

Vietnam Veterans Memorial Center Design Environmental Assessment

Washington, DC



Responsible Federal Agency Prepared in Association with

February, 2012



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**VIETNAM VETERNAS MEMORIAL CENTER DESIGN
ENVIRONMENTAL ASSESSMENT**

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

The National Park Service (NPS), in association with the Vietnam Veterans Memorial Fund and the National Capital Planning Commission (NCPC), has prepared an Environmental Assessment (EA) to evaluate impacts of two alternatives for the design of a center for the Vietnam Veterans Memorial. The site for the Memorial Center is bound by Constitution Avenue to the north, the Lincoln Memorial Circle to the south, 23rd Street to the west, and Henry Bacon Drive to the east.

As identified in the authorizing legislation in 2003, Public Law 108-126, the purpose of the Memorial Center is “to better inform and educate the public about the Vietnam Veterans Memorial and the Vietnam War.” The facility would address the need to gain a better understanding and a more complete picture of this time in the nation’s history. Congress determined in 2003 that the proposed action is needed to enhance the visitor experience of the Memorial and to help future generations connect our nation’s past with their future.

This EA presents two design concepts, or action alternatives, and a No Action Alternative. Per Congressional instruction, the two designs feature a below-grade education and interpretive facility that would offer a ticket and information area, exhibit space, a book sales area, a courtyard, and restroom facilities. Passive recreation opportunities would continue at the site, although active recreation would no longer be permitted at the site. The existing food service concession kiosk would remain. The design would re-grade the site to minimize visual impacts. Both action alternatives would access the sidewalk along Henry Bacon Drive; Alternative 1 would also lead to the Constitution Avenue sidewalk. The courtyard in Alternative 1 would be open-air, while the Alternative 2 courtyard

would be partially enclosed with openings to the ground above. Both alternatives would use skylights to illuminate the interior of the building, but the skylights in Alternative 1 would extend along exhibit space, while in Alternative 2, the skylights would be more compact and open to the entrance and courtyard.

The implementation of the action alternatives would result in long-term beneficial impacts on visitor use and experience. The action alternatives would result in long-term negligible to moderate impacts on archeological resources, historic resources and cultural landscapes, park operations and management, soils, transportation, vegetation, water resources, and utilities in the project area.

This document is being used for compliance with both the National Environmental Policy Act (NEPA) of 1969, as amended and the National Historic Preservation Act of 1966, as amended.

Note to Reviewers and Respondents

To comment on this EA, you may mail comments or submit them online at <http://parkplanning.nps.gov/NAMA> and follow the appropriate links. Please be aware that your comments and personal identifying information may be made publicly available at any time. While you may request that NPS withhold your personal information, we cannot guarantee that we will be able to do so. Please mail comments to:

Glenn DeMarr, Project Manager
National Capital Region, National Park Service
1100 Ohio Drive Southwest
Washington, DC 20242

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1.0 PURPOSE AND NEED

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1.1 INTRODUCTION

The National Park Service (NPS), in cooperation with the Vietnam Veterans Memorial Fund (VVMF), the project sponsor, propose to design, permit construction, and then operate the Vietnam Veterans Memorial Center (the Memorial Center). The Memorial Center would be designed as an underground educational facility near the existing Vietnam Veterans Memorial (the Memorial) on the National Mall. The site for the Memorial Center is bound by Constitution Avenue to the north, the Lincoln Memorial Circle to the south, 23rd Street to the west, and Henry Bacon Drive to the east, as shown in Figure 1-1.

VVMF was established for the purpose of bringing honor and recognition to the men and women who served and sacrificed their lives in Vietnam. VVMF is a non-profit organization authorized by Public Law 96-297 in 1980 to build a national memorial dedicated to all who served with the U.S. Armed Forces in the Vietnam War. The Vietnam Veterans Memorial was completed and dedicated in 1982. The operation and management of the Memorial was transferred to NPS in 1984. The Fund works to preserve the legacy of the Vietnam Veterans Memorial, to promote healing, and to educate the public about the impact of the Vietnam War.

