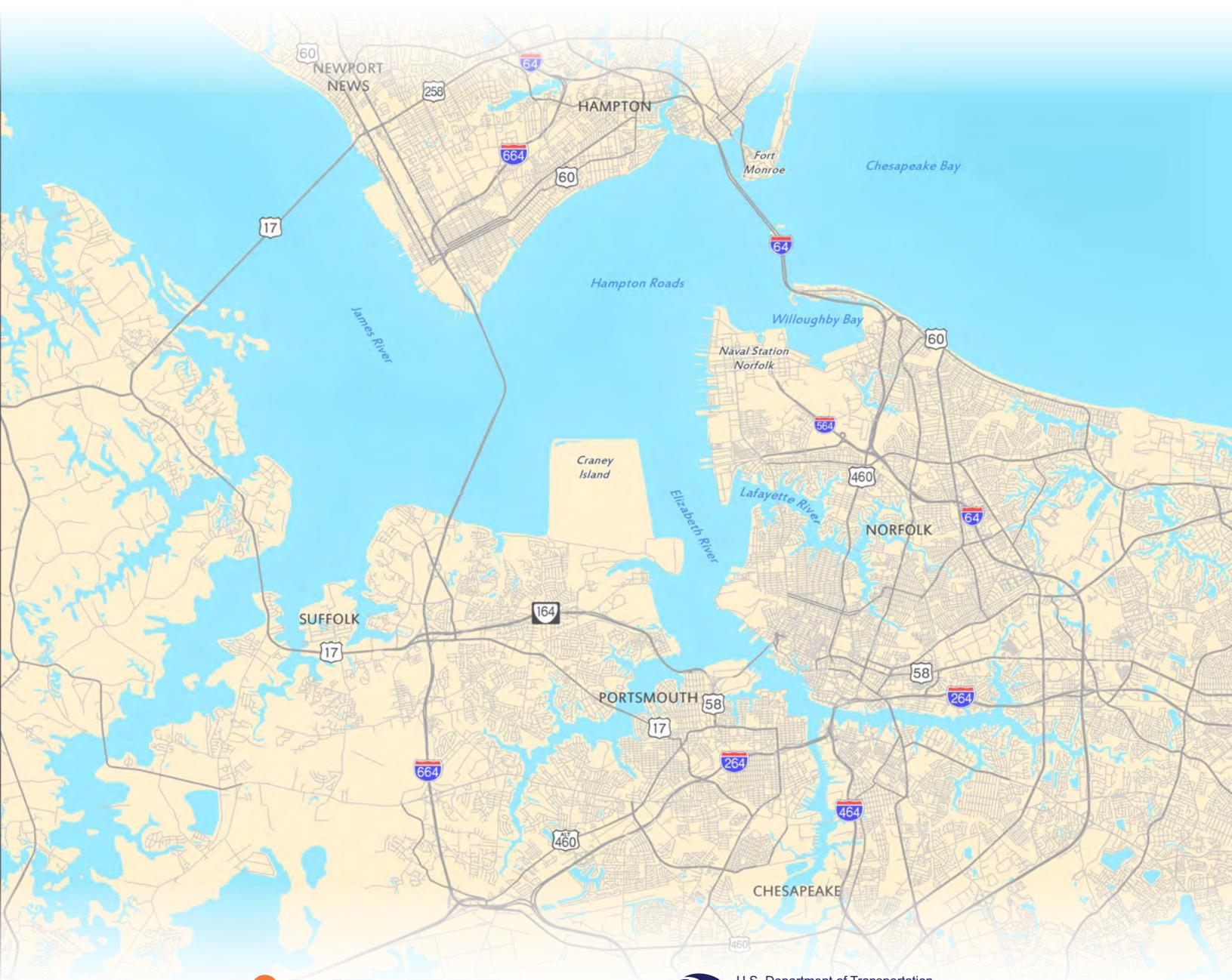
# HRCS SEIS

Hampton Roads Crossing Study SEIS

Environmental Assessment Re-evaluation of the Supplemental Environmental Impact Statement

## Appendix D:

### Agency Correspondence



Appendix D



**From:** [Scott.Smizik@vdot.virginia.gov](mailto:Scott.Smizik@vdot.virginia.gov)  
**To:** [Maggie Berman](#)  
**Subject:** FW: HRCS SEIS Re-evaluation  
**Date:** Friday, June 01, 2018 1:48:59 PM

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-----Original Message-----

From: [scott.smizik@vdot.virginia.gov](mailto:scott.smizik@vdot.virginia.gov)

Sent: 02/14/18 03:47 PM

To: [akrasnoff@cityofchesapeake.net](mailto:akrasnoff@cityofchesapeake.net); [alice.w.allen-grimes@usace.army.mil](mailto:alice.w.allen-grimes@usace.army.mil);  
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anthony.gibson@vdot.virginia.gov  
Subject: HRCS SEIS Re-evaluation

Good afternoon,

On behalf of FHWA, I wanted to take the opportunity to notify the Cooperating and Participating agencies for the Hampton Roads Crossing Study Supplemental Environmental Impact Statement (HRCS SEIS) that VDOT and FHWA have initiated a re-evaluation of the HRCS SEIS. The re-evaluation will be documented in an Environmental Assessment (EA) that will be made available to agencies and the public. The re-evaluation will provide FHWA with information to determine if refinements proposed to the preferred alternative since the issuance of the Record of Decision (ROD) would result in any significant impacts not previously addressed in the SEIS. The re-evaluation will focus primarily on addressing recent direction from the Commonwealth Transportation Board that identified High Occupancy Toll (HOT) as the management option for the corridor. Specifically, the re-evaluation will address:

- <!--[if !supportLists]-->1) <!--[endif]-->HOT lanes – documenting the use of additional capacity as HOT lanes and converting one general purpose lane in each direction from the Settlers Landing interchange to the I-664 interchange to create a continuous HOT lane in each direction from I-664 to I-564
- <!--[if !supportLists]-->2) <!--[endif]-->Peak-hour drivable shoulders – the project could include a drivable shoulder that would be available during peak hours in the HOT lanes. As the limits of this shoulder have yet to be determined, the EA will consider a shoulder in both directions from I-664 to I-564.
- <!--[if !supportLists]-->3) <!--[endif]-->Improvements at the I-564 interchange – with the identification of HOT lanes as the management option, it is anticipated that additional ramp structures will be needed to safely make connections from the new HOT lanes to I-564. An inventory bubble will be developed around the interchange to accommodate different ramp configuration concepts that may be considered as the project advances.
- <!--[if !supportLists]-->4) <!--[endif]-->Staging area – VDOT is in the process of acquiring the peninsula that extends from the base of the HRBT on Willoughby Spit towards the nearby marina for use as a staging area during construction. The EA will document the potential impacts to this site through the course of the project.

The re-evaluation also will incorporate ongoing technical studies (wetland delineation, sturgeon monitoring, etc.) into the NEPA document. VDOT anticipates completing the re-evaluation this summer, following public review.

While the re-evaluation does not trigger formal coordination with the agencies, as documented in the [HRCS SIES Coordination Plan](#), we did want to take this first step to ensure all partner agencies were aware of this effort. As the study develops, we will continue to coordinate with agencies with regulatory purview over the resources within the study corridor, to ensure the given resources are adequately documented and assessed in the EA. If any of our local jurisdictions require additional information for their management or boards, please let us know. As always, if you have any questions or require additional information, please do not hesitate to contact me.

Thanks to all for your continued support.

