

George Washington Memorial Parkway
Virginia

U.S. Department of the Interior
National Park Service



Arlington County and Vicinity Boathouse Environmental Assessment



June 2018

PROJECT SUMMARY

INTRODUCTION

The National Park Service (NPS), in cooperation with the National Capital Planning Commission (NCPC) and Arlington County, is evaluating the proposed development of a boathouse and related facilities on the Virginia side of the Potomac River south and west of Washington, DC, on land administered by the George Washington Memorial Parkway. Currently, Arlington County residents and the three public high schools use area boathouses located in Washington, DC. Wakefield High School rows out of the Capitol Rowing Club on the Anacostia River; Washington-Lee High School rows out of the Potomac Boat Club and Yorktown High School out of Thompson Boat Center, both on the Potomac River. The rowing conditions, potential conflicts with motorized watercraft, and travel times between Arlington County and the boat clubs make some of these locations less than ideal for the high school rowing programs, as well as for other community users. The proposed action is the subject of this environmental assessment. This environmental assessment demonstrates compliance with the National Environmental Policy Act of 1969, as amended.

PURPOSE OF AND NEED FOR THE ACTION

The purpose of taking action is to identify a preferred site for an environmentally sustainable public rowing and paddling facility along the Virginia shoreline, while ensuring the protection of park natural and cultural resources.

The selection of a preferred site and construction of a boathouse is needed to meet the direction of Congress to provide enhanced public waterfront access near Arlington County. The construction of a boathouse facility is also needed to increase access along the Virginia shoreline for nonmotorized water-based recreational activities on the Potomac River and to alleviate pressure on other area boathouses, which are currently at maximum capacity.

OVERVIEW OF THE ALTERNATIVES

The National Park Service explored and objectively evaluated a range of alternatives. Three action alternatives and the No-Action Alternative were carried forward for further analysis as follows:

- Alternative A: No Action
- Alternative B: Lower Rosslyn Site
- Alternative C: Combination Upper and Lower Rosslyn Site
- Alternative D: Gravelly Point Site

SUMMARY OF IMPACTS

Impacts of the proposed alternatives were assessed in accordance with the National Environmental Policy Act; National Park Service Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making; and the National Historic Preservation Act. Several impact topics were dismissed from further analysis because the proposed action would result in no impacts or minimal and/or short-term impacts to those resources. All three action alternatives would result in adverse impacts on submerged aquatic vegetation and cultural resources and would result in soil disturbance in the vicinity of all new structures, access roads, and staging areas. Vegetation clearing, regrading and dredging under alternatives B and C would adversely impact wetlands and vegetation. All three action alternatives are

located within the floodplain, but would not be expected to adversely impact floodplain functions and values. A detailed assessment of the impacts on traffic and transportation is included as appendix A.

HOW TO COMMENT

Agencies and the public are encouraged to review and comment on the contents of this environmental assessment during a 30-day public review and comment period. We invite you to comment on this document and you may do so by any one of the following methods. The preferred method of providing comments is on the park's Planning, Environment, and Public Comment website:

<http://parkplanning.nps.gov/arlingtonboathouse>. You may also submit written comments to the following address:

Superintendent
George Washington Memorial Parkway
Attn: Arlington Boathouse EA
Turkey Run Headquarters
700 George Washington Memorial Parkway
McLean, Virginia 22101

Only written comments will be accepted. Please submit your comments within 30 days of the posting of the notice of availability on the Planning, Environment, and Public Comment website. If you wish to remain anonymous, please clearly state that within your correspondence. However, before including your address, phone number, e-mail address, or other personal identifying information in your comment, please be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request that your personal identifying information be withheld from public review, it cannot be guaranteed.

CONTENTS

INTRODUCTION	1
PURPOSE OF AND NEED FOR THE ACTION	1
OVERVIEW OF THE ALTERNATIVES.....	1
SUMMARY OF IMPACTS	1
HOW TO COMMENT	2
CHAPTER 1: PURPOSE AND NEED	1
INTRODUCTION.....	1
PURPOSE OF THE ACTION	1
NEED FOR ACTION	1
PROJECT BACKGROUND	1
PROJECT AREA	3
ISSUES AND IMPACT TOPICS RETAINED FOR DETAILED ANALYSIS	3
Soils.....	3
Wetlands and Floodplains	3
Vegetation	5
Aquatic Wildlife.....	5
Cultural Resources	5
Visitor Use and Experience.....	6
Traffic and Transportation	6
IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS	6
Water Quality.....	6
Terrestrial Wildlife and Wildlife Habitats	7
Federally Listed Species	7
Indian Trust Resources.....	9
Environmental Justice	9
CHAPTER 2: ALTERNATIVES	11
DESCRIPTIONS OF ALTERNATIVES	11
Alternative A: No Action.....	11
Elements Common to All Action Alternatives	11
Alternative B: Lower Rosslyn Site	15
Alternative C: Combination Upper and Lower Rosslyn Sites	20
Alternative D: Gravelly Point Site	24

Alternatives Considered but Dismissed	29
MITIGATION MEASURES	29
Soils.....	29
Water Quality.....	29
Wetlands and Floodplains.....	30
Vegetation	30
Aquatic Wildlife.....	30
Historic Districts and Cultural Landscapes.....	30
Archeological Resources.....	30
Visitor Use and Experience.....	31
Traffic and Transportation	31
NATIONAL PARK SERVICE PREFERRED ALTERNATIVE.....	32
CHAPTER 3: AFFECTED ENVIRONMENT	33
SOILS	33
WETLANDS AND FLOODPLAINS.....	33
Wetlands	33
Floodplains.....	36
VEGETATION	39
Lower Rosslyn	39
Upper Rosslyn.....	39
Gravelly Point.....	39
Roaches Run	39
Riverside Park.....	39
AQUATIC WILDLIFE	39
HISTORIC DISTRICTS AND THE CULTURAL LANDSCAPE.....	40
Study Area	40
Historic Resources in the Rosslyn Site Direct Area of Potential Effect	46
Historic Resources in the Rosslyn Site Indirect Area of Potential Effect.....	47
Historic Resources in the Gravelly Point Site Direct Area of Potential Effect.....	47
Historic Resources in the Gravelly Point Site Indirect Area of Potential Effect	48
Historic Resources in the Roaches Run Area of Potential Effect	48
Historic Resources in the Riverside Park Site Indirect Area of Potential Effect	48
ARCHEOLOGICAL RESOURCES	48
Archeological Investigations of the Upper Rosslyn Site	49
Archeological Investigation of the Lower Rosslyn Site	50

Archeological Investigations of the Gravelly Point Site.....	50
Roaches Run and Riverside Park Soft Launch Sites.....	50
VISITOR USE AND EXPERIENCE.....	50
Mount Vernon Trail	51
Martha Custis Trail	52
Potomac Heritage Trail	52
TRAFFIC AND TRANSPORTATION	52
Soft Launch Sites	52
Pedestrian Network.....	52
Bicycle Network	53
Transit	53
Parking	53
Traffic	54
CHAPTER 4: ENVIRONMENTAL CONSEQUENCES	55
GENERAL METHODOLOGY FOR ANALYZING IMPACTS	55
Type of Impact.....	55
Cumulative Impacts Analysis Method.....	55
Past, Present, and Reasonably Foreseeable Future Actions	55
SOILS	56
Methodology and Assumptions	56
Study Area	56
Impacts of Alternative A: No Action.....	56
Impacts of Alternative B: Lower Rosslyn.....	57
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	58
Impacts of Alternative D: Gravelly Point	59
WETLANDS AND FLOODPLAINS.....	59
Methodology and Assumptions	59
Study Area	60
Impacts of Alternative A: No Action.....	60
Impacts of Alternative B: Lower Rosslyn.....	60
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	63
Impacts of Alternative D: Gravelly Point	63
VEGETATION	65
Methodology and Assumptions	65
Study Area	65

Impacts of Alternative A: No Action	65
Impacts of Alternative B: Lower Rosslyn.....	65
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	66
Impacts of Alternative D: Gravelly Point	67
AQUATIC WILDLIFE	68
Methodology and Assumptions	68
Study Area	68
Impacts of Alternative A: No Action.....	68
Impacts of Alternative B: Lower Rosslyn.....	68
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	69
Impacts of Alternative D: Gravelly Point	70
HISTORIC DISTRICTS AND THE CULTURAL LANDSCAPE	71
Methodology and Assumptions	71
Study Area	71
Impacts of Alternative A: No Action.....	71
Impacts of Alternative B: Lower Rosslyn.....	72
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	74
Impacts of Alternative D: Gravelly Point	75
ARCHEOLOGICAL RESOURCES	75
Methodology and Assumptions	75
Study Area	76
Impacts of Alternative A: No-Action.....	76
Impacts of Alternative B: Lower Rosslyn.....	76
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	77
Impacts of Alternative D: Gravelly Point	78
VISITOR USE AND EXPERIENCE.....	78
Methodology and Assumptions	78
Study Area	78
Impacts of Alternative A: No Action.....	79
Impacts of Alternative B: Lower Rosslyn.....	79
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	81
Impacts of Alternative D: Gravelly Point	83
TRAFFIC AND TRANSPORTATION	84
Methodology and Assumptions	84
Impacts of Alternative A: No-Action Alternative.....	85

Impacts of Alternative B: Lower Rosslyn.....	87
Impacts of Alternative C: Upper and Lower Rosslyn (Preferred Alternative).....	89
Impacts of Alternative D: Gravelly Point	92
CHAPTER 5: CONSULTATION AND COORDINATION	95
SCOPING PROCESS AND PUBLIC PARTICIPATION	95
COOPERATING AGENCIES.....	95
AGENCY CONSULTATION.....	96
CHAPTER 6: LIST OF PREPARERS	99
US Department of the Interior, National Park Service	99
Louis Berger.....	99
CHAPTER 7: ACRONYMS AND ABBREVIATIONS	101
CHAPTER 8: REFERENCES.....	103

APPENDICES

Appendix A—Transportation Impact Assessment
Appendix B—Wetland Statement of Findings
Appendix C—Floodplain Statement of Findings
Appendix D—Visual Impact Assessment

LIST OF FIGURES

Figure 1. Project Area.....	4
Figure 2. Proposed Alternative Site Locations	13
Figure 3. Roaches Run Soft Launch Site	14
Figure 4. Riverside Park Soft Launch Site.....	14
Figure 5. Alternative B: Lower Rosslyn	16
Figure 6. Lower Rosslyn Regrading/Dredging Extent.....	17
Figure 7. Lower Rosslyn Site, Facing North	18
Figure 8. Conceptual Elevation for the Lower Rosslyn Site.....	19
Figure 9. Alternative C: Combination of Upper and Lower Rosslyn Sites.....	21
Figure 10. Upper Rosslyn Site	22
Figure 11. Staging Areas – Upper and Lower Rosslyn Sites.....	23
Figure 12. Alternative D: Gravelly Point Site.....	25

Figure 13. Conceptual Elevation at the Gravelly Point Site	26
Figure 14. Submerged Aquatic Vegetation at Lower Rosslyn Site	34
Figure 15. Submerged Aquatic Vegetation at the Gravelly Point Site	35
Figure 16. FEMA Flood Hazard Zones in Rosslyn Alternatives	37
Figure 17. FEMA Flood Hazard Zones in Gravelly Point Alternative	38
Figure 18. Area of Potential Effect: Rosslyn Sites	42
Figure 19. Area of Potential Effect: Gravelly Point Site	43
Figure 20. Area of Potential Effect: Roaches Run Soft Launch Site	44
Figure 21. Area of Potential Effect: Riverside Park Soft Launch Site.....	45

LIST OF TABLES

Table 1. Summary of Action Alternatives	27
Table 2. Weekday AM and PM Peak Hour Trip Generation by User Group	90
Table 3. Saturday Peak Hour Trip Generation by User Group	91
Table 4. Required Agency Consultation	96

CHAPTER 1: PURPOSE AND NEED

INTRODUCTION

The National Park Service (NPS), in cooperation with the National Capital Planning Commission (NCPC) and Arlington County, is evaluating the proposed development of a boathouse and related facilities on the Virginia side of the Potomac River south and west of Washington, DC, on land administered by the George Washington Memorial Parkway. Currently, Arlington County residents and the three public high schools use area boathouses located in Washington, DC. Wakefield High School rows out of the Capitol Rowing Club on the Anacostia River; Washington-Lee High School rows out of the Potomac Boat Club and Yorktown High School out of Thompson Boat Center, both on the Potomac River. The rowing conditions, potential conflicts with motorized watercraft, and travel times between Arlington County and the boat clubs make some of these locations less than ideal for the high school rowing programs, as well as for other community users. Other area schools have generated additional demand for rowing programs and associated storage spaces.

This environmental assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) and its implementing regulations (40 Code of Federal Regulations [CFR] 1500–1508) and Director’s Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2011a) and its accompanying handbook (NPS 2015). This EA analyzes the proposed action and alternatives and their impacts on the environment.

PURPOSE OF THE ACTION

The purpose of taking action is to identify a preferred site for an environmentally sustainable public rowing and paddling facility along the Virginia shoreline, while ensuring the protection of park natural and cultural resources.

NEED FOR ACTION

The selection of a preferred site and construction of a boathouse is needed to meet the direction of Congress to provide enhanced public waterfront access near Arlington County. The construction of a boathouse facility is also needed to increase access along the Virginia shoreline for nonmotorized water-based recreational activities on the Potomac River and to alleviate pressure on other area boathouses, which are currently at maximum capacity.

PROJECT BACKGROUND

Access to the Potomac River along the George Washington Memorial Parkway has been an issue for Northern Virginia citizens since the 1930s, when a wharf was planned below the Francis Scott Key Bridge (Key Bridge) to serve primarily as an industrial port. Since the late 1980s, Arlington County residents involved in rowing have expressed a desire for the construction of a boathouse facility along the George Washington Memorial Parkway, and more recently, residents involved in other paddling and nonmotorized activities expressed a desire for more access to the water on the Virginia side of the river. Multiple plans and studies have been completed to explore potential locations for a boathouse in Arlington County including the *Arlington County Riverfront Inventory and Analysis* in 1993 and a *Feasibility Study for a Boathouse Facility Located between Theodore Roosevelt Island and Francis Scott Key Memorial Bridge* in 1995.

In October 1998, planning for a boathouse facility continued when Congress adopted the Department of the Interior’s Appropriations Act for 1999, which included a provision for a 6-month feasibility study to determine a recommended site for an Arlington County facility. Language in the bill directed NPS to

work collaboratively with Arlington County and the Arlington Boathouse Foundation to complete a feasibility study of Columbia Island and Theodore Roosevelt Island as potential construction sites (HR 2001). At the request of Congress, NPS evaluated the potential siting of a nonmotorized boathouse along the Potomac River within Arlington County, Virginia, in a facility and site analysis feasibility study. The feasibility study evaluated a boathouse facility that would include equipment storage and training facilities for the three Arlington County public high school rowing programs and provide storage and access for other rowers and nonmotorized boat users (NPS 2002a).

The 2002 feasibility study determined criteria for a minimum and maximum program for the proposed boathouse facility and identified four potential locations that could accommodate its construction and operation along the Potomac River within the historic George Washington Memorial Parkway.

The four sites analyzed in the feasibility study were:

- The shore near Theodore Roosevelt Island, east of the parkway, down river of the Key Bridge, and north of the Theodore Roosevelt Island parking lot (hereafter referred to as the lower Rosslyn site).
- County-owned property on the Rosslyn shore between Interstate 66 (I-66) and the parkway, located west of the parkway and east of North Lynn Street (hereafter referred to as the upper Rosslyn site).
- An area north of Gravelly Point and south of the 14th Street and CSX Bridges, located east of the parkway (hereafter referred to as the 14th Street Bridge site).
- An area east of the parkway, just south of the Reagan National Airport, and adjacent to the Washington Sailing Marina (hereafter referred to as the Daingerfield Island site).

The study assessed the existing conditions of each site and the feasibility of placing a minimum 10,000-square-foot (SF) or a maximum 14,000-SF rowing facility at each site (NPS 2002a).

In 2005, Arlington County initiated a study to evaluate the feasibility of building a boathouse facility in a Virginia Department of Transportation (VDOT) right-of-way adjacent to the upper Rosslyn site that included a boathouse, access roadway and parking, and a boat rigging area. The Arlington County report was meant to supplement and augment the *Facility & Site Analysis for a Boathouse on the Potomac River in Arlington County and Vicinity* by adding another site for consideration that is a variation of the upper Rosslyn site from that report. This report looked at the feasibility of the additional site from two perspectives: (1) the feasibility of adequately accommodating all of the elements of the program within the confines of the sites, taking into account identified constraints and opportunities, and (2) the feasibility of avoiding or mitigating potential adverse impacts and meeting applicable regulatory requirements.

In 2006, NPS began the NEPA process, and developed an EA for the sites included in the feasibility study. The EA was never completed or released for public review. In 2010, Arlington County developed a Boathouse Concept Study with a new proposal for development at the lower Rosslyn site (Arlington County 2010). In 2011, NPS reinitiated the NEPA process as an environmental impact statement (EIS), given the potential for significant impacts at the 14th Street Bridge and Daingerfield Island sites. Since that time, both of those locations have been revised or dismissed as viable alternatives (see chapter 2), and the proposed action is now completing the NEPA process as an EA. In addition to the upper and lower Rosslyn sites, this EA examines a new site just south of the 14th Street Bridge Site, referred to as the Gravelly Point site.

Other projects along the Potomac River have also looked at demand for access to rowing, including the development of a nonmotorized boathouse zone along the shore in the Georgetown neighborhood of Washington, DC. Studies related to that initiative confirmed continued demand for access to rowing facilities for scholastic, collegiate, and private rowers but also identified a growing demand for access to

other nonmotorized boating activities, such as canoeing, kayaking, and stand up paddleboarding (Louis Berger 2013). Although options for renting paddlecraft are available along the river, options are limited for owners of paddlecraft to launch their own boats along the Potomac River. Therefore, in addition to evaluating options for rowers, this EA also considers possibilities for car-top soft launch access for paddlecraft users.

PROJECT AREA

Located along the shores of the Potomac River in Virginia, the historic George Washington Memorial Parkway is one component of a large park system serving the nation's capital (in this document "the park" refers to the park unit and "the parkway" refers to the roadway). The 32-mile-long urban park is approximately 7,600 acres, connected by a roadway designed for pleasure driving. The parkway serves to tie the scenic, recreational, memorial, and historic features of national significance in Virginia, Maryland, and the District of Columbia (the District). In Virginia, the parkway passes through Fairfax and Arlington Counties, as well as the City of Alexandria (NPS 1992).

The project area, depicted in figure 1, includes locations in the park that were considered as sites for the proposed boathouse facility as well as two soft launch sites for paddlecraft. The project area includes sites in both Arlington and Fairfax County, Virginia. The potential boathouse locations and one of the soft launch sites are located in the portion of the park within Arlington County, which extends from just northwest of the Chain Bridge to the southern edge of the Reagan National Airport. The second soft launch site is located at the southern end of the park in Fairfax County. Site-specific details are provided in "Chapter 2: Alternatives."

ISSUES AND IMPACT TOPICS RETAINED FOR DETAILED ANALYSIS

SOILS

The construction of a boathouse facility and soft launch sites could disturb soils and increase impervious surface, which could lead to soil erosion and loss of topsoil.

WETLANDS AND FLOODPLAINS

Construction of a boathouse facility and the installation of docks and soft launch sites, as well as dredging that could be required at one of the sites, could affect shallow water riverine wetlands associated with the shoreline of the Potomac River that often support submerged aquatic vegetation (SAV). In addition, a change in the hydraulics of the river associated with the installation of the rowing facility's docks could potentially remove sediment from some areas and deposit it at different locations, which could also affect riverine wetlands.

Similarly, both proposed boathouse sites considered in the alternatives are located in the 100-year floodplain, and while the proposed structures are water-dependent facilities, they have the potential to alter the flood zone, including floodplain function and values.

NPS Director's Order 77-1: *Wetland Protection*, states a policy of no net loss of wetlands and requires that NPS (1) avoid adverse wetland impacts to the extent practicable, (2) minimize impacts that cannot be avoided, and (3) compensate for remaining adverse wetland impacts via restoration of degraded wetlands (NPS 2002b). A wetlands statement of findings is required and has been prepared in conjunction with this EA.

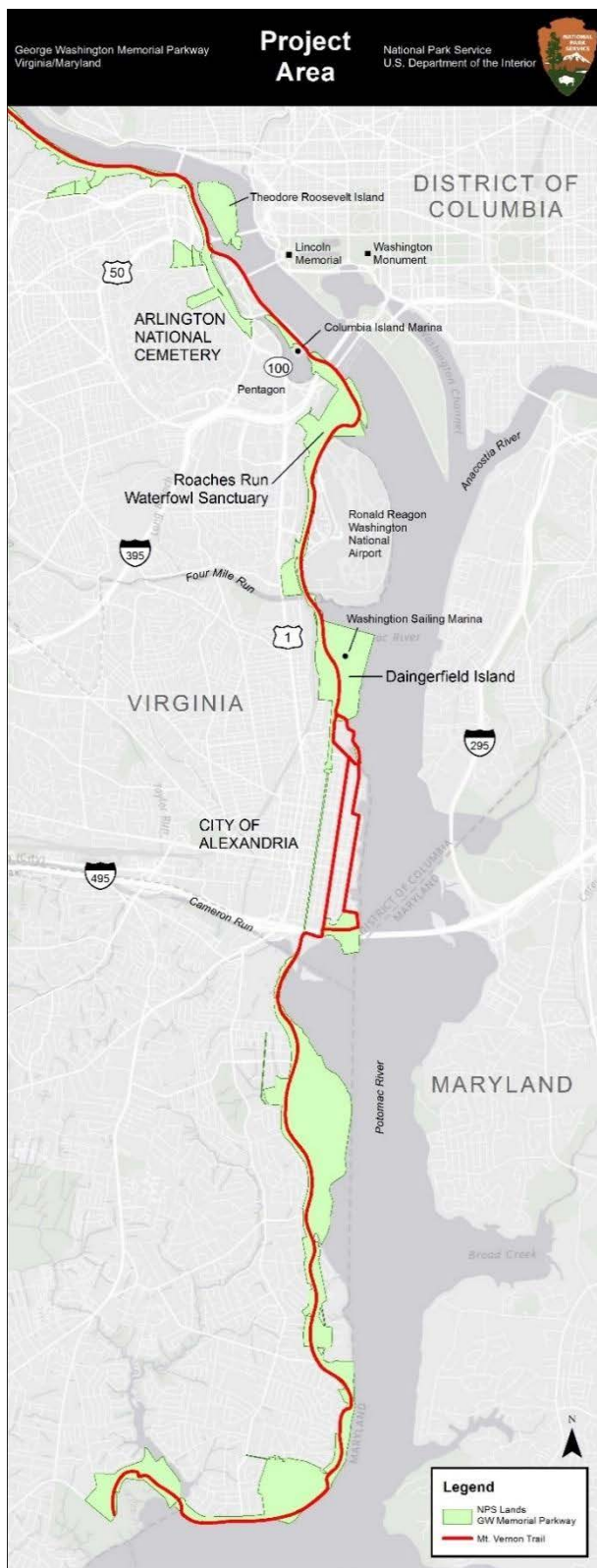


FIGURE 1. PROJECT AREA

Similarly, Director's Order 77-2: *Floodplain Management*, guides NPS actions within the floodplain. NPS policy is to "avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative" (NPS 2003). Because the proposed boathouse would be constructed in the floodplain, floodplain functions and values would be disturbed and a floodplain statement of findings is required. The statement of findings has been prepared in conjunction with this EA.

VEGETATION

The construction of a boathouse facility would potentially result in a short-term loss of vegetation from construction staging areas and other related activities, as well as a long-term loss in vegetation within the footprint of the facility. Installation of soft launch sites would also potentially result in disturbance and short- and long-term loss of vegetation. Potential impacts on SAV are analyzed under the "Wetlands and Floodplains" section, as noted above.

AQUATIC WILDLIFE

Construction and operation of a boathouse facility and soft launch sites could displace fish and other aquatic wildlife species from temporary disturbances and alteration of habitat and cause mortality to less mobile benthic species. Regrading or dredging may be required at one of the sites, disturbing and potentially reducing the size of existing SAV beds.

Two species of freshwater mussels listed as species of greatest conservation need in the District of Columbia (DOEE 2015), the eastern pondmussel (*Ligumia nasuta*) and the tidewater mucket (*Leptodea ochracea*), were found in the Potomac River along the Rosslyn waterfront during a 2004 mussel survey (EA Engineering 2005) and are likely present at the lower Rosslyn site. Alterations along the shoreline to place docks could adversely affect their habitat.

A single shell from an alewife floater (*Anodonta implicata*), a mussel listed as a species of greatest conservation need in the District of Columbia (DOEE 2015), was found at the lower Rosslyn site during a 2004 mussel survey (EA Engineering 2005). However, no live specimens were documented within the project area, and relic shells may have originated outside the project area and been transferred from upstream locations during high flow events (EA Engineering 2005). Therefore, the species is not believed to be currently present in the project area, would not likely be affected by the project, and is not analyzed in full detailed analysis.

Atlantic and shortnose sturgeon, which may also occur in the project area, are discussed under "Federally Listed Species."

CULTURAL RESOURCES

Historic Districts and the Cultural Landscapes

The project areas are all located within the George Washington Memorial Parkway Historic District. The historic district has designated and documented cultural landscapes; therefore, views and vistas within the historic district are important resources. The park makes up the shoreline of the Virginia side of the Potomac River and acts as a gateway to the District and Arlington County. In addition to the importance placed on the viewshed by the park, NCPC requires that special care be given to the points where gateway routes provide views of the monumental core in the District, including views of the Washington Monument, the Jefferson and Lincoln Memorials, and the US Capitol Building, especially where such views first appear when approaching the core. Not only would a boathouse be very visible along this shoreline from Virginia, but it would also be very visible from the District's shoreline of the Potomac

River, including Georgetown. Also taken under consideration are the views to/from Theodore Roosevelt Island, which are of great historic significance.

Archeological Resources

The shores of the Potomac River contain a rich archeological record that includes prehistoric, colonial, Civil War, and other sites. A Phase I Archeological Survey was conducted at the Rosslyn sites to identify the potential presence and location of such resources, but no other surveys have been conducted to date (Louis Berger 2005). Planning and development of all sites and launch points should ensure these resources are not disturbed by potential development. Because of the extensive history of the project area, the probability that archeological resources exist in the proposed boathouse locations or at the two launch sites is high. Additionally, dredging may be required near potential underwater archeological resources, which would disturb the river bottom and potentially affect archeological resources.

VISITOR USE AND EXPERIENCE

The park provides access to a variety of recreational activities, including scenic driving, picnicking, fishing, and hiking, among others. The construction and operation of a boathouse facility and soft launch sites would create new visitor uses and experience opportunities within the park, but could conflict with already established recreational uses. Emergency access and the space for vehicles to maneuver at each alternative site may differ; these topics are analyzed under this impact topic.

TRAFFIC AND TRANSPORTATION

During construction of a facility, construction vehicles entering and leaving the site could affect traffic along the parkway. During operation, the presence of a boathouse facility would bring more pedestrian, bicycle, and vehicle traffic to the area. Other concerns include possible traffic back-ups along the parkway as boat trailers enter and exit the site.

Construction and operation of a boathouse would bring additional users to a site who would require parking. Conflicts for parking spaces could occur between existing park users and boathouse users and would affect the amount of parking available to other recreational users.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

WATER QUALITY

Potential impacts on water quality from the installation and use of a boathouse and soft launch sites include the expected extent of disturbance to the riverbank and nearshore river bottom/sediments from construction and the potential for soil erosion from disturbance of the banks. In addition, impacts also include the longer-term management of stormwater runoff from the site that could affect water quality. The construction of the boathouse and installation of floating docks (and associated regrading or dredging) would be subject to permitting requirements and appropriate sediment and erosion control management practices as required in Virginia's *Erosion and Sediment Control Handbook* (VDEQ 1992) that would minimize the potential for sediment-laden runoff from the construction site. Two alternatives may require dredging in the Potomac River to reach a depth that would be feasible to use motorized coaching launches and minimize wave refraction beneath the floating docks. Dredging would also cause short-term, adverse, localized impacts on water quality from turbidity as sediments are stirred up during the dredging process. The impacts would cease when dredging is complete. All dredging activities would require resource agency consultation and permitting through the US Army Corps of Engineers (USACE) and would include mitigation measures to reduce impacts. The boathouse would also maximize building-integrated stormwater management and minimize the use of impervious surfaces so the potential for stormwater to affect water quality would be minimized. Finally, storage and on-site use of petroleum

products for coaches' launches and other uses would be prohibited, so impacts from accidental spills would not be a concern.

TERRESTRIAL WILDLIFE AND WILDLIFE HABITATS

The construction and operation of a boathouse facility potentially could temporarily displace terrestrial wildlife species from increased noise and visual disturbance during project construction. However, wildlife habitat at the upper and lower Rosslyn sites and Gravelly Point is limited because of the urban nature of the area. Additionally, habitat at the three sites is heavily fragmented and is bound by or within close proximity to urban development, with little to no connectivity to other nearby habitats, and a relatively high level of noise and human disturbance. As a result, the three sites provide a small amount of minimally suitable habitat for most wildlife species. Terrestrial wildlife at the three sites consists primarily of urban species such as small mammals and birds, including bald eagles (*Haliaeetus leucocephalus*) (described below under "Federally Listed Species"). These species would likely avoid the area during construction. Operation of the facility would have minimal impacts on terrestrial wildlife because noise and human presence associated with the project would not represent a substantial change from existing conditions. Habitat disturbance at the two soft launch sites would be limited in scope and would result in minimal disturbance or impacts. At one of the soft launch sites, NPS would formalize a path through a narrow strip of trees and underbrush between the parking lot and the shoreline. At the other soft launch site, armor stone would be moved and minimal habitat would be disturbed.

FEDERALLY LISTED SPECIES

Four federally listed species could occur in or adjacent to the project area—the threatened northern long-eared bat (*Myotis septentrionalis*), the endangered Indiana bat (*Myotis sodalis*), the endangered shortnose sturgeon and several distinct population segments (DPS) (*Acipenser brevirostrum*) of that species, and the threatened Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), Gulf of Maine Atlantic DPS. Development of the boathouse is not expected to affect these species, so they were dismissed from further detailed analysis. Although no longer listed under Endangered Species Act, bald eagles are protected at the federal level under the Bald and Golden Eagle Protection Act and may occur in the project area; however, they would not likely be adversely affected and are dismissed from further detailed analysis. The full dismissal rationale for each species is provided below.

Northern Long-eared and Indiana Bats

It is possible that northern long-eared and Indiana bats could occur in and adjacent to the boathouse or soft launch sites. However, no known roost trees for either species are in the project area, and no impacts on northern long-eared or Indiana bats are anticipated because tree removal for construction would be limited to the late fall or winter after bats return to their hibernacula. Habitat reduction would be minimal.