In 2003, Public Law 108-126 117 Stat 1348 authorized VVMF to establish the Memorial Center. The legislation states that the “Vietnam Veterans Memorial Fund, Inc., is authorized to construct a visitor center at or near the Vietnam Veterans Memorial on Federal land in the District of Columbia, or its environs ... in order to better inform and educate the public about the Vietnam Veterans

Memorial and the Vietnam War.” The legislation requires the Memorial Center to be located underground.

VVMF, in consultation with NPS, is responsible for designing and constructing the Memorial Center. Once construction is complete, NPS would be responsible for operating and maintaining the Memorial Center. However, the Secretary of the Interior shall enter into a written agreement with VVMF for specified maintenance needs of the Memorial Center, as determined by the Secretary.

The design, construction, conveyance, and operation of the Memorial Center are the subject of this environmental assessment (EA). NPS is the lead federal agency responsible for the preparation of this EA. The National Capital Planning Commission (NCPC) is a cooperating agency, which is requested or designated by the lead agency to assist in the preparation of the EA.

NPS, in association with VVMF, has prepared this EA consistent with the National Environmental Policy Act (NEPA) of 1969, as amended; the Council on Environmental Quality (CEQ) regulations implementing NEPA [40 Code of Federal Regulations (CFR) 1500-1508 (1986)], as amended; and NPS Director’s Order #12 (DO-12). This EA has also been prepared consistent with NCPC’s Environmental and Historic Preservation Policies and Procedures. In conjunction with this EA, the project is undergoing a review of potential effects on historic resources in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966.



1-1: Center location
Source: Google and AECOM, 2011

1.2 PURPOSE AND NEED FOR ACTION

The proposed action is the design, construction, and operation of a center for the Vietnam Veterans Memorial. As stated in the authorizing legislation, the purpose of the Memorial Center is “to better inform and educate the public about the Vietnam Veterans Memorial and the Vietnam War.” The facility would address the need to gain a better understanding and a more complete picture of this time in the nation’s history.

Because the Vietnam War ended over 35 years ago, many people do not have memories of that time. Therefore, the Memorial Center is needed to enhance the visitor experience of the Memorial and to help future generations connect our nation’s past with their future. It is intended to be inspirational, educational, and uplifting, a place for healing and reflection.

1.3 PROJECT BACKGROUND

On November 17, 2003, Congress approved Public Law 108-126 authorizing the construction of a center on federal land at or near the Vietnam Veterans Memorial. In addition to authorizing VVMF to construct the Memorial Center, Public Law 108-126 also notes that the Memorial Center must comply with the Commemorative Works Act, with the exception of three provisions: the approval of the Memorial Center shall not be withheld, no additional legislative approval is required for the location of the Memorial Center, and there shall be no prohibition of siting the Memorial Center within the Reserve (see Section 1.3.3 for description of the Reserve). The legislation also states that the size of the Memorial Center must be limited to the minimum necessary in order “to provide an appropriate education and interpretive functions” and to “prevent interference or encroachment on the Vietnam Veterans Memorial and to protect open space and visual sightlines on the Mall.” Also mandated in the legislation is that the Memorial Center must be “constructed and landscaped in a manner harmonious with the site of the Vietnam Veterans Memorial, consistent with the special nature and sanctity of the Mall.” VVMF has worked with NPS and NCPC to select a site and create a design suitable to carry out the authorization of the Memorial Center.

Site Selection

In 2005 and 2006, VVMF explored the selection of a suitable site for the Memorial Center. In 2006, NPS identified the current site as the preferred site. In association with VVMF, NPS completed the *Vietnam Veterans Memorial Education Center Site Selection Environmental Assessment* for selection of the site. The *Vietnam Veterans Memorial Education Center Site Selection Environmental*

Assessment analysis found that no significant impact would result due to the location of the Memorial Center at the site (NPS and VVMF, 2006). NPS issued a Finding of No Significant Impact (FONSI) in 2007.