Scott Smizik, AICP

Location Studies Project Manager

Virginia Department of Transportation

Environmental Division

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Fax: (804) 786-7401

[Scott.Smizik@VDOT.Virginia.gov](mailto:Scott.Smizik@VDOT.Virginia.gov)

**From:** [Scott.Smizik@vdot.virginia.gov](mailto:Scott.Smizik@vdot.virginia.gov)  
**To:** [Maggie Berman](#)  
**Subject:** FW: Re: HRCS SEIS Re-evaluation  
**Date:** Friday, June 01, 2018 1:49:25 PM

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-----Original Message-----

From: [scott.smizik@vdot.virginia.gov](mailto:scott.smizik@vdot.virginia.gov)

Sent: 05/02/18 07:13 AM

To: [ed.sundra@dot.gov](mailto:ed.sundra@dot.gov); [akrasnoff@cityofchesapeake.net](mailto:akrasnoff@cityofchesapeake.net); [alice.w.allen-grimes@usace.army.mil](mailto:alice.w.allen-grimes@usace.army.mil); [alice.baird@dcr.virginia.gov](mailto:alice.baird@dcr.virginia.gov); [amand.ciampolilo@dhs.gov](mailto:amand.ciampolilo@dhs.gov); [amoye@vamaritime.com](mailto:amoye@vamaritime.com); [ernie.aschenbach@dgif.virginia.gov](mailto:ernie.aschenbach@dgif.virginia.gov); [john.aulbach@vdh.virginia.gov](mailto:john.aulbach@vdh.virginia.gov); [citymanager@cityofchesapeake.net](mailto:citymanager@cityofchesapeake.net); [stewart.baker@vdem.virginia.gov](mailto:stewart.baker@vdem.virginia.gov); [sharon.baxter@deq.virginia.gov](mailto:sharon.baxter@deq.virginia.gov); [brian.fowler@norfolk.gov](mailto:brian.fowler@norfolk.gov); [mbriley@yesvirginia.org](mailto:mbriley@yesvirginia.org); [nick.britton@drpt.virginia.gov](mailto:nick.britton@drpt.virginia.gov); [mbunting@hampton.gov](mailto:mbunting@hampton.gov); 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michael.r.thorogood@uscg.mil; searley@suffolkva.us; almaira.garcia@va.gov;  
bsolis@vbgov.com; bstilley@nnva.gov; lallsbrook@hampton.gov  
Subject: Re: HRCS SEIS Re-evaluation

Ed -

Following up on my email from February 14th (see below), VDOT is notifying FHWA and the Cooperating and Participating Agencies for the HRCS SEIS that there has been a change in the proposed scope of the re-evaluation. Previously, we noted the re-evaluation would include analysis of the proposed conversion of a General Purpose Lane to a High Occupancy Toll (HOT) lane in each direction from the Settlers Landing interchange to the I-664 interchange. As VDOT has continued to work to refine the Selected Action and analyze it as part of the re-evaluation, this element has been ruled out of further consideration in this project. This decision has been made in close coordination with local and regional leadership.

Therefore, the re-evaluation will now focus on the remaining elements identified in that February 14 email:

- 1) HOT lanes – documenting the use of additional capacity as HOT lanes in each direction from the Settlers Landing interchange to the I-564 interchange.
- 2) Peak-hour drivable shoulders – the project could include a drivable shoulder that would be available during peak hours in the HOT lanes. As the limits of this shoulder have yet to be determined, the EA will consider a shoulder in both directions from the Settlers Landing interchange to the I-564 interchange.
- 3) Improvements at the I-564 interchange – with the identification of HOT lanes as the management option, it is anticipated that additional ramp structures will be needed to safely make connections from the new HOT lanes to I-564. An inventory bubble will be developed around the interchange to accommodate different ramp configuration concepts that may be considered as the project advances.
- 4) Staging area – VDOT is in the process of acquiring the peninsula that extends from the base of the HRBT on Willoughby Spit towards the nearby marina for use as a staging area during construction. The EA will document the potential impacts to this site through the course of the project.

We remain committed to the timeline proposed in my email below. I have copied our Cooperating and Participating agencies so they are aware of the proposed change. Thanks to all for your continued support in this effort.

**Scott Smizik**

Location Studies Project Manager  
Virginia Department of Transportation  
Environmental Division  
1401 East Broad Street  
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[Scott.Smizik@VDOT.Virginia.gov](mailto:Scott.Smizik@VDOT.Virginia.gov)

On Wed, Feb 14, 2018 at 3:47 PM, Smizik, Scott (VDOT) <[SMIZIK@vdot.virginia.gov](mailto:SMIZIK@vdot.virginia.gov)> wrote:

Good afternoon,

On behalf of FHWA, I wanted to take the opportunity to notify the Cooperating and Participating agencies for the Hampton Roads Crossing Study Supplemental Environmental Impact Statement (HRCS SEIS) that VDOT and FHWA have initiated a re-evaluation of the HRCS SEIS. The re-evaluation will be documented in an Environmental Assessment (EA) that will be made available to agencies and the public. The re-evaluation will provide FHWA with information to determine if refinements proposed to the preferred alternative since the issuance of the Record of Decision (ROD) would result in any significant impacts not previously addressed in the SEIS. The re-evaluation will focus primarily on addressing recent direction from the Commonwealth Transportation Board that identified High Occupancy Toll (HOT) as the management option for the corridor. Specifically, the re-evaluation will address:

- 1) HOT lanes – documenting the use of additional capacity as HOT lanes and converting one general purpose lane in each direction from the Settlers Landing interchange to the I-664 interchange to create a continuous HOT lane in each direction from I-664 to I-564
- 2) Peak-hour drivable shoulders – the project could include a drivable shoulder that would be available during peak hours in the HOT lanes. As the limits of this shoulder have yet to be determined, the EA will consider a shoulder in both directions from I-664 to I-564.
- 3) Improvements at the I-564 interchange – with the identification of HOT lanes as the management option, it is anticipated that additional ramp structures will be needed to safely make connections from the new HOT lanes to I-564. An inventory bubble will be developed around the interchange to accommodate different ramp configuration concepts that may be considered as the project advances.
- 4) Staging area – VDOT is in the process of acquiring the peninsula that extends from the base of the HRBT on Willoughby Spit towards the nearby marina for use as a staging area during construction. The EA will document the potential impacts to this site through the course of the project.

The re-evaluation also will incorporate ongoing technical studies (wetland delineation, sturgeon monitoring, etc.) into the NEPA document. VDOT anticipates completing the re-evaluation this summer, following public review.

While the re-evaluation does not trigger formal coordination with the agencies, as documented in the [HRCS SIES Coordination Plan](#), we did want to take this first step to ensure all partner agencies were aware of this effort. As the study develops, we will continue to coordinate with agencies with regulatory purview over the resources within the study corridor, to ensure the given resources are adequately documented and assessed in the EA. If any of our local jurisdictions require additional information for their management or boards, please let us know. As always, if you have any questions or require additional information, please do not hesitate to contact me.

Thanks to all for your continued support.