Shortnose and Atlantic Sturgeon

Two species of federally listed sturgeon and several distinct subpopulations may be present in the Potomac River—the endangered shortnose sturgeon (*Acipenser brevirostrum*) and the Chesapeake Bay, New York Bight, Carolina, and south Atlantic DPS, as well as the threatened Gulf of Maine DPS of the Atlantic sturgeon (*Acipenser oxyrinchus*). US Fish and Wildlife Service (USFWS) multiyear surveys indicate that the species migrate through the project area (Kynard et al. 2007). Critical habitat for the five DPS of the Atlantic sturgeon was designated in August 2017 (82 *Federal Register* 39160). Within the Potomac River, critical habitat for the Chesapeake Bay DPS (Unit 2) includes the entire river from its mouth to Little Falls Dam and extends from the ordinary high water mark of one riverbank to the ordinary high water mark of the opposing riverbank. Currently, the Potomac River does not contain any confirmed sturgeon spawning sites. However, one suspected Atlantic sturgeon spawning site occurs downriver of the Chain Bridge. Additionally, it is possible that Atlantic sturgeon spawn in portions of the Potomac River

based on the presence of hard substrate in freshwaters, evidence of a historical sturgeon fishery in the Potomac, and observations of a large mature female Atlantic sturgeon in the Potomac River in 1970 (NMFS 2017a). Physical and biological features identified in the final rule as being necessary for the conservation of the species include:

- Hard bottom substrate (e.g., rock, cobble, gravel, limestone, or boulder) in low salinity waters (i.e., 0.0 to 0.5 parts per thousand range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;
- Aquatic habitat with a gradual downstream salinity gradient of 0.5 to 30 parts per thousand and soft substrate (e.g., sand, mud) downstream of spawning sites for juvenile foraging and physiological development;
- Water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, reservoirs, or gear) between the river mouth and spawning sites necessary to support: (1) unimpeded movement of adults to and from spawning sites; (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary; and (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., >1.2 meters) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river; and
- Water, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support (1) spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment (e.g., 13 degrees Celsius [°C] to 26°C for spawning habitat and no more than 30°C for juvenile rearing habitat, and 6 milligrams per liter dissolved oxygen for juvenile rearing habitat).

The term “physical or biological features” is defined as the features that support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features.

It is unlikely that the project would result in construction or disturbance that would adversely affect shortnose or Atlantic sturgeon. Impacts on these federally listed species associated with regrading or dredging would consist of disturbance/removal of sediments along the shoreline, underwater noise, and a temporary increase in turbidity that may displace animals from feeding and resting areas. Other impacts could include habitat modification as a result of shading from the dock. These potential impacts would be minimal and mostly temporary because of (1) the short duration of dredging; (2) the limited area where impacts could occur (the area where dredging could occur would be approximately 58,000 SF); (3) the area shaded by the docks would be minimal (up to 3,000 SF) compared to all other habitat available to the sturgeon; and (4) sturgeon are mobile and could avoid the area during times of underwater noise-generating activities. Therefore, the issue of potential impacts on threatened and endangered species was dismissed from further analysis. NPS submitted a determination of “may affect, not likely to adversely affect” federally listed threatened and endangered species to the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) in compliance with the requirements of section 7 of the Endangered Species Act (1973) on June 3, 2016.

NPS reinitiated section 7 consultation with NMFS following the designation of Atlantic sturgeon critical habitat in August 2017.

Although the proposed alternative sites are located within Atlantic sturgeon critical habitat, it is not likely that the alternatives would result in damage or adverse modification of critical habitat based on the four physical and biological features described above. Although dredging and placement of the dock would result in changes to substrate and water depth, these changes would not result in loss or degradation of sturgeon habitat. The water depth in the area proposed for potential dredging is currently 1 foot or less

and does not represent suitable habitat for sturgeon. Therefore, the 1 to 2 foot increase in water depth within the disturbed area would not constitute damage or adverse modification of habitat. Similarly, although placement of the dock would result in a permanent conversion of SAV habitat to unvegetated riverine habitat, this change would not represent a loss of habitat for Atlantic sturgeon because they also rest and forage in unvegetated habitats. The project would not create barriers to sturgeon passage. Proposed actions under the proposed project do not have the potential to substantially affect water parameters, including temperature, salinity, or dissolved oxygen.

Ongoing consultation with NMFS would determine specific mitigation measures that will be included in the decision document for this proposed action.

Bald Eagle

Bald eagles, protected under the Bald and Golden Eagle Protection Act, are known to nest within the vicinity of the project area and may forage in or near the alternative sites. Noise during construction activities could temporarily affect foraging eagles, but eagles would likely avoid the project area during periods of active construction. The nearest active bald eagle nest is located in the median of the parkway approximately half a mile north of the Rosslyn sites (CCB 2017). Therefore, project activities would not affect nesting eagles. It is likely that bald eagles occasionally forage at or near the alternative sites, given the proximity of nests to the sites and considering that foraging bald eagles are relatively common within riparian and open water habitats. Eagles would likely avoid the area during construction and instead forage in other nearby habitats.

INDIAN TRUST RESOURCES

No Indian trust resources exist in the project area.

ENVIRONMENTAL JUSTICE

The project could affect minority and/or low-income populations located near the project area. Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the US Environmental Protection Agency, environmental justice is the

...fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The goal of “fair treatment” is not to shift risks among populations but to identify potentially disproportionately high and adverse effects and to identify alternatives that may mitigate these impacts.

Although communities surrounding the project area contain both minority and low-income populations, environmental justice was dismissed as an impact topic for the following reasons:

- The park staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors.

- Implementation of the action alternatives would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse effects on any minority or low-income population.
- Implementation of the action alternatives would not result in any identified effects that would be specific to any minority or low-income community.
- The impacts associated with implementation of the action alternatives would not disproportionately affect any minority or low-income population or community.

CHAPTER 2: ALTERNATIVES

NEPA requires federal agencies to explore a range of reasonable alternatives aimed at addressing the purpose of and need for the proposed action. NPS has refined the alternatives under consideration and narrowed the number of alternatives to be examined in further detail to three action alternatives, plus the no-action alternative.

Four alternatives are analyzed in this EA as follows:

- Alternative A: no action
- Alternative B: lower Rosslyn site
- Alternative C: combination upper and lower Rosslyn sites
- Alternative D: Gravelly Point site

Alternatives that were considered but were not technically feasible, did not meet the purpose of and need for the project, created unnecessary or excessive adverse impacts on cultural or natural resources, and/or conflicted with the overall management of the park or its resources were dismissed from further analysis and also are described in this chapter.

DESCRIPTIONS OF ALTERNATIVES

ALTERNATIVE A: NO ACTION

Under the no-action alternative, no boathouse or soft launch sites would be constructed in the park. Arlington County public high school rowing programs and the public would continue to use area boathouses located in Washington, DC, as described in chapter 1. Existing and future public demand for rowing programs and related boat storage space would be accommodated by these existing facilities, other planned rowing facilities, or would remain unmet.

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

Regardless of the alternative location, all facilities would provide low-impact, resilient, and flood-resistant riverfront boat storage and launching. The structures would be designed with flow-through and tear-away walls. Best management practices for siting and construction would include limiting impervious surfaces and maximizing building-integrated stormwater management. As possible, alternative energy systems would be incorporated into the design. Table 1 provides a summary of each alternative element and provides a detailed description of the resilience/flood hazard adaption measures and boathouse architecture options.

The boathouse facility would be operated through either a concessions contract or a cooperative agreement. A lease would not be appropriate because NPS leases are for facilities that are not tied to a park's purpose or of operational significance. Arlington County, possibly in coordination with NOVA Parks, of which Arlington County is a member, would be the collaborating government in a cooperative agreement. The management and implementation approach would be determined at a future point in time. Operations via a concessions contract would provide a return of franchise fees (revenue) to the park.

Boats would be delivered to the Rosslyn storage facility by water only (alternatives B and C) and could be delivered either by water or by vehicle/boat trailer during non-peak traffic hours at Gravelly Point (alternative D). Stored boats would be moved to a location above base flood elevation when potential flood events are expected. No on-site storage of motorized coach launches, gasoline, or motors would occur and no gasoline tanks would be filled on-site.

All action alternatives would also include the option to create car-top access and soft launch points for paddlecraft along the Virginia shoreline of the Potomac River at Riverside Park and Roaches Run. These sites would be located convenient to existing parking and would include some changes to the shoreline to allow users to launch from the shore. Short, floating docks would be placed in both locations. Existing riprap would be removed from Roaches Run, and an existing road would be used for pedestrian access to minimize disturbance. Armor stone (boulders) currently on the steep riverbank would be removed at Riverside Park and potentially replaced with stairs. In addition, NPS would close an unofficial soft launch point at Riverside Park and the associated social trail used to access it. The general area within the park for each proposed alternative boathouse facility location and the location of the soft launch points are provided in figure 2. Site-specific maps and photos are provided under each alternative. The Roaches Run site is shown in figure 3, and Riverside Park is shown in figure 4.

Permits for docks and other in-water work would be obtained from USACE and from the appropriate local jurisdiction. The District of Columbia has jurisdiction over the Potomac River to the Virginia shoreline at the lower Rosslyn site and Gravelly Point. Construction under all action alternatives would require permits from the District Department of Energy and the Environment and Arlington County. The Potomac River at the Riverside Park soft launch site is under the State of Maryland's jurisdiction and would require permits from the Maryland Department of the Environment and Fairfax County, Virginia. Because of its location within an inlet and not on the mainstem of the Potomac River, the Roaches Run soft launch site is entirely within the State of Virginia's jurisdiction and would require permits from Arlington County and the Virginia Department of Environmental Quality.

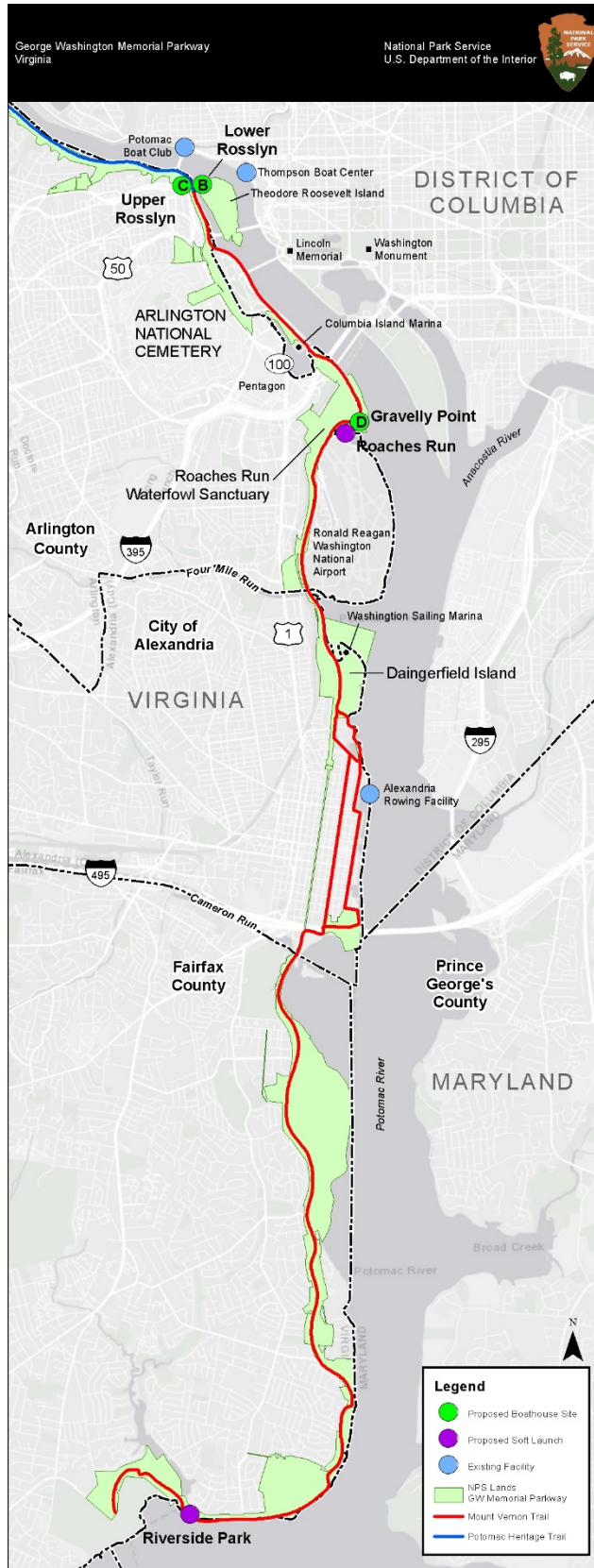


FIGURE 2. PROPOSED ALTERNATIVE SITE LOCATIONS



FIGURE 3. ROACHES RUN SOFT LAUNCH SITE



FIGURE 4. RIVERSIDE PARK SOFT LAUNCH SITE

ALTERNATIVE B: LOWER ROSSLYN SITE

Under alternative B, NPS and Arlington County would develop a low-impact, flood-resistant riverfront boat storage facility and launching site, including a boathouse facility and floating docks for nonmotorized boats. The facility would be located along the Potomac River shoreline in Virginia south of the Key Bridge, east of the parkway and north of the existing Theodore Roosevelt Island parking lot. Site access would be predominantly by transit, including both Metrorail and bus, by bicycle, and on foot. This alternative would provide approximately 14,000 SF of boat storage and additional space for a rigging area/apron. As noted under “Elements Common to all Action Alternatives,” the storage facility would be designed to be light on the land and flood-resistant with flow-through and tear-away walls. The space would be split with some of the space reserved for scholastic teams and the remaining for community users. No support facilities (e.g., offices or locker rooms) would be available at this location. A path would link the rigging area/apron to a 300-foot-long floating dock for launching rowing shells and other paddlecraft. A new 300-foot-long access lane for emergency vehicles would connect the parking lot to the boathouse location. The access lane would be designed to minimize impacts, using grass pavers or other pervious surfaces, eliminating impervious surface to the extent possible. The emergency access lane would run beneath the highest part of the elevated walkway in this location, which would accommodate the required clearance of 14 feet for emergency vehicle access. (IAFC 2011).

Approximately 58,000 SF of regrading, dredging, and bottom contouring would be required to achieve at least a 3.3-foot depth in this location to accommodate depth required for coaching launch boats and rowers to avoid underwater obstructions. The outboard motors on the coaching launches have shafts that extend up to 22 inches below the surface; there needs to be enough depth below them at low tide so they do not come into contact with the river bottom and stir up sediments or hit objects on the river bottom. In addition, enough depth below the dock should be included so that waves refracting from the shore do not cause the dock to bounce and make it difficult to get into and out of rowing shells safely. Figure 5 provides the proposed components and configuration for alternative B, figure 6 shows where regrading or dredging would be required, figure 7 shows a photo of the site, and table 1 provides details on facility architecture, site access, and floodplain adaptations. Figure 8 shows a conceptual elevation for the lower Rosslyn site. The exact location of the floating dock and the depth and frequency of any dredging activities would be formalized during the design and permitting phase of the proposed project and in consultation with USACE. A USACE permit would be required for all in-water work. Construction equipment would be staged on a portion of the existing parking area for Theodore Roosevelt Island. A dredge boat would be required to complete dredging activities, if necessary, and a barge may be required to deliver large equipment or materials for construction of the boathouse on the lower Rosslyn site because site access is constrained by the elevated pedestrian walkway located south of the proposed boathouse location. Vegetation cleared during the construction period would be replanted with native vegetation where possible.

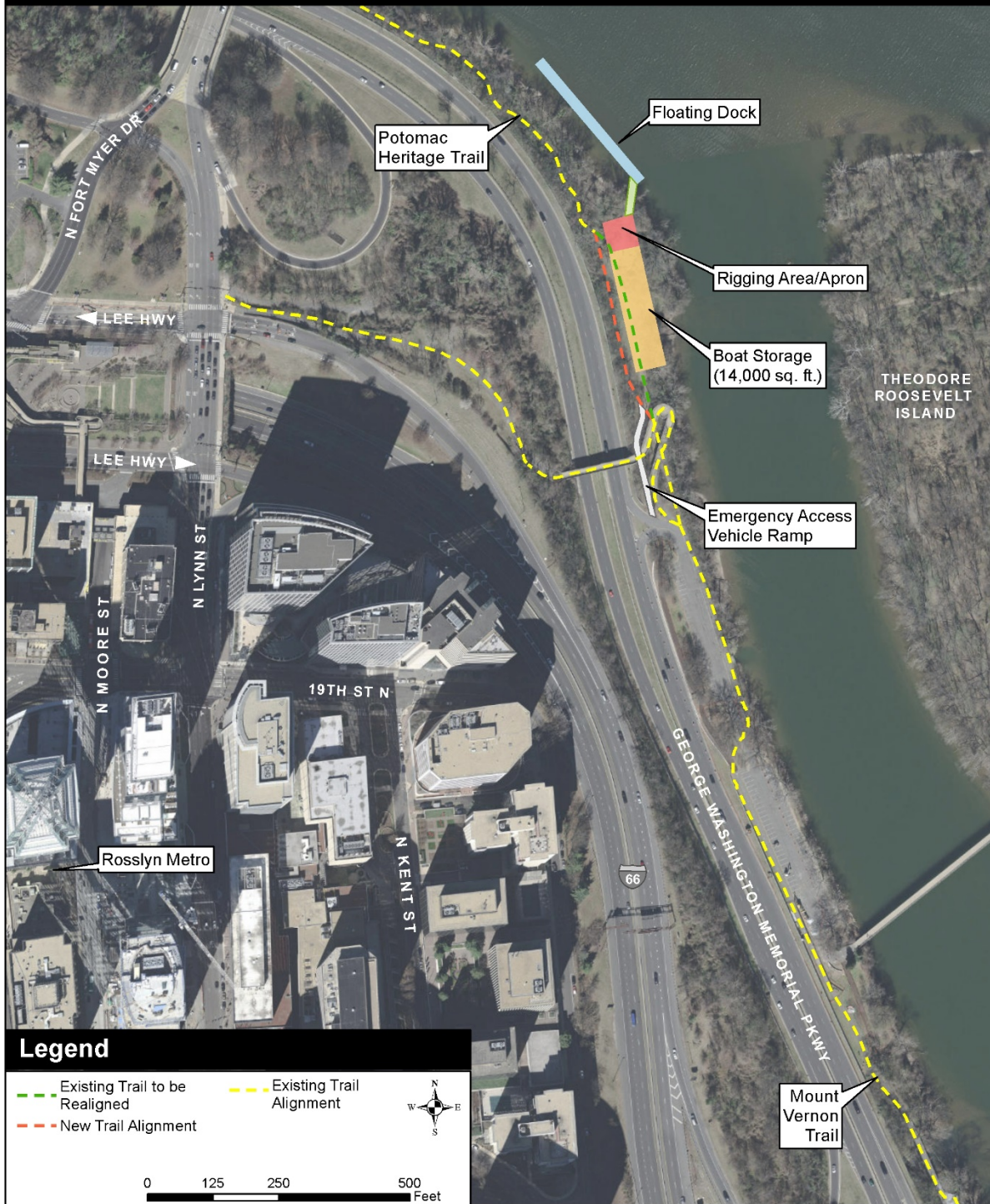


FIGURE 5. ALTERNATIVE B: LOWER ROSSLYN

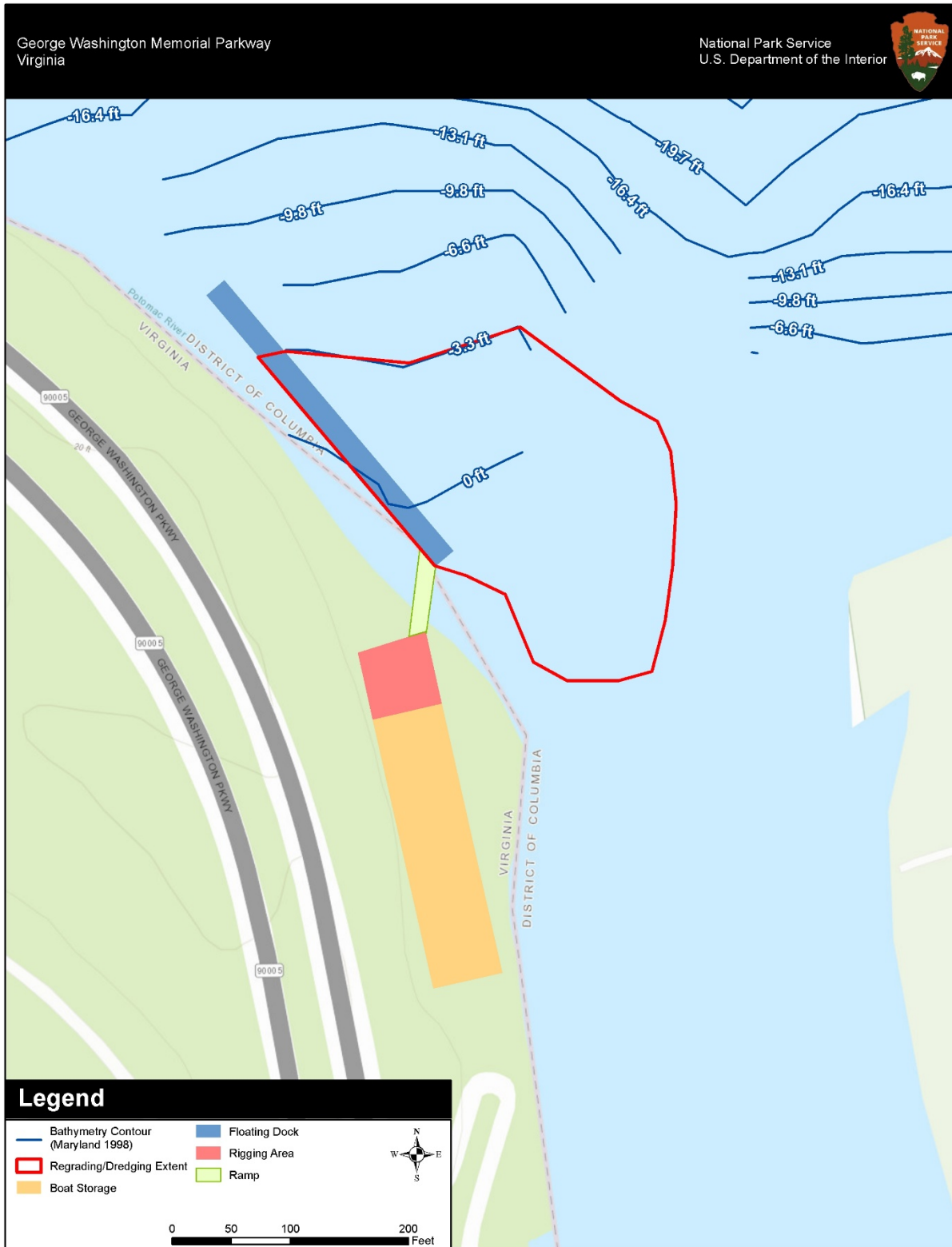


FIGURE 6. LOWER ROSSLYN REGRADING/DREDGING EXTENT



FIGURE 7. LOWER ROSSLYN SITE, FACING NORTH

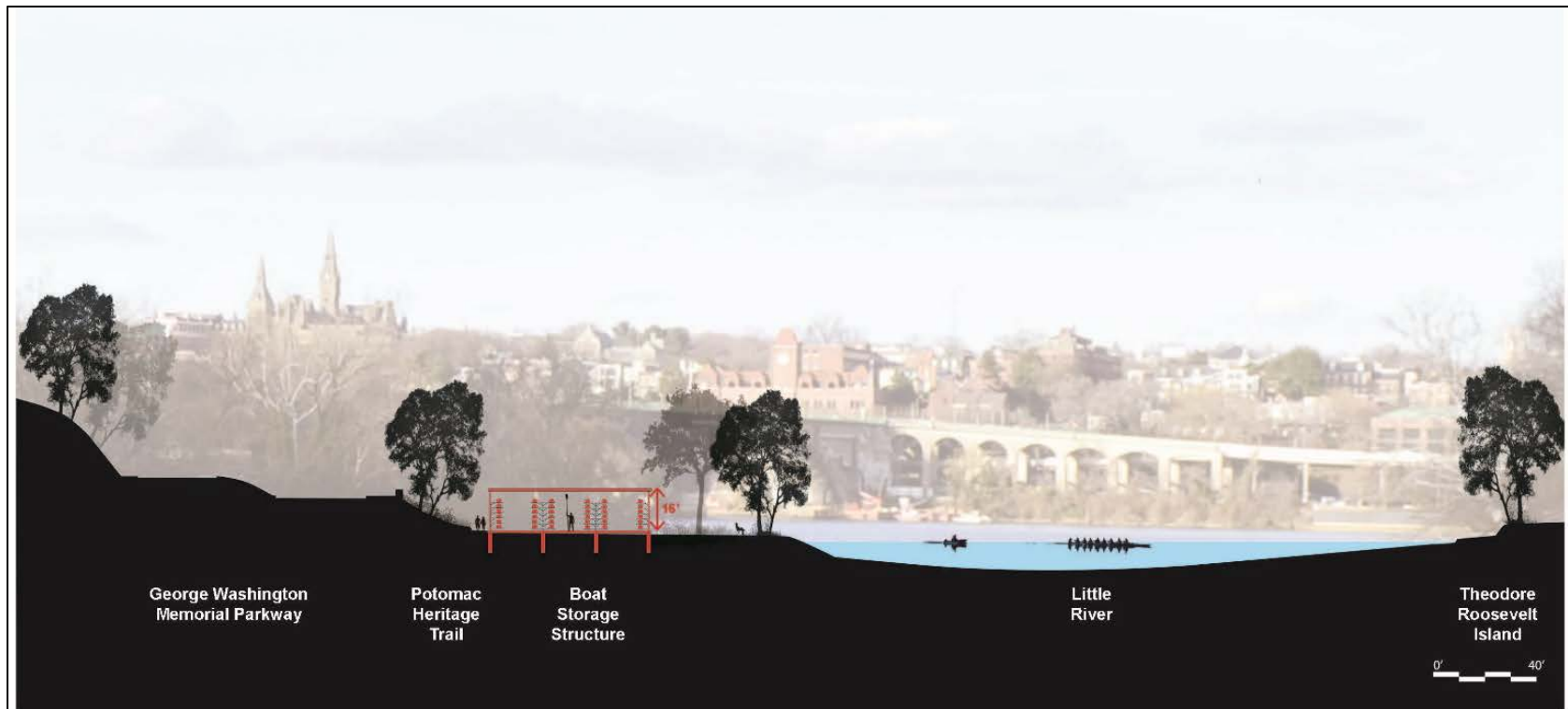


FIGURE 8. CONCEPTUAL ELEVATION FOR THE LOWER ROSSLYN SITE

ALTERNATIVE C: COMBINATION UPPER AND LOWER ROSSLYN SITES

Alternative C would include the same facility and configuration on the lower Rosslyn site as described for alternative B but would also provide additional support facilities on the upper Rosslyn site owned by Arlington County. The upper Rosslyn site support facility would include office space, locker rooms, restrooms, and space for education and outreach. A small parking area would provide access for visitors with disabilities and service vehicles and an access road associated with the support facility. Similar to alternative B, boat storage, the floating dock, and rigging area would be located on the lower Rosslyn site, while other support functions would be located in a facility on the upper Rosslyn site, accessible by trail. Site access would be predominantly by transit, bicycle, and on foot. The proposed parking lot and portions of the relocated trail and support buildings for options A and B would not be situated on NPS lands. Figure 9 provides the proposed components and configuration for alternative C. Table 1 provides details on facility architecture, site access, and floodplain adaptations. Figure 10 shows the proposed location for the support facility.

Construction equipment would access the upper Rosslyn site via N. Lynn Street. The upper Rosslyn area is constrained by the I-66 off ramp to the south and a steep slope down to the parkway to the north. The analysis assumes all vegetation in the staging area would be removed during construction and would be replanted in areas outside the support facility and the small parking area. The location of the staging area for the both the upper and lower Rosslyn sites is provided in figure 11.