Based on the *Vietnam Veterans Memorial Education Center Site Selection Environmental Assessment* and public comment received, NCPIC issued a FONSI that included the following design guidelines established by NCPIC and the U.S. Commission of Fine Arts (CFA) “to mitigate otherwise significant impacts of the site selection.”

1. The Visitor Center will be constructed underground as required by the authorizing legislation for the project with no portion of the building or related building elements visible from any portion of the Lincoln Memorial steps and podium, from Constitution Avenue, and from within the axial viewsheds of 23rd Street, NW and Henry Bacon Drive, NW.
2. The Visitor Center’s entrance will be only minimally visible from the Vietnam Veterans Memorial to satisfy the project’s purpose and need, but in accordance with the authorizing legislation will not interfere with or encroach upon the Vietnam Veterans Memorial.
3. To maintain the character of the historic landscape, the Visitor Center’s design concept will be based on maintaining the existing grade, and any new slopes will be gradual. The project will raise the existing site grade only to allow for an accessible entry ramp.
4. The Visitor Center will be designed such that light emanating from the Center’s interior will not be visible from any portion of the Lincoln Memorial, from Constitution Avenue, and from the Vietnam Veterans Memorial so as not to interfere with or encroach upon the Lincoln Memorial or the Vietnam Veterans Memorial.
5. The Visitor Center will not intrude into the landscape. No protrusions, such as skylights, monitors, light wells, or sunken areaways, will be visible from the sidewalk surrounding the site.
6. The Visitor Center’s site lighting for public safety will not interfere with or encroach upon views to and from the Lincoln Memorial and the Vietnam Veterans Memorial.
7. The Visitor Center’s design will provide only the paved area necessary for visitors to enter and exit the building and will also provide service access. The design will not include additional paved area for gathering space or queuing.
8. The project will not include new vehicle parking areas.
9. The Visitor Center will have a single entrance for both visitors and service.
10. The Visitor Center’s associated pedestrian street crossing points will be designed to address traffic impacts effectively and to protect pedestrian safety.

11. The Visitor Center will be constructed only on the portion of the site that lies outside of the critical root zone of existing elm trees. The applicant will develop a tree protection plan to protect and preserve the trees both during and after construction in accordance with standard design and construction procedures.
12. The project will place new landscaping on the site in accordance with the National Park Service's Cultural Landscape Report for the Lincoln Memorial referenced in the Environmental Assessment and will maintain the open grass panel on the site surrounded at the site's perimeter by elm trees.
13. The Visitor Center design will not impede the use of the site for multi-purpose recreation on the site.
14. The Visitor Center will be designed without guardrails or perimeter security elements.

The design guidelines in the FONSI were approved by CFA and NCPC in July and August, 2006, respectively. CFA approved the guidelines to follow its conditional approval of the site. NCPC issued its own FONSI and approved the selection of the site conditioned upon the design guidelines and the reconstruction of softball fields within one-half mile of the site. NCPC also recommended consultation of its staff during the design phase.

Center Design

In 2002, VVMF solicited potential design concepts from leading architects, landscape architects, and designers. In 2004, VVMF held

a design competition to select the design team for the Center. VVMF subsequently awarded the contract to Polshek Partnership, which now operates as ENNEAD Architects.

ENNEAD developed three concept design alternatives, which were refined using the Section 106 consultation process and consultation with NCPC and CFA. Over the course of six years, five Section 106 Consulting Parties meetings were held. Representatives from NCPC, CFA, District of Columbia State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (ACHP), the National Coalition to Save our Mall, the National Trust for Historic Preservation, Equal Honor for All, and other parties provided comment and input.