Scott Smizik, AICP

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# COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION  
HAMPTON ROADS DISTRICT  
1700 NORTH MAIN STREET  
SUFFOLK, VIRGINIA 23434

**Stephen C. Brich, P.E.**  
Commissioner

April 16, 2018

Ms. Julie V. Langan, Director  
ATTN: Mr. Marc Holma, Division of Review and Compliance  
Virginia Department of Historic Resources  
2801 Kensington Avenue  
Richmond, Virginia 23221

Route: Interstate 64  
Project: 0064-965-081, P101  
City: Hampton, Norfolk  
Funding: Federal  
UPC: 106724  
DHR File: 2015-0783

Dear Ms. Langan:

On April 11, 2017, the Federal Highway Administration (FHWA), the Virginia State Historic Preservation Officer, and the Virginia Department of Transportation executed a Programmatic Agreement (PA) regarding proposed highway improvements considered under the Hampton Roads Crossing Study that would relieve congestion at the Interstate 64 Hampton Roads Bridge Tunnel (HRBT) in a manner that improves accessibility, transit, emergency evacuation, and the movement of the military and goods along the primary transportation corridors in the Hampton Roads region, including the Interstate 64, Interstate 664, Interstate 564, and VA Route 164 corridors. Under proposed Alternative A, which was endorsed by the Commonwealth Transportation Board in December 2016, and contained within the Final Supplemental Environmental Impact Statement (FEIS) approved by FHWA, improvements to Interstate 64, and the Hampton Roads Bridge Tunnel (HRBT), would begin at the Interstate 64/Interstate 664 interchange in the City of Hampton and end at the Interstate 64/Interstate 564 interchange in the City of Norfolk, Virginia and would create a consistent six-lane facility on the Interstate 64 mainline and provide a new bridge-tunnel on the HRBT (VDOT Project No. 0064-965-081, P101; UPC 106724; Virginia Department of Historic Resources [DHR] File No. 2015-0783). Under Stipulation II of the PA, the VDOT is responsible for completing efforts to identify archaeological sites eligible for listing on the National Register of Historic Places (National Register) within the Area of Potential Effect (APE) for the project.

Ms. J. V. Langan  
April 16, 2018  
Page Two

VDOT most recently coordinated this project with your office on July 13, 2017 when VDOT submitted the terrestrial and nautical archaeology survey for your review. On August 15, 2017, your office determined that there were no archaeological sites within the survey corridor that were eligible for the National Register. Now, the VDOT is moving forward with Preliminary Engineering work for Alternative A, which includes design for widening Interstate 64 to a consistent six-lane facility from the Interstate 64/Interstate 664 interchange to the Interstate 64/Interstate 564 interchange and the construction of a third tunnel at the Hampton Roads Bridge Tunnel. As a result of this preliminary design work, VDOT identified an area that was not included in the previous archaeological survey. The newly identified Area of Potential Effect (APE) is an approximately 15 acre area on the western end of Willoughby Spit in the City of Norfolk. The APE was subject to pedestrian survey and systematic archaeological survey. On behalf of the FHWA, the VDOT is coordinating this federally-funded, project with DHR in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800.

The VDOT is submitting one hard copy and one CD of the archaeological management summary, *Final Management Summary, Archaeological Survey, Hampton Roads Crossing Survey, City of Norfolk Virginia* (April 2018), prepared by Thomas F. Higgins, III of the William and Mary Center for Archaeological Research, for your review and comment in accordance with the existing federal consultation process as described in 36 CFR Part 800. We believe the archaeological survey and management summary meet your department's *Guidelines for Conducting Cultural Resource Survey in Virginia* (revised 2011), the 2016 *Programmatic Agreement Among the Federal Highway Administration, the U. S. Army Corps of Engineers, Norfolk District, the Tennessee Valley Authority, the Advisory Council on Historic Preservation, the Virginia State Historic Preservation Officer, and the Virginia Department of Transportation Regarding Transportation Undertakings Subject to Section 106 of the National Historic Preservation Act of 1966*, and the "Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation" (*Federal Register* 48:44716-44742). Approximately 15 acres were surveyed as part of this project.

Archaeological survey of the newly identified APE resulted in the identification of no new or previously recorded archaeological sites. Location 1 was identified within the APE, but represents an area of redeposited cultural materials and twentieth-century cultural deposits and surface features that have been disturbed by post-occupational demolition and landscape modification. A total of 97 shovel tests were excavated. Archaeological Location 1 is, by definition, not eligible for the National Register under Criteria A-D. VDOT recommends that no further archaeological work is required for this location.

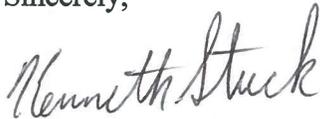
The VDOT invites you to indicate your concurrence with our recommendation by completing the signature block below within 30 days of receipt of this letter and the attached management summary. Please return the original signature to this office. In accordance with Stipulation II.A.a of the PA, VDOT is copying the Consulting Parties to the PA on this letter

Ms. J. V. Langan  
April 16, 2018  
Page Three

and providing them a chance to review and comment on the management summary. Consulting Parties may send comments on the report to me for a period of thirty (30) days after receipt of the letter and the management summary.

Thank you for your assistance. If you have any questions or need additional information about this management summary or this project, please do not hesitate to contact me at (757) 925-2372 or at [Kenneth.Stuck@vdot.virginia.gov](mailto:Kenneth.Stuck@vdot.virginia.gov)

Sincerely,



Kenneth E. Stuck  
Cultural Resource Coordinator (Archaeologist)

KES:

cc: Mr. Mack Frost, FHWA  
Ms. Britta Ayers, City of Newport News, w/CD  
Mr. Scott Mills, City of Suffolk, w/CD  
Mr. Porter Stevens, City of Hampton, w/CD  
Mr. Mark Perreault, Citizens for a Fort Monroe National Park, w/CD  
Mr. Paul C. Harris, Hampton University, w/CD  
Mr. Carter B. S. Furr, Norfolk Preservation Alliance, w/CD  
Ms. Peggy McPhillips, Norfolk Historical Society, w/CD  
Mr. James R. Turner, Partnership for a New Phoebus, Inc., w/CD  
Ms. Kristen McMasters, American Battlefield Protection Program  
Mr. Glenn Madderom, National Cemetery Administration, w/CD  
Captain Brenda Kerr, U. S. Coast Guard, w/CD  
Mr. Chuck Hunt, National Park Service, Chesapeake Bay Office, w/CD  
Mr. J. Brewer Moore, w/CD  
Ms. Martha F. Morris, Buckroe Historical Society, w/CD  
Mr. John Haynes, U. S. Army Corps of Engineers, w/CD  
Ms. May Breckenridge-Haywood, African-American Historical Society of  
Portsmouth, Inc., w/CD

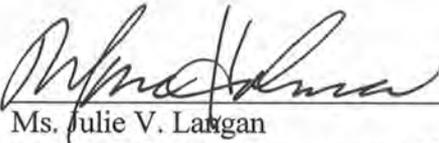
bcc: Ms. Mary Ellen Hodges, with report and CD  
Mr. Jim Utterback  
Ms. Martha Gross  
Mr. Bradley Weidenhammer

Ms. J. V. Langan  
April 16, 2018  
Page Four

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The Virginia Department of Historic Resources concurs with the Virginia Department of Transportation's (VDOT) following recommendation for the additional archaeological survey conducted under VDOT Project No. 0064-965-081, P101; UPC 106724; Virginia Department of Historic Resources File No. 2015-0783 in support of the Preliminary Engineering work for Alternative A being conducted under VDOT Project No. 0064-M06-028, P101; UPC 110577:

- Archaeological Location 1 is, by definition, not eligible for the National Register under Criteria A-D and no further archaeological work is required.