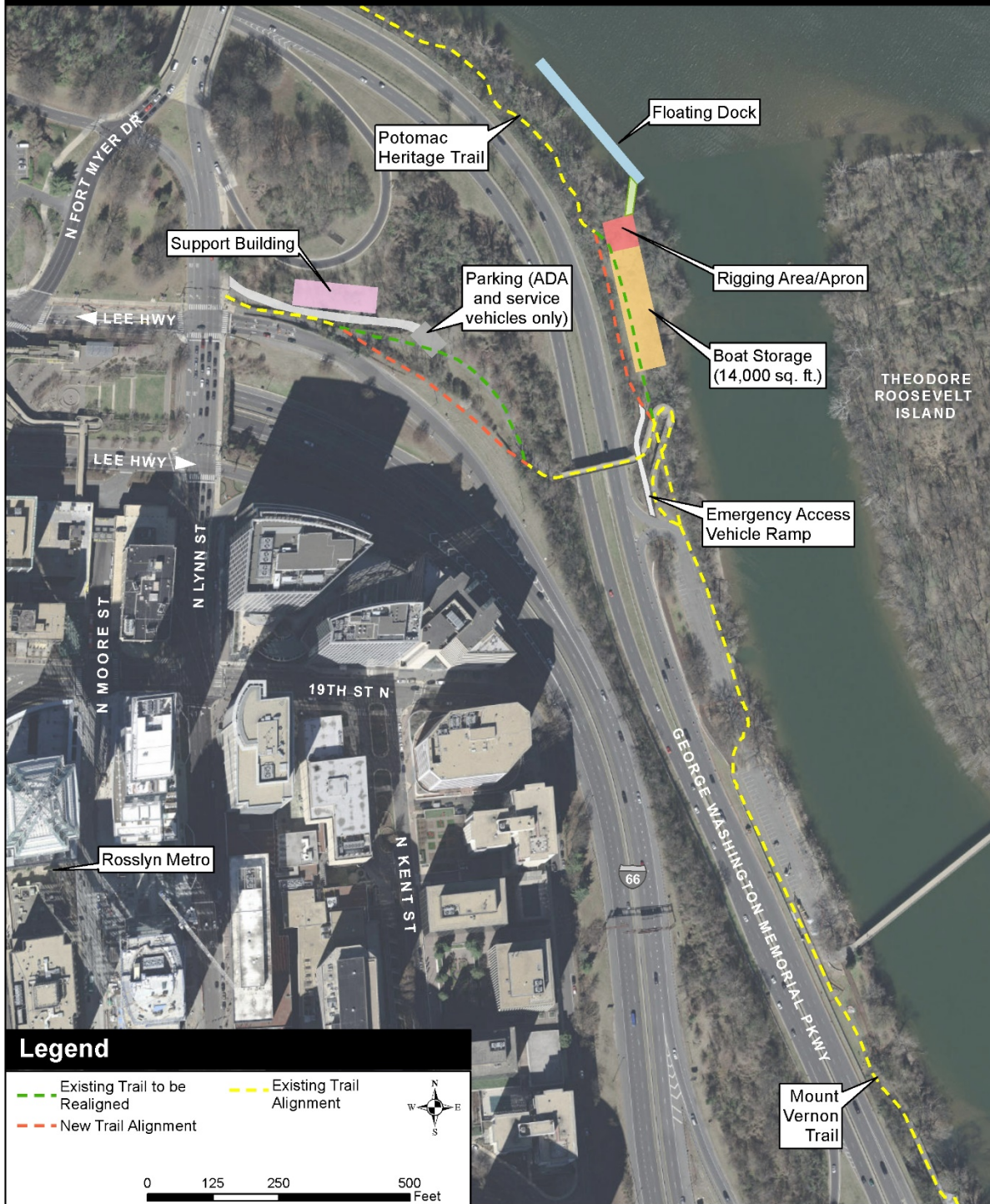


FIGURE 9. ALTERNATIVE C: COMBINATION OF UPPER AND LOWER ROSSLYN SITES



FIGURE 10. UPPER ROSSLYN SITE

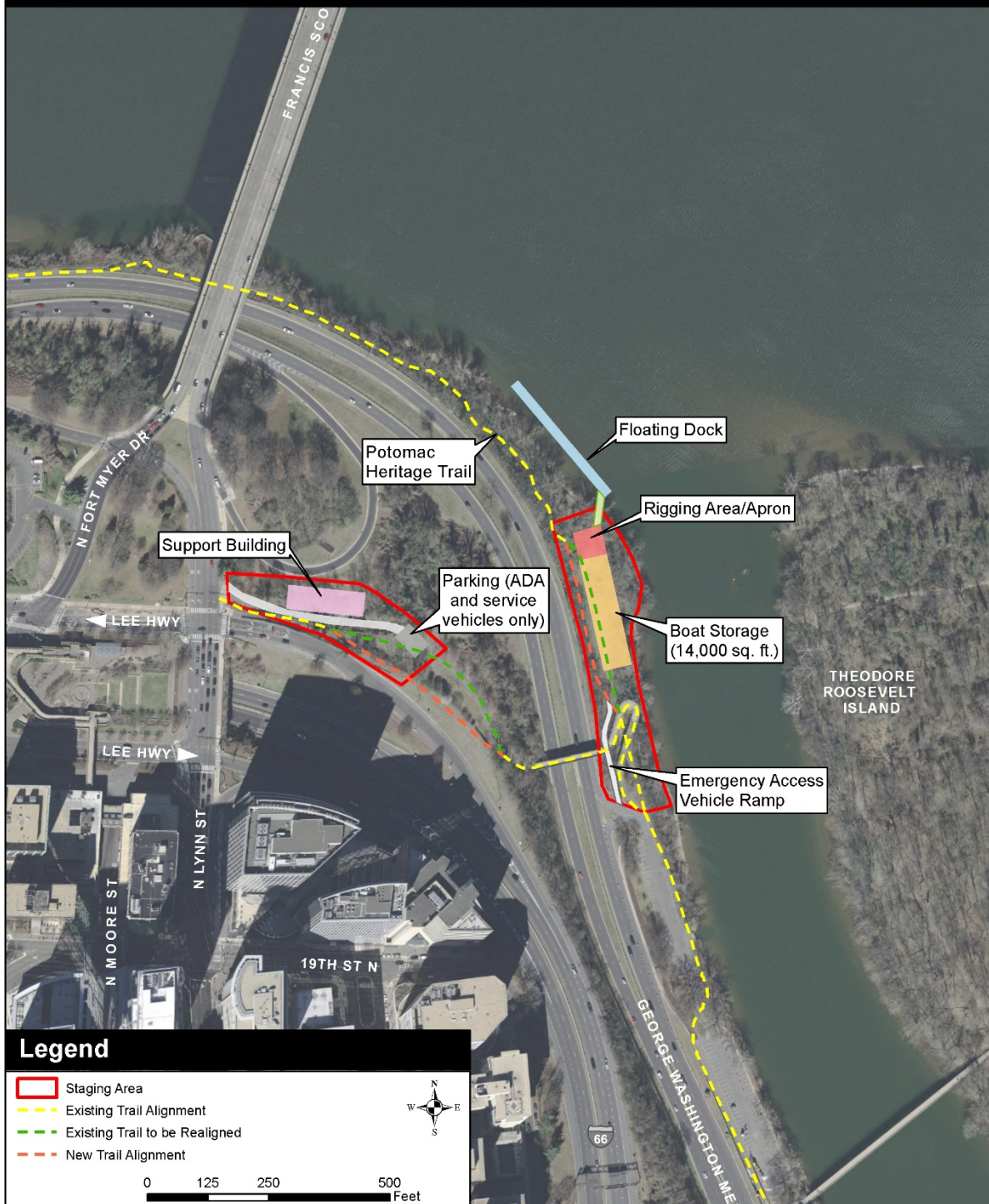


FIGURE 11. STAGING AREAS – UPPER AND LOWER ROSSLYN SITES

ALTERNATIVE D: GRAVELLY POINT SITE

Under alternative D the boathouse facility and docks for nonmotorized boats would be located in the Gravelly Point area located east of the parkway, adjacent to the existing parking lots and recreational fields. Gravelly Point was proposed to avoid potentially sensitive resources and reduce the amount of road infrastructure needed to access the site, compared to other locations along this part of the Potomac River. This alternative would include one larger 28,000 SF two-story boathouse facility, with 14,000 SF of storage space and 14,000 SF for restrooms, locker rooms, exercise equipment, team meeting space, and a community room above. Because of the proximity to the Reagan National Airport, the height of the proposed boathouse would be restricted to be less than 25 feet (14 CFR Part 77, Subpart C). Similar to alternatives B and C, the site would contain an associated rigging area/apron and 300-foot-long floating dock. A 1,130-foot-long (20-feet-wide / 22,850 SF) driveway would be constructed to provide drop-off access to the boathouse facility. The driveway would accommodate accessible parking spaces and emergency vehicles. Two playing fields that exist on the site would be relocated slightly to the north. Access would be predominantly by car, and boathouse users would use the existing parking area at Gravelly Point. Overflow parking could be accommodated on permeable pavement in the middle of the loop area, if necessary.

Figure 12 provides the proposed components and configuration for alternative D. Table 1 provides details on facility architecture, site access, and floodplain adaptations. Figure 13 shows conceptual elevation for the Gravelly Point site.

Construction equipment at Gravelly Point could be staged in the existing parking lot or on the proposed site itself. The Gravelly Point site does not have the same construction staging and access constraints that the upper and lower Rosslyn sites have.



FIGURE 12. ALTERNATIVE D: GRAVELLY POINT SITE

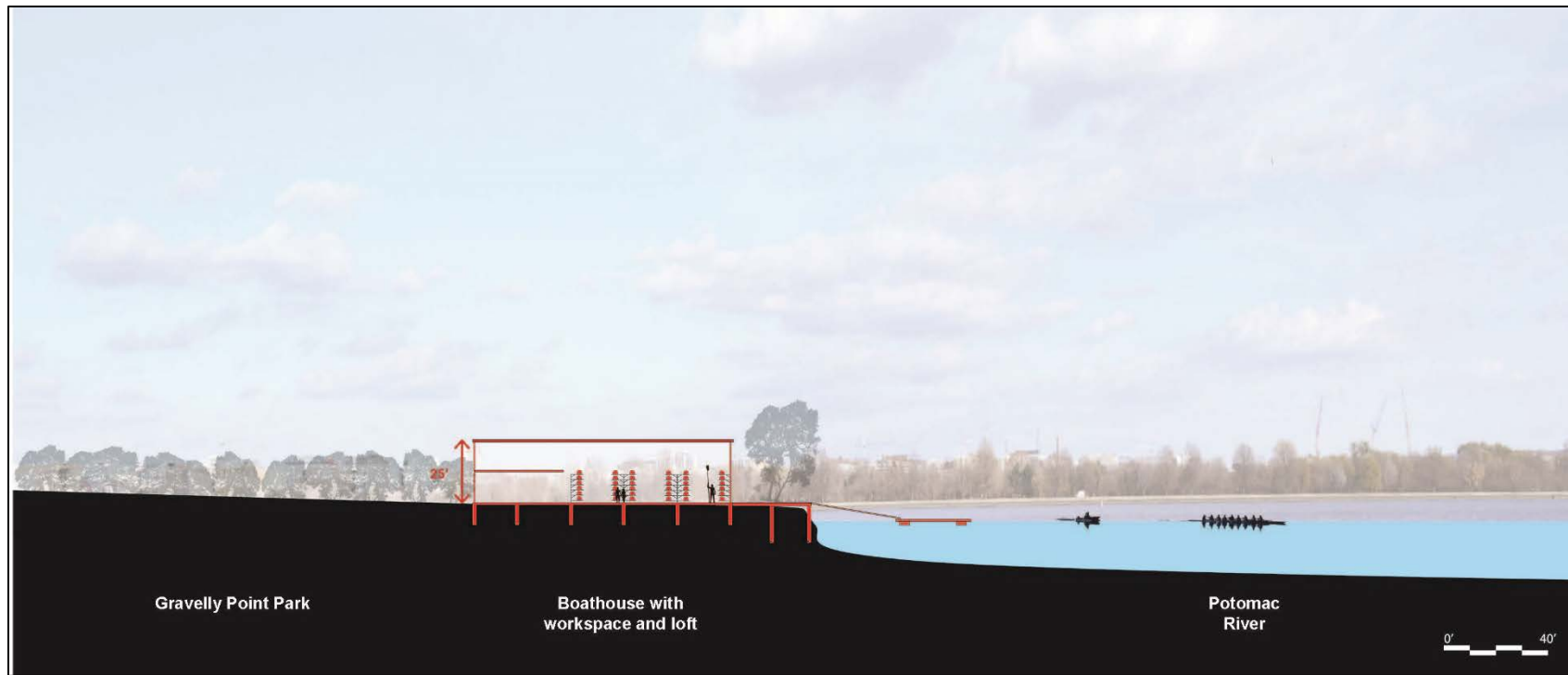


FIGURE 13. CONCEPTUAL ELEVATION AT THE GRAVELLY POINT SITE

TABLE 1. SUMMARY OF ACTION ALTERNATIVES

Feature	Alternative B— Lower Rosslyn Site	Alternative C— Upper and Lower Rosslyn Site	Alternative D—Gravelly Point Site
Summary	This alternative focuses on developing a low-impact, flood resistant riverfront boat storage and launching facility. Site access would be predominantly by transit, bicycle, and on foot.	This alternative focuses on developing a low-impact, flood resistant riverfront boat storage and launching facility with ancillary functions provided in facilities located on an upland site accessible by a trail. Site access would be predominantly by transit, bicycle, and on foot.	This alternative focuses on developing a large, full-service riverfront community rowing/paddling facility with storage, launching and support spaces provided within the same flood-resistant building. Access would be predominantly by car.
Management and Implementation Options	<ul style="list-style-type: none"> Options for which legislative authority exists: <ul style="list-style-type: none"> Concession Cooperative management agreement 	<ul style="list-style-type: none"> Same as alternative B 	<ul style="list-style-type: none"> Same as alternative B
Operational Restrictions and Requirements	<ul style="list-style-type: none"> Stored boats to be moved to a location above base flood elevation during potential flood events Boats delivered to storage facility by water only No storage or fueling of motorized coach launches, gasoline, or motors 	<ul style="list-style-type: none"> Same as alternative B 	<ul style="list-style-type: none"> Same as alternative B, but boats may be delivered to storage facility by water as well as boat trailer access during non-peak hours
User Experience/Access	<ul style="list-style-type: none"> Minimum 5-minute walk from nearby parking and bus drop-off; 100-foot grade change limits accessibility Accessible parking and access for emergency vehicles only No vehicular access / car-top launch for users. Alternative launch points for kayaks/canoes to be developed at <ul style="list-style-type: none"> Riverside Park Roaches Run 	<ul style="list-style-type: none"> Same as alternative B , plus Vehicular access at upper site limited to accessible parking and emergency and service vehicles 	<ul style="list-style-type: none"> Universal access No vehicular access / car-top launch for users. Alternative launch points for kayaks/canoes developed at <ul style="list-style-type: none"> Riverside Park Roaches Run
Building Footprint and Program	<ul style="list-style-type: none"> 14,000 SF boat storage for scholastic and community users Rigging space/apron 	<ul style="list-style-type: none"> Lower site (14,000 SF structure) <ul style="list-style-type: none"> 14,000 SF boat storage for scholastic and community users Rigging space/apron Upper site boat house support <ul style="list-style-type: none"> Office space Locker rooms and restrooms Other user amenities that support transit access to the site (e.g., changing rooms, lockers, showers, education and outreach) 	<ul style="list-style-type: none"> 28,000 SF with 14,000 SF boat storage; the remainder is for boat house support and amenities for scholastic and community users Rigging space/apron Restrooms Locker rooms Exercise equipment room Team meeting space/community room
New Dock	<ul style="list-style-type: none"> 300-foot-long low-profile floating dock for rowing and canoe/kayak launch Wheelchair transfer point Regrading or dredging required to achieve minimum 3.3-foot clearance to bottom (approximately 58,000 SF of disturbance) 	<ul style="list-style-type: none"> Same as alternative B 	<ul style="list-style-type: none"> Same as alternative B; however, no dredging would be required in this location

Feature	Alternative B— Lower Rosslyn Site	Alternative C— Upper and Lower Rosslyn Site	Alternative D—Gravelly Point Site
Visitor Access	<ul style="list-style-type: none"> • Bus drop-off in Rosslyn with enhanced wayfinding signage identifying the route to the river by way of the existing trail and pedestrian bridge over parkway • Bicycle and pedestrian access via Martha Custis Trail rerouted around building to minimize bicycle, boat, and pedestrian conflicts • Potomac Heritage Trail would be rerouted around the boathouse • Emergency access vehicle route from the Theodore Roosevelt Island parking lot 	<ul style="list-style-type: none"> • Same as alternative B – plus the following upper site amenities • Shower and changing rooms, lockers for bulky equipment storage and other amenities on the upper site that support transit as a viable and comfortable access option 	<ul style="list-style-type: none"> • Pedestrian access via footpath from parking lot at Gravelly Point • Bicycle and pedestrian access via Mount Vernon Trail rerouted around building to minimize bicycle, boat, and pedestrian conflicts
Motorized Access	<ul style="list-style-type: none"> • Vehicular access to building limited to park maintenance vehicles via driveway extended from the Theodore Roosevelt Island parking lot • Paid parking in nearby parking garages • Storage of motorized launches not permitted on site; coach launches berthed offsite at nearest motorboat marina (Pentagon Lagoon), or other marinas 	<ul style="list-style-type: none"> • Same as alternative B, plus • Access for emergency and service vehicles and accessible parking at upper Rosslyn 	<ul style="list-style-type: none"> • Vehicular access for rowing shell trailers restricted to non-peak hours • Park maintenance vehicle access to building • Parking in Gravelly Point lot, with accessible spaces on the loop road in front of the boathouse; overflow parking could be accommodated on permeable pavement in the middle of the loop area, if necessary. • Storage of motorized launches not permitted on site; coach launches berthed offsite at nearest motorboat marina (Columbia Island), or other marinas
Boathouse Architecture	<ul style="list-style-type: none"> • Narrow footprint allows for some vegetative screening on long façades facing river and parkway • Maximum height above existing grade limited to minimize intrusion into views from parkway and other vantage points • Alternative construction methods such as modular construction and installation from waterside to minimize construction impacts 	<ul style="list-style-type: none"> • Same as alternative B 	<ul style="list-style-type: none"> • Maximum height above existing grade limited to minimize intrusion into views from parkway and other vantage points; maximum of 25.5 feet meets airport proximity requirements.
Resilience/Flood Hazard Adaptation	<ul style="list-style-type: none"> • Critical systems (electrical and communication) would be provided by alternative means to establish an “off the grid” facility • Resilient structure resists flood damage and allows easy renovation post-flood (e.g., structural frame withstands flood/debris and ice dam impact, interior and exterior finish materials are eliminated to reduce post-flood waste; structure and finishes of durable materials that dry out and clean off easily) • Simple, passive and flexible design features such as natural daylighting, operable windows, passive heating and cooling allow usable conditions to be restored more easily 	<ul style="list-style-type: none"> • Same as alternative B, except critical systems would be located above base flood elevation (+19, approximately 9 feet above existing grade) 	<ul style="list-style-type: none"> • Same as alternative C

ALTERNATIVES CONSIDERED BUT DISMISSED

During the course of scoping, several alternatives were considered but deemed to be unreasonable and were not carried forward for analysis in this EA. Justification for eliminating these options from further analysis was based on the following factors:

- technical or economic feasibility
- inability to meet project objectives or resolve need
- duplication with other, less environmentally damaging or less expensive alternatives
- conflict with an up-to-date and valid park plan, statement of purpose and significance, or other policy, such that a major change in the plan or policy would need to be implemented

The following alternatives or alternatives elements were considered but dismissed for the listed reasons:

- The original 14th Street/CSX Bridge site: This alternative was dismissed because the location required too much pavement for the driveway and potentially would have affected underwater archeological sites. The realignment of the alternative for this site to place the boathouse closer to Gravelly Point (now alternative D) would result in fewer environmental impacts on several resources.
- Dangerfield Island site: Dangerfield Island is also the site of the Washington Sailing Marina, and the available site for the facility would place the docks close to the narrow navigation channel. Therefore, this alternative was considered in the 2002 feasibility study, but dismissed following scoping for several reasons:
 - Water conditions for rowing are not ideal.
 - There would be conflicts with navigation and sailboats from the narrow entrance channel where new rowing facilities would be most likely to be placed.
 - Rowing and sailing would not be compatible in the basin.
 - The site is not in Arlington County.

MITIGATION MEASURES

SOILS

- The construction of the boathouse and installation of floating docks would be subject to permitting requirements and appropriate sediment and erosion control management practices as required in Virginia's *Erosion and Sediment Control Handbook* (VDEQ 1992) to minimize the potential for sediment-laden runoff from the construction site.
- If the total site disturbance exceeds 2,500 SF, a land-disturbing activity permit would be required by the Erosion and Sediment Control Ordinance in Chapter 57 of the Arlington County Code and the Virginia Erosion and Sediment Control Program.

WATER QUALITY

- The construction of the boathouse and installation of floating docks would be subject to permitting requirements and appropriate sediment and erosion control management practices as required in Virginia's *Erosion and Sediment Control Handbook* (VDEQ 1992) to minimize the potential for sediment-laden runoff from the construction site.
- The boathouse would (1) comply with stormwater management requirements, (2) maximize building-integrated stormwater management, and (3) minimize the use of impervious surfaces to minimize the potential for stormwater impacts on water quality.

- Storage of petroleum products for coaches' launches and other uses would be prohibited to prevent impacts from accidental spills.
- Dredging activities, if required, would be permitted through the USACE.

WETLANDS AND FLOODPLAINS

- The boathouse structures would be designed to reduce floodplain impacts, including using flow-through construction and potentially an elevated structure.
- A buffer would be established around SAV beds to the extent possible and dredging and placing any necessary fill would occur outside the growing season. The total square footage of SAV disturbed would be replanted outside the project area but within the watershed, as close to the site as possible.
- Mitigation, to be determined during the permit process, would occur, as necessary.

VEGETATION

- Following construction, revegetation of temporarily disturbed areas should follow applicable best management practices to minimize and prevent the establishment of invasive species. Fill material should be obtained in accordance with agency approvals and permitting requirements and should be certified free of exotic invasive vegetation species and weeds. The equipment used at the site should be free of mud, dirt, and plant material before use. Plants used in revegetation activities should include only native species. Prior to revegetation, disturbed areas should be monitored for any invasive plant species.
- Ground disturbance would be avoided and minimized, where possible.
- Trees removed during construction would be replanted within the project area or elsewhere in the park.

AQUATIC WILDLIFE

- The construction of the boathouse and installation of floating docks would be subject to permitting requirements and use of appropriate sediment and erosion control management practices as required in Virginia's *Erosion and Sediment Control Handbook* (VDEQ 1992) to minimize the potential for sediment-laden runoff from the construction site, which could affect aquatic wildlife.
- Consultation with USFWS and NMFS would determine any additional mitigation measures, which may include seasonal restrictions for in-water work. All mitigation measures required by USFWS and NMFS will be included in the decision document for this proposed action.

HISTORIC DISTRICTS AND CULTURAL LANDSCAPES

All mitigation for historic districts and cultural landscapes would be completed in consultation with the Virginia, District of Columbia (DC), and Maryland state historic preservation officers (SHPO); specific mitigation measures will be included in a programmatic agreement.

ARCHEOLOGICAL RESOURCES

All mitigation for archeological resources would be completed through section 106 consultation with the Virginia, DC, and Maryland SHPOs; specific measures would be included within a programmatic agreement. All specific mitigation measures will be included in the decision document for this proposed action.

VISITOR USE AND EXPERIENCE

- The construction of the boathouse and installation of the floating docks would be limited to daytime hours and subject to all applicable local, state, and federal noise ordinances and compliance measures.

TRAFFIC AND TRANSPORTATION

To reduce impacts on the transportation system from the action alternatives, mitigation measures are recommended by travel mode of transportation analyzed.

- **Pedestrians:** Under alternatives B or C, signs to help boathouse users, especially tourists, should be installed to help find their way between the Rosslyn Metro Station and the boathouse facilities. At Gravelly Point, install speed humps along the Gravelly Point internal roadway network, including the new proposed circular driveway serving the boathouse and at each Mount Vernon Trail vehicular crossing. More detail is provided in the Transportation Impact Assessment (TIA) (appendix A).
- **Bicycles:** Under alternatives B or C, require bicyclists to walk their bicycles between N. Lynn Street and the boathouse along the Martha Custis Trail to reduce bicycle-pedestrian safety issues through this section with a steep grade. More detail is provided in the TIA (appendix A).
- **Transit:** Under alternatives B and C, NPS should work with the Washington Metropolitan Area Transit Authority (WMATA) and the District Department of Transportation (DDOT) to install signs directing boathouse patrons from the key transit locations to the boathouse, including the Rosslyn Metro Station and DC Circulator stop at N. Moore Street at N.19th Street.
- **School buses/taxis/other carpools:** Under alternatives B and C, Arlington County should work with NPS to designate locations where school buses, taxis, and other vehicles can safely drop-off/pick-up boathouse users. The TIA provides a few suggested locations, but these locations need to be formalized before a new boathouse opens to prevent vehicles from attempting the drop-off/pick-up at the corner of Lee Highway Westbound (Lee Highway WB) and N. Lynn Street. The following locations are suggested for further study as near-term solutions:
 - *School buses:* along N. Kent Street.
 - *Taxis and personal vehicle drop-off/pick-up:* along Lee Highway Eastbound (Lee Highway EB) service road, using the existing designated bus stops during the weekdays.
 - *Taxis and personal vehicle drop-off/pick-up:* along N. Moore Street just south of Lee Highway EB service road along the west side, using the existing on-street parking during the weekday peak hours.
 - *All drop-off/pick-up:* along N. Moore Street just south of Lee Highway EB service road along the west side using the existing on-street parking converted to an official drop-off/pick-up for all boathouse traffic. More detail is provided in the TIA (appendix A).

In the long term, all drop-off/pick-up is suggested to use an existing commuter bus stop for 13 Loudoun County Transit outbound commuter buses destined to Loudoun County located on N. Kent Street. There is 100-foot section of curb that is signed to prohibit parking.

- **Parking:** Under alternative D, additional parking may be needed to accommodate the boathouse demand at Gravelly Point without affecting the existing park facilities. A separate parking study would need to be conducted to ascertain an appropriate parking lot capacity. No parking for use of the boathouse facilities would be allowed at the existing Theodore Roosevelt Island parking lot under alternatives B and C.

- **Rowing Shell Trailer Access:** Under alternative D, the pavement at three locations (the entrance ramp to Gravelly Point, the exit ramp from Gravelly Point, and the U-turn at the parkway and Daingerfield Island) may need to be widened to accommodate the boat trailers. The TIA contains more detail and further consultation with Arlington County would be required.

NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

The preferred alternative is the alternative that “would best accomplish the purpose and need of the proposed action while fulfilling [the NPS] statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors” (46.420(d)). The preferred alternative ultimately may not be the selected alternative and identification of the preferred alternative is not a final agency decision.

NPS has identified Alternative C, Combined Upper and Lower Rosslyn Sites, as the preferred alternative. Alternative C is preferred because the water at the lower Rosslyn site is calmer, which would improve boater safety and allow for more days on the water compared with the Gravelly Point location. The use of both the upper and lower Rosslyn sites allows for development of a smaller boat storage structure while providing additional support facilities outside the floodplain, off NPS property, and close to transit. The upper and lower Rosslyn project sites are also located closer to other existing boathouses, which would help facilitate organized events.

CHAPTER 3: AFFECTED ENVIRONMENT

SOILS

According to the US Department of Agriculture, Natural Resources Conservation Services (NRCS) web soil survey, the upland portion of the upper Rosslyn site, the Gravelly Point site, and the soft launch sites at Roaches Run are identified as Urban Land-Udorthents complex (2–15% slopes), which are characterized by well-drained loamy and clayey soils with varying components of rock fragments. These soils are typically formed when the original soils are disturbed by excavating or filling during road or building construction. Udorthent soils are generally found by quarries, mines, large buildings, highways, and other areas that have been excavated or filled. Because of the inherently disturbed nature of these soil types, Urban Land and Udorthents complex are not rated by NRCS for erosion hazard, recreational path and trail development, or shallow excavations. The soils at both Rosslyn sites support woody vegetation and turfgrass. The soils are worn where the Potomac Heritage Trail crosses through the lower Rosslyn site. There is no evidence of other erosion, and the soils do not appear to be compressed in other portions of the Rosslyn sites. The Gravelly Point site supports turfgrass for the recreational fields adjacent to the site. The soils do not appear to be prone to erosion or to be noticeably compressed.

The soft launch site at Riverside Park is located on soils mapped as Grist Mill-Mattapex complex (2–7% slopes). Mattapex soils are found on terraces on coastal plains and are relatively well drained. The parent material consists of fluviomarine deposits. This soil does not meet hydric criteria and is limited for path and trail development because it tends to be dusty. This soil complex is moderately erodible and is rated as somewhat limited for shallow excavations because of dustiness, typical depth to saturated zone, and unstable excavation walls. The site is used relatively often and signs of social paths with some soil compression in the area occur near the bank; however, the soils are otherwise covered with turfgrass and do not appear to be eroding.

WETLANDS AND FLOODPLAINS

WETLANDS

Under Director's Order 77-1: *Wetland Protection* (NPS 2008a), NPS considers water up to 2 meters (about 6 feet) deep to be riverine wetlands. Although precise bathymetry for the area is not available, navigational charts and observational data show the river along the Virginia bank at the lower Rosslyn site being relatively shallow, in the 1- to 5-foot range (NMFS 2017b; MD DNR 1998; EA Engineering 2005). From approximately two-thirds of the way down the dock moving south into the mouth of the channel between the Virginia shoreline and Theodore Roosevelt Island, the depth at mean low water ranges from 0 to 3 feet, as shown in figure 6 in chapter 2. Under the northernmost third of the dock, the water is deeper, between 3 and 6 feet. The riverbed in this area is composed of clay, sands and sediments (EA Engineering 2005), and SAV historically has occurred in the Potomac River along the shoreline. The Virginia Institute of Marine Sciences maps SAV beds in the Chesapeake Bay region annually. Based on inspection of historic and recent SAV maps, historical SAV beds along the shoreline of the proposed Lower Rosslyn site and along the shore of Theodore Roosevelt Island just across from the site include mostly hydrilla (*Hydrilla verticillata*), along with hornwort (*Ceratophyllum demersum*), Brazilian waterweed (*Egeria densa*), stargrass (*Heteranthera dubia*), nodding waternymph (*Najas flexilis*), brittle naiad (*Najas minor*), sago pondweed (*Stuckenia pectinata*), and wild celery (*Vallisneria spiralis*). SAV was recorded in the zone in 2014, 2015, and 2016 (VIMS 2017; DOEE 2017) (figure 14).

At Gravelly Point, navigation charts show the water depth in the 5-foot range, extending some way out from the shore, beyond where the docks would be placed. Similar to the lower Rosslyn site, historical SAV beds with a high percentage of *Hydrilla verticillata* have been documented along the shore of the site, as recently as 2017 (VIMS 2017; DOEE 2017) (figure 15).



FIGURE 14. SUBMERGED AQUATIC VEGETATION AT LOWER ROSSLYN SITE



FIGURE 15. SUBMERGED AQUATIC VEGETATION AT THE GRAVELLY POINT SITE

No National Wetlands Inventory wetlands have been documented in the upland portion of the soft launch sites at Riverside Park, although a 0.5-acre freshwater forested/shrub wetland is located at the southern end of the parking lot at Roaches Run. A formal delineation has not been performed. Both of these sites contain shallow water riparian wetlands. Riverside Park (under the State of Maryland's jurisdiction) does not have recorded SAV beds, but at Roaches Run (under the State of Virginia's jurisdiction), a large SAV bed of nearly all hydrilla was recorded in 2015. The bed covers most of the inlet and is in front of the area for the proposed launch spot (VIMS 2017).

FLOODPLAINS

NPS *Floodplain Management Guidelines* define floodplains as “the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, and including, at a minimum, that area subject to temporary inundation by a regulatory flood.” Both the lower Rosslyn site and the Gravelly Point site are located in the 100-year floodplain, in which there is a 1% chance of flooding in a given year. At the lower Rosslyn site, the entire area proposed for the boathouse is in the Federal Emergency Management Agency's (FEMA) Flood Hazard Zone AE, or 100-year floodplain (FEMA 2017) (figure 16). The Gravelly Point site is completely within flood zone AE, or the 100-year floodplain (FEMA 2017) (figure 17).

The soft launch sites are also located in the 100-year floodplain. Roaches Run is completely within the 100-year floodplain, while the floodplain at Riverside Park is confined to the area immediately along the riverbank (FEMA 2017). A steep bank separates the river from the upland area by about 10 feet at the proposed Riverside Park site.

Floodplain values include the ability of the floodplain to absorb increased water flows, recharge groundwater, and provide floodplain habitat. Floodplain values in the lower Rosslyn area include area for the floodplain to absorb increased flows and recharge groundwater. The floodplain provides habitat value, but with the nonnative vines covering the woody vegetation, other nonnative plant species, and turfgrass, the quality of that habitat on the site is more limited than it could be. The floodplain value at Roaches Run is of mixed quality. The site provides area that can absorb or accommodate increased water flows, but with the parking area, the habitat values and groundwater recharge potential is restricted to the narrow area of vegetation between the parking lot and the gravel beach. The floodplain at Riverside Park is small, and values are limited to some habitat value in the armor stone along the steep bank, which could provide refuge for some species.