Although CFA and NCPC are required to review the design of the Memorial Center as called for under the Commemorative Works Act, Public Law 108-126, Title I, Section (b) states "(1) final approval of the visitor center shall not be withheld; (2) the provisions of subsections (b) and (c) of 8908 of Title 40, United States Code, requiring further approval by law of the location of a commemorative work within Area I and prohibiting the siting of a visitor center within the Reserve shall not apply." VVMF and ENNEAD presented design concepts to both CFA and NCPC in 2007: CFA approved the concept and, stating that "the subterranean design is successful within the unusual constraints imposed by the authorizing legislation," provided comments. Given that this was only the concept review stage, no formal action was taken by NCPC because they do not formally approve concept plans. Rather, NCPC provided comments on the designs. In 2009, VVMF and ENNEAD submitted revised conceptual designs to CFA and NCPC. CFA approved the revised concept and provided comments, and NCPC once again provided comments. VVMF and ENNEAD also presented

design concepts to the National Capital Memorial Advisory Commission (NCMAC).

1.3.1 Agency Relationships

Although VVMF is proposing the design and construction of the Memorial Center, NPS manages the project site. Following construction, NPS would be responsible for the long-term operation and maintenance of the Memorial Center except that the Secretary shall enter into a written agreement with VVMF for specified maintenance needs of the Memorial Center. As such, NPS is the lead agency for the NEPA and Section 106 processes. NPS publishes the EA, issues notices, and conducts meetings, as necessary, to comply with NEPA and Section 106 regulations. Because NCPC has an approval role for the proposed action, it has been designated as a cooperating agency. As such, NCPC has the opportunity to comment on the proposed action and will issue a FONSI.

Approvals Framework

The Commemorative Works Act, discussed further in Section 1.3.3, outlines the approvals necessary for a commemorative work authorized by federal law.

NCMAC must be consulted regarding the selection of design concepts. In addition, NPS, having an approval role as the future manager, maintainer, and administrator of the federally-owned site, must submit design proposals to CFA and NCPC for their approval. Only after these tasks are completed and approved, and the necessary funds to complete construction and preserve the Memorial Center are proven to be available, may a construction

permit be issued, in this case (40 U.S.C. Chapter 89, Section 8906) by NPS.

In addition to its role as a cooperating agency, NCPC is required to comply with NEPA and has adopted NEPA guidance outlined in Section 4(D) of NCPC's Environmental and Historic Preservation Policies and Procedures. NCPC's design principles require applicants to prepare the necessary NEPA and Section 106 of the NHPA documents, in conformance with respective CEQ and ACHP requirements.

CFA is also required to comply with NEPA and Section 106. Although it participates as a consulting party under Section 106, CFA does not issue its own FONSI and does not participate as a cooperating agency in the NEPA process.

SHPO has reviewed the Memorial Center designs, as called for by the National Historic Preservation Act. In consultation with the SHPO, NPS and NCPC must make determinations of effect and comply with Section 106 of the National Historic Preservation Act.

1.3.2 Purpose and Significance of the National Mall and Memorial Parks

The NPS parcel at the project site is part of the National Mall and Memorial Parks (NAMA). This park unit lies within the National Capital Region, which contains numerous park units of NPS. NAMA would manage and operate the Memorial Center upon its completion. As part of the planning process for the National Mall Plan (NPS, 2010), NPS developed a Foundation Statement designed to create a shared understanding of the purpose and significance of the portion of the National Mall under the jurisdiction of NAMA.

This is intended to describe the park unit, rather than the resources found within the unit (the resources are specifically addressed in Sections 3 and 4 of this document).

Purpose of NAMA in Relation to the National Mall

As stated in the Foundation Statement, the purpose of NAMA, in relation to its jurisdiction over the National Mall, is to

- Preserve, interpret, and manage federal park lands in the national capital on the land delineated by the L'Enfant Plan and the 1902 Senate Park Improvement Plan (commonly referred to as the McMillan Plan), including green spaces, vistas, monuments, memorials, statues, historic sites, cultural landscapes, and natural and recreation areas.
- Preserve places where important events in U.S. history occurred.
- Provide opportunities for visitor contemplation, celebration, commemoration, citizen participation, recreation, and demonstration, where the full expression of the constitutional rights of speech and peaceful assembly occur.
- Maintain space for the symbols and icons of our nation and its ideals (e.g., equality, freedom, and democracy).
- Serve as a symbol of the United States to the world.