Ms. Julie V. Langan  
Director, Virginia Department of Historic Resources  
Virginia State Historic Preservation Officer

8 MAY 18  
Date

2015-0783

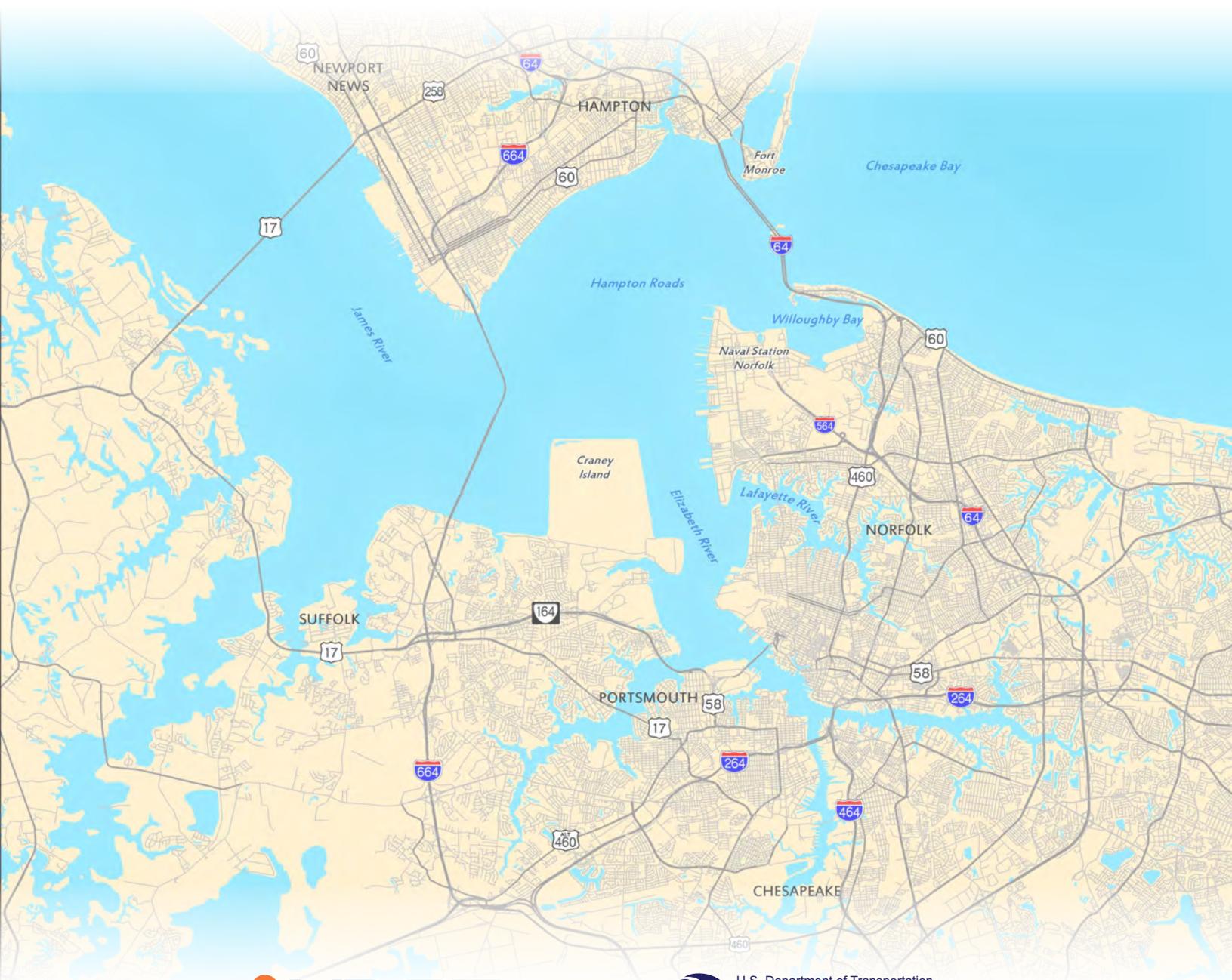
# HRCS SEIS

Hampton Roads Crossing Study SEIS

Environmental Assessment Re-evaluation of the Supplemental Environmental Impact Statement

## Appendix E:

### Threatened and Endangered Database Results





## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Virginia Ecological Services Field Office  
6669 Short Lane  
Gloucester, VA 23061-4410  
Phone: (804) 693-6694 Fax: (804) 693-9032  
<http://www.fws.gov/northeast/virginiafield/>

In Reply Refer To:

May 29, 2018

Consultation Code: 05E2VA00-2018-SLI-3616

Event Code: 05E2VA00-2018-E-08372

Project Name: Re-Evaluation of the Hampton Roads Crossing Study Supplemental Environmental Impact Statement

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
-

# Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Virginia Ecological Services Field Office**

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

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## Project Summary

Consultation Code: 05E2VA00-2018-SLI-3616

Event Code: 05E2VA00-2018-E-08372

Project Name: Re-Evaluation of the Hampton Roads Crossing Study Supplemental Environmental Impact Statement

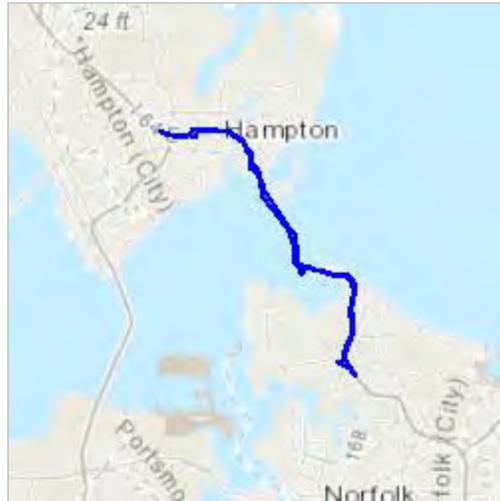
Project Type: TRANSPORTATION

Project Description: The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA) as the lead federal agency, is preparing an Environmental Assessment (EA) Re-evaluation for the Hampton Roads Crossing Study (HRCS) Final Supplemental Environmental Impact Statement (Final SEIS), which was prepared in 2017 by FHWA and VDOT. The Re-evaluation considers refinements proposed by VDOT to the Selected Action documented in FHWA's June 12, 2017 Record of Decision (ROD) and is informed by environmental analyses completed since the ROD was issued. The ROD allowed VDOT to advance with more detailed design activities, using more advanced engineering and other analyses. The advanced engineering and analyses sought to refine the Selected Action, for which the U.S. Army Corps of Engineers (USACE) found no reason to disagree that it appeared to be the preliminary Least Environmentally Damaging Practicable Alternative (preliminary LEDPA). This finding and the FHWA ROD were based on the level of detail that can be applied to a National Environmental Policy Act (NEPA) document and the work that followed sought to provide additional information for future procurement, design, and permitting. The EA addresses the refinements being proposed for the Selected Action since publication of the ROD. Given the scope of the changes being proposed as part of the refinements, along with detailed agency coordination conducted as part of the SEIS (see Chapter 4 of the Final SEIS), VDOT and FHWA agreed that an EA would be an appropriate tool to re-evaluate the Final SEIS to determine if any new significant impacts would occur that were not documented in the Final SEIS.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/36.97408467812328N76.30124395334948W>

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Counties: Hampton, VA | Norfolk, VA

## Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Birds

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a>	Threatened

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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# USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

---

**Site Location**

37,02,06.7 -76,21,50.0  
is the Search Point

**Show Position Rings**

Yes  No

1 mile and 1/4 mile at the Search Point

**Show Search Area**

Yes  No

2 Search distance miles buffer

Display at center	Search Point is not at map center
-------------------	-----------------------------------