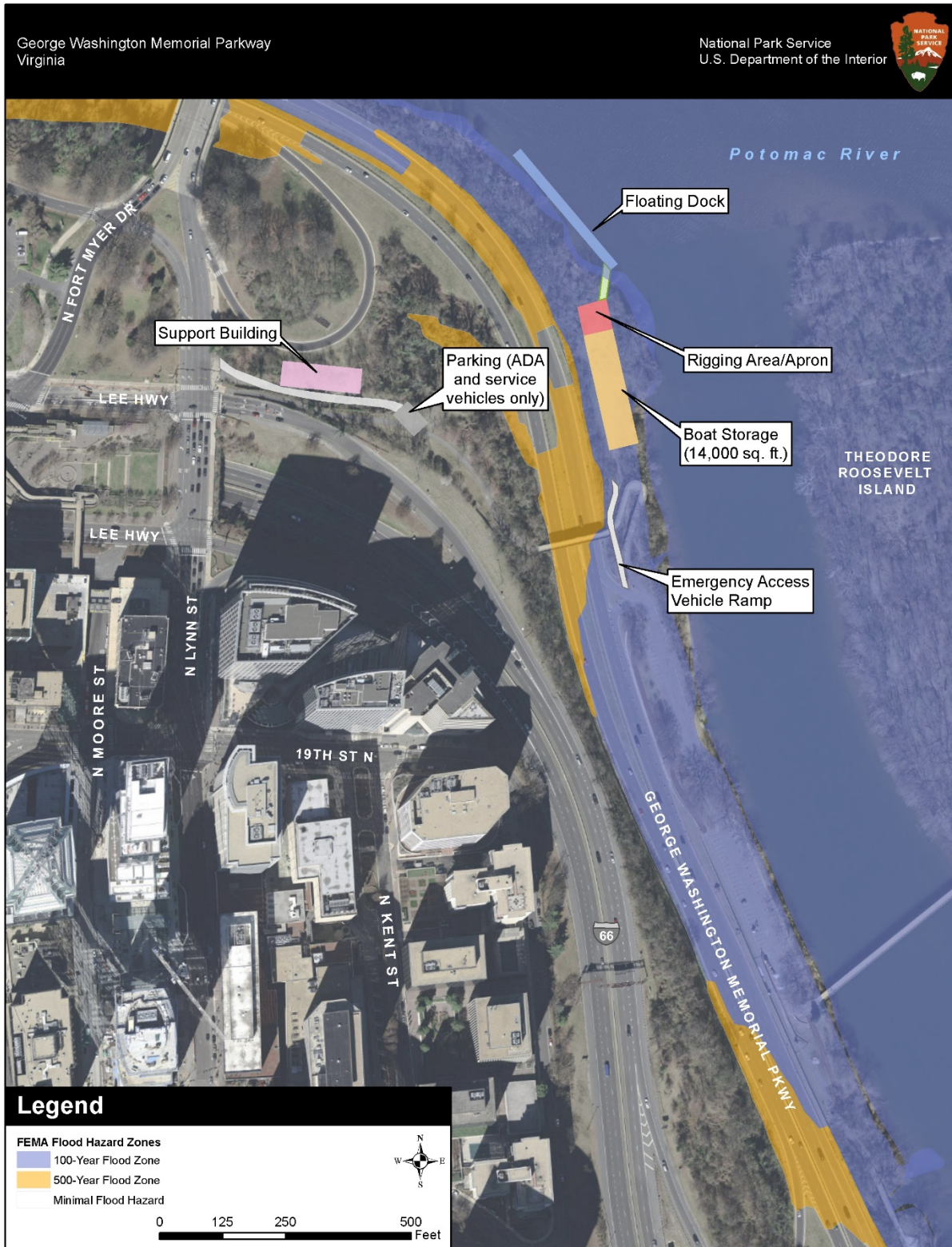


FIGURE 16. FEMA FLOOD HAZARD ZONES IN ROSSLYN ALTERNATIVES



FIGURE 17. FEMA FLOOD HAZARD ZONES IN GRAVELLY POINT ALTERNATIVE

VEGETATION

LOWER ROSSLYN

The site includes a mix of deciduous riparian forest and shrubland with a large clearing (approximately 0.25 to 0.33 acre) with turfgrass in the middle of the site where the boathouse would be placed. Turfgrass is more predominant closer to the parking lot and around the trail and pedestrian ramp over the parkway, with trees and shrubs becoming more common as the distance from the trail and parking lot increases (figure 6 in chapter 2). Species include both native species (e.g., sycamore) and nonnative species (e.g., tree of heaven [*Ailanthus latissimus*]). Nonnative vine species also cover other vegetation around the perimeter of the clearing.

UPPER ROSSLYN

Turfgrass, ranging from 5 to 20 feet wide, lines both sides of the Martha Custis Trail but is fringed by deciduous trees and shrubs as the distance from the trail increases. Tree species vary and include nonnative tree of heaven and native species. Nonnative vines cover much of the areas not maintained in turfgrass. See figure 10 in chapter 2 for a photo of the vegetation at upper Rosslyn.

GRAVELLY POINT

Gravelly Point contains mostly turfgrass, with some low shrubs and vines along the eastern shore adjacent to the riprap. A few trees are located next to the fence line separating the parkland from the airport property.

ROACHES RUN

The launch site at Roaches Run includes trees, dense shrubs, and other undergrowth between the parking lot and the banks of the run, which has an open gravel beach.

RIVERSIDE PARK

Riverside Park is developed parkland with turfgrass beneath scattered trees and shrubs extending from the parking lot down to the water. Several boulders armor the shoreline on the steep bank immediately adjacent to the river; no vegetation is in that area.

AQUATIC WILDLIFE

Aquatic species in the riverine and SAV habitats of the Potomac River adjacent to the lower Rosslyn and Gravelly Point sites includes a variety of freshwater fish, mussels, and other aquatic invertebrates.

Two freshwater mussel species listed as species of greatest conservation need in the District of Columbia, the eastern pondmussel (*Ligumia nasuta*) and the tidewater mucket (*Leptodea ochracea*), were found in the Potomac River along the Rosslyn waterfront during a 2004 mussel survey, and may be present at the lower Rosslyn site (EA Engineering 2005). These long-lived invertebrates are sedentary benthic filter feeders. These species, like most freshwater mussels, require a fish host for completion of their life cycle. However, specific fish hosts for the eastern pondmussel and tidewater mucket are unknown (EA Engineering 2005).

Benthic communities were also surveyed at the lower Rosslyn site during the 2004 survey, but not at Gravelly Point. The species identified were all considered relatively tolerant to degrading stream habitat. Dominant taxa included Oligochaeta, Crustacea, and Diptera, which were expected considering the riverine substrate, which consisted of mostly silt and clay particles. Overall, the Rosslyn site was

statistically lower in taxa richness and abundance than the other sites studied (Daingerfield Island and adjacent to the 14th Street Bridge).

Additionally, aquatic snail surveys conducted at NPS sites in northern Virginia and adjacent Maryland documented 23 species representing 9 families in 2010 and 2011 (Steury 2014). These species could be present at the alternative sites.

No additional aquatic wildlife surveys have been conducted at the sites.

HISTORIC DISTRICTS AND THE CULTURAL LANDSCAPE

STUDY AREA

For the NEPA analysis, the Area of Potential Effect (APE) under section 106 of the National Historic Preservation Act (NHPA) (36 CFR 800) was used to delineate study areas and determine which historic resources to include in the discussion of the affected environment in this EA. The study area includes geographic area or areas that the proposed action, directly or indirectly, may alter the character or use of historic properties, if such properties exist. Because of the nature of the proposed alternatives, four discontinuous areas have been identified for the study areas for the project, each one associated with one of the four proposed sites: Rosslyn, Gravelly Point, Roaches Run, and Riverside Park. Each site has its own direct and indirect study areas. The APE, although derived from the NHPA, helps identify the historic resources that the project may affect.

Rosslyn Site

Direct – Lower Rosslyn—The direct study area for the lower Rosslyn site is within the George Washington Memorial Parkway Historic District and encompasses the areas where there is the potential for ground-disturbing activities as a result of the proposed undertakings (figure 18). The direct study area encompasses the area formed by the parkway to the west up to the intersection of the parkway and the Key Bridge; turns east to include the northwest shoreline of Theodore Roosevelt Island, and turns south to include the shoreline of Theodore Roosevelt Island for approximately 1,500 feet before turning west to align with the north edge of the parking lot.

Direct – Upper Rosslyn—The direct study area for the upper Rosslyn site extends west from the direct study area for the lower Rosslyn at the pedestrian bridge crossing over the parkway. It aligns with the Martha Custis Trail to the south and N. Lynn Street creates its western border. The north border is the parkway's clover off-ramp from the Key Bridge across to the border with the southbound lane of the parkway (figure 18).

Indirect – Lower Rosslyn—The indirect study area is also within the George Washington Memorial Parkway Historic District and considers potential visual impacts on surrounding historic resources adjacent to the undertaking. Given the topography of the area and known historic properties in the vicinity of the lower Rosslyn site, potential visual impacts would occur on the eastern and western banks of the Potomac River. The indirect study area of the lower Rosslyn site begins where the one for upper Rosslyn site ends at the southern end of the Key Bridge where it interfaces with the parkway. At this point, the area flares northwest across the Potomac to the Chesapeake and Ohio (C&O) Canal within the Georgetown Historic District. The study area flanks the southern edge of the C&O Canal before turning south at 33rd Street NW to follow Water Street until the Georgetown Ferry complex, thereby encompassing the entirety of the Georgetown Waterfront Park. The border then crosses southwest over the Potomac River to include the northwest banks of Theodore Roosevelt Island (figure 18).

Indirect – Upper Rosslyn—The indirect study area for the upper Rosslyn site expands around its direct study area to flank the direct study area of the lower Rosslyn site to the north and east to just above the Theodore Roosevelt Island Bridge where it turns east across both the parkway and Interstate 66 (I-66). It

runs along the south side of I-66, turns north at N. Fort Myer Drive, and crosses the Curtis Trail to the Key Bridge (figure 18).

Gravelly Point

Direct—The direct study area for the Gravelly Point site is within the George Washington Memorial Parkway Historic District and includes the George Washington Memorial Parkway entrance up to the parking lot where it turns east into the Potomac River to the proposed location for the piers and floating dock of the buildings. At this point, the boundary turns north approximately 1,400 feet up the shoreline to include the Mount Vernon Trail before cutting southwest where it flanks the George Washington Memorial Parkway until the entrance (figure 19).

Indirect—Like the Rosslyn site, the topography and known historic properties indicate that there is the potential for visual impacts on the eastern bank of the Potomac. The indirect study area for this site expands around the direct study area. The area south includes the George Washington Memorial Parkway's parking lot and southern areas, the inlet between Reagan National Airport as well as the north edge of the Reagan National Airport parcel. The east boundary coincides with the west boundary of the Roaches Run Waterfowl Sanctuary to encompass the parkway extending up to the Arland D. Williams Jr. Memorial Bridge, where it crosses the Potomac River. The border turns southeast at this point running down the south edge of the East & West Potomac Parks Historic District before turning west across the Potomac River (figure 19).

Roaches Run

Direct—The direct study area for the soft launch site at Roaches Run is within the George Washington Memorial Parkway Historic District and includes the area that extends 20 feet on either side of the site where it meets the sidewalk/parking lot for the waterfowl sanctuary (figure 20).

Indirect—The indirect study area for the soft launch site at Roaches Run expands from the direct APE to include the area between the George Washington Memorial Parkway and the Metrorail track (figure 20).

Riverside Park

Direct—The direct study area for the soft launch site at Riverside Park is within the George Washington Memorial Parkway Historic District and includes the area that extends approximately 20 feet east and west of the center of the proposed site location, the shoreline to the south, and the Mount Vernon Trail to the north (figure 21). This area encompasses a portion of the Mount Vernon Trail.

Indirect—The indirect study area for the soft launch site at Riverside Park expands from the direct APE to include all of Riverside Park and the parkway to the north and northeast. The north, west, and south borders include the small inlet west of the park (figure 21).



FIGURE 18. AREA OF POTENTIAL EFFECT: ROSSLYN SITES



FIGURE 19. AREA OF POTENTIAL EFFECT: GRAVELLY POINT SITE



FIGURE 20. AREA OF POTENTIAL EFFECT: ROACHES RUN SOFT LAUNCH SITE



FIGURE 21. AREA OF POTENTIAL EFFECT: RIVERSIDE PARK SOFT LAUNCH SITE

HISTORIC RESOURCES IN THE ROSSLYN SITE DIRECT AREA OF POTENTIAL EFFECT

George Washington Memorial Parkway Historic District and Cultural Landscape

The parkway was listed in the National Register of Historic Places (National Register) in 1995, comprises 7,146 acres, and extends 38.3 miles along the Potomac River. The nomination was reevaluated in 2015 (Louis Berger 2017). In Virginia, the parkway includes two sections. The southern section, opened in 1932, extends from Arlington Memorial Bridge Gateway to Mount Vernon. The northern section runs 9.7 miles from Memorial Bridge to the Capital Beltway/I-495 in Virginia and opened in 1965. The parkway has a period of significance from 1930 to 1966. Under criterion C, the parkway is significant for the Potomac River corridor's association with George Washington. Also under criterion C, the parkway is significant for landscape architecture designed by Frederick Law Olmsted, Jr., Charles Eliot, and Gilmore D. Clark (Krakow 1995). Built with the twin purposes of conserving the Potomac Gorge and connecting historic sites associated with George Washington, the views from the parkway were designed by landscape architects to capitalize on both the scenic value of the river valley and the monumental character of the nation's capital. Historic vistas, such as those toward Georgetown, were preserved by planners and engineers by managing vegetation and small-scale features along the road and through framing the various vistas with bridges, natural systems, and circulation features. These views have been altered over time through the growth of vegetation along the parkway, but remain a significant and character-defining feature of the parkway (Donaldson 2009). A cultural landscapes inventory of north section of the parkway, completed in 2009, identified contributing landscape characteristics that include natural systems and features, spatial organization, land use, topography, vegetation, circulation, buildings and structures, views and vistas, small-scale features, and archeological sites (Donaldson 2009).

Francis Scott Key Bridge

The Key Bridge spans the Potomac River between Georgetown in Washington, DC, and Rosslyn in Arlington County, Virginia. The bridge, which carries US Route 29, has a northern approach at the foot of 35th Street NW. Key Bridge is a skillfully designed reinforced concrete arch bridge. Originally constructed to provide automotive, trolley, and pedestrian transit, the bridge has served as an important link between Washington and northern Virginia. Nathan C. Wyeth designed the bridge in 1916, and construction was completed in 1923. The structure is noteworthy for its elegant and simple Classical design. The Classically inspired structure is composed of reinforced concrete, with eight arches. Five of the arches span the river, while the other three span land features. The original structure included seven arches. The eighth arch was added in 1938–1939 to span the George Washington Memorial Parkway in Virginia. The superstructure was altered in 1955 and 1987. The bridge was listed in the National Register in 1996 under criterion C in the area of engineering and because it was designed by an important local architect, Nathan C. Wyeth (NPS 1995).

Theodore Roosevelt Island

Theodore Roosevelt Island is an 88.5-acre island that sits in the Potomac River near Key Bridge. Although the island is accessed in Virginia, the island is part of Washington, DC. The Theodore Roosevelt Memorial Association bought the island in October 1931; it was transferred to the federal government in March 1932 to serve as a national memorial to President Theodore Roosevelt. The island honors the 26th president primarily for his role as a leader in conservation, exhibited in the natural features of the island itself, including its lands, waters, flora, and fauna. In 1967, a large open-air architectural monument commemorating Roosevelt with sculpture and inscriptions was completed on the northern end of the island. Theodore Roosevelt Island, administratively part of the park, was listed in the National Register in 1967, and its nomination was updated in 1999 (NPS 1999).

HISTORIC RESOURCES IN THE ROSSLYN SITE INDIRECT AREA OF POTENTIAL EFFECT

Georgetown Historic District

Georgetown was founded by an act of the Maryland Assembly in 1751 and became part of the District of Columbia when the District was established in 1791, although it remained a separate jurisdictional entity within the District until 1871. The Georgetown Historic District is a remarkably intact example of a historic port town and encompasses the area originally laid out in 1751. Its narrow grid streets contrast from the wide streets of L'Enfant's Plan, and its collection of buildings and structures are among the city's oldest, demonstrating a rich variety of residential, commercial, institutional, and industrial examples. The historic district was first established by the Old Georgetown Act in 1950 and listed in the DC Inventory of Historic Sites in 1964. In 1967, the Georgetown Historic District was designated a national historic landmark and was listed in the National Register under criteria A and C (DC SHPO 2009).

Potomac Aqueduct Bridge Abutment and Pier (Alexandria Aqueduct)

The Georgetown abutment and stone pier are remnants of the C&O Canal aqueduct over the Potomac River built between 1833 and 1843 and designed by Maj. William Turnbull of the US Topographical Engineers. The aqueduct bridge was a major early-19th century engineering achievement involving construction of piers to bedrock 35 feet under the waterline. During the Civil War, the structure was drained and used as a highway bridge. The canal was reconstructed with a wooden Howe truss in 1868 with a highway bridge above. Iron trusses were added in 1888, and the canal was converted to a bridge. In 1933, the superstructure was removed. The piers were cut down in 1962. The remnants of the aqueduct received DC landmark designation on January 23, 1973 (DC SHPO 2009).

Washington Canoe Club

The Washington Canoe Club is located on a narrow strip of land between the bank of the Potomac River and the C&O Canal at the western end of Water Street NW just west of the Alexandria Aqueduct. The Capital Crescent Trail runs immediately behind the building. The club was constructed in 1904 and remains an excellent example of shingle style architecture characterized by octagonal towers, a cross-gabled roof with louvered cupola, a central pavilion with flanking balconies, shaped verge boards in the prominent gable end, and shingle cladding. The building received DC landmark designation on January 23, 1973 and was listed in the National Register in 1991 (NPS 1990a; DC SHPO 2009).

Potomac Boat Club

The Potomac Boat Club is also located on the western end of Water Street NW, just east of the Alexandria Aqueduct. The boathouse, which exhibits Craftsman style influences, was constructed in 1908 as the second structure for the Potomac Boat Club. The two-story frame boathouse displays typical characteristics of its type, including a façade that faces the river, a low-pitch front-gabled roof, a tower, boat ports, large French doors, and shingle cladding. As one of only two remaining early 20th-century boat clubs along the Potomac River in the District of Columbia, the Potomac Boat Club received DC historic landmark designation on January 23, 1973, and was listed in the National Register in 1991 (NPS 1990b).

HISTORIC RESOURCES IN THE GRAVELLY POINT SITE DIRECT AREA OF POTENTIAL EFFECT

The George Washington Memorial Parkway Historic District, described above, also extends through the Gravelly Point study area to the west (figure 19).

HISTORIC RESOURCES IN THE GRAVELLY POINT SITE INDIRECT AREA OF POTENTIAL EFFECT

The George Washington Memorial Parkway Historic District also extends through the Gravelly Point indirect APE.

East and West Potomac Historic District

The East and West Potomac Parks Historic District is a 730-acre area that encompasses the National Mall and extends south from Independence Avenue along the Potomac River to include two additional parks. East Potomac Park, a 1.9-mile-long peninsula between the Potomac River (west) and the Washington Canal (east), falls within the indirect APE for the Gravelly Point site. Prior to the late 1800s, the area was submerged or swampland. Between 1882 and 1911, channel clearing produced enough fill to create the East and West Potomac Parks. There have been a number changes to the parks since their creation but overall, the area has remained an informal recreational area. Features in the East Potomac Park area that contribute to the eligibility of the district include the Potomac Railroad Bridge, Stone Seawalls built by the US Army Corps of Engineers (USACE) as part of the reclamation process, Ohio Drive SW, and the Japanese cherry trees. The East and West Potomac Parks Historic District was originally listed in the National Register in 1973. The National Register nomination was revised in 1996, and the district was determined eligible under criteria A and C with some features being eligible under criterion B or criterion consideration F and G. The period of significance is 1882 to 1997.

HISTORIC RESOURCES IN THE ROACHES RUN AREA OF POTENTIAL EFFECT

The George Washington Memorial Parkway Historic District is in the direct and indirect APE of the Roaches Run site (figure 20).

HISTORIC RESOURCES IN THE RIVERSIDE PARK SITE INDIRECT AREA OF POTENTIAL EFFECT

The George Washington Memorial Parkway Historic District is in the direct and indirect APE of the Riverside Park site (figure 21).

ARCHEOLOGICAL RESOURCES

The shoreline of the Potomac River is an area rich in history. People first came to this area more than 10,000 years ago, and traces of their presence can be found all along the river. John Smith explored the lower Potomac, almost to the falls in 1608, and he noted numerous Indian settlements along the river. The shores up to the falls were claimed by colonists in the 1600s and divided into plantations and tenant farms. The population of the project vicinity remained low until after 1720, but by 1750, it was thickly settled. Small hamlets and communities developed around the tobacco warehouses and ports established along the river, and by the 1750s two of these had grown into the towns of Alexandria and Georgetown. After Washington was established as the federal capital, the population of rural areas nearby grew even more, and facilities that ranged from health spas to gambling dens were established along the river's south bank. During the Civil War, fortifications were erected to defend Washington, and troops camped throughout the area. Because of the area's rich history, archeological surveys were carried in both proposed boathouse locations (Louis Berger 2005). At the Rosslyn site, studies included subsurface and underwater investigations. For the Gravelly Point site, a careful study of historic maps and other sources was used to establish that the project area consists entirely of modern fill.

ARCHEOLOGICAL INVESTIGATIONS OF THE UPPER ROSSLYN SITE

Background Research

Documentary and map research did not produce any evidence of occupation in the upper Rosslyn site, and it appeared too steep to have been occupied in prehistoric times. In the 19th century, the site was crossed by a road that led down to the river.

In the late 1790s, John Mason, son of George Mason IV (framer of the Bill of Rights), built a summer home on Analostan or Mason's Island. Between 1805 and 1810, Mason constructed a causeway to connect the island to the Virginia shore. The western part of the causeway ran through the shoreline area of the upper Rosslyn site. Mason fell into debt in the late 1820s, and his family left the island in 1834. The island was used as a camp for African-American Federal soldiers, the 1st United States Colored Troops, during the Civil War. In 1931, the island was acquired by the Theodore Roosevelt Memorial Association, which transferred title to NPS in 1932, "to be used as a wilderness preserve" in memory of Theodore Roosevelt. Theodore Roosevelt Island is listed on the National Register as a historic district; its periods of significance are 1749–1833, 1861–1865, and 1931–present. Mason's Causeway and remnants of the causeway are a contributing structure of the historic district.

In 1830, Alexandria merchants received a charter from Congress for construction of a canal that would link Alexandria with the new C&O Canal. The Alexandria Canal and the Aqueduct Bridge, which carried the canal across the Potomac River, were completed in December 1843. The canal may have crossed the southwestern corner of the upper Rosslyn site. A huge flood in 1877 damaged the canal, and in 1886, the Aqueduct Bridge was condemned as unsafe and was closed. This marked the commercial demise of the Alexandria Canal.

When the Alexandria Canal was built in 1841, it appears that a tunnel was constructed underneath the canal, within this site, to allow access from the old ferry road to the Mason's Causeway. The presence of this passage is implied by depictions on 1861 (Boschke), 1865 (Barnard), and 1868 maps of the area. After the closure of the canal in 1886, the tracks of the Washington and Ohio Railroad occupied the former canal route by 1900. The track followed the curvature of the canal. Between Gardner Street (to the south) and Canal Street (to the north), the track fanned out into several branches within a rail yard.

Despite all of the grading and construction associated with the railroad and nearby industrial activities, it appears that the tunnel survived at least into the 1950s. VDOT demolition and highway construction plans, dated October 4, 1956, show the rectangle corresponding to the 17,605 SF portion of the upper Rosslyn site identified as belonging to the 1101 Corporation. The tunnel or culvert was depicted on both maps, south of this rectangle. The demolition plan refers to it as "Abandoned Brick Arch Culvert." The construction plan calls it "20' x 90' Brick Tunnel." The north end of the tunnel is depicted as located about 50 or 60 feet east of the southwest corner of the site, and about 15 feet south of its southern border. However, it is apparent that the exact location of the tunnel was not field-verified. The demolition map shows it as only about 40 feet long and oriented only slight off a north-south axis. In contrast, the construction plan shows the tunnel as about 90 feet long and oriented about 40 degrees east of north; but this is explicitly stated as its approximate location.

Aerial photographs taken in 1927 show a round structure, probably an oil storage tank, and an adjacent large rectangular building, probably of industrial use, within the project area.

Terrestrial Survey

Visual inspection of the upper Rosslyn site in 2004 showed that it had been disturbed by highway construction and other activities. Shovel tests encountered only recent fill and debris. Backhoe trenches dug in the projected location of the old brick tunnel reached a depth of 10 feet below grade but failed to locate any remains. It seems likely that the tunnel was destroyed in the course of highway and sewer construction, and any remains that are present would be more than 10 feet below the surface. The study

concludes that “extensive 20th-century urban/industrial development precludes survival of significant intact portions of the canal or any earlier cultural remains” (Louis Berger 2005). One parcel within the area of direct effects was not investigated during the archeological survey because it was in private hands. If construction activity affects this parcel, archeological investigations would be required, likely in the form of soil coring to determine if any intact ground surfaces are present.

ARCHEOLOGICAL INVESTIGATION OF THE LOWER ROSSLYN SITE

Terrestrial Survey

In 2004, augering and mechanical excavations were carried out along the shore of the river in an attempt to locate remains of the 19th century causeway. All of the approximately 20 auger tests and 1 of the 2 mechanical trenches encountered only 20th-century fill extending to below river level. The second mechanical trench encountered a densely packed layer of soil, brick fragments, and stone rubble at a depth of 5 feet below grade. The nature of this deposit is uncertain. Because it was below the water table, it could not be investigated in detail, and it is conceivable that it represents remains of the causeway. However, the investigators conclude that this is unlikely. Given its depth, its surface would have been submerged at low tide, so if it represents part of the causeway it has lost its upper portion. In addition, the density of brick in the fill suggested a more recent date, since not enough brick buildings had been built and demolished in this area before 1800 for it to be a likely constituent of fill (Louis Berger 2005).

Underwater Survey

An attempt to carry out magnetic survey of the project area was unsuccessful because of magnetic disturbance from the underlying Metro tunnel and other modern infrastructure. Divers working in 6 to 8 feet of muddy water reported a number of boulders in the river that appeared to have been part either of the original causeway or the rebuilding carried out by NPS in the 1950s. Although the causeway’s remains have only limited integrity, the study concludes that these remains might be National Register-eligible as part of the Theodore Roosevelt Island Historic District (Louis Berger 2005).

ARCHEOLOGICAL INVESTIGATIONS OF THE GRAVELLY POINT SITE

During an archeological investigation of a location just to the west of the Gravelly Point site, more than a dozen historic maps were studied, using Geographic Information Systems (GIS) to fit them onto modern maps (Fiedel and Rupnik 2005). All of the maps indicate that the historic shoreline of the river was well to the south or west of the Gravelly Point site. Therefore, the site is constructed entirely on modern fill. Mechanical trenching carried out during that study resulted in the identification of the old shoreline, confirming that it is well away from the Gravelly Point site. Because the Gravelly Point site is entirely on modern fill, it has no archeological potential.

ROACHES RUN AND RIVERSIDE PARK SOFT LAUNCH SITES

Similar to Gravelly Point, the Roaches Run soft launch site is located on modern fill and has no archeological potential.

Riverside Park, located along the Potomac River in Fairfax County, has potential for archeological resources to occur, but has not been investigated. A Phase I study would be necessary to confirm the presence and location of archeological resources.

VISITOR USE AND EXPERIENCE

The project is located along the parkway, parallel to the Virginia shoreline of the Potomac River. The scenic roadway traverses north to south and is paralleled primarily by three recreational paths within the immediate project area boundary: the Mount Vernon Trail, the Martha Custis Trail, and the Potomac

Heritage Trail. The parkway connects visitors to numerous scenic vistas, national historic sites, and a wide array of recreational opportunities. Visitors are able to view the river valley, the nation's capital, various memorials, as well as lush greenery that surround the parkway. Recreational activities that are accessible via the parkway include scenic driving, picnicking, hiking, and nonmotorized boating (e.g., kayaking, canoeing, and sailing). Immediately within the project area, in addition to many memorials, the parkway provides visitors with views of and access to Theodore Roosevelt Island and Gravelly Point.

Visitors can enjoy both active and passive recreational activities at Theodore Roosevelt Island along a number of trails that cross the roughly 1-mile-long island. Visitors can participate in activities such as birding, fishing, nature watching, hiking and walking, and visiting the various memorials. In 2016, Theodore Roosevelt Island had 164,360 visitors. Monthly visitation averaged approximately 13,697 visitors (Louis Berger 2018).

At Gravelly Point, which is located adjacent to the Reagan National Airport, visitors can enjoy picnicking, playing soccer and other sports, watching airplanes take off and land at the airport, and fishing. Visitors can also walk, run, or bike on the Mount Vernon Trail, which runs primarily on the east side of the park, parallel to the parkway. On the western edge of the park, visitors can enjoy nature viewing at nearby Roaches Run Waterfowl Sanctuary. To the south, a boat ramp is accessible for small boats. In 2016, Gravelly Point had 1,576,464 visitors. Monthly visitation averaged approximately 131,372 visitors (Louis Berger 2018).

As the parkway winds southward past Alexandria, visitors can picnic and recreate at additional, smaller areas alongside the Potomac. Within the immediate project boundary, in Fairfax County, Riverside Park offer visitors picnic benches, green space, and quiet waterfront views. Visitors can also access the Mount Vernon Trail from these locations.

Substantial boating activity occurs on the Potomac River offshore from the project area, where favorable currents and winds combine to create ideal flat-water conditions. Multiple rowing teams practice in the area daily during the rowing season. In addition, several rowing regattas are conducted each year, involving both high school and collegiate racing teams. Motorboats and some small sailboats also use the water offshore from the project area, primarily on weekends.

Visitors launch rowing shells and paddlecraft within and adjacent to the project area primarily on the Potomac River from the docks at the Potomac Boat Club, Thompson Boat Center, and Key Bridge Boathouse. These facilities are shared with several local high schools. Powerboats use the concrete launch on the southern portion of Gravelly Point, near Roaches Run, as well as a launching ramp at Belle Haven Marina, located south of Alexandria.

The project area offers a variety of water-based visitor use opportunities and several facilities, including boat rental facilities at Thompson Boat Center and Key Bridge Boathouse, the Washington Sailing Marina, and a private club (the Potomac Boat Club). Thompson Boat Center offers rowing and other watercraft lessons and rentals; the Key Bridge Boathouse and Washington Sailing Marina also offer a variety of watercraft lessons and rentals. Rowing programs are available at the Dee Campbell Boathouse in Alexandria, which is shared with a local high school. Belle Haven Marina offers small sailboat, canoe, and kayak rentals (Belle Haven Marina 2017).

Public nonmotorized boat storage is available at Thompson Boat Center, Key Bridge Boat House, and Belle Haven Marina, all of which have 1 to 2 year waiting lists.

MOUNT VERNON TRAIL

The Mount Vernon Trail is a paved multiuse trail that runs 18 miles in Virginia from George Washington's Mount Vernon Estate to the Key Bridge in Rosslyn along the west bank of the Potomac River. This trail also connects to the Theodore Roosevelt Bridge crossing and provides access to the

Theodore Roosevelt Island footbridge and the lower Rosslyn site. The Mount Vernon Trail crosses the western edge of the Gravelly Point site.