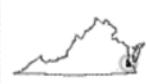
**Base Map Choices**

Topography

**Map Overlay Choices**

Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous

**Map Overlay Legend**



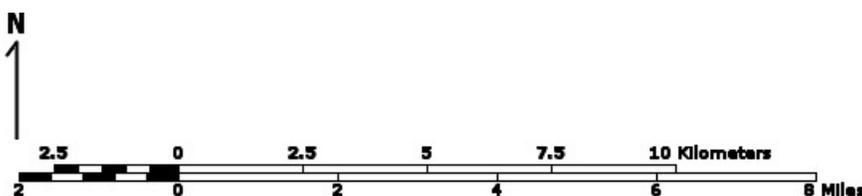
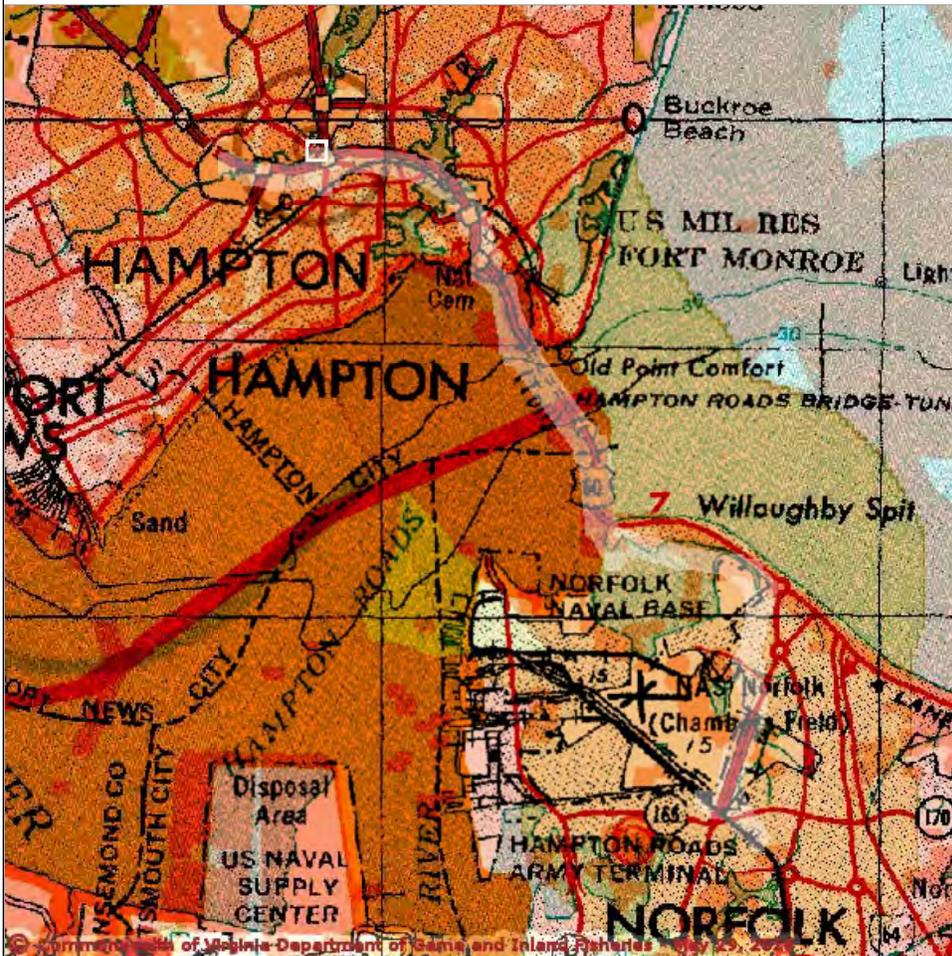
[Refresh Browser Page](#)

Map Click **Pan** **Id** **M**

Map Scale **In** **Zoom** **Out**

Screen Size **Small** **Size** **Big**

[Help](#)



Point of Search 37,02,06.7 -76,21,50.0

Map Location 36,58,28.4 -76,19,27.7

- Select **Coordinate System**:
- Degrees,Minutes,Seconds Latitude - Longitude
  - Decimal Degrees Latitude - Longitude
  - Meters UTM NAD83 East North Zone
  - Meters UTM NAD27 East North Zone

Base Map source: USGS 1:250,000 topographic maps (see [Microsoft terraserver-usa.com](http://Microsoft terraserver-usa.com) for details)

Map projection is UTM Zone 18 NAD 1983 with left 372523 and top 4102470. Pixel size is 32. . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 19200 meters east to west by 19200 meters north to south for a total of 368.6 square kilometers. The map display



represents 63002 feet east to west by 63002 feet north to south for a total of 142.3 square miles.

Topographic maps and Black and white aerial photography for year 1990+ are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

Shaded topographic maps are from TOPO! ©2006 National Geographic  
<http://www.national.geographic.com/topo>

All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2018-05-29 15:48:05 (qa/qc March 21, 2016 12:20 - tn=907272.0 dist=3218 I )  
 \$poi=37.0352000 -76.3638899

**VaFWIS Search Report** Compiled on 5/29/2018, 3:49:41 PM[Help](#)

Known or likely to occur within a **2 mile buffer around polygon; center 37.0352000 -76.3638899**  
 in **650 Hampton City, 710 Norfolk City, VA**

[View Map of  
Site Location](#)

567 Known or Likely Species ordered by Status Concern for Conservation  
 (displaying first 45) (45 species with Status\* or Tier I\*\* or Tier II\*\* )

<a href="#">BOVA Code</a>	<a href="#">Status*</a>	<a href="#">Tier**</a>	<a href="#">Common Name</a>	<a href="#">Scientific Name</a>	<a href="#">Confirmed</a>	<a href="#">Database(s)</a>
030074	FESE	Ia	<a href="#">Turtle, Kemp's ridley sea</a>	Lepidochelys kempii	<a href="#">Yes</a>	BOVA,SppObs,HU6
010032	FESE	Ib	<a href="#">Sturgeon, Atlantic</a>	Acipenser oxyrinchus	<a href="#">Yes</a>	BOVA,TEWaters,SppObs,HU6
030075	FESE	Ic	<a href="#">Turtle, leatherback sea</a>	Dermochelys coriacea	<a href="#">Yes</a>	BOVA,SppObs,HU6
030073	FESE		<a href="#">Turtle, hawksbill sea</a>	Eretmochelys imbricata		BOVA
040183	FESE		<a href="#">Tern, roseate</a>	Sterna dougallii dougallii		HU6
030071	FTST	Ia	<a href="#">Turtle, loggerhead sea</a>	Caretta caretta	<a href="#">Yes</a>	BOVA,SppObs,HU6
040144	FTST	Ia	<a href="#">Knot, red</a>	Calidris canutus rufa	<a href="#">Yes</a>	BOVA,SppObs,HU6
050022	FTST	Ia	<a href="#">Bat, northern long-eared</a>	Myotis septentrionalis		BOVA
030072	FTST	Ib	<a href="#">Turtle, green sea</a>	Chelonia mydas	<a href="#">Yes</a>	BOVA,SppObs,HU6
040120	FTST	IIa	<a href="#">Plover, piping</a>	Charadrius melodus	<a href="#">Yes</a>	BOVA,Habitat,SppObs,HU6
100361	FTST	IIa	<a href="#">Beetle, northeastern beach tiger</a>	Cicindela dorsalis dorsalis		HU6
120030	FTSE	IVb	<a href="#">Manatee, West Indian</a>	Trichechus manatus		BOVA,HU6
030064	SE	Ia	<a href="#">Turtle, eastern chicken</a>	Deirochelys reticularia reticularia		HU6
040118	SE	Ia	<a href="#">Plover, Wilson's</a>	Charadrius wilsonia	<a href="#">Potential</a>	Habitat,HU6
040110	SE	Ia	<a href="#">Rail, black</a>	Laterallus jamaicensis	<a href="#">Potential</a>	BOVA,Habitat,HU6
050020	SE	Ia	<a href="#">Bat, little brown</a>	Myotis lucifugus		BOVA
050034	SE	Ia	<a href="#">Bat, Rafinesque's eastern big-eared</a>	Corynorhinus rafinesquii macrotis		HU6
050027	SE	Ia	<a href="#">Bat, tri-colored</a>	Perimyotis subflavus	<a href="#">Yes</a>	BOVA,SppObs,HU6
030013	SE	IIa	<a href="#">Rattlesnake, canebrake</a>	Crotalus horridus	<a href="#">Yes</a>	BOVA,Habitat,SppObs,HU6
040096	ST	Ia	<a href="#">Falcon, peregrine</a>	Falco peregrinus	<a href="#">Yes</a>	BOVA,SppObs,HU6
040293	ST	Ia	<a href="#">Shrike, loggerhead</a>	Lanius ludovicianus		BOVA
040379	ST	Ia	<a href="#">Sparrow, Henslow's</a>	Ammodramus henslowii	<a href="#">Potential</a>	Habitat,HU6
040179	ST	Ia	<a href="#">Tern, gull-billed</a>	Sterna nilotica	<a href="#">Yes</a>	BOVA,Habitat,SppObs,CWB,HU6
020044	ST	IIa	<a href="#">Salamander, Mabee's</a>	Ambystoma mabeei	<a href="#">Yes</a>	BOVA,Habitat,SppObs,HU6
020002	ST	IIa	<a href="#">Treefrog, barking</a>	Hyla gratiosa		HU6
040292	ST		<a href="#">Shrike, migrant loggerhead</a>	Lanius ludovicianus migrans		BOVA
030067	CC	IIa	<a href="#">Terrapin, northern diamond-backed</a>	Malaclemys terrapin terrapin	<a href="#">Yes</a>	BOVA,Habitat,SppObs,HU6
030063	CC	IIIa	<a href="#">Turtle, spotted</a>	Clemmys guttata	<a href="#">Yes</a>	BOVA,SppObs,HU6
040040		Ia	<a href="#">Ibis, glossy</a>	Plegadis falcinellus	<a href="#">Yes</a>	BOVA,SppObs,HU6
040306		Ia	<a href="#">Warbler, golden-winged</a>	Vermivora chrysoptera	<a href="#">Yes</a>	BOVA,SppObs
040213		Ic	<a href="#">Owl, northern saw-whet</a>	Aegolius acadicus		HU6
020063		IIa	<a href="#">Toad, oak</a>	Anaxyrus quercicus		HU6
040052		IIa	<a href="#">Duck, American black</a>	Anas rubripes	<a href="#">Yes</a>	BOVA,BBA,SppObs,HU6

040033		IIa	<a href="#">Egret, snowy</a>	Egretta thula	<a href="#">Yes</a>	BOVA,BBA,SppObs,HU6
040029		IIa	<a href="#">Heron, little blue</a>	Egretta caerulea caerulea	<a href="#">Yes</a>	BOVA,SppObs
040036		IIa	<a href="#">Night-heron, yellow-crowned</a>	Nyctanassa violacea violacea	<a href="#">Yes</a>	BOVA,BBA,SppObs,CWB
040114		IIa	<a href="#">Oystercatcher, American</a>	Haematopus palliatus	<a href="#">Yes</a>	BOVA,Habitat,BBA,SppObs,HU6
040192		IIa	<a href="#">Skimmer, black</a>	Rynchops niger	<a href="#">Yes</a>	BOVA,Habitat,BBA,SppObs,CWB,HU6
040181		IIa	<a href="#">Tern, common</a>	Sterna hirundo	<a href="#">Yes</a>	BOVA,BBA,SppObs,CWB,HU6
040320		IIa	<a href="#">Warbler, cerulean</a>	Setophaga cerulea		BOVA,HU6
040140		IIa	<a href="#">Woodcock, American</a>	Scolopax minor	<a href="#">Yes</a>	BOVA,SppObs,HU6
040203		IIb	<a href="#">Cuckoo, black-billed</a>	Coccyzus erythrophthalmus	<a href="#">Yes</a>	BOVA,SppObs,HU6
040105		IIb	<a href="#">Rail, king</a>	Rallus elegans		BOVA,HU6
040304		IIc	<a href="#">Warbler, Swainson's</a>	Limnothlypis swainsonii		HU6
110353		IIc	<a href="#">SPIDER, FUNNEL-WEB</a>	Barronopsis jeffersi		HU6

To view **All 567 species** [View 567](#)

\*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

\*\*I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need  
Virginia Wildlife Action Plan Conservation Opportunity Ranking:

- a - On the ground management strategies/actions exist and can be feasibly implemented.;
- b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
- c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

[View Map of All Query Results from All Observation Tables](#)

Bat Colonies or Hibernacula: **Not Known**

**Anadromous Fish Use Streams** ( 1 records )

[View Map of All Anadromous Fish Use Streams](#)

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE*	Highest Tier**	
C92	<a href="#">James River I</a>	Confirmed	6		IV	<a href="#">Yes</a>

**Impediments to Fish Passage**

N/A

**Colonial Water Bird Survey** ( 41 records - displaying first 20 , 3 Observations with Threatened or Endangered species )

[View Map of All Query Results Colonial Water Bird Survey](#)

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
<a href="#">Urban, Norfolk North, Norfolk</a>	11	Jun 5 2013	10	ST	I	<a href="#">Yes</a>
<a href="#">HRB Tunnel Island</a>	4	Jun 12 2008	7	ST	I	<a href="#">Yes</a>
<a href="#">Hampton Roads Bridge-Tunn</a>	1	Jun 1 1993	3	ST	I	<a href="#">Yes</a>
<a href="#">WILLOUGHBY SPIT</a>	1	Jun 1 1989	1		III	<a href="#">Yes</a>
<a href="#">Urban, Hampton, Hampton</a>	3	Jun 4 2013	2		II	<a href="#">Yes</a>

<a href="#">Hermitage</a>	1	Jul 12 2008	2		II	<a href="#">Yes</a>
<a href="#">Newport</a>	2	Jul 12 2008	1		II	<a href="#">Yes</a>
<a href="#">River Road</a>	1	Jul 12 2008	1		II	<a href="#">Yes</a>
<a href="#">Suburban</a>	1	Jul 12 2008	1		II	<a href="#">Yes</a>
<a href="#">West Belvedere</a>	2	Jul 12 2008	1		II	<a href="#">Yes</a>
<a href="#">Mohawk</a>	1	May 31 2008	1		II	<a href="#">Yes</a>
<a href="#">Pine Grove</a>	1	May 31 2008	1		II	<a href="#">Yes</a>
<a href="#">Raleigh Terrace</a>	2	May 31 2008	1		II	<a href="#">Yes</a>
<a href="#">Treasure Point</a>	1	May 31 2008	1		II	<a href="#">Yes</a>
<a href="#">Pine Wells</a>	1	May 8 2008	1		II	<a href="#">Yes</a>
<a href="#">Morwin</a>	2	Jul 10 2003	1		II	<a href="#">Yes</a>
<a href="#">Pinewell</a>	2	Jul 9 2003	1		II	<a href="#">Yes</a>
<a href="#">Fort Monroe</a>	1	Jun 25 2003	1		II	<a href="#">Yes</a>
<a href="#">Kecoughtan</a>	1	Jun 25 2003	2		II	<a href="#">Yes</a>
<b>ALGONQUIN PARK</b>	3	Jun 23 2003	2		II	<a href="#">Yes</a>

Displayed 20 Colonial Water Bird Survey

**Selected 41 Observations** [View all 41 Colonial Water Bird Survey](#)

**Threatened and Endangered Waters** ( 2 Reaches )

[View Map of All Threatened and Endangered Waters](#)

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
<a href="#">James River (0316799)</a>	FESE	010032	FESE	Ib	<a href="#">Sturgeon, Atlantic</a>	Acipenser oxyrinchus	<a href="#">Yes</a>

To view All 2 Threatened and Endangered Waters records [View 2](#)

**Managed Trout Streams**

N/A

**Bald Eagle Concentration Areas and Roosts**

N/A

**Bald Eagle Nests** ( 2 records )

[View Map of All Query Results Bald Eagle Nests](#)