MARTHA CUSTIS TRAIL

The Martha Custis Trail provides a multiuse trail link between the Washington and Old Dominion Trail in Fairfax County, Virginia, and the Mount Vernon Trail and Key Bridge in Rosslyn. The Martha Custis Trail follows the right-of-way of I-66 for its length. The trail is located on the north side of Lee Highway westbound and changes into the Mount Vernon Trail after it crosses N. Lynn Street.

POTOMAC HERITAGE TRAIL

The Potomac Heritage Trail is a multiuse scenic trail that intermittently connects to various multiuse trail networks throughout the mid-Atlantic region, incorporating 710 miles of existing and planned trails. Within the project area, the segment of the trail that is accessible to visitors is limited to a natural surface footpath for pedestrian use such as hiking, walking, and nature watching and is located just north of the Theodore Roosevelt Island footbridge and parking lot, within the footprint of the proposed lower Rosslyn site.

TRAFFIC AND TRANSPORTATION

Two study areas are included in the TIA (appendix A) to determine transportation issues, impacts, and potential mitigation measures. Existing conditions within these two study areas are described in this section.

SOFT LAUNCH SITES

Roaches Run

The launch site at Roaches Run contains approximately 50 parking spaces served by a one-way operation driveway. The driveway connects to the parkway without a deceleration or acceleration lane to allow vehicles to slow down when exiting the parkway or speed up to merge into traffic within their own lane.

Riverside Park

Riverside Park contains more than 50 parking spaces served by a two-way operation paved driveway. The driveway connects to the parkway across from Stratford Lane with stop signs posted on the Riverside Park driveway and Stratford Lane.

PEDESTRIAN NETWORK

In the Rosslyn study area, sidewalks flank both sides of N. 19th Street. Construction on the west side of N. Lynn Street blocks off most of the sidewalk; however, many pedestrians still use the east side. Between the two directions of Lee Highway, there is sidewalk on both sides of N. Lynn Street; however, it switches back to the east side after crossing Lee Highway WB. The same holds true for the east side of N. Moore Street south of N. 19th Street, where construction blocks the sidewalk. N. Fort Myer Drive has sidewalks on both sides; however, the sidewalk stops on the east side after N. Fort Myer Drive crosses over Lee Highway WB. Lee Highway WB has a sidewalk on the south side until it crosses N. Nash Street to the west, and the Martha Custis Trail (for bicycles and pedestrians) travels along the north side. Lee Highway EB, has a sidewalk on the north side from N. Lynn Street to N. Fort Myer Drive, then along both sides until N. Nash Street, and then only along the south side west of N. Nash Street.

The only pedestrian facility in the Gravelly Point study area is the Mount Vernon Trail with connections to the north and south.

BICYCLE NETWORK

Regional Bicycle Network

The Martha Custis Trail provides a multiuse trail link between the Washington and Old Dominion Rail Trail in Fairfax County, Virginia, and the Mount Vernon Trail and Key Bridge in Rosslyn. The trail is located on the north side of Lee Highway WB, and changes into the Mount Vernon Trail after it crosses the parkway.

The Mount Vernon Trail runs 18 miles in Virginia from George Washington's Mount Vernon Estate to the Key Bridge in Rosslyn along the west bank of the Potomac River. NPS maintains this paved, multiuse trail (NPS 2015b). This trail also connects to the Theodore Roosevelt Bridge crossing and provides access to the Theodore Roosevelt Island footbridge. The Mount Vernon Trail traverses the western edge of the Gravelly Point study area and is the only bicycle facility in a 1-mile radius.

The Key Bridge crosses the Potomac River in the Rosslyn study area, and it is equipped with wide multiuse trails on each side that provide connections between Georgetown and Rosslyn, Virginia. On the Virginia side of the river, connections are made directly with the Martha Custis and Mount Vernon Trails. In Georgetown, the bridge crosses over the C&O Canal Trail and near the Capital Crescent Trail and Georgetown Waterfront Trail, but no direct connections are made. The *Bicycle Master Plan 2014 Update* notes that the trails on the bridge are crowded with pedestrians, making bicycle use difficult (DDOT 2014).

Bikeshare Facilities

In total, 30 Bikeshare stations exist within a mile of the upper and lower Rosslyn sites. A bicycle rack at the Rosslyn Metro Station can accommodate 20 bicycles. The Gravelly Point study area contains eight Bikeshare stations within a 1-mile radius west of the parkway. New Bikeshare stations, described under cumulative actions in chapter 4, are planned at the parking lots for both Theodore Roosevelt Island and Gravelly Point.

TRANSIT

Transit service in the Rosslyn and Gravelly Point study areas consists of many modes, including Metrorail lines, local and commuter bus service, carsharing, and on-demand car services.

PARKING

Existing public parking in the Rosslyn study area includes on-street metered and unmetered parking zones, off-street underground garages, and surface lots. Information about on-street parking was gathered through site visits in April 2017; information on off-street parking used Arlington County online resources in addition to site visits. This section also contains a description of the available parking at Gravelly Point and Theodore Roosevelt Island.

On-Street Parking in Rosslyn

The Rosslyn study area includes approximately 41 public on-street parking spaces. The majority of these spaces are metered with limited hour restrictions (i.e., 2 hours) and centralized on N. Fort Myer Drive and N. Lynn Street. A few spaces have no parking restrictions during rush hour, are reserved for handicapped parking, or are reserved for tour bus parking.

Off-Street Parking in Rosslyn

Eight public off-street parking options serve the Rosslyn study area, including seven underground garages and one surface lot. The off-street parking option closest to the proposed Rosslyn boathouse sites is the

Colonial Parking underground garage located at 1901 N. Moore Street. Other off-street parking options accessible to the public in the study area are provided in the TIA.

Theodore Roosevelt Island Parking Area

Theodore Roosevelt Island has a public outdoor surface parking lot containing 97 parking spaces based on a parking occupancy study conducted by Louis Berger on July 28, 2015. This parking lot can only be accessed from the northbound travel lanes of the parkway and is the primary access point to the pedestrian bridge to Theodore Roosevelt Island. The parking lot also provides access to the Mount Vernon Trail and Rosslyn via a pedestrian bridge over the parkway. A table detailing the results of the Theodore Roosevelt Island parking occupancy study is included in the TIA.

Gravelly Point Parking Area

The Gravelly Point study area has a public outdoor surface parking lot containing 78 parking spaces and 18 boat trailer parking spaces based on a parking occupancy study conducted by Louis Berger on July 28, 2015. Grassy areas are routinely used for parking once the paved surface lot is full. This parking lot can only be accessed from northbound travel lanes of the parkway. The parking lot provides access to the parkland and boat launch associated with Gravelly Point, but it also provides access to the Mount Vernon Trail. A table detailing the results of the Gravelly Point parking occupancy study is included in the TIA.

TRAFFIC

The affected environment for traffic includes a high-level overview discussion of the data collection, study area travel operations, and existing condition traffic analysis results. The TIA includes more details, including a description of study area peak hour operations; a description of the traffic analysis tools; details on turning movements, queuing, and operations (intersection and parkway mainline; and a crash analysis of the study area intersections and descriptions of all of the roadways within the study area.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

GENERAL METHODOLOGY FOR ANALYZING IMPACTS

In accordance with Council on Environmental Quality regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16) and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts also are described and incorporated into the evaluation of impacts.

TYPE OF IMPACT

The potential impacts of both alternatives are described in terms of type, as follows:

- **Direct:** Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).
- **Indirect:** Impacts that would occur as a result of the proposed action but later in time or farther in distance from the action (40 CFR 1508.8).
- **Cumulative:** Impacts defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7).
- **Beneficial:** A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
- **Adverse:** A change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.

CUMULATIVE IMPACTS ANALYSIS METHOD

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7). The temporal scale for the cumulative impacts analysis assumes past actions have been captured in the affected environment and focuses on current and reasonably foreseeable future actions. The geographic scale considered for cumulative impacts is generally the vicinity of the project area, with some extension, including along Water Street NW and nearby in Georgetown, as well as in the river as far downstream as Riverside Park, where one of the soft launches could be located.

Cumulative impacts are determined for each impact topic by combining the impacts of the alternative being analyzed and other past, present, and reasonably foreseeable actions that also would result in beneficial or adverse impacts. Because some of these actions are in the early planning stages, the evaluation of cumulative impacts is based on a general description of the projects. Past, present, and reasonably foreseeable actions to be included in the cumulative impacts analysis were identified through the internal and external project scoping processes and are summarized below.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

- **Georgetown Nonmotorized Boathouse Zone:** Several boathouses and associated facilities are proposed across the Potomac River in the Georgetown neighborhood in Washington, DC, extending from 34th Street NW to approximately 1,000 feet west of the Potomac Aqueduct abutment. These boathouses would provide rowing facilities for universities, high schools, and the public, as well as opportunities to rent paddlecraft or launch personally owned paddlecraft. As

part of this project, it may be necessary to reconstruct bulkheads on the two sites between 34th Street NW and the Potomac Boat Club.

- **Rehabilitation of Arlington Memorial Bridge (starting in 2018):** This project includes replacing the drawbridge span, concrete approach spans, and deck using prefabricated concrete deck panels.
- **George Washington Memorial Parkway – North Section Rehabilitation:** NPS, in cooperation with the Federal Highway Administration is proposing to rehabilitate the North Section of the George Washington Memorial Parkway from Spout Run to Capital Beltway (I-495) in Virginia, which includes the Rosslyn project area. Elements of the proposed action include: (1) reconstructing the asphalt pavement and constructing new concrete curbs; (2) replacing drainage inlets and culverts; (3) stabilizing erosion at drainage outfalls; (4) improving safety with options including crash-worthy roadside barriers; (5) various options to reconfigure the interchange at Route 123/the parkway; and (6) other smaller project elements (e.g., creating emergency turnarounds, extending acceleration and deceleration lanes, and installing stormwater management practices). The project is still in the NEPA planning stages.
- **Cultural Landscape Report/Environmental Assessment for Theodore Roosevelt Island (starting in 2019):** This project includes the rehabilitation of Bridge 31 on the Mount Vernon Trail just south of the mainland plaza area for Theodore Roosevelt Island and proposed soft launch sites on Theodore Roosevelt Island so that paddlers can visit the island from the Washington, DC, side of the river.
- **Ronald Reagan National Airport Terminal B/C Redevelopment:** The Metropolitan Washington Airports Authority will redevelop the site to add a new concourse on the north end of the terminal. The project will include associated demolition of two hangars and the airport office building and reconfiguration of security screening facilities within the airport to increase efficiencies.
- **Capital Bikeshare Stations at Theodore Roosevelt Island and Gravelly Point:** The Arlington County Board approved an agreement with NPS to install new Capital Bikeshare stations at both Theodore Roosevelt Island and Gravelly Point to provide access to the Mount Vernon Trail.

SOILS

METHODOLOGY AND ASSUMPTIONS

Following the review of available data, impacts on soils were evaluated in terms of disturbance, erosion susceptibility, and compaction potential. Potential impacts on soils include changes from construction activities, including excavation for buildings, temporary access roads, and staging areas (temporary and permanent).

STUDY AREA

The study area is the footprint of development at each of the alternative sites and soft launch locations.

IMPACTS OF ALTERNATIVE A: NO ACTION

No construction or changes to existing conditions would occur under the no-action alternative. Existing social paths would remain, with increased soil compaction and the potential for erosion in those locations. The no-action alternative would have no new impacts on soils.

Cumulative Impacts

Because there would be no new impacts on soils from the no-action alternative, there would be no cumulative impacts on soils.

Conclusion

There would be no new impacts on soils under the no-action alternative. Existing social trails would remain. Because there would be no new impacts on soils from the no-action alternative, there would be no cumulative impacts on soils.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Construction of the 14,000 SF boat storage facility and rigging space/apron would result in short-term, direct impacts on the soils present on site during construction. Excavation for the construction of boathouse structure would be required. Soils would also be disturbed from the new trail alignment for the Potomac Heritage Trail, which currently runs through the lower Rosslyn site and would need to be shifted so that the boathouse could be built. The trail currently consists of a worn path in the grass but could be more formally established adjacent to the boathouse. Construction activities, including staging of construction materials, placing footers and piles for the boathouse, and creating access to the site with driveways and sidewalks, would result in direct impacts on soils from erosion and compaction at the site. However, the potential for adverse impacts stemming from erosion would be avoided and minimized by compliance with applicable regulations required under local, state, and federal law, and the implementation of required sediment and erosion control plans, stormwater pollution prevention plans, and other permitting requirements and best management practices. A direct loss of soil productivity and an overall increase in impervious surface and compaction would occur in the location of the boathouse and the relocated trail. Impacts on soils would be long-term, direct, and adverse in the location of the boathouse and any new trail locations.

Impacts at the soft launch sites would be minimal because no structures would be erected at these locations. The soil along the riverbank would be moved as the armor stone is rearranged, and some disturbance of soils would occur to establish the launch site at Roaches Run. There could be long-term, adverse impacts from soil compaction from increased foot traffic and erosion if any vegetation is cleared to provide access to the waterfront. Existing social trails would be discouraged with the use of plantings and boulders, which would allow the soil to revegetate and result in long-term, beneficial impacts. Adverse impacts stemming from erosion during construction of the launch site to move the armor stone and place the stairs would be minimized by compliance with applicable regulations required under local, state, and federal law, and the implementation of the Virginia Erosion and Sediment Control Law, Regulations, and Certification Regulations, stormwater pollution prevention plans, and other permitting requirements and best management practices.

Cumulative Impacts

Several past, present, and reasonably foreseeable actions have the potential to result in adverse effects on soils. The rehabilitation of Arlington Memorial Bridge, north parkway, and Bridge 31; installation of the soft launch site on Theodore Roosevelt Island; and redevelopment of the terminals at Reagan National Airport all have the potential to affect soils through exposure, erosion, and sedimentation, as well as compaction at staging areas, during construction. The long-term impacts would be adverse but minimal because the projects would create little new impervious surface and would occur in previously disturbed areas; the bridges would be rehabilitated with no expansion in footprint; and the new airport terminal would be built on existing developed and impervious land. Alternative B has the potential to contribute short-term, direct, adverse effects from erosion and sedimentation and long-term, adverse impacts from compaction and reduced soil productivity to the overall cumulative scenario, and some beneficial impacts from the closure of social trails. Alternative B would contribute an imperceptible increment of adverse

and beneficial impacts to the adverse impacts of past, present, and reasonably foreseeable projects, resulting in overall adverse cumulative impacts on soils.

Conclusion

Construction of alternative B has the potential to result in short-term, adverse impacts on the soils at the lower Rosslyn site in the form of increased sedimentation and erosion and long-term, adverse impacts from the loss of soil production. There would be similar short-term, direct, adverse impacts at the soft launch sites and both long-term, adverse impacts from increased compaction and loss of soil productivity and beneficial impacts from the elimination of existing social trails. Adverse impacts would be mitigated by following sediment and erosion control plans for construction and implementing best management practices to reduce the risk of runoff from the site while soils are exposed.

Alternative B would contribute an imperceptible increment of adverse and beneficial impacts to the adverse impacts of past, present, and reasonably foreseeable projects, resulting in overall cumulative impacts on soils.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

The impacts for alternative C would be similar to the impacts described for alternative B, although the construction of additional support facilities and trail realignment at the upper Rosslyn site would result in additional soil disturbance and loss of soil productivity and long-term, adverse impacts. During construction, soil disturbance would occur in the building and trail footprints and staging areas. Vegetation removal in these locations would increase the potential for erosion. However, the soils in the study area are previously disturbed Urban Lands soils and would be revegetated after construction is complete, resulting in overall minimal adverse impacts. Adverse impacts resulting from erosion would be avoided and minimized by compliance with applicable regulations required under local, state, and federal law and the implementation of required sediment and erosion control plans, stormwater pollution prevention plans, and other permitting requirements and best management practices, as described under alternative B.

Impacts on soils at the soft launch sites would be the same as those described for alternative B, resulting in both adverse and beneficial impacts.

Cumulative Impacts

Cumulative actions and associated impacts would be the same as those described under alternative B. Alternative C would contribute additional short- and long-term, adverse impacts on soils from soil disturbance and increased erosion potential as well as loss of soil production in the building and trail footprints. Alternative C would contribute a minimal adverse increment to the adverse impacts of past, present, and reasonably foreseeable projects, resulting in overall adverse cumulative impacts.

Conclusion

Impacts on soils from alternative C would be similar to those described for alternative B, although the potential for soil disturbance and loss would be greater because of the larger overall footprint of the site. Adverse impacts would be minimal because of the previously disturbed nature of the soils present at the site. These impacts would be further mitigated by following the sediment and erosion control plan for construction and implementing best management practices to reduce the risk of runoff from the site while soils are exposed. Alternative C would contribute a minimal adverse increment to the adverse impacts of past, present, and reasonably foreseeable projects, resulting in overall adverse cumulative impacts.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

Alternative D would have the same 14,000 SF building footprint as the lower Rosslyn boathouse; however, under alternative D the boathouse would be two stories for a total of 28,000 SF. Soil disturbance and loss would be similar to that described for alternative B. Construction of a 28,000 SF storage facility, including rigging space/apron and locker rooms and realignment of approximately 1,500 linear feet of the Mount Vernon Trail would cause short-term, direct impacts through soil disturbance and erosion. Long-term impacts would be the same as those described for alternative B, with long-term impacts from the loss of soil production in the location of the boathouse footprint and relocated trail. Because all of the structures would be located on previously disturbed Urban Land soils, the adverse impacts would be minimal. The potential for adverse impacts stemming from erosion would be avoided and minimized by compliance with applicable regulations required under local, state, and federal law, and the implementation of required sediment and erosion control plans, stormwater pollution prevention plans, and other permitting requirements and best management practices.

Impacts on soils at the soft launch sites would be the same as those described for alternative B, resulting in both adverse and beneficial impacts.

Cumulative Impacts

Cumulative actions and associated impacts would be the same as those described for alternative B. Alternative D has the potential to contribute short-term, direct, adverse effects from erosion and sedimentation and long-term, adverse and beneficial impacts. Alternative D would contribute an imperceptible adverse increment to the adverse impacts from past, present, and reasonably foreseeable projects, resulting in overall adverse cumulative impacts on soils.

Conclusion

Impacts associated with the construction of alternative D would be similar to those described for alternative B—short-term impacts from soil disturbance and erosion during construction; long-term, adverse impacts from the slight loss of soil production; and minimal beneficial impacts from the reduction in social trails. Adverse impacts would be minimal because of the previously disturbed nature of the soils present at the site. Alternative D would contribute an imperceptible adverse increment to the adverse impacts from past, present, and reasonably foreseeable projects, resulting in overall adverse cumulative impacts on soils.

WETLANDS AND FLOODPLAINS

METHODOLOGY AND ASSUMPTIONS

Wetlands

NPS has adopted a policy of “no net loss” of wetlands. Executive Order 11990, “Protection of Wetlands,” states that federal agencies are to avoid, to the extent possible, long-term and short-term impacts associated with the destruction or modification of wetlands and avoid direct and indirect support of new construction in wetlands whenever practical alternatives exist. USACE regulates development in wetland areas pursuant to section 404 of the Clean Water Act (33 CFR, Parts 320–330).

Impact analysis and the conclusions for possible impacts on wetlands are based on review of existing literature and studies and information provided by park staff and other agencies. Where possible, locations of wetlands were overlain with the proposed site development activities to determine impacts on wetlands. As described in chapter 3, SAV is vegetation found in shallow riverine wetlands and are analyzed as part of the wetlands impact topic. A wetland statement of findings is provided in appendix B.

Floodplains

The action alternatives would be implemented within existing regulatory floodplain throughout the project area. Impacts on floodplain functions and values are therefore assessed for all the alternatives/sites. These assessments are based on the known and potential 100-year and 500-year floodplains within the study area, review of existing literature and studies, information provided by NPS experts and other agencies, and professional judgment.

Executive Order 11988, "Floodplain Management," requires federal agencies to take action to reduce the risk of flood loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the national and beneficial values served by floodplains in carrying out their responsibilities for managing and disposing of federal lands. Before taking an action, an agency must determine if a proposed action would occur in a floodplain; if so, consideration must be made of alternatives to avoid adverse effects and incompatible development in floodplains to the extent possible.

NPS is required to protect and preserve the natural resources and functions of floodplains, avoid long- and short-term effects associated with the occupancy of the floodplains, and avoid direct or indirect support of floodplain development that could adversely affect the natural resources and function of floodplains or increase flood risks. When it is not possible to locate development outside the floodplain, a floodplain statement of findings is required (appendix C), and NPS must take all reasonable actions to minimize impacts of these actions.

STUDY AREA

The study area for wetlands and floodplains is the footprint of development at each of the alternative and soft launch sites as well as the adjacent Potomac River.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no-action alternative, neither SAV nor floodplains would be disturbed, so there would be no new impacts on wetlands or floodplains at any of the sites.

Cumulative Impacts

Because there would be no impacts on wetlands and floodplains from the no-action alternative, there would not be any cumulative impacts on wetlands and floodplains.

Conclusion

There would be no impacts on wetlands or floodplain function and values under the no-action alternative. Because there would be no impacts on wetlands and floodplains, there would not be any cumulative impacts.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Wetlands

Under alternative B, a boathouse facility and dock would be placed at the lower Rosslyn site. The boathouse itself would not be located in any wetlands, but the dock would be placed over shallow water riverine wetlands and an SAV bed. Riverine wetlands are defined as the wetland/deepwater habitat boundary at a depth of 6.6 feet at low water or at the limits of emergent or woody vegetation extending beyond this depth (Cowardin et al. 1979).

With docks that are approximately 10 feet wide and 300 feet long, up to 3,000 SF of new dock space would be installed at the site, completely over riverine wetlands. The dock would be secured using removable dock anchor poles that would be placed by hand and would have a minimal disturbance or

adverse impact on riverine wetlands. The dock would also shade habitat and SAV in this area; however, because the total square footage of the dock would be relatively small in the larger setting of the Potomac River, long-term, adverse impacts from shading would be minimal.

Alternative B would require regrading or dredging to 3.3 feet deep at mean low tide, an increase of 1 to 2 feet of depth over the current depth along and below two-thirds the length of the dock and immediately beneath it to ensure that boats can access to the docks and connect to deeper water. The amount of material that would be regraded or dredged would be determined at the time of design. An area of up to approximately 58,000 SF would need to be regraded or dredged, which would also disturb approximately 3,600 SF of SAV in front of and below the dock. Dredging or regrading activities would result in short- and long-term, direct, adverse impacts on riverine wetlands by disturbing the river bottom, which is a combination of clay, sand and silt, habitat, and SAV (EA Engineering 2005). SAV could be permanently lost in this area, or it could reestablish itself on the river bottom where dredging has occurred. This would result in loss of nursery and other habitat, although the river bottom where this is no SAV would not change noticeably other than it would be deeper. Although the character of the wetlands would change, overall wetland area would not be lost because even with dredging, the depth at mean low tide would remain less than 2 meters (6.5 feet) deep.

The potential for temporary increases in turbidity from construction and dredging activities could adversely affect SAV by stirring up sediments. Shading below and adjacent to the dock would limit light and potential productivity. As noted above, approximately 3,600 SF of SAV would need to be disturbed to prevent the dock from sitting on the river bottom or bouncing too much as waves refract from the shoreline. However, the largest SAV species population in the SAV bed is *Hydrilla verticillata*, which is considered an invasive species. To reduce adverse impacts on SAV, NPS or permitting agencies could stipulate that work be done in the fall and winter when the plants are dormant. Appropriate screening such as a sediment curtain or cofferdam could also be used to prevent sediment from entering the open water adjacent to the work and disturbed area and blocking light to the SAV. The area would be surveyed prior to construction to confirm the presence of SAV. Mitigation measures could also include establishing a buffer around the SAV beds to the extent possible and dredging and placing any necessary fill outside the growing season. NPS would compensate for lost SAV by planting native species of SAV on a 1:1 basis in the Potomac River as close to the project site as possible.

Permits for construction and fill in the river would be required. USACE – Baltimore District issues permits for proposed marinas, bulkheads, docks, piers, dredging, and commercial and institutional facilities located partially or wholly in a waterbody in the Chesapeake Bay Watershed or any action requiring fill in a waterbody. A section 10 permit (for work in, over, or under a navigable water of the United States) would also be required. USACE would initiate coordination and consultation with the US Department of the Interior, the US Environmental Protection Agency, and the National Oceanic and Atmospheric Administration. The Potomac River in this area falls under the jurisdiction of the District of Columbia, so additional permits from the District Department of Energy and the Environment would be required.

At both soft launch sites, minor vegetation clearing and some manipulation of the riverbank would be necessary to provide access that is wide enough for people to carry paddlecraft to the water. Similar to the boathouse dock, the installation of floating docks at the soft launch sites would shade habitat in the open water wetlands, although the docks would be much smaller. At the Roaches Run location, appropriate management practices consistent with Virginia's *Erosion and Sedimentation Control Manual* (VDEQ 1992) would be used to prevent sedimentation from occurring when boulders from the shoreline are removed. Impacts on wetlands at the Roaches Run soft launch site would be minimal because NPS would use an existing road for water access; therefore, clearing and disturbance on the banks would be limited. At the Riverside Park location, no SAV is present; however, more intense manipulation of the banks would be necessary, including alteration of the bank to remove and rearrange the armor stone and install stairs. This disturbance would create more potential for adverse impacts from exposed soil entering the

water column and creating turbidity in the open water wetland, which could affect habitat during construction. The use of appropriate sediment and erosion control practices and in-water practices (e.g., sediment curtains or cofferdams) would minimize the potential for adverse impacts. Use of the launch sites would not affect wetlands through disturbance of the river bottom or SAV. The site at Riverside Park would fall under the State of Maryland's jurisdiction, so in addition to a USACE permit; a permit from the Maryland Department of the Environment would be required.

Floodplains

Alternative B would result in the construction of a 14,000 SF new boathouse plus ancillary impervious improvements to accommodate walkways and accessible parking within the 100-year floodplain. Boathouse facilities are water-dependent, and therefore are appropriate for placement in the floodplain per NPS Director's Order 77-2 (NPS 2003). The boathouse would be designed to be flood resistant with flow-through construction, tear-away walls, and possible construction on piles to elevate the building so that floodwaters could flow through the structures and not impede floodplain functions. Because of the conceptual nature of the plan for the boathouse at this time, a site-specific study would be required at the time of design to quantify site-specific flood risk from the project, and identify other measures that would allow for resiliency in a floodplain location. A 2004 study that examined the effect of a large boathouse structure proposed across the river in Georgetown concludes that the proposed structure would have no impact on the floodplain and would not increase the water surface level, velocity, or shear stress appreciably during floods (Patton, Harris, Rust and Associates 2004). A similar lack of impacts would be expected under alternative B because of the proximity of the lower Rosslyn site to the 2004 study area, and the action would be similar in nature to the one described in the 2004 study.

Under this alternative, floodplain function values, such as the ability to absorb flood flows, recharge water, slow floodwater flows with vegetation, and provide riparian habitat, would be slightly affected by the placement of the 14,000 SF boathouse facility and new impervious surface on the site for driveways and sidewalks. However, the construction of the boathouse facility could be designed to allow floodwaters to flow through, minimizing long-term, adverse effects on floodplain functions and values at that site.

Improvements at the soft launch sites would not change either floodplain function or values, so there would be no impact on floodplains. Long-term impacts from use of the launch sites would be negligible.

Cumulative Impacts

Past, present, and reasonably foreseeable actions have the potential to affect wetlands and floodplains. The construction of the Georgetown nonmotorized boathouse zone and associated facilities would result in long-term, adverse impacts on floodplain and wetlands through the placement of structures and associated impervious surface in the floodplain and installation of floating docks over riverine wetlands, which would cause shading, similar to the proposed Arlington boathouse. However, the impacts on floodplains in the boathouse zone would be minimal because of the use of flow-through construction techniques and pervious pavement to minimize impacts on floodplain functions and values. Wetland impacts would also be minimal and would be mitigated. Installation of the soft launch site on Theodore Roosevelt Island would cause direct, adverse impacts on wetlands, similar to those described for Roaches Run. Some impacts on riverine wetlands and floodplain function and values could occur as a result of the bridge rehabilitation projects during construction, but those impacts would be short term and relatively minor because they are rehabilitation projects and do not involve new construction. Alternative B has the potential to contribute short- and long-term, direct, adverse effects on wetlands from shading and removal of SAV, regrading or dredging, and potential sedimentation from construction, and on floodplain function and value by placing a new structure in the floodplain. Alternative B would contribute a small but perceptible adverse increment to the short- and long-term, adverse impacts from past, present and reasonably foreseeable projects, resulting in overall adverse cumulative impacts.

Conclusion

Under alternative B, impacts on wetlands and floodplains would be direct and adverse. The floating dock would cover shallow riverine wetlands and any SAV present and the dock anchors would directly disturb a very small area of riverine wetlands. Dredging would disturb river bottom, including SAV, although the area would remain riverine wetlands. The wetland area disturbed and shaded by the dock would be relatively small compared to the wetland area present throughout the larger setting of the Potomac River. Implementation of buffers and other best management practices and the use of potential construction timeframes to protect SAV would minimize and prevent adverse impacts. Permits for construction and the use of fill and mitigation of the unavoidable adverse impacts would be required to offset the filled wetlands and replace lost functions and values. The conversion of pervious surface to impervious within the footprint of the boathouse and rigging area/apron would result in minimal adverse impacts on floodplain values. Preparation of the soft launch areas would result in minimal adverse impacts on wetlands but would not affect floodplain functions and values. Long-term impacts on both wetlands and floodplains from use of the launch sites would be adverse but minimal. Alternative B would contribute a small but perceptible adverse increment to the short- and long-term, adverse impacts from past, present and reasonably foreseeable projects, resulting in overall adverse cumulative impacts.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

The impacts of alternative C on wetlands and floodplains would be the same as those described for alternative B because there are no wetlands or floodplains at the upper Rosslyn site, and the proposed improvements at the lower Rosslyn site would be the same.

Cumulative Impacts

Impacts on wetlands and floodplains from past, present, and reasonably foreseeable actions would be the same as those described under alternative B. Alternative C would contribute a small but perceptible adverse increment to these short and long-term, adverse impacts, resulting in overall adverse impacts.

Conclusion

Under alternative C, the impacts on wetlands and floodplains would be the same as those described under alternative B. Direct, adverse impacts on wetlands and SAV would result from construction of the dock and dredging, and to floodplain values from the construction of the boathouse facility. The areas of direct disturbance are small compared to the larger setting of the Potomac River. Wetland impacts would be minimized and prevented through implementation of best management practices, permits, and mitigation. Alternative C would contribute a small but perceptible adverse increment to the short- and long-term adverse impacts from past, present and reasonably foreseeable projects, resulting in overall adverse impacts.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

Wetlands

Under alternative D, a boathouse facility with a 14,000 SF footprint and up to a 3,000 SF floating dock would be placed at the Gravelly Point site. As described under alternative B, the boathouse would not be located in wetlands, but the dock would be placed over shallow water riverine wetlands. Unlike alternative B, no dredging would be required at the Gravelly Point site.