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
<a href="#">HM1101</a>	1	Jun 20 2011	Unknown	<a href="#">Yes</a>
<a href="#">NO1001</a>	2	May 20 2011	Unknown	<a href="#">Yes</a>

Displayed 2 Bald Eagle Nests

**Species Observations** ( 179 records - displaying first 77 , 77 Observations with Threatened or Endangered species )

[View Map of All Query Results Species Observations](#)

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	

<a href="#">600892</a>	SppObs	Nov 1 2008	Lisa; Wright	1	FESE	I	<a href="#">Yes</a>
<a href="#">604058</a>	SppObs	Oct 18 2008	Christina; Trapani	1	FESE	I	<a href="#">Yes</a>
<a href="#">600190</a>	SppObs	Oct 18 2008	Gwen; Lockhart	1	FESE	I	<a href="#">Yes</a>
<a href="#">605898</a>	SppObs	Sep 20 2008	Shannon; Davis	1	FESE	I	<a href="#">Yes</a>
<a href="#">319029</a>	SppObs	Jun 13 2007	John Musick	2	FESE	I	<a href="#">Yes</a>
<a href="#">308412</a>	SppObs	Sep 4 2004	Meredith Fagan	1	FESE	I	<a href="#">Yes</a>
<a href="#">308384</a>	SppObs	May 17 2004	Meredith Fagan	1	FESE	I	<a href="#">Yes</a>
<a href="#">63110</a>	SppObs	Nov 4 1997	USFWS	1	FESE	I	<a href="#">Yes</a>
<a href="#">607549</a>	SppObs	Oct 29 2008	Lisa; Wright	1	FTST	I	<a href="#">Yes</a>
<a href="#">600455</a>	SppObs	Oct 20 2008	Gwen; Lockhart	1	FTST	I	<a href="#">Yes</a>
<a href="#">602475</a>	SppObs	Oct 15 2008	Danielle; McCulloch	1	FTST	I	<a href="#">Yes</a>
<a href="#">600604</a>	SppObs	Oct 15 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">607382</a>	SppObs	Oct 12 2008	Lisa; Wright	1	FTST	I	<a href="#">Yes</a>
<a href="#">604922</a>	SppObs	Oct 11 2008	Trish; Bargo	1	FTST	I	<a href="#">Yes</a>
<a href="#">607659</a>	SppObs	Sep 19 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">600673</a>	SppObs	Sep 18 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">606920</a>	SppObs	Sep 18 2008	Margaret; Cook	1	FTST	I	<a href="#">Yes</a>
<a href="#">606919</a>	SppObs	Sep 17 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">600739</a>	SppObs	Sep 11 2008	Wendy; Walton	1	FTST	I	<a href="#">Yes</a>
<a href="#">601055</a>	SppObs	Aug 23 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">600958</a>	SppObs	Aug 23 2008	Shannon; Davis	1	FTST	I	<a href="#">Yes</a>
<a href="#">604864</a>	SppObs	Aug 21 2008	Shannon; Davis	1	FTST	I	<a href="#">Yes</a>
<a href="#">601216</a>	SppObs	Aug 5 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">602391</a>	SppObs	Jul 24 2008	Gwen; Lockhart	1	FTST	I	<a href="#">Yes</a>
<a href="#">607815</a>	SppObs	Jul 24 2008	Shannon; Davis	1	FTST	I	<a href="#">Yes</a>
<a href="#">607994</a>	SppObs	Jul 18 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">604406</a>	SppObs	Jul 7 2008	Diane; Tulipani	1	FTST	I	<a href="#">Yes</a>
<a href="#">600756</a>	SppObs	Jul 2 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">601425</a>	SppObs	Jun 24 2008	Ryan; Gill	1	FTST	I	<a href="#">Yes</a>
<a href="#">601467</a>	SppObs	Jun 18 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>

<a href="#">601428</a>	SppObs	Jun 18 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">601205</a>	SppObs	Jun 18 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">601494</a>	SppObs	Jun 17 2008	Ryan; Gill	1	FTST	I	<a href="#">Yes</a>
<a href="#">606886</a>	SppObs	Jun 12 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">607298</a>	SppObs	Jun 7 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">600179</a>	SppObs	Jun 6 2008	Diane; Tulipani	1	FTST	I	<a href="#">Yes</a>
<a href="#">600928</a>	SppObs	Jun 6 2008	Ryan; Gill	1	FTST	I	<a href="#">Yes</a>
<a href="#">604186</a>	SppObs	Jun 5 2008	Christina; Trapani	1	FTST	I	<a href="#">Yes</a>
<a href="#">607945</a>	SppObs	Jun 3 2008	Trish; Bargo	1	FTST	I	<a href="#">Yes</a>
<a href="#">600454</a>	SppObs	May 29 2008	Trish; Bargo	1	FTST	I	<a href="#">Yes</a>
<a href="#">600000</a>	SppObs	May 25 2008	Linda; D'Eri	1	FTST	I	<a href="#">Yes</a>
<a href="#">601318</a>	SppObs	Feb 24 2008	Gwen; Lockhart	1	FTST	I	<a href="#">Yes</a>
<a href="#">319053</a>	SppObs	Sep 8 2007	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">319052</a>	SppObs	Aug 24 2007	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">319045</a>	SppObs	Jun 29 2007	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">319027</a>	SppObs	Jun 12 2007	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">319018</a>	SppObs	Jun 4 2007	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">319015</a>	SppObs	May 30 2007	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">317933</a>	SppObs	Oct 25 2006	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">317929</a>	SppObs	Sep 15 2006	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">317925</a>	SppObs	Aug 26 2006	John Musick	1	FTST	I	<a href="#">Yes</a>
<a href="#">313344</a>	SppObs	Oct 25 2005	John Musick (principal permittee), K. Mansfield, M. Fagan & V. Saba collectors	1	FTST	I	<a href="#">Yes</a>
<a href="#">313343</a>	SppObs	Aug 29 2005	John Musick (principal permittee), K. Mansfield, M. Fagan & V. Saba collectors	1	FTST	I	<a href="#">Yes</a>
<a href="#">313335</a>	SppObs	Jun 29 2005	John Musick (principal permittee), K. Mansfield, M. Fagan & V. Saba collectors	1	FTST	I	<a href="#">Yes</a>
<a href="#">312968</a>	SppObs	Jun 23 2005	John Musick (principal permittee), K. Mansfield, M. Fagan & V. Saba collectors	1	FTST	I	<a href="#">Yes</a>
<a href="#">312962</a>	SppObs	Jun 12 2005	John Musick (principal permittee), K. Mansfield, M. Fagan & V. Saba collectors	1	FTST	I	<a href="#">Yes</a>
<a href="#">308417</a>	SppObs	Nov 2 2004	Meredith Fagan	1	FTST	I	<a href="#">Yes</a>
<a href="#">308407</a>	SppObs	Jun 30 2004	Meredith Fagan	1	FTST	I	<a href="#">Yes</a>
<a href="#">308391</a>	SppObs	Jun 1 2004	Meredith Fagan	1	FTST	I	<a href="#">Yes</a>
<a href="#">308390</a>	SppObs	May 30 2004	Meredith Fagan	1	FTST	I	<a href="#">Yes</a>