The 3,000 SF dock would be secured using removable dock anchor poles that could be placed by hand. The dock anchors would have a minimal impact on riverine wetlands. The dock would also shade habitat in this area; however, because this area is relatively small in the scheme of the larger setting of the Potomac River, impacts would be minimal.

Impacts on SAV would include shading of approximately 3,000 SF of SAV under the docks, which could jeopardize the viability of the SAV bed in that area. As noted in chapter 3, SAV was recorded in 2016 adjacent to the Gravelly Point site (VIMS 2017). Appropriate screening such as a sediment curtain or cofferdam could also be used to prevent sediment from entering the open water adjacent to the work area and blocking light to the SAV. The area would be surveyed prior to construction to confirm if SAV is present.

Impacts on wetlands at the soft launch sites would be the same as those described under alternative B. At both soft launch sites, minor vegetation clearing and some manipulation of the riverbank would be necessary to provide access that is wide enough for people to carry paddlecraft to the water. Similar to the boathouse dock, the installation of floating docks at the soft launch sites would shade habitat in the open water wetlands, although the docks would be much smaller.

Floodplains

Under alternative D the 28,000 SF (with a 14,000 SF footprint) of new structures, rigging area/apron and driveways would be constructed within the floodplain. Boathouse facilities are water-dependent, and therefore appropriate for placement in the floodplain. The boathouse would be designed to be flood resistant with flow-through construction and tear-away walls, and possible construction on piles to elevate the building so floodwaters could flow through the structures and not impede floodplain functions. A 2004 study that examined the effect of a large boathouse structure proposed for across the river in Georgetown concludes that the proposed structure would have no impact on the floodplain and would not increase the water surface level, velocity, or shear stress appreciably during floods (Patton, Harris, Rust and Associates 2004). However, the plan for the boathouse at Gravelly Point is conceptual at this time, therefore, a site-specific study to analyze potential impacts on water surface level, velocity, or shear stress would be required at the time of design.

Under this alternative, floodplain function values, such as the ability to absorb flood flows, recharge water, slow floodwater flows with vegetation, and provide riparian habitat, would be slightly affected by the placement of the 14,000 SF boathouse facility footprint and new impervious surface on the site for driveways and sidewalks. However, the construction of the boathouse facility could be designed to allow floodwaters to flow through, minimizing long-term, adverse effects on floodplain functions and values at that site.

Improvements at the soft launch sites would not change either floodplain function or values, so there would be no impact on floodplains.

Cumulative Impacts

Impacts on wetlands and floodplains from cumulative actions would be the same as those described for alternative B. Under alternative D, impacts on wetlands and floodplains during and after construction would be minimal and adverse. Some impacts would be minimized or eliminated using construction techniques and mitigation actions. Alternative D would contribute a relatively small, adverse increment to the short- and long-term, direct, adverse impacts of the past, present, and reasonably foreseeable projects and result in overall adverse cumulative impacts.

Conclusion

Under alternative D, impacts on wetlands and floodplains would be direct and adverse. The floating dock would cover shallow riverine wetlands and any SAV present and the dock anchors would directly disturb a very small area of the riverine wetlands underneath the dock. However, the disturbed wetland area covered by and adjacent to the dock is relatively small compared to the wetland area present throughout the larger setting of the Potomac River. Implementation of buffers and other best management practices and the use of potential construction timeframes to protect SAV would minimize and prevent adverse

impacts. Permits for construction and the use of fill and mitigation of unavoidable adverse impacts would be required to offset the filled wetlands and replace lost functions and values. The conversion of pervious surface to impervious surfaces within the footprint of the boathouse, rigging area/apron, and driveway would result in minimal adverse impacts on floodplain values. Preparation of the soft launch areas would result in minimal adverse impacts on wetlands but would not affect floodplain functions and values. Alternative D would contribute a relatively small adverse increment to the short- and long-term, direct, adverse impacts of the past, present, and reasonably foreseeable projects, resulting in overall adverse cumulative impacts.

VEGETATION

METHODOLOGY AND ASSUMPTIONS

Under Director's Order 77: *Natural Resources Management* (NPS n.d.), NPS is responsible for managing, conserving, and protecting the natural resources found in national park system units. Information on vegetation and vegetation communities that would be potentially affected in the project area was compiled based on available sources, including National Land Cover Database data and aerial imagery. Impacts on vegetation are based on general characteristics of the site and vicinity, available aerial photos, site observations, and proposed encroachment into vegetated areas associated with construction and the removal of vegetation.

STUDY AREA

The study area for wetlands and floodplains is the footprint of development at each of the alternative and soft launch sites.

IMPACTS OF ALTERNATIVE A: NO ACTION

Because no boathouse would be built and no soft launch sites would be developed under the no-action alternative, there would be no disturbance and no impacts on vegetation.

Cumulative Impacts

Because there would be no impacts under the no-action alternative, there would be no cumulative impacts on vegetation.

Conclusion

There would be no impacts on vegetation under the no-action alternative and no associated cumulative impacts.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Under alternative B, the construction of a boathouse facility and dock would adversely affect vegetation at the lower Rosslyn site. Preparation of the site for the 14,000 SF boathouse would require clearing and conversion of some currently vegetated areas on the site. Vegetation including shrubs, turfgrass, and other understory vegetation would be disturbed and removed temporarily during construction activities. Additionally, the placement the boathouse, rigging area/apron, and realigned Potomac Heritage Trail, would permanently remove trees, shrubs, turfgrass, and other understory vegetation and convert these areas to impervious surface or pervious pavement. Because the boathouse has not been designed, it is not possible to identify the numbers, types, or location of trees, shrubs, turfgrass, and other vegetation that would need to be removed to accommodate the boathouse and dock. However, up to 1.5 acres of vegetation clearing may be required during the construction period. For the purpose of analysis, it is assumed that the entirety of the riparian area and some trees closer to the parking lot would be cleared to

allow access to the site. After completion of construction activities, appropriate vegetation would be replanted in temporarily disturbed areas and adjacent to the new structures, pathways and realigned trail. Cleared trees would be replaced on-site, to the extent possible, or elsewhere in the park.

Construction activities have the potential to introduce invasive species through contaminated equipment or fill soil. Additionally, ground disturbance during construction could present an opportunity for the establishment of invasive species. However, potential impacts from the establishment or spread of invasive species would be minimized and prevented using best management practices, including using only approved, clean fill.

The placement of soft launch sites at Riverside Park and Roaches Run would have minimal impacts on vegetation. A small amount of vegetation would need to be cleared from the shoreline to provide access that is wide enough to ensure safe launches of paddlecraft at Roaches Run. These changes would be permanent, although any cleared trees would be replaced elsewhere in the park. Clearing activities would result in minimal temporary disturbances and permanent removal of vegetation. The shoreline at Riverside Park is composed of boulder armoring; therefore, no vegetation would be affected during construction of the soft launch site. Existing social trails at Roaches Run would be revegetated and discouraged with the placement of boulders, resulting in a small, long-term, beneficial impact on vegetation. There would also be long-term, adverse impacts from removal of vegetation; however, those impacts would be minimal because of the small amount of vegetation removed. Long-term impacts from the use of the soft launch sites would also be negligible, limited to some trampling of turfgrass over time.

Cumulative Impacts

Past, present, and reasonably foreseeable actions have the potential to affect vegetation. The impacts on vegetation of the future construction of the Georgetown nonmotorized boathouse zone and a soft launch site on Theodore Roosevelt Island would be similar to the impacts from construction of the soft launch site at Roaches Run. Construction of the soft launch site would temporarily disturb and remove some vegetation such as trees, shrubs, turfgrass, and other ground cover from upland and riparian areas of the Potomac River. Temporarily disturbed areas would be replanted or landscaped as possible; however, a small amount of vegetation would be permanently removed within the footprint of the facilities. Future projects to rehabilitate Arlington Memorial Bridge, the north parkway, and Bridge 31 would likely temporarily disturb riparian vegetation, which would be revegetated after construction. Although most of the future redevelopment of Reagan National Airport would take place on existing impervious surfaces, there would be temporary adverse impacts on vegetation during construction and limited permanent adverse impacts after existing vegetation is removed for construction of the new concourse and security facilities. Implementation of alternative B would contribute a small, adverse increment to the adverse impact on vegetation of past, present and reasonably foreseeable actions, resulting in overall adverse cumulative impacts on vegetation.

Conclusion

Under alternative B, impacts on vegetation would be direct and adverse. During construction, vegetated areas could be temporarily disturbed and cleared; however, these areas would be replanted following completion of construction activities. After construction, the placement of the boathouse, dock, and soft launches would result in permanent removal of trees, shrubs, turfgrass, and other understory vegetation. Implementation of alternative B would contribute a small, adverse increment to the adverse impact on vegetation of past, present and reasonably foreseeable actions, resulting in overall adverse impacts on vegetation.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

Under alternative C, the impacts on vegetation would be the same as those described under alternative B but on a slightly larger scale because of the additional construction of a support building and parking on

the upper Rosslyn site. Construction activities would disturb and clear vegetation within the project area, including up to an additional acre of vegetation at the upper Rosslyn site. Temporarily disturbed areas would be replanted following completion of construction. After construction, trees, shrubs, turfgrass, and other vegetation would be permanently removed from the footprint of the boathouse, rigging area/apron, support building, and parking area. The placement of soft launch sites at Riverside Park and Roaches Run would have minimal impacts on vegetation, as described under alternative B. The introduction and establishment of invasive species during construction is possible, but impacts on vegetation from invasive species would be minimized and prevented using best management practices. Under alternative C, the adverse impacts on vegetation would be minimal.

Cumulative Impacts

Impacts on vegetation from cumulative actions would be the same as those described under alternative B. Vegetation would be disturbed and cleared during construction activities. Temporarily disturbed areas would be replanted after construction; however, areas of permanent vegetation loss would occur within the footprint of the construction facilities. The contribution of adverse impacts from alternative C to the overall adverse impacts on vegetation from past, present and reasonably foreseeable projects would be slightly noticeable, resulting in overall adverse cumulative impacts on vegetation.

Conclusion

Under alternative C, impacts on vegetation would be direct and adverse. During construction, vegetated areas could be temporarily disturbed and cleared; however, these areas would be replanted following completion of construction activities. After construction, the placement of the boathouse, dock, soft launches, support building, and parking area would result in permanent removal of trees, shrubs, turfgrass, and other understory vegetation. Implementation of alternative C would contribute a small, adverse increment to the overall cumulative impact on vegetation. The contribution of adverse impacts from alternative C to the overall adverse impacts on vegetation from past, present and reasonably foreseeable projects would be slightly noticeable, resulting in overall adverse cumulative impacts on vegetation.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

The Gravelly Point site consists of developed parkland, which is predominantly covered in turfgrass. Because of the existing vegetative community, impacts on vegetation would be limited to turfgrass removed to prepare the site for construction activities and turfgrass lost permanently to the footprint of the building and ancillary site improvements. The introduction and establishment of invasive species during construction is possible, but impacts on vegetation from invasive species would be minimized and prevented using best management practices. Under alternative D, impacts on vegetation at the site would be minimal. The site would receive some low landscaping to accommodate height restrictions associated with the airport. The placement of soft launch sites at Riverside Park and Roaches Run would have minimal impacts on vegetation, as described under alternative B.

Cumulative Impacts

Impacts on vegetation from cumulative actions would be the same as those described for alternative B. Vegetation would be disturbed and cleared during construction activities. Temporarily disturbed areas would be replanted after construction; however, areas of permanent vegetation loss would occur within the footprint of the construction facilities. The contribution of adverse impacts from alternative D to the overall adverse cumulative impacts on vegetation would be minimal, resulting in overall adverse cumulative impacts on vegetation.

Conclusion

Under alternative D, impacts on vegetation would be direct and adverse. During construction, vegetated areas could be temporarily disturbed and cleared; however, these areas would be replanted following completion of construction activities. After construction, the placement of the boathouse, dock, soft launches, and driveway would result in permanent removal of trees, shrubs, turfgrass, and other understory vegetation. Implementation of alternative D would contribute a small, adverse increment to the overall cumulative impact on vegetation. The contribution of adverse impacts from alternative D to the cumulative impacts on vegetation would be minimal, resulting in overall adverse cumulative impacts on vegetation.

AQUATIC WILDLIFE

METHODOLOGY AND ASSUMPTIONS

Information on aquatic wildlife was compiled based on available resources including the 2006 and 2015 District of Columbia Wildlife Action Plans (DDOE 2006, 2015) and the results of a 2004 freshwater mussel survey conducted in the Potomac River along the Rosslyn waterfront (EA Engineering 2005). Impacts on aquatic wildlife are based on general characteristics of the sites and surrounding environment as well as anticipated impacts of the action alternatives on riverine habitats within the study area, including SAV, as described under in the “Wetlands and Floodplains” section.

STUDY AREA

The study area for aquatic wildlife includes portions of the Potomac River adjacent to the alternative sites, including the soft launch sites.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no-action alternative, there would be no disturbance to aquatic wildlife species or their habitats, so there would be no impacts on these resources at any of the sites.

Cumulative Impacts

Because the no-action alternative would have no impacts on aquatic wildlife, there would not be any cumulative impacts.

Conclusion

Under the no-action alternative, there would be no impacts on aquatic wildlife. Because there would be no impacts on these species, there would not be any cumulative impacts on aquatic wildlife.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Under alternative B, a boathouse facility and dock would be placed at the lower Rosslyn site. The boathouse would be placed in upland areas and would not affect aquatic species or habitats. However, the dock could result in impacts on aquatic wildlife in the Potomac River adjacent to the lower Rosslyn site. Underwater noise associated with placement of the dock would result in temporary displacement of fish and other mobile aquatic species that may be present at the site. These temporary impacts would not affect any aquatic species at the population level.

To allow boaters to use the dock safely at mean low tide without hitting mudflats would require dredging the river bottom adjacent to the shoreline at the lower Rosslyn site to achieve a minimum 3.3-foot water depth. Approximately 1 to 2 feet of dredging would be required across an area of up to approximately 58,000 SF. Dredging would result in disturbance/removal of sediments along the shoreline, underwater

noise, and a temporary increase in turbidity. Fish and other mobile species would likely avoid the area during dredging, using other nearby habitats, and would not likely be affected. However, dredging would likely result in mortality of sessile or less mobile benthic species, potentially including eastern pondmussel and tidewater mucket from crushing or burial, resulting in long-term, adverse impacts on these species. These impacts would affect isolated individuals but would not affect the overall population levels of these species given the small amount of habitat that would be affected and the abundance of nearby suitable habitat within the Potomac River.

Dredging to achieve the required depth and shading of up to 3,000 SF of SAV from the dock, as described in the “Wetlands and Floodplains” section, would result in loss or degradation of habitat for fish and other aquatic species associated with SAV communities.

Following construction, boat traffic and human presence would increase from the operation of the dock and associated facilities, causing recurring temporary disturbances to fish and other aquatic species. However, given the amount of surrounding development and current level of use near the site, these disturbances would not represent a substantial change from existing conditions.

The development of soft launch sites at Riverside Park and Roaches Run would have minimal impacts on aquatic wildlife. Impacts would include temporary increases in turbidity and in-water disturbances during the establishment and use of the soft launches and long-term, adverse impacts from a slight increase in human presence in those locations.

Cumulative Impacts

Past, present, and reasonably foreseeable actions have the potential to affect aquatic wildlife. In-water work associated with construction of the Georgetown nonmotorized boathouse zone, rehabilitation of the Arlington Memorial Bridge, and Cultural Landscape Report/Environmental Assessment for Theodore Roosevelt Island may result in adverse impacts on aquatic wildlife from temporary increases in noise, turbidity, and human presence, especially at the Georgetown boathouse. The redevelopment at Reagan National Airport and rehabilitation of the north parkway would not affect aquatic species or habitats because no in-water work is proposed. Construction of alternative B would result in long-term, adverse impacts on aquatic wildlife from dredging and the shading of SAV and long-term impacts from an increased human presence. The contribution of adverse impacts from alternative B to the overall adverse cumulative impacts on aquatic wildlife would be minimal, resulting in overall adverse cumulative impacts.

Conclusion

Under alternative B, long-term, adverse impacts on aquatic wildlife could include mortality of freshwater mussels (e.g., eastern pondmussel and tidewater mucket) and other less mobile benthic species from dredging at the lower Rosslyn site and loss or degradation of habitat from shading of SAV by the dock. Fish and other mobile aquatic species would likely avoid the area during construction and would not be affected. Increased boat traffic and human presence during operation of the project facilities would result in recurring temporary disturbances to fish and other aquatic species but would not represent a substantial change from existing conditions because this use already occurs in this area. Alternative B would contribute a minimal increment of adverse impacts to the overall minimal cumulative impacts on aquatic wildlife.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

The impacts of alternative C on aquatic wildlife would be the same as those described for alternative B, because there are no aquatic habitats at the upper Rosslyn site, and the proposed improvements at the lower Rosslyn site would be the same.

Cumulative Impacts

Impacts on aquatic wildlife from cumulative actions would be the same as those described for alternative B. Alternative C would contribute the same impacts on aquatic wildlife as alternative B because there are no aquatic habitats at the upper Rosslyn site, and the proposed improvements at the lower Rosslyn site would be the same. Alternative C would contribute a minimal increment of adverse impacts to the overall minimal cumulative impacts on aquatic wildlife.

Conclusion

The impacts of alternative C on aquatic wildlife would be the same as those described for alternative B. Impacts would be long term and adverse and could include mortality of freshwater mussels (including eastern pondmussel and tidewater mucket) and other less mobile benthic species from dredging at the lower Rosslyn site and loss or degradation of habitat from shading of SAV by the dock. Increased boat traffic and human presence during operation of the project facilities would result in recurring temporary disturbances to fish and other aquatic species but would not represent a substantial change from existing conditions. Alternative C would contribute a minimal increment of adverse impacts to the overall minimal cumulative impacts on aquatic wildlife.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

Under alternative D, a boathouse facility and dock would be placed at the Gravelly Point site. Similar to alternative B, the boathouse would be placed in upland areas and would not affect aquatic species or habitats. However, the dock could result in impacts on aquatic wildlife in the Potomac River adjacent to Gravelly Point site. Impacts on aquatic species under alternative D would be similar to those described for alternative B; however, no dredging would be required under alternative D. As described under alternative B, up to 3,000 SF of SAV would be shaded by the dock, which would result in loss or degradation of habitat for fish and other aquatic species associated with SAV communities.

Following construction, operation of the dock and facilities would result in increased boat traffic and human presence causing recurring temporary disturbances to fish and other aquatic species. However, given the amount of surrounding development and current level of use near the site, these disturbances would not represent a substantial change from existing conditions.

Impacts associated with the development of soft launch sites at Riverside Park and Roaches Run on aquatic wildlife would be the same as those described for alternative B.

Cumulative Impacts

Impacts on aquatic wildlife from cumulative actions would be the same as those described under alternative B. In-water work associated with the cumulative actions would result in adverse impacts on aquatic wildlife from temporary increases in noise, turbidity, and human presence. Implementation of alternative D would contribute an imperceptible adverse increment to the overall cumulative impact on aquatic wildlife.

Conclusion

Under alternative D, placement of the dock would result in loss or degradation of habitat because SAV would be shaded. Fish and other mobile aquatic species would likely avoid the area during construction and would not be affected. Increased boat traffic and human presence during operation of the project facilities would result in recurring temporary disturbances to fish and other aquatic species, but would not represent a substantial change from existing conditions. Implementation of alternative D would contribute an imperceptible adverse increment to the overall cumulative impact on aquatic wildlife.

HISTORIC DISTRICTS AND THE CULTURAL LANDSCAPE

METHODOLOGY AND ASSUMPTIONS

Federal actions that have the potential to affect cultural resources are subject to a variety of laws and regulations. The NHPA of 1966, as amended, is the principal legislative authority for managing cultural resources associated with NPS projects. Generally, section 106 of the NHPA requires all federal agencies to consider the effects of their actions on cultural resources listed and/or determined eligible for listing in the National Register. Such resources are termed “historic properties.” In addition, the NHPA requires that federal agencies take action to minimize harm to historic properties that could potentially be adversely affected by a federal undertaking. Agencies must consult with the SHPO; Tribal historic preservation officer, if applicable; the Advisory Council on Historic Preservation, as required; and other interested parties in an effort to avoid, minimize, or mitigate adverse effects. Agreement on mitigation of adverse effects on historic properties is reached through consultation with relevant agencies, including the state historic preservation officer, the Tribal historic preservation officer, and the Advisory Council on Historic Preservation, where appropriate. In addition, NPS is charged with the protection and management of cultural resources in its custody. This is furthered through the implementation of Director’s Order 28: *Cultural Resource Management Guideline* (NPS 1998), *NPS Management Policies 2006* (NPS 2006), and the 2008 *NPS Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers* (NPS 2008b). These documents charge NPS managers with avoiding, or minimizing to the greatest degree practicable, adverse or other negative impacts on park resources and values. Although NPS has the discretion to allow certain impacts in parks, that discretion is limited by the statutory requirement that park resources and values remain unimpaired, unless a specific law directly provides otherwise.

NPS guidance for evaluating effects, included in the NPS NEPA handbook (NPS 2015), requires that impact assessment be scientific, accurate, and quantified to the extent possible. For cultural resources, it is rarely possible to measure impacts in quantifiable terms; therefore, impact assessment must rely heavily on the professional judgment of resource experts. The analyses of effects on cultural resources that are presented in this section respond to the requirements of NEPA. An assessment of effect under section 106 is being conducted separately, but concurrently with the NEPA effort. This NHPA analysis has informed the analysis of impacts on historic structures and districts within this EA.

STUDY AREA

The study area for this analysis coincides with the APE that was determined during the section 106 process. According to the section 106 regulations (36 CFR 800), an APE is defined as the geographic area or areas in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. A separate assessment of effects was prepared in compliance with section 106 and submitted to the Virginia and DC SHPOs for review.

As described in chapter 3, two discontinuous sites have been identified that each have a direct and indirect APE (see figures 18–21). The direct APEs coincide with areas likely to experience direct impacts, such as ground disturbance and physical impacts on historic resources, while the indirect APEs coincide with areas likely to experience the potential indirect and cumulative impacts. Indirect impacts can include visual or auditory impacts on the surrounding historic resources adjacent to the project area.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no-action alternative, no boathouse facilities would be constructed. Arlington County public high school rowing programs would continue to use area boathouses located in Washington, DC, as

described in chapter 1. There would be no direct or indirect impact on historic resources because of this alternative.

Cumulative Impacts

No cumulative impacts would occur under the no-action alternative because there would be no impacts.

Conclusion

The no-action alternative would have no impact on historic resources because the existing conditions would remain the same. No new facilities would be constructed and there would be no changes to the shoreline of the Potomac River. There would be no cumulative impacts under the no-action alternative.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Alternative B would result in direct, adverse impacts on the George Washington Memorial Parkway Historic District from the introduction of new, non-contributing features within the historic district. Much of this resource's National Register significance is based on its natural systems, features, land use, vistas, and topography. Construction of the boathouse, storage, and support facilities would require permanent changes to this historic resource. Construction of the facilities on the upper Rosslyn site would necessitate removal of some trees that are within the boundary of the George Washington Memorial Parkway Historic District, which would alter the cultural landscape and diminish the integrity of setting and feeling of the immediate area. The massing of the structures, even with appropriate design, would completely change the natural character of the Potomac Gorge and land use in this section of the park, which are contributing resources in the district. Despite the changes that diminish the overall integrity of the district, the George Washington Memorial Parkway Historic District would still be able to convey its National Register significance under criteria A, B and C.

Indirect, adverse impacts on historic resources near alternative B would occur as a result of the change in the built environment along the shoreline of the Potomac River. A complete visual impact analysis is provided in appendix D. Impacts on the George Washington Memorial Parkway Historic District would be indirect and adverse. Facilities for the lower Rosslyn site would likely be visible from the parkway, although the parkway elevation and retention of as much tree cover as possible would limit the visual intrusion except in the leaf-off season. In addition, construction of facilities at the site would diminish the integrity of setting and feeling in that section of the district. Alternative B would have short-term, direct visual impacts on the setting of the Key Bridge during construction but long-term, indirect visual impacts. The setting of the bridge is secondary to its National Register eligibility. The change in setting posed by the lower Rosslyn site would not affect the bridge's integrity of design, workmanship, materials, location, feeling or association, the reasons the resource is eligible under criterion C in the area of engineering.

The Alexandria Aqueduct, more so its southern remnants, would be visible from the floating dock of the lower Rosslyn site. The change in setting posed by the lower Rosslyn site would not affect the resource's integrity of design, workmanship, materials, location, feeling or association that are associated with its engineering significance.

There would be short-term, indirect visual impacts on the Georgetown Historic District during construction but long-term, indirect visual impacts on its waterfront setting as result of alternative B. The narrow edge of the proposed boathouse and the floating dock would be visible from the southern edge of the waterfront. The historic Georgetown waterfront landscape at this location east of the Key Bridge is characterized by natural views of the parkway, the Little River, and Theodore Roosevelt Island. In leaf-off conditions, the lower Rosslyn site is visible but obstructed. In leaf-on conditions, the site would be more screened except for the floating dock. However, because of its low profiles along the water, the floating dock would not greatly alter the view of the existing shoreline.

The longest façade of the boathouse at the lower Rosslyn site would only be visible from the northern end of Theodore Roosevelt Island from a strategically located and popular shoreline vista on the island, located directly across from the site. Theodore Roosevelt Island is National Register-listed based on the natural features and vistas of the island and its association with the 26th president who played a major role in conservation awareness. The massing of the proposed structures, even with appropriate design, would have an indirect, adverse impact on the natural setting and vistas of the island, which are important character-defining features of the resource. The alteration would affect the historic character of the island, but would not be expected to affect the overall eligibility of Theodore Roosevelt Island.

The C&O Canal is a tertiary feature of the lower Rosslyn landscape given its distance away and the elevation change between them. The lower Rosslyn site is barely discernable from portions of the canal's south terrace. East of the Key Bridge, the lower Rosslyn site is only discernable where the C&O Canal crosses 33rd Street NW and 34th Street NW. At this higher vantage point, it is unlikely a viewer would perceive the site unless directed to do so; therefore, no indirect impacts are anticipated.

Given the location of the boathouse along a side channel of the Potomac and behind Theodore Roosevelt Island, the facility would not be visible from other historic resources within the indirect APE, including the Washington Canoe Club, and the Potomac Boat Club.

Installation of a soft launch at both the Riverside Park and Roaches Run sites would have direct impacts on the George Washington Memorial Parkway Historic District from the introduction of new, non-contributing structures within the historic district; however, the launch sites would have minimal, if any, visual impacts on the parkway. Given the low-profile nature of soft launch sites and their locations at the shoreline, the structures would not restrict the visibility of any topographic or landscape features surrounding them. There would be minimal indirect impacts on the parkway from an increase in traffic to take advantage of the launch site. For the Mount Vernon Trail, the site is visible from the trail and would introduce a new visual element for passersby, but it would not appreciably change the existing viewshed. Installation of short, floating docks would diminish the setting of the immediate site but would not diminish the integrity of setting of the much larger historic district.

Cumulative Impacts

The Georgetown nonmotorized boathouse zone would have a beneficial impact because it would bring a new boathouse to an area of shoreline that was historically known to contain numerous boathouses. Rehabilitation of the Arlington Memorial Bridge would have an adverse impact because the existing drawbridge span and concrete arch approach spans would be replaced with prefabricated concrete panels, which presumably would not meet the Secretary of the Interior's *Standards for Rehabilitation* (NPS 2011b). Specific impacts of the north parkway rehabilitation are not known at this time, but all rehabilitation efforts would be completed in consultation with the SHPO. The Theodore Roosevelt Island Cultural Landscape Report would have a beneficial impact because Bridge 31 would be rehabilitated and a soft launch site would be constructed, which would cause minimal alteration on the shoreline. The redevelopment at Reagan National Airport would have an adverse impact from the introduction of a new concourse on the north end of the existing terminal. Alternative B would contribute direct, adverse impacts on historic resources to overall adverse and beneficial cumulative impacts. Alternative B would contribute an imperceptible incremental impact to the cumulative impacts because the project would be designed to reduce the visual intrusion on the existing landscape.

Conclusion

The Virginia and DC SHPOs would review the exact design of the building to ensure that adverse impacts on the historic districts are minimized. NPS would develop an agreement document (programmatic agreement or memorandum of agreement) with the Virginia and DC SHPOs and other consulting parties outlining the process for reviewing building designs; determining the potential impacts on resources; and

developing a process to avoid, minimize or mitigate any adverse effects on historic districts and cultural landscapes in the study area. Alternative B would contribute an imperceptible incremental impact to the cumulative impacts because the project would be designed to reduce the visual intrusion on the existing landscape.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

Under alternative C, the boathouse and launching facility would be constructed in the same location as described under alternative B, but additional facilities would be constructed on the upper Rosslyn site. The impacts for the lower Rosslyn site under alternative C would be the same as those described for alternative B. The support facility would be constructed on the upper Rosslyn site and would include office space, locker rooms, restrooms, and space for education and outreach. There would also be a small parking area for accessible parking and service vehicles and an access road associated with the support facility. Approximately 500 linear feet of the Martha Custis Trail would be rerouted to accommodate the new facilities.

Alternative C would have direct, adverse impacts on the George Washington Memorial Parkway Historic District by introducing one non-contributing building and adding a new road and parking area to the historic district. As noted above, several non-contributing resources would be added to the district. The introduction of these modern buildings would diminish the integrity of setting and feeling of the historic district, but the district would remain eligible for listing under criteria A, B and C. Additionally, the Virginia and DC SHPOs would review the design of the facility to ensure that adverse impacts on the historic district are minimized.

There would be indirect impacts on the Key Bridge, Georgetown Historic District, and Theodore Roosevelt Island Historic District because the new facility would be visible from multiple points within each of these resources. Alternative C would have short-term, indirect impacts on the setting of the Key Bridge during construction but long-term, indirect impacts from the altered setting. The change in setting posed by the development on either upper Rosslyn site would not diminish the bridge's integrity of design, workmanship, materials, location, feeling or association, the reasons the resource is eligible under criterion C in the area of engineering.

The Alexandria Aqueduct, C&O Canal, Potomac Boat Club, and the Washington Boat Club are not visible from the upper Rosslyn site. Impacts on these historic resources would be the same as those described under alternative B.

Impacts on historic districts from the Riverside Park and Roaches Run soft launch sites would be the same as those discussed under alternative B.

Cumulative Impacts

Impacts from past, present, and reasonably foreseeable projects would be the same as those described for alternative B. Alternative C would contribute direct, adverse impacts on historic resources to overall adverse and beneficial cumulative impacts. Alternative C would contribute an imperceptible incremental impact to the cumulative impacts because the project would be designed to reduce the visual intrusion on the existing landscape.

Conclusion

Similar to alternative B, the design of the buildings would adhere to the Secretary of the Interior's *Standards for Rehabilitation*, and the Virginia and DC SHPOs would review all plans to ensure that adverse impacts on the historic district are minimized. NPS would develop an agreement document (programmatic agreement or memorandum of agreement) with the Virginia and DC SHPOs and other consulting parties outlining the process for reviewing building designs; determining the potential impacts on resources; and developing a process to avoid, minimize, or mitigate any adverse effects. Alternative C

would contribute an imperceptible incremental impact to the cumulative impacts because the project would be designed to reduce the visual intrusion on the existing landscape.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

Under alternative D, the boathouse facility would be constructed on the Gravelly Point site. This facility would include one larger two-story boathouse (28,000 SF) with 14,000 SF of boat storage space and 14,000 SF for restrooms, exercise equipment, team meeting space and a community room. A rigging area would be located on the shoreline side of the facility and a floating dock and launch area would extend along the shoreline. A new driveway would be constructed to access the facility. The location of the facility would require the realignment of approximately 1,500 linear feet of the 18-mile Mount Vernon Trail.

Impacts on the George Washington Memorial Parkway Historic District would be direct because of the addition of one, non-contributing feature within the district's boundaries. As noted above, although a non-contributing resource would be added to the district, the introduction of the modern building and the minor relocation of the trail would not alter the characteristics of the historic district that make it eligible for listing under criteria A, B and C. Additionally, the Virginia SHPO would review the design of the facility to ensure that adverse impacts on the historic district are avoided or minimized.

No other historic resources would be affected under this alternative. Impacts on historic districts and cultural landscapes from the Riverside Park and Roaches Run soft launch sites would be the same as those described for alternative B.

Cumulative Impacts

Impacts from past, present and reasonably foreseeable projects would be the same as described under alternative B. Alternative D would contribute direct, adverse impacts on historic resources to overall adverse and beneficial cumulative impacts. Alternative D would contribute an imperceptible incremental impact to the cumulative impacts because the project would be designed to reduce the visual intrusion on the existing landscape.

Conclusion

Similar to alternative B, the design of the buildings would adhere to the Secretary of the Interior's *Standards for Rehabilitation*, and the Virginia SHPO would review all plans to ensure that adverse impacts to the historic district are avoided or minimized. NPS would develop an agreement document (programmatic agreement or memorandum of agreement) with the Virginia SHPO and other consulting parties outlining the process for reviewing building designs; determining the potential impacts on resources; and developing a process to avoid, minimize, or mitigate any adverse effects. Alternative D would contribute an imperceptible incremental impact to the cumulative impacts because the project would be designed to reduce the visual intrusion on the existing landscape.

ARCHEOLOGICAL RESOURCES

METHODOLOGY AND ASSUMPTIONS

Certain important research questions about human history can only be answered by the actual physical material of cultural resources. Archeological resources have the potential to answer, in whole or in part, such research questions. An archeological site can be eligible to be listed in the National Register of Historic Places if the site has yielded, or may be likely to yield, information important in prehistory or history. An archeological site can be nominated to the National Register in one of three historic contexts or levels of significance: local, state, or national. For purposes of analyzing impacts to archeological resources, thresholds of change for the intensity of an impact are based upon the potential of the site to

yield information important in prehistory or history, as well as the probable historic context of the affected site.

Information on the presence or absence of archeological sites in the project area comes from a Phase I archeological survey carried out in 2004 (Louis Berger 2005).

STUDY AREA

The study area for archeological resources is limited to areas where there will be ground-disturbing activities from construction. This includes near-shore areas in the water, since the project could have impacts on submerged resources.

IMPACTS OF ALTERNATIVE A: NO-ACTION

Under the no-action alternative, the proposed boathouse would not be built. If the boathouse is not constructed at any location, no ground disturbing activities would occur and there would be no discernible effect on archeological resources.

Cumulative Impacts

Because there are no impacts under the no-action alternative, there would be no cumulative impacts on archeological resources.

Conclusion

Under the no action alternative, no resources would be disturbed and no impacts would occur. There would be no cumulative impacts.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Under alternative B, a new boathouse storage and launching facility would be constructed along the Potomac River shoreline to the east of the parkway and north of existing parking areas, near the northern end of Theodore Roosevelt Island. Review of historical documentation and photographs indicated that most of the lower Rosslyn site was marsh in the nineteenth century, but has been built up by filling in the twentieth. However, the causeway connecting Mason's Island, now Theodore Roosevelt Island, to the mainland crossed the lower Rosslyn site. Viewed in isolation, Mason's causeway was not a feature of any aesthetic merit or outstanding architectural ingenuity, judging from extant photographs. However, the causeway has been recognized as an National Register of Historic Places-listed contributing structure of the Theodore Roosevelt Island Historic District, because of its "importance...as a link in the passage by ferry and road across the Potomac River" (Fanning 1999). Mechanical excavation in this area encountered no intact traces of the original causeway. Underwater surveyors identified boulders that they interpreted as elements of the causeway, but it is not known if these are part of the original structure or were added by NPS in the 1950s rebuilding. Archeological investigations have not demonstrated sufficient integrity to warrant National Register of Historic Places-eligibility for this remnant of the causeway, which was heavily modified. However, consultation with the Virginia SHPO would continue under all action alternatives to confirm there would be no impacts to this resource. If the remnant is deemed eligible, and if the construction footprint would not avoid it altogether, mitigation of project effects in this situation might entail more intensive recordation of exposed elements. As only the docks would be constructed in this area, it is likely avoidance would be feasible. If causeway remnants are present, but lack structural integrity, there would be no impact. If the causeway remnants are present and have structural integrity, the project impact is likely to be long-term and adverse but minimal due to the primarily local historic context.

The Roaches Run soft launch site is located on modern fill and has no archeological potential; therefore, there would be no impacts. Riverside Park, located along the Potomac River in Fairfax County, has the

potential for both terrestrial and underwater archeological resources to occur, but it has not been investigated. Some disturbance may have occurred on the site when the stone was installed on the shoreline. The installation of poles or anchor points for the floating dock could affect underwater archeological resources, which are under the jurisdiction of the Maryland SHPO. A Phase I study would be necessary to determine if archeological resources are present, and further consultation with the Virginia and Maryland SHPOs would be required.

Cumulative Impacts

Because there would be no likely impacts under the alternative B, there would be no cumulative impacts on archeological resources.

Conclusion

Under alternative B, it is likely that no resources would be disturbed and no impacts would occur. If causeway remnants are present, but lack structural integrity, there would be no impact. If the causeway remnants are present and have structural integrity, the project impact is likely to be long-term and adverse but minimal due to the primarily local historic context. There would be no cumulative impacts.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

Under alternative C, the new boathouse and soft launch facility would be constructed in the same location as described under alternative B, but additional facilities would be constructed in the upper Rosslyn site. A support facility would be constructed on the upper Rosslyn site and would include office space, locker rooms, restrooms, and space for education and outreach. There would also be a small parking area for accessible parking and service vehicles and an access road associated with the support facility. Two existing trails would be rerouted to accommodate the new facilities.

Based on a review of historical documentation, the upland portion of the upper Rosslyn site may contain remains of the mid-19th century Alexandria Canal. In particular, this site includes the mapped location of a brick-lined tunnel under the canal that allowed passage from the old ferry road to the Mason's Causeway. It is not known, however, if any traces of the tunnel or the canal survive beyond the 10-foot depth that was surveyed. The Alexandria Canal is a related component of the C&O Canal, which is listed as having national significance. Earlier traces of prehistoric or colonial occupation in this area were likely destroyed by the excavation of the canal and other later disturbances.

After its abandonment in the 1880s, the Washington and Old Dominion Railroad acquired the canal right-of-way. Review of 1927 aerial photography shows industrial structures in the project area. The canal would have crossed the site along the western border, to the south. In this area, the land is level and the previous location of the canal does not show up even as a slight depression in the landscape; the entire area was likely filled and leveled for the buildings.

Mechanical trenching was carried out in the mapped location of the tunnel. At a depth of 10 to 12 feet below the surface, this testing revealed a concrete and stone superstructure encasing a metal-pipe outfall. This structure could not have been associated with the culvert/tunnel because it was too high in the profile, too small, and seemed recently installed (Louis Berger 2005). Two shovel tests could not penetrate the deeply compacted soil, and so two trenches were excavated at 10 feet deep, revealing modern inclusions in the fill. The presence of these modern inclusions in the fill indicated the feature is from the 20th century, not from the mid/late-19th century. The trenches also indicated no traces of a culvert/tunnel under the canal. Lack of archeological evidence suggests there is no culvert/tunnel at a depth of 10 feet, but the culvert/tunnel could reside deeper underground. One parcel on the bluff top was not investigated because it was under private ownership. Although review of historic maps and photographs suggests that it should have a similar level of disturbance, it would require archeological survey if it is going to be disturbed during construction. Based on current knowledge of archeological

resources, there would be no impacts under alternative C, but additional investigations may be necessary to confirm no impacts.

The impacts on archeological resources at the soft launch locations would be the same as those described for alternative B.

Cumulative

Because there likely would be no impacts under the alternative C, there would be no cumulative impacts on archeological resources.

Conclusion

Under alternative C, it is likely that no resources would be disturbed and no impacts would occur. If causeway remnants were present, but lacking structural integrity, there would be no impact. If the causeway remnants are present and have structural integrity, the project impact is likely to be long term and adverse but minimal because of the primarily local historic context. If impacts extend beyond the part of the upper site covered by the previous survey, additional surveys would be necessary, but the likelihood of finding intact archeological resources is not high. There would likely be no cumulative impacts.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

The Gravelly Point site is located entirely on recent fill, so it has no potential for archeological remains. There would be no impact on archeological resources under alternative D.

The impacts on archeological resources at the soft launch locations would be the same as alternative B.

Cumulative

Because there would be no impacts under the alternative D, there would be no cumulative impacts on archeological resources.

Conclusion

Under alternative D, no resources would be disturbed and no impacts would occur. No cumulative impacts under alternative D would occur.

VISITOR USE AND EXPERIENCE

METHODOLOGY AND ASSUMPTIONS

The purpose of this impact analysis is to assess the effects of the alternatives on the visitor use and experience in and around the study area. To determine impacts, current uses of the area were considered and the potential effects of the construction and implementation of the proposed alternatives on visitor use and experience were analyzed.

STUDY AREA

In addition to the vicinity of each of the alternative sites and associated soft launch sites, the study area extends beyond the project area to include surrounding boathouses identified in chapter 3, spanning from Georgetown, Washington, DC, to Alexandria, Virginia, and considers use on the Potomac River, because this area is influenced by launch activity from the project area.

IMPACTS OF ALTERNATIVE A: NO ACTION

The no-action alternative represents a continuation of existing conditions, operations, and current practices regulating visitor use on the shoreline of the river. Visitor use and activity at Theodore Roosevelt Island and the Potomac Heritage Trail, both at the lower Rosslyn site, Gravelly Point, Roaches Run, and Riverside Park would remain the same. Visitors would continue to use Thompson Boat Center, Key Bridge Boathouse, and Belle Haven Marina to access the water, and members of the Potomac Boat Club would continue to use that facility. Visitors would continue to remain on waiting lists for boat storage.

Interest in nonmotorized boating (canoeing, kayaking, rowing, and paddle boarding) on the Potomac River in Virginia would likely continue to increase, and demand for this type of recreation would remain unmet. Existing boathouse facilities that provide access to the river and related amenities would continue to have insufficient capacity. In addition, Thompson Boat Center and Key Bridge Boathouse would remain the key access points for a majority of public users, resulting in increased crowding of these facilities on the Washington, DC, shoreline. Existing capacity would continue to be limited by current facilities, but the no-action alternative would contribute no new impacts on visitor use and experience.

Safety

Alternative A would not alter existing emergency vehicle access to any of the proposed sites. There would be no impact on visitor safety.

Cumulative Impacts

Because the no-action alternative would contribute no new impacts on visitor use and experience, there would be no cumulative impacts on visitor use and experience.

Conclusion

Under the no-action alternative, visitors would continue to use and recreate at Theodore Roosevelt Island, Gravelly Point, Roaches Run, and Riverside Park. No water-based visitor use opportunities would be available from these locations. Visitors would continue to use Thompson Boat Center, Key Bridge Boathouse, and Belle Haven Marina, although unmet demand for waterfront access by nonmotorized boat users from the Virginia shoreline and unchanging facilities and access levels are expected to continue. Overall, the no-action alternative would contribute no new impacts on visitor use and experience and no cumulative impacts.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Alternative B would include a boathouse facility and floating docks for nonmotorized boats located along the Potomac River shoreline in Virginia, south of Key Bridge. The improvements under alternative B would be located in the project area that begins approximately 500 feet south of Key Bridge continuing down to the northern Theodore Roosevelt Island parking lot. These proposed improvements would be bound to the east by the Potomac River and to the west by the parkway. Visitors would access the site predominantly by transit, bicycle, and on foot.

The addition of a boathouse facility would support nonmotorized boating activities in the project area, and public access to the river would be increased by the floating dock. With increased access, more visitors would be able to easily access the river for nonmotorized boat uses and other activities, resulting in long-term, beneficial impacts on visitor use and experience.

Under alternative B, a new boathouse with room for boat storage and a rigging space/apron would increase storage capacity for a variety of nonmotorized boat users along the river. Increased public storage would relieve some of the current demand on existing boathouses and enable members of the public to store their boats closer to the river, allowing easier access to the river. An additional boathouse

would also provide more space for the scholastic, collegiate, and other rowing groups to conduct their programs. Up to 14,000 SF of boat storage space would be built. The addition of these new facilities at the waterfront would rearrange riverfront use patterns to alleviate crowding issues occurring at other boating facilities such as Thompson Boat Center, and enable more users to access the water during peak hours. An increase in facility and storage space would reduce crowding and enable more people to access the river, ultimately providing a more enjoyable experience for those visitors, resulting in direct long-term, beneficial impacts on visitor use and experience.

While access to the proposed boathouse would be primarily by transit, bicycle, or on foot, the nearby northern parking lot for Theodore Roosevelt Island would provide visitors with access to the area by car. From this parking lot, the boathouse would be an approximate 5 to 10 minute walk for visitors. Increased use of the parking lot may result in adverse impacts on existing users visiting Theodore Roosevelt Island. However, boat storage would be accessible by water only, and visitors would not be able to launch paddlecraft from cars at this location. A potential emergency vehicle route would be constructed to connect from the boat storage area to the northern Theodore Roosevelt Island parking lot. The Potomac Heritage Trail would be reconfigured to run on the east side of the proposed boat storage area, to allow for continued recreational connectivity.

Under alternative B, construction of the boathouse and realignment of the Potomac Heritage Trail would require temporary closure of areas within the immediate vicinity of the project area. Visitors engage in walking, hiking, wildlife viewing, and other activities on the Potomac Heritage Trail; therefore, closures that affect these activities would have short-term, direct, adverse impacts on visitor use and experience. The temporary staging of construction equipment in the Theodore Roosevelt Island parking lot would also have short-term, direct, adverse impacts as a result of reduced parking options for visitors. In addition to area closures, visitors accessing the trail would be subjected to some short-term, adverse noise impacts from construction. The duration of these adverse impacts on visitor use and experience during construction activities is anticipated to last for less than a year. Construction activity would be restricted to daytime hours, and all applicable local, state, and federal noise ordinances and compliance measures be implemented and enforced.

Alternative B would include the addition of two soft-launch sites located at Roaches Run and Riverside Park. The addition of these two sites along the Potomac River would allow for car-top access for visitors to launch small paddlecraft, providing additional public access to the waterfront to accommodate a diverse mix watercraft uses and users. Construction of the launch sites would result in short-term, adverse impacts on visitors recreating in the nearby park areas associated with noise and temporary re-routing, if needed. Overall, the increase of public access to the waterfront from the Virginia shoreline would result in long-term, beneficial impacts on visitor use and experience.

Safety

Under alternative B, emergency vehicles, including fire trucks and ambulances, would be able to access the boathouse facility using the emergency vehicle access ramp from the Theodore Roosevelt Island parking lot. Emergency vehicles would need to travel slowly through the heavily used parking lot and under the existing elevated walkway. A limited number of emergency access vehicles would be able to park near the boathouse. Remaining vehicles would need to stage in the Theodore Roosevelt Island parking lot, and personnel would walk the remainder of the way.

Cumulative Impacts

Future projects and construction within the project and surrounding areas include the rehabilitation of the Arlington Memorial Bridge, north parkway, and renovation of Bridge 31 on the Mount Vernon Trail. Short-term, adverse impacts may result for visitors recreating either above or along the Potomac River from noise and temporary closures or rerouting from land or water-based construction activities for the renovation and rehabilitation projects, but would ultimately result in long-term, beneficial impacts for all

users because of long-term safety improvements. In addition to the rehabilitation of Bridge 31, new Capital Bikeshare stations are proposed at Theodore Roosevelt Island and Gravelly Point. Construction of a soft launch site on Theodore Roosevelt Island is also proposed. The new bikeshare stations would improve bicycle access along the Mount Vernon Trail and specifically at both Theodore Roosevelt Island and Gravelly Point, and the soft launch site would allow paddlers to visit the island, resulting in long-term, beneficial impacts by adding a new visitor destination and enhancing visitor resources for cyclists and paddlecraft users in the area. However, access to the new soft launch site at Theodore Roosevelt Island would be primarily limited to users paddling from Washington, DC, and would not be readily accessible from the Virginia shoreline.

The additional future construction of the Georgetown nonmotorized boathouse zone would include several boathouses and associated facilities in the Georgetown neighborhood. The construction of the Georgetown nonmotorized boathouse zone would allow universities, high schools, and the public to access rowing facilities and provide opportunities to rent paddlecraft or launch personally owned paddlecraft. The addition of these facilities along the waterfront would alleviate current crowding conditions at existing boathouse facilities through increased public access points and the provision of additional facilities for competitive teams. This future project contributes cumulatively to visitor use and experience by enhancing existing project area resources, adding new visitor destinations, and providing increased nonmotorized boat user access points along the Potomac River. However, similar to the construction of a soft launch site at Theodore Roosevelt Island, although the Georgetown nonmotorized boathouse zone would provide increased access for nonmotorized boat users, these improvements would be constructed solely on the Washington, DC, shoreline, and demands for access and facilities on the western shore of the Potomac in Virginia would continue to remain unmet. Short-term, adverse impacts may result from added noise and area closures during construction.

Alternative B would also potentially permit visitors to access the proposed soft launch location on Theodore Roosevelt Island, and the improvements to Bridge 31 would notably enhance the project area. Alternative B would result in long-term, beneficial impacts and some short-term, adverse impacts on visitor use and experience from improved river access and reduced crowding at existing boathouse facilities. When combined with long-term, beneficial impacts from cumulative actions, overall cumulative impacts would be beneficial, and alternative B would contribute an appreciable, beneficial and minimal, short-term, adverse increment to the overall beneficial cumulative impacts on visitor use and experience.

Conclusion

Alternative B would result in a long-term, beneficial impact on visitor use and experience as a result of increased public access to the river from the Virginia shoreline, increased visitors, increased and more diverse visitor opportunities and facilities, and enhanced visitor experience. Impacts on visitor use and experience during construction would be short term and adverse because of the potential closure of portions of the project area and associated temporary increase in noise. When combined with long-term, beneficial impacts from cumulative actions, overall cumulative impacts would be beneficial, and alternative B would contribute an appreciable, beneficial and modest, adverse increment to the overall beneficial cumulative impacts on visitor use and experience.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

Alternative C would include a boathouse facility and a floating dock for nonmotorized boats located along the Potomac River shoreline in Virginia south of Key Bridge. Alternative C would encompass the same boundaries as alternative B at the lower Rosslyn site, but would also extend west of the parkway with improvements bound by North Lynn Street and I-66, and extending to Mount Vernon Trail to the south, which would comprise the upper Rosslyn site.

Alternative C would include the same storage and rigging facilities described for alternative B, allowing for increased storage and use of nonmotorized boats and easier river access. The boat storage space would have the same footprint as described under alternative B and would provide similar levels of long-term, beneficial impacts on visitor use and experience from supporting nonmotorized boating activities in the project area.

In addition to a boat facility and dock along the Potomac River, alternative C would include a support facility located at the upper Rosslyn site, west of the parkway. The support building would include additional visitor amenities such as locker rooms, showers, restrooms, and a space for education and outreach. The combination of the boathouse and accompanying support building would provide a more comfortable and engaging visitor experience, and such accommodations would notably enhance public, scholastic, and collegiate groups' experiences. Access to a full suite of amenities would result in a greater increment of benefits to visitor use and experience compared to alternative B.

Similar to alternative B, the addition of boating options along the Potomac River would result in long-term, beneficial impacts because river use patterns would be improved through the distribution of new facilities and amenities along the waterfront that alleviate crowding issues. The support building under alternative C would have a space dedicated to education and outreach. This dedicated space would provide opportunities for visitors to engage in waterfront education and stewardship activities, resulting in more noticeable long-term, beneficial impacts compared to alternative B.

Primary boathouse access options would be the same as those described under alternative B. However, alternative C would include the addition of a small accessible parking lot that would also provide emergency and service vehicle access parallel to I-66, allowing for more convenient and comprehensive egress to and from the area. Adverse impacts on existing visitors to Theodore Roosevelt Island would remain under alternative C, with an increased demand for parking. Boat storage would remain accessible by water only, and a potential emergency vehicle route would connect in the same location as described under alternative B. Reconfigurations of the Potomac Heritage Trail would be the same as those described for alternative B, allowing for continued recreational connectivity around the boathouse. However, under alternative C, the Mount Vernon Trail at the upper Rosslyn site would be realigned to allow for the new parking lot and potential support building.

Under alternative C, construction impacts associated with the boathouse and realignment of the Potomac Heritage Trail on the lower Rosslyn site would be the same as those described for alternative B. Construction at the upper Rosslyn site would result in additional short-term, direct, adverse impacts on visitor use and experience because visitors would also experience temporary closure of the Mount Vernon Trail in the immediate project area and additional noise impacts. Construction activity would be restricted to daytime hours, and all applicable local, state, and federal noise ordinances and compliance measures would be implemented and enforced. The length of construction is anticipated to last less than a year, although construction time would likely be longer compared to alternative B.

Impacts associated from the addition of two new soft launches would be the same as those described under alternative B.

Safety

Emergency vehicle access to the lower Rosslyn site under alternative C would be the same as described under alternative B. Emergency vehicles would access the upper Rosslyn facility from N. Lynn Street and would be able to stage along the small parking area and access road. Similar to the lower Rosslyn site, a limited number of emergency access vehicles would be able to park near the boathouse support facility because of site constraints.

Cumulative Impacts

Impacts from other actions and projects in the area of analysis would be the same as those described under alternative B, resulting in long-term, beneficial impacts from enhancing existing project area resources, adding new visitor destinations, and providing increased nonmotorized boat user access points and storage. Similar to alternative B, alternative C would permit visitors to access the proposed soft launch location on Theodore Roosevelt Island from the Virginia shoreline, and improvements to Bridge 31 would contribute additional beneficial impacts within the project area. Alternative C would result in noticeable long-term, beneficial impacts and some short-term, adverse impacts on visitor use and experience. Beneficial impacts from alternative C would be more notable compared to alternative B. When combined with long-term, beneficial impacts from cumulative actions, overall cumulative impacts would be beneficial, and alternative C would contribute a substantial appreciable, beneficial and minor, short-term, adverse increment to the overall beneficial cumulative impacts on visitor use and experience.

Conclusion

Alternative C would result in a long-term, beneficial impact on visitor use and experience as a result of increased public access to the river from the Virginia shoreline, increased visitors, increased and more diverse visitor opportunities and facilities, and a substantially enhanced visitor experience. Impacts on visitor use and experience during construction would be short term and adverse because of the potential closure of portions of the project area and associated temporary increase in noise. When combined with long-term, beneficial impacts from cumulative actions, overall cumulative impacts would be beneficial, and alternative C would have substantial appreciable, beneficial and minor, short-term, adverse contributions to the overall beneficial cumulative impacts on visitor use and experience.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

Alternative D would include a boathouse facility and a floating dock for nonmotorized boats located on the southern portion of Gravelly Point, along the Potomac River shoreline in Virginia. The improvements would be located adjacent to the existing Gravelly Point parking lot and recreational fields. Proposed improvements for alternative D would be bound to the east by the Potomac River, to the west by the parkway, and to the south by Mount Vernon Trail.

The proposed facility would contain boat storage, a floating dock and staging area. Under alternative D, capacity for a variety of nonmotorized boat uses would increase, similar to both previously described action alternatives. However, the boathouse facility under alternative D would have more combined storage and amenity space (28,000 SF) compared to alternative B (14,000 SF) and alternative C (22,000 SF), resulting in long-term, beneficial impacts on rowers and paddlers. Additional amenities provided at Gravelly Point would be similar to those proposed at the upper Rosslyn site as described under alternative C but would also include exercise equipment, a team meeting space, and a community meeting room. The combination of the boathouse and accompanying amenities would provide a comfortable, engaging, and enhanced visitor experience, similar to that of alternative C. Access to a full suite of amenities would result in the same increment of benefits to visitors as described for alternative C.

To accommodate the proposed boathouse and associated amenities, the existing open playing field at Gravelly Point would be relocated to the north of the existing paved parking lot entranceway. For visitors whose primary use of the Gravelly Point area is for field recreation, impacts would be long-term and adverse from a reduction in open field area.

Visitors would primarily access the boathouse at Gravelly Point by car, with the option to park at the existing parking lot at Gravelly Point. Building off the existing parking lot entranceway, a paved driveway would be constructed to connect the boathouse to the parking lot, allowing for visitor pick-up and drop-off at the boathouse, as well as emergency vehicle access. Visitors would also have the option to access the area by bicycle or on foot by way of the Mount Vernon Trail.

A small section of the Mount Vernon Trail would be realigned to allow for a looped trail route that would run alongside the boathouse and connect to the visitor parking lot. The new alignment would circumvent the newly relocated playing field to more efficiently and safely accommodate trail users around the modified recreation area and boathouse.

Under alternative D, construction of the boathouse and realignment of the Mount Vernon Trail would result in the same impacts and have a similar timeline as described under alternative C.

Impacts associated with the addition of two new soft launches would be the same as described under both action alternatives; however, under alternative D, Gravelly Point park users would likely experience additional long-term, direct, beneficial impacts because of the close proximity of the Roaches Run launch site. The improved ease of waterfront access for paddlecraft users in combination with the boathouse would markedly enhance visitor's boating experiences and recreational opportunities at Gravelly Point.

Safety

Emergency vehicle access to the Gravelly Point site would be readily available from the parkway, with plenty of room for multiple vehicles to park along the loop road and space for large vehicles to turn around. Vehicles could stage on the existing turfgrass and the existing Gravelly Point parking area.

Cumulative Impacts

Impacts from past, present, and reasonably foreseeable projects would be the same as those described for alternative B, resulting in long-term, beneficial impacts from enhancing existing project area resources, adding new visitor destinations, and providing increased nonmotorized boat user access points.

Alternative D would result in similar levels of long-term, beneficial impacts and short-term, adverse impacts on visitor use and experience as alternative C. When combined with the long-term, beneficial impacts from cumulative actions, overall cumulative impacts would be beneficial, and alternative D would contribute appreciable, beneficial and minor, short-term, adverse increment to the overall beneficial cumulative impacts on visitor use and experience.

Conclusion

Alternative D would result in a long-term, beneficial impact on visitor use and experience from improved public access to the river from the Virginia shoreline, increased visitor use, more diverse visitor opportunities and facilities, and a substantially enhanced visitor experience. Impacts on visitor use and experience during construction would be short term and adverse because of the potential closure of portions of the project area and associated temporary increase in noise. When combined with long-term, beneficial impacts from cumulative actions, overall cumulative impacts would be beneficial, and alternative D would contribute a substantial appreciable, beneficial and modest, adverse increment to the overall beneficial cumulative impacts on visitor use and experience.

TRAFFIC AND TRANSPORTATION

METHODOLOGY AND ASSUMPTIONS

The purpose of this impact analysis is to assess the effects of the alternatives on the transportation systems in the two project study areas, as noted in the "Study Area" section, below. The following modes or elements of transportation were analyzed as a part of this EA and in the accompanying TIA report (appendix A): traffic, pedestrian network, bicycle network, transit, parking, and truck and bus access. Prior to initiating the transportation analysis, NPS, VDOT, Arlington County, and the project team met to determine what analysis tools, data parameters, and assumptions would provide the basis of the analysis.

The first step to determine transportation impacts was to monitor the current use of the transportation systems, including counts of vehicles, pedestrians, and cyclists. These results are documented in the TIA

and summarized in the “Affected Environment” section. Next, background transportation trips through 2020 were evaluated using information from reasonably foreseeable developments in the nearby area, proposed improvements to the transportation infrastructure (e.g., roadway, sidewalk, transit, bicycle, and parking improvements), and background growth of the roadway system. The background transportation trips through 2020, added to the existing conditions traffic counts, constitute the no-action alternative, or alternative A. Because alternative A includes transportation trips of reasonably foreseeable projects, the impacts of alternative A and all action alternatives inherently include cumulative impacts.

Because the proposed action is focused on opening a new boathouse in Arlington County, alternatives B, C, and D traffic analysis is based on scholastic users from Arlington County public high schools and nearby universities with crew teams. The analysis also includes boat renters and private boat owners; therefore, the Saturday peak period is studied for the study area intersections to reflect rental and private boat owner users accessing the Virginia side of the Potomac River.

Study Area, Reasonably Foreseeable Development and Planned Improvements

The transportation study areas are described in “Chapter 3: Affected Environment,” within the “Transportation” section of that chapter and in appendix A.

For the reasons discussed above, analysis of transportation impacts must include planned transportation improvements and reasonably foreseeable projects in the study area that are usually considered as part of cumulative effects for other resource topics.

Planned Developments and Roadway Improvements

The planned developments and the background roadway improvements that were included in the analysis of transportation impacts for alternative A, as described in the “Methodology and Assumptions” section above. More details on these projects are included in the TIA (appendix A).

IMPACTS OF ALTERNATIVE A: NO-ACTION ALTERNATIVE

Under alternative A, no boathouse would be developed. Therefore, alternative A analyzes only changes that are planned or reasonably foreseeable future within the study areas.

Pedestrian Network

Under alternative A, the planned developments and improvements and other area pedestrian growth through 2020 would provide additional sidewalk capacity and safer intersection crossings and would result in a small increase in the volume of pedestrian activity in the Rosslyn study area. Other than minor growth along the Mount Vernon Trail through the Gravelly Point study area, no increase in pedestrians is anticipated.

Bicycle Network

Under alternative A, the planned developments and improvements described above and other area bicyclist growth through 2020 are not expected to result in a substantial change to the volume of bicycle activity in the Rosslyn or Gravelly Point study areas.

Transit

During the study period, three planned developments are anticipated in the Rosslyn study area. These planned developments would result in a moderate increase in transit trips in addition to annual background growth. It is likely that office and residential developments would increase Metrorail ridership to and from the Rosslyn Metro Station during morning and afternoon peak periods.