<a href="#">308385</a>	SppObs	May 23 2004	Meredith Fagan	1	FTST	I	<a href="#">Yes</a>
<a href="#">54905</a>	SppObs	Apr 1 1998	USFWS - GOFA	213	FTST	I	<a href="#">Yes</a>
<a href="#">367009</a>	SppObs	Jan 1 1900		1	FTST	I	<a href="#">Yes</a>
<a href="#">367003</a>	SppObs	Jan 1 1900		1	FTST	I	<a href="#">Yes</a>
<a href="#">367004</a>	SppObs	Jan 1 1900		1	FTST	I	<a href="#">Yes</a>
<a href="#">367008</a>	SppObs	Jan 1 1900		1	FTST	I	<a href="#">Yes</a>
<a href="#">54902</a>	SppObs	Mar 1 1998	USFWS - GOFA	24	SE	I	<a href="#">Yes</a>
<a href="#">318684</a>	SppObs	Oct 2 2007	John Kleopfer	1	SE	II	<a href="#">Yes</a>
<a href="#">55259</a>	SppObs	Oct 11 1974	ROBERT A. S. WRIGHT, DELEUW, CATHER, AND CO.	1	SE	II	<a href="#">Yes</a>
<a href="#">28852</a>	SppObs	Jan 1 1900	Mitchell, J. C.	1	SE	II	<a href="#">Yes</a>
<a href="#">503323</a>	CWB	Jun 4 2013	Beck	8	ST	I	<a href="#">Yes</a>
<a href="#">212526</a>	CWB	Jun 12 2008	Watts and Paxton, The Center for Conservation Biology, College of William and Mary	4	ST	I	<a href="#">Yes</a>
<a href="#">210246</a>	CWB	Jun 1 2003	Beck, R.	6	ST	I	<a href="#">Yes</a>
<a href="#">211705</a>	CWB	Jun 1 1993		3	ST	I	<a href="#">Yes</a>
<a href="#">3536</a>	SppObs	Nov 16 1985	Div. Natural Heritage	1	ST	II	<a href="#">Yes</a>
<a href="#">366303</a>	SppObs	Jan 1 1900		1	SS	II	<a href="#">Yes</a>
<a href="#">366272</a>	SppObs	Jan 1 1900		1	SS	III	<a href="#">Yes</a>

Displayed 77 Species Observations

**Selected 179 Observations** [View all 179 Species Observations](#)

**Habitat Predicted for Aquatic WAP Tier I & II Species**

N/A

**Habitat Predicted for Terrestrial WAP Tier I & II Species** ( 12 Species )

[View Map of Combined Terrestrial Habitat Predicted for 12 WAP Tier I & II Species Listed Below](#)

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
040120	FTST	IIa	<a href="#">Plover, piping</a>	Charadrius melodus	<a href="#">Yes</a>
040118	SE	Ia	<a href="#">Plover, Wilson's</a>	Charadrius wilsonia	<a href="#">Yes</a>
040110	SE	Ia	<a href="#">Rail, black</a>	Laterallus jamaicensis	<a href="#">Yes</a>
030013	SE	IIa	<a href="#">Rattlesnake, canebrake</a>	Crotalus horridus	<a href="#">Yes</a>
040379	ST	Ia	<a href="#">Sparrow, Henslow's</a>	Ammodramus henslowii	<a href="#">Yes</a>
040179	ST	Ia	<a href="#">Tern, gull-billed</a>	Sterna nilotica	<a href="#">Yes</a>
020044	ST	IIa	<a href="#">Salamander, Mabee's</a>	Ambystoma mabeei	<a href="#">Yes</a>
030067	CC	IIa	<a href="#">Terrapin, northern diamond-backed</a>	Malaclemys terrapin terrapin	<a href="#">Yes</a>
040114		IIa	<a href="#">Oystercatcher, American</a>	Haematopus palliatus	<a href="#">Yes</a>
040192		IIa	<a href="#">Skimmer, black</a>	Rynchops niger	<a href="#">Yes</a>
040186		IIIa	<a href="#">Tern, least</a>	Sterna antillarum	<a href="#">Yes</a>
040187		IVa	<a href="#">Tern, royal</a>	Sterna maxima maximus	<a href="#">Yes</a>

**Virginia Breeding Bird Atlas Blocks** ( 12 records )

[View Map of All Query Results](#)  
[Virginia Breeding Bird Atlas Blocks](#)



# Natural Heritage Resources

## Your Criteria

Federal Legal Status: Select All

State Legal Status: Select All

Watershed (8 digit HUC): 02080108 - Lynnhaven-Poquoson

Subwatershed (12 digit HUC): CB23 - Southwest Branch (Back River)

Search Run: 5/29/2018 16:21:28 PM

## Result Summary

Total Species returned: 3

Total Communities returned: 0

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	<a href="#">Global Conservation Status Rank</a>	<a href="#">State Conservation Status Rank</a>	<a href="#">Federal Legal Status</a>	<a href="#">State Legal Status</a>	Statewide Occurrences	Virginia Coastal Zone
<b>Lynnhaven-Poquoson</b> Southwest Branch (Back River)							

Common Name/Natural Community	Scientific Name	<a href="#">Global Conservation Status Rank</a>	<a href="#">State Conservation Status Rank</a>	<a href="#">Federal Legal Status</a>	<a href="#">State Legal Status</a>	Statewide Occurrences	Virginia Coastal Zone
AMPHIBIANS							
Mabee's Salamander	<a href="#">Ambystoma mabeei</a>	G4	S1S2	None	LT	17	Y
REPTILES							
Canebrake Rattlesnake	<a href="#">Crotalus horridus</a> <a href="#">[Coastal Plain population]</a>	G4T4	S1	None	LE	18	Y
VASCULAR PLANTS							
Virginia Least Trillium	<a href="#">Trillium pusillum var. virginianum</a>	G3T2	S2	SOC	None	34	Y

**Note:** On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

**For Additional Information** on locations of Natural Heritage Resources please submit an [information request](#).

**To Contribute information** on locations of natural heritage resources, please fill out and submit a [rare species sighting form](#).

# Natural Heritage Resources

## Your Criteria

Federal Legal Status: Select All

State Legal Status: Select All

Watershed (8 digit HUC): 02080208 - Hampton Roads

Subwatershed (12 digit HUC): JL56 - Elizabeth River-Lafayette River, JL57 - Willoughby Bay-Masons Creek, JL58 - Hampton Roads-Hampton River, JL59 - Hampton Roads Channel

Search Run: 5/29/2018 16:19:14 PM

## Result Summary

Total Species returned: 5

Total Communities returned: 0

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	<a href="#">Global Conservation Status Rank</a>	<a href="#">State Conservation Status Rank</a>	<a href="#">Federal Legal Status</a>	<a href="#">State Legal Status</a>	Statewide Occurrences	Virginia Coastal Zone
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## **Hampton Roads**

Common Name/Natural Community	Scientific Name	<a href="#">Global Conservation Status Rank</a>	<a href="#">State Conservation Status Rank</a>	<a href="#">Federal Legal Status</a>	<a href="#">State Legal Status</a>	Statewide Occurrences	Virginia Coastal Zone
Elizabeth River-Lafayette River BIRDS							
Wilson's Plover	<a href="#">Charadrius wilsonia</a>	G5	S1B	None	LE	11	Y
Hampton Roads Channel BIRDS							
Gull-billed Tern	<a href="#">Gelochelidon nilotica</a>	G5	S2B	None	LT	19	Y
FISH							
Atlantic Sturgeon							
Hampton Roads-Hampton River	<a href="#">Acipenser oxyrinchus</a>	G3	S2	LE	LE	2	Y
Hampton Roads-Hampton River FISH							
Atlantic Sturgeon	<a href="#">Acipenser oxyrinchus</a>	G3	S2	LE	LE	2	Y
Willoughby Bay-Masons Creek FISH							
Atlantic Sturgeon	<a href="#">Acipenser oxyrinchus</a>	G3	S2	LE	LE	2	Y

**Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.**

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**To Contribute information** on locations of natural heritage resources, please fill out and submit a [rare species sighting form](#).