No change to regional commuter bus service is anticipated beyond routine route and schedule adjustments under alternative A. Carsharing options may change over time depending on decisions made by the individual vendors.

Trucks and Buses

Because few changes to truck and bus circulation or loading are anticipated in the project area, impacts on trucks and buses under alternative A would be minimal for project study areas.

Parking

Parking at Theodore Roosevelt Island would be reduced by two to three spaces from installation of the Capital Bikeshare station (Capital Bikeshare 2017). No additional parking changes are expected in the Rosslyn or Gravelly Point study areas. However, planned developments may introduce new underground garage parking options in the Rosslyn study area.

Traffic

Alternative A includes growth in existing traffic volumes through 2020, various programmed transportation improvements in the study area, and trips generated by approved and unbuilt development projects. These and other traffic inputs were then used to evaluate the traffic operations. The TIA includes full documentation on the detailed methods and data sources for determining the various traffic inputs, including background growth for all alternatives, and alternative A trip generation, modal split, and trip distribution.

Based on the signalized intersection analysis, all the Rosslyn study area intersections would operate at acceptable conditions (level of service D or better) during the peak hours analyzed (weekday AM and PM peak hours, Saturday peak hour).

The individual signalized intersection approaches that operate under unacceptable conditions during the noted peak hour are individually called out in the TIA and shown in figures. Based on the unsignalized intersection analysis and freeway mainline analysis, the Gravelly Point study area intersection and parkway would operate at overall acceptable conditions during the peak hours.

Cumulative Impacts

Due to the nature of the transportation analysis, all cumulative impacts from transportation-related projects are described above. The no-action alternative would not contribute impacts on traffic and transportation.

Conclusion

Under alternative A, a new boathouse facility would not be constructed at any site in Arlington County. Impacts on the pedestrian network would be long-term and beneficial from the planned pedestrian improvements in Rosslyn and along the Mount Vernon Trail. Impacts on the bicycle network would be similar to the pedestrian impacts, resulting in long-term, beneficial impacts. There would be no direct impacts on transit because routine route adjustments by WMATA and Arlington County Transit (ART) would offset additional transit ridership generated from the planned Rosslyn developments. There would be no direct impacts on parking given the new planned developments in Rosslyn would continue to include off-street parking options. For traffic, an increased volume of vehicles would be generated from the planned development in Rosslyn; however, traffic signal timing optimization would offset those new vehicle trips. In the Gravelly Point study area, traffic from planned construction and growth would continue to be within acceptable conditions. Therefore, there would be no long-term, adverse impacts, but there could be short-term, direct, and adverse impacts in downtown Rosslyn during construction of the planned developments.

Overall, alternative A would benefit transportation facilities because the planned developments in Rosslyn, bicycle and pedestrian planned improvements in Rosslyn and near Gravelly Point, and optimization of the traffic signal timings in Rosslyn would improve the sidewalk network, bicycle network, and traffic operations in the Rosslyn study area and Mount Vernon multiuse trail in Gravelly Point study area. The no-action alternative would not contribute to overall cumulative impacts.

IMPACTS OF ALTERNATIVE B: LOWER ROSSLYN

Under alternative B, a new 14,000 SF building would provide boat storage on the lower Rosslyn site, just north of the Theodore Roosevelt Island parking lot. Site access would only be available by bicycle, transit (a 10–15 minute walk from Rosslyn Metro Station), or on foot. These additional person trips would affect all components of the transportation system, including traffic, transit, pedestrians, and bicycles.

Pedestrian Network

Under alternative B, pedestrian activity in the Rosslyn study area would likely increase because of the lower Rosslyn boathouse facility, and pedestrian congestion could increase slightly at times, particularly traversing the Martha Custis Trail between N. Lynn Street and the Theodore Roosevelt Island parking lot, including the bridge over the parkway. No other pedestrian impacts are anticipated from alternative B.

Bicycle Network

Under alternative B, similar to the description for pedestrians, bicycle activity in the Rosslyn study area and vicinity would likely increase, and bicycle congestion could slightly increase at times along the Martha Custis Trail between N. Lynn Street and the Theodore Roosevelt Island parking lot, including traversing the bridge over the parkway. The increase could result in bicycle congestion, but would not require an expansion of existing infrastructure.

Transit

Under alternative B, transit use would increase slightly as a result of patrons destined to the boathouse facility; however, transit should not be adversely affected. Alternative B would have a minimal increase in traffic in the area, resulting in minimal delays to Metrobus, ART, and DC Circulator bus service. However, it is likely that bus routes, scheduling, and stop locations would be planned and updated, as conditions require, which could result in potential new bus routes and changes in existing bus routes as operators periodically adjust them (e.g., WMATA's Metrobus Service Change program).

Trucks and Buses

This section discusses project area access for emergency vehicles and buses and loading within the project area.

Project Area Access – Emergency Vehicles—Under alternative B, fire trucks and possibly ambulances would need to park on the parkway, west of the lower boat facility to access to the facility. The site plan also proposes a possible emergency vehicle route that would connect the Theodore Roosevelt Island parking lot to the boat facility on the lower Rosslyn site. The route would not alter the pedestrian bridge.

Project Area Access – Buses—Under alternative B, buses would not be able to access the boathouse directly at the lower Rosslyn site but would be directed in the near-term to use a general loading/unloading area along a Lee Highway EB service road between N. Fort Myer Drive and N. Lynn Street. In the long term, once these roadways are eliminated by proposed future development, buses would be directed to the existing Loudon County Transit commuter bus stop on N. Kent Street. If alternative B were implemented, discussions regarding the best place for a boathouse pickup/drop-off location would continue between NPS and Arlington County. The details of using these areas are further described in the TIA.

Project Area Loading—Under alternative B, boats would be launched from other locations, including Riverside Park and Roaches Run in Virginia but would not unload/load in lower Rosslyn. Loading and unloading boats from trailers would be prohibited along the parkway and at the Theodore Roosevelt Island parking lot.

Parking

No new parking would be provided under alternative B; however, a few spaces in the northern part of the Theodore Roosevelt Island parking lot would need to be converted from public parking to accessible spaces and NPS service vehicle parking. These spaces would serve the proposed new boathouse. All other parking needs would use downtown Rosslyn options. Viable options that are accessible to the lower Rosslyn site on foot (i.e., paid commercial parking facilities throughout Rosslyn) are currently available to accommodate increased demand for parking adjacent to the boathouse. No other parking impacts are anticipated because of alternative B.

Traffic

Both alternatives B and C are almost identical in their traffic evaluation; therefore, the full traffic evaluation is described under alternative C because that alternative would represent a slightly worse condition.

The traffic impacts assessed under alternative C would follow the same analysis process and contain very similar results as this alternative. There would be a minor difference in the operations analysis because the boathouse driveway is not included in this alternative. The removal of the driveway would improve vehicle operations at the intersection of N. Fort Myer Drive and the parkway on-ramp by 1 second per vehicle.

Cumulative Impacts

Due to the nature of the transportation analysis, all cumulative impacts from transportation-related projects are described above. When the travel modes are combined, alternative B would have overall adverse cumulative impacts on transportation based on the added demand on the Martha Custis Trail. Alternative B would contribute noticeable short-term impacts to the overall adverse cumulative impacts.

Conclusion

Under alternative B, a new boathouse facility would be constructed at the lower Rosslyn site. Impacts on the pedestrian network would be long-term, direct, and adverse from the increased reliance on the Martha Custis Trail to access the boathouse from Rosslyn and potential increase in pedestrian-bicycle conflicts. Impacts on the bicycle network would be similar to impacts on the pedestrian network, but from a different perspective where bicyclists would need to avoid conflicts with the pedestrians, thus resulting in long-term, direct, and adverse impacts. There would be no direct impacts on transit because routine route adjustments by WMATA and ART would offset additional transit ridership generated from the boathouse. There would be no direct impacts on parking, given the many parking garage options in Rosslyn. There could be short-term, direct, and adverse impacts on the Theodore Roosevelt Island parking lot because it could be used as a staging area to construct the boathouse and be used by boathouse patrons once the boathouse opens until NPS enforcement can strongly motivate patrons to use Rosslyn instead. For traffic, an increased volume of vehicles would be generated from the boathouse. However, this increase would not adversely affect the operations of the Rosslyn study area intersections. Therefore, there would be no long-term, direct impacts, but there could be short-term, direct, and adverse impacts along the parkway during construction of the boathouse. Alternative B would contribute noticeable short-term, adverse impacts to overall cumulative impacts on traffic and transportation.

IMPACTS OF ALTERNATIVE C: UPPER AND LOWER ROSSLYN (PREFERRED ALTERNATIVE)

Under alternative C, a new 14,000 SF building would provide boat storage on the river just north of the Theodore Roosevelt Island parking lot. Site access would be provided by bicycle or on foot only.

A second building, on the west side of the parkway, would contain amenities to support the boathouse. A driveway would connect the building to N. Lynn Street and would only allow access for accessible spaces and NPS or county service vehicles. All other vehicles would be prohibited from using the driveway. Site access would be primarily by bicycle, transit (a 10-minute walk from the Rosslyn Metro Station), or on foot. These additional person trips would affect all components of the transportation system, including traffic, transit, pedestrians, and bicycles.

Pedestrian Network

Under alternative C, the new multimodal driveway serving the upper boat facility would have a minimal impact on pedestrians using the sidewalk along the east side of N. Lynn Street. Pedestrian activity in the Rosslyn study area would likely increase because of the lower boathouse facility, and pedestrian congestion could increase slightly at times, particularly traversing the Martha Custis Trail between N. Lynn Street and the Theodore Roosevelt Island parking lot, including the bridge over the parkway. No other pedestrian impacts are anticipated because of alternative C.

Bicycle Network

Under alternative C, similar to the description for pedestrians under alternative B, bicyclist activity in the Rosslyn study area and vicinity would likely increase because of the boathouse facilities, and bicycle congestion along the Martha Custis Trail between N. Lynn Street and the Theodore Roosevelt Island parking lot, including traversing the bridge over the parkway, would also increase.

Transit

Under alternative C, transit use would be the same as described under alternative B.

Trucks and Buses

This section discusses project area access for emergency vehicles and buses and loading in the project area.

Project Area Access – Emergency Vehicles—Similar to alternative B, fire trucks and ambulances would need to park on the parkway just west of the lower boat facility to access the facility. The site plan also proposes a possible emergency vehicle route that would connect the Theodore Roosevelt Island parking lot to the lower boat facility. The upper support facility would be accessible by the proposed driveway along N. Lynn Street between Lee Highway WB and the Key Bridge.

Project Area Access – Buses—Under alternative C, buses would not be able to access either the upper support or lower boat facility directly, but would be directed in the near-term to use a general loading/unloading area along a Lee Highway EB service road between N. Fort Myer Drive and N. Lynn Street. In the long-term, once these roadways are eliminated by proposed future development, buses would be directed to 1401 N. Kent Street, the existing Loudon County Transit commuter bus stop. If alternative C were implemented, discussions regarding the best place for a boathouse pickup/drop-off location would continue between NPS and Arlington County. The details of using this area are further described in the TIA.

Project Area Loading—Boat loading would be the same as described under alternative B.

Parking

A few spaces in the upper Rosslyn site would be assigned for accessible parking and NPS service vehicle parking to serve the proposed new boathouse. All other parking demand would need to use downtown Rosslyn options. Existing public parking options in downtown Rosslyn would likely be able to accommodate an increase in parking demand by patrons of the boat facility. Alternative B offers a viable option to address increased demand for parking adjacent to the boathouse by using the paid commercial parking facilities located throughout Rosslyn that are accessible to Theodore Roosevelt Island on foot. No other parking impacts are anticipated because of alternative C.

Traffic

The future projected traffic analysis is based on a new driveway serving the upper Rosslyn site and all other vehicles stored in downtown Rosslyn. More details on the traffic analysis can be found in the TIA.

Trip Generation—Custom trip generations were calculated for the different proposed boathouse users. These include athletes from the Arlington County high schools and nearby universities, public use (users with their own boats and privately stored at a future boathouse), and recreational public rentals. A separate analysis covers the AM peak hour and PM weekday peak hour representing the early morning and late afternoon rowing demand, as well as a Saturday peak hour analysis representing the private use and recreational rental demand.

The trip generation would include development of a 14,000 SF of boathouse, as originally detailed in the VDOT scoping form process (see attachment 1 of the TIA). The primary assumption is that the available space would be divided evenly between athletic use, rental use, and private use (users with their own boats and storage) (i.e., one-third of the total square footage divided among the three user groups). The future area for each user group was used in combination with other trip generation data collected to determine the total number of trips that would be expected. Further trip generation detail can be found in the TIA. All user groups were combined to develop a total forecasted trip generation. Based on the assumptions, between 196 and 305 total AM and PM peak hour person trips, respectively, are estimated to be generated by the proposed high-density scenario. On a typical Saturday, an estimated 272 person trips would be generated during the afternoon peak hour. Table 2 contains a weekday peak hour summary of all user group's trip generation results. Table 3 contains a Saturday peak hour summary of all user group's trip generation results.

TABLE 2. WEEKDAY AM AND PM PEAK HOUR TRIP GENERATION BY USER GROUP

User	Independent Variable	Time Period	IN	OUT	TOTAL
Rental	Square footage of facility (4,667 SF)	AM Peak	10	10	20
		PM Peak	23	23	46
Athlete	Number of athletes	AM Peak	0	156	156
		PM Peak	234	0	234
Private User (Store at Boathouse)	Number of boat storage racks (ITE 420)	AM Peak	13	8	21
		PM Peak	13	13	26
Private User (Bring own Boat)	Parking spaces and temporary storage lockers	AM Peak			
		PM Peak			
TOTAL		AM Peak	23	173	196
		PM Peak	269	36	305

TABLE 3. SATURDAY PEAK HOUR TRIP GENERATION BY USER GROUP

Source	Independent Variable	IN	OUT	TOTAL
Rental	Square footage of facility (4,667 SF)	119	119	238
Athlete	Number of athletes	N/A	N/A	N/A
Private User (Store at Boathouse)	Number of boat storage racks (ITE 420)	15	19	34
Private User (Bring own Boat)	Parking spaces and temporary storage lockers			
TOTAL		134	138	272

Details and documentation on the modal split analysis and trip distribution methodology by user group are presented in the TIA. Figures showing all vehicle trips and turning movement volumes for all user groups under alternative C are also included in the TIA.

Traffic Operations Analysis—The results of the alternative C operations analysis are summarized in this section, while the TIA contains tables and graphics depicting the full operations results and the alternative C traffic queueing analysis in more detail.

Previous capacity analysis results in this report note any locations where an overall intersection or intersection approach degraded to unacceptable operations or a failing level of service (this and other thresholds are described in more detail in the TIA). The capacity analysis results for alternative C note any overall intersections or intersection approaches continuing to operate at an unacceptable condition compared to alternative A. Based on the signalized intersection analysis, compared to alternative A, none of the study intersections would operate at unacceptable conditions during the peak hours analyzed (weekday AM and PM peak hours, Saturday peak hour). See the TIA for details on the operational changes between alternative A and alternative C.

The individual signalized intersection approaches that operate under unacceptable conditions during the noted peak hour are individually called out in the TIA and shown in figures. In summary, all study area intersections would operate at acceptable conditions.

Cumulative Impacts

Due to the nature of the transportation analysis, all cumulative impacts from transportation-related projects are described above. When the travel modes are combined, alternative C would have overall adverse cumulative impacts to transportation based on the added demand on the Martha Custis Trail. Alternative C would contribute noticeable short-term impacts to the overall adverse cumulative impacts.

Conclusion

Under alternative C, the construction of a new boathouse and support facilities on the upper and lower Rosslyn sites would require a new curb cut at the sidewalk along N. Lynn Street in Rosslyn that would create an unsignalized right-in/right-out driveway. These actions, in addition to attracting new person trips to the area by the boathouse facilities, would slightly increase pedestrian and bicycle volumes along the Martha Custis Trail. Impacts on the pedestrian network would be long-term, direct, and adverse from the increased reliance on the Martha Custis Trail to access the boathouse from Rosslyn and potential increase in pedestrian-bicycle conflicts. Impacts on the bicycle network would be similar to the impacts on the pedestrian network, but from a different perspective where bicyclists would need to avoid conflicts with the pedestrians, thus resulting in long-term, direct, and adverse impacts. There would be no direct impacts on transit because routine route adjustments by WMATA and ART would offset additional transit ridership generated from the boathouse. There would be no direct impacts on parking given many parking garage options in Rosslyn. There could be short-term, direct, and adverse impacts on the

Theodore Roosevelt Island parking lot because it could be used as a staging area to construct the boathouse and be used by boathouse patrons once the boathouse opens until NPS enforcement can strongly motivate patrons to use Rosslyn instead. For traffic, an increased volume of vehicles would be generated from the boathouse. However, this increase would not adversely affect the operations of the Rosslyn study area intersections. Therefore, there would be no measurable long-term, direct impacts, but there could be short-term, direct, and adverse impacts along the parkway and N. Lynn Street during construction of the boathouse. Alternative C would contribute noticeable short-term, adverse impacts to overall cumulative impacts on traffic and transportation.

IMPACTS OF ALTERNATIVE D: GRAVELLY POINT

Under alternative D, a 28,000 SF building would provide boat storage and amenities to support the boathouse. A 14,000 SF building would provide boat storage. The facility would be located on the Potomac River in the southeastern part of the park and connected by driveway to the existing Gravelly Point parking lot. Site access would be on foot or by vehicle, bicycle, or transit (a 30-minute walk from Reagan National Airport Metro Station).

Pedestrian Network

Under alternative D, minimal impacts on Mount Vernon Trail users are anticipated because the trail would be shifted away from the boathouse; however, the trail would still cross the boathouse exit driveway. Overall, vehicular traffic crossing the trail would increase slightly to access the new boathouse facility. Visitors accessing the boathouse on foot or by bicycle would increase use of the Mount Vernon Trail.

Bicycle Network

Under alternative D, impacts on bicyclists would be similar to those on pedestrians—with a slight increase in vehicle volumes crossing the Mount Vernon Trail. Visitors accessing the boathouse on foot or by bicycle would also increase use of the Mount Vernon Trail.

Transit

Under alternative D, Metrorail use would increase slightly as a result of patrons destined to the boathouse facility, but this increase should not have any adverse impact on transit. Because the distance to the nearest metro station at Reagan National Airport is approximately 1 mile, the number of new transit trips would be minimal. The second nearest Metrorail station is Crystal City, which is even farther.

Trucks and Buses

This section discusses project area access for trucks and emergency vehicles, project area access for buses and off-site parking, loading within the project area, and the ability of rowing shell trailers to travel between the nearest interstate and the project area and to access to the project area.

Project Area Access – Emergency Vehicles—Under alternative D, fire trucks and ambulances would access the boat facility from the northbound parkway using the existing off-ramp.

Project Area Access – Buses—Under alternative D, buses would access the boat facility from the northbound parkway using the existing off-ramp. Buses traveling southbound along the parkway would be able to access the northbound parkway via National Airport or by making a U-turn at the Daingerfield Island marina.

Project Area Loading—Under alternative D, all boats would be loaded and unloaded at the boathouse facility using the existing or new boat ramps constructed as part of the boathouse facility. They would also be launched from several other locations, including Riverside Park and Roaches Run in Virginia.

Rowing Shell Trailer Access—Under alternative D, rowing shell trailers would need access to Gravelly Point. These trailers are usually pulled by a Ford-150 or equivalent with an average trailer length of approximately 72 feet from the front of the truck to the end overhang point of the boats. They would access the boathouse facility from the northbound parkway using the existing off-ramp. Trailers traveling southbound along the parkway would be required to make a U-turn at the Daingerfield Island marina to access the boathouse facility. These trailers may require additional coordination with NPS to travel along the parking. The TIA contains the rowing shell trailer turn analysis performed.

Parking

Under alternative D, patrons of the boathouse facility would use the existing parking lot at Gravelly Point. Based on the exiting Gravelly Point parking use survey described in the TIA, there would be some room to accommodate future boathouse demand in the existing parking area, however, a new parking facility may be needed to be accommodate additional demand from boathouse users. The addition of a new parking facility would reduce the potential parking impact caused by the increase in patrons at Gravelly Point.

Traffic

The future projected traffic analysis is based on all access from the parkway at the Gravelly Point ramps. The trip generation would be the same as alternative C. Details and documentation on the modal split analysis and trip distribution methodology by user group are presented in the TIA. Figures showing all vehicle trips and turning movement volumes for all user groups under alternative D are also included in the TIA.

Traffic Operations Analysis—The results of the alternative D operations analysis are summarized in this section, while the TIA contains tables and graphics depicting the full operations results and the alternative D traffic queueing analysis in more detail.

Based on the unsignalized intersection analysis, compared to alternative A, the study area intersection would operate at acceptable conditions during the peak hours analyzed (weekday AM and PM peak hours, Saturday peak hour). See the TIA for details on the operational changes between alternative A and alternative D covering the study area intersection and the parkway mainline.

Cumulative Impacts

Due to the nature of the transportation analysis, all cumulative impacts from transportation-related projects are described above. When the travel modes are combined, alternative D would result in overall adverse cumulative impacts on transportation based on the shift in the Mount Vernon Trail alignment and parking shortage at Gravelly Point. Alternative D would contribute noticeable short- and long-term impacts to the overall adverse cumulative impacts.

Conclusion

Under alternative D, a new boathouse facility would be constructed at Gravelly Point. This action, in addition to attracting new person trips to the area by the boathouse facilities, would increase vehicle traffic along the parkway and slightly increase pedestrian and bicycle volumes along the Mount Vernon Trail. Impacts on the pedestrian network would be long-term, direct, and adverse from the increased number of roadway crossings along the Mount Vernon Trail through Gravelly Point. Impacts on the bicycle network would be similar to the pedestrian network, resulting in long-term, direct, and adverse impacts. There would be no impacts on transit because of the minimal number of potential patrons choosing that travel mode. There would be long-term, direct, and adverse impacts on parking based on the limited parking available at Gravelly Point and current full utilization on weekends. There could be short-term, direct, and adverse impacts to the Gravelly Point parking area because it could be used as a staging

area to construct the boathouse. For traffic, an increased volume of vehicles would be generated from the boathouse. However, this increase would not adversely affect the operations of the Gravelly Point study area intersection. Therefore, there would be no long-term impacts, but there could be short-term, direct and adverse impacts along the parkway during construction of the boathouse.

CHAPTER 5: CONSULTATION AND COORDINATION

This chapter describes the public involvement and agency consultation used during the preparation of this EA.

SCOPING PROCESS AND PUBLIC PARTICIPATION

NPS has engaged the public and concerned stakeholders in the planning process from the onset. For the development of this EA, a public scoping meeting was held on June 21, 2004, at the Arlington County Government Building, when the project was still an EIS. Notification of the meeting was placed in the *Washington Post* (newspaper of record), *Washington Times* (newspaper of record), the *Northern Virginia Journal* and the *Arlington Sun Gazette*. In addition, a newsletter detailing the project and alternatives was sent to approximately 350 people comprising local officials and agencies, the mailing list from the 2002 *Feasibility Study*, and other potentially interested parties identified. As a result of the newsletter and public scoping meeting, more than 200 comments were received. The comments came from a wide range of local citizens and organizations, federal agencies, and various advocacy groups.

Coordination occurred with the rowing programs at the three high schools in Arlington County: Washington-Lee, Wakefield, and Yorktown. Coaches from both the men and women's rowing programs at these schools were interviewed to determine details of the program (e.g., number of students involved, practice times, and method of transportation to the practice site). The coaches were also asked to identify their concerns in relocating to a new rowing facility on the Virginia side of the Potomac River. Concerns identified included travel times to sites, water conditions at the sites, and site access.

After the public scoping meetings, the project was placed on hold, and was then restarted in 2012. A 90-day public comment period was open between July 2, 2012, and September 30, 2012. This public comment period was announced on the park website (<http://parkplanning.nps.gov/arlingtonboathouse>), through mailings sent to interested parties, elected officials, and appropriate local and state agencies, and through press releases. Information about the project was made available through several outlets, including the NPS Planning, Environment, and Public Comment (PEPC) website at <http://parkplanning.nps.gov/arlingtonboathouse>. After reviewing the project information, the public was encouraged to submit comments regarding the purpose and need and proposed actions through the NPS PEPC website or by postal mail sent directly to the park.

A public open-house meeting was held on July 24, 2012, to present the project, provide an opportunity to ask questions, and facilitate public involvement and community feedback on the proposed Arlington County and Vicinity Nonmotorized Boathouse Facility. The public meeting was held from 6:30 p.m. to 8:30 p.m., on July 24, 2012, at Washington and Lee High School, 1301 North Stafford Street, Arlington, Virginia, 22201. The public was able to submit comments to the park via email, regular mail, PEPC, or on comment forms made available at the meeting.

In 2016, a decision was made that the most appropriate NEPA pathway for the project would be an EA, because no significant impacts are anticipated. NPS released a newsletter in July 2017, providing an update on the project, including refinements to the alternatives under consideration and the shift from the EIS to an EA.

COOPERATING AGENCIES

Because of the location of the proposed boathouses and the complexity of the project, several agencies were invited to be cooperating agencies, including NCPC and Arlington County.

NCPC is the planning agency for the federal government in the District of Columbia and the National Capital Region. It was established by the National Capital Planning Act. NCPC reviews all proposed federal actions that affect the nation's capital and surrounding areas. The agency's principal responsibility

is to protect and enhance the historic, cultural, and natural resources of the national capital by creating and updating a comprehensive plan for the region; crafting long-range plans and policies; reviewing a variety of federal and district development projects; and producing the federal Capital Improvements Program. Any planning documents related to the zone and any resulting projects, including land exchanges, development projects, and landscape design, are subject to review and approval by NCPC.

Arlington County is a cooperating agency because the new facility would serve county students and residents, and the site would affect surrounding neighborhoods within Arlington County.

AGENCY CONSULTATION

In addition to NCPC review, consultation with other agencies under both the section 106 of the National Historic Preservation Act and the section 7 of the Endangered Species Act. Agency consultation began early in the EA process and is ongoing to ensure that all relevant agencies are informed of any NPS planning actions. Table 4 provides a list of potential permits, reviews, and consultations that would be required for project implementation.

TABLE 4. REQUIRED AGENCY CONSULTATION

Law, Statute, or Authority	Agency	Permit, Review, or Consultation	Outcome
Section 106 of the NHPA	Virginia, DC, and Maryland, SHPOs	Section 106 of the NHPA requires federal agencies to consider the impacts of their undertakings on historic properties and archeological resources. Compliance with section 106 of the NHPA is being conducted separately from this EA.	Reinitiated consultation with Virginia SHPO and initiated consultation with Maryland and DC SHPOs in 2018. Consultation is ongoing.
National Capital Planning Act	NCPC	NCPC is the review agency for federal projects in the District of Columbia and surrounding region. NCPC has direct review authority for federal projects in the District and advisory review authority in adjacent jurisdictions, including Arlington, County, Virginia.	Discussion with NCPC staff occurring concurrently with development of the EA; Commission review will occur at completion of EA process.
Section 7 of the Endangered Species Act	USFWS, National Marine Fisheries Service	Section 7 of the Endangered Species Act requires federal agencies to consult with USFWS and National Oceanic and Atmospheric Administration's National Marine Fisheries Service regarding the potential for proposed actions to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.	Letter submitted to USFWS on April 24, 2015, and May 2018. Letter submitted to the National Marine Fisheries Service on April 24, 2015, and May 2018. Consultation may be reinitiated during the design phase if construction methods or other parameters change.

Law, Statute, or Authority	Agency	Permit, Review, or Consultation	Outcome
Sections 401 and 404 of the Clean Water Act	USACE	<p>Under section 404 of the Clean Water Act, USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, and authorization would be required.</p> <p>The District Department of Energy & Environment administers the Water Pollution Control Act of 1984 under section 401 of Clean Water Act, which is required as part of the section 404 review/issuance by the USACE. Because the District administers the Potomac River, permits for docks or other changes over the river would be subject to permitting from the District of Columbia. The State of Maryland administers the Potomac River at Riverside Park, so permits for docks and other changes within the river would be subject to permitting from the Maryland Department of the Environment.</p>	Permitting would occur at the design phase.
Section 10 of the River and Harbors Act	USACE	Under section 10 of the Rivers and Harbors Act, USACE regulates work in navigable waters, and authorization would be required.	If required, permitting would occur at the design phase.
Federal Consistency—Coastal Zone Management Act	Virginia Department of Environmental Quality	Under the Coastal Zone Management Act of 1972, as amended, federal activities that are reasonably likely to affect any land or water use or natural resources of Virginia's designated coastal resources management area must be consistent with the enforceable policies of the Virginia Coastal Zone Management Program.	Consistency determination would be completed at the design phase.
Virginia Discharge Elimination System	Virginia Department of Environmental Quality	A State Pollutant Discharge Elimination System Permit is required for construction projects disturbing more than 5,000 SF of soil. A stormwater pollution prevention plan would be prepared to minimize impacts of stormwater during construction.	Permitting would occur at the design phase.
Chesapeake Bay Protection Act	Arlington County	The sites are located adjacent to the river, in designated resource protection areas under the Chesapeake Bay Preservation Ordinance, and there are resource protection buffers along the shoreline.	Permitting would occur at the design phase.

Law, Statute, or Authority	Agency	Permit, Review, or Consultation	Outcome
Magnuson-Stevens Fishery Conservation and Management Act and Fish and Wildlife Coordination Act	NMFS Habitat Conservation Division	Consultation with NMFS is required for SAV, fish habitat, and anadromous fish.	Consultation ongoing.
Local approval	Fairfax County Wetlands Board	Project review by the Fairfax County, Virginia Wetlands Board is required for the Riverside Park location.	Consultation would occur at the design phase, if needed.
State permit	Virginia Marine Resources Commission regulations	A joint application with USACE and either Maryland or the District of Columbia, depending on the site, would be required for shoreline changes and dock installations.	Permitting would occur at the design phase.

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CHAPTER 7: ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
ART	Arlington County Transit
°C	degrees Celsius
C&O	Chesapeake & Ohio
CFR	Code of Federal Regulations
DDOT	District Department of Transportation
DPS	distinct population segment
EA	environmental assessment
EIS	environmental impact statement
FEMA	Federal Emergency Management Agency
GIS	Geographic Information Systems
I	Interstate
ITE	Institute of Transportation Engineers
Key Bridge	Francis Scott Key Bridge
National Register	National Register of Historic Places
NCPC	National Capital Park and Planning Commission
NEPA	National Environmental Policy Act
NHP	National Historical Park
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	US Department of Agriculture, National Resource Conservation Service
Parkway	George Washington Memorial Parkway
PEPC	Planning, Environment, and Public Comment
SAV	submerged aquatic vegetation
SHPO	State Historic Preservation Office
SF	square feet
TIA	Transportation Impact Assessment
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
VDOT	Virginia Department of Transportation
WMATA	Washington Metropolitan Area Transit Authority

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