Significance of NAMA in Relation to the National Mall

Park significance statements capture the essence of a park's importance to the nation's natural and cultural heritage.

Understanding park significance helps managers make decisions that preserve the resources and values necessary to the park's purpose.

Several aspects of the NAMA, in relation to its jurisdiction over the National Mall, contribute to its overall significance.

- The areas under NPS stewardship are some of the oldest public lands in the United States, dating back to 1791 when the District was established, and the L'Enfant Plan guided the creation and development of park areas.
- Much of the area managed by NAMA reflects the physical expression of the historic L'Enfant and McMillan Plans for the federal city.
- The areas managed by NAMA are vital components of the historic federal city - the singular designed urban core that from inception has physically expressed its political role as the American national capital city and seat of government.
- NAMA preserves the stage upon which historic events of national significance occurred, such as the "I Have a Dream" speech of Dr. Martin Luther King, Jr. at the Lincoln Memorial.
- The iconography, architecture, and open spaces within NAMA are a source of national pride and symbolize our

cherished values and ideals, and they commemorate individuals and events that symbolize our freedom, justice, compassion, equality, service, healing, citizenship, civil rights, liberty, service, dedication, courage, sacrifice, innovations, unity, and diversity, as well as struggles of the international community for freedom and democracy. A visit to the park sites is a pilgrimage to find inspiration among the principal symbols of America's heritage.

- NAMA is the setting for national celebrations, parades, festivals, ceremonies, and rallies, as well as local and regional events.
- NAMA comprises a globally recognized platform to exercise democratic First Amendment rights.
- The individual states within the United States are represented in park elements ranging from street names and layout of the L'Enfant Plan and successor plans to African American personages, history, and events that have taken place or are commemorated here.

1.3.3 Relationship to Laws, Executive Orders, Policies, and Other Plans

The proposed action and the site upon which it would be constructed relate to a variety of laws, policies, and other plans. The purpose of this section is to describe the regulatory framework for the Memorial Center. The following section describes the Commemorative Works Act, the NPS Organic Act, NEPA, NHPA, the

National Parks Omnibus Management Act, the Energy Independence and Security Act, the Migratory Bird Treaty Act, and the Architectural Barriers Act; Executive Orders 12898, 11593, 11988, 11990, 13112, and 13514; NPS Director's Orders 12 and 28; the *Extending the Legacy: Planning America's Capital for the 21st Century Plan*; the *Memorials and Museums Master Plan, the Comprehensive Plan for the National Capital, Federal Elements and District Elements, the Monumental Core Framework Plan, the Capital Space: Ideas to Achieve the Full Potential of Washington's Parks and Open Space*, the *National Mall Plan*, the Urban Design and Security Plan Objectives and Policies, and NCPC Donor Recognition Policies.

Commemorative Works Act

Most directly relevant to the project is the Commemorative Works Act, which addresses the location of memorials within the Washington, DC area. Based on the Commemorative Works Act of 1986 (amended in 2003), the standards preserve the integrity of the Monumental Core and encourage memorials to be located in all quadrants of the city. The standards provide direction for placing memorials on federal lands administered by NPS in the District of Columbia and its environs.

The Commemorative Works Act, as amended, establishes three memorial zones in the Washington, DC area: The Reserve, Area I, and Area II (Figure 1-2). The Mall is an area that has been declared as a substantially completed work of civic art, in which no new museums or memorials can be constructed (40 USC 8908 (c)). Since 1986, Area I has been and is now a sensitive area designated for commemorative works of pre-eminent historic and lasting national significance requiring Congressional approval. However, the authorizing legislation for the Memorial Center (Public Law

108-126) specifically exempts the siting of the Memorial Center from this requirement.

Although the authorizing legislation also states that approval of the Memorial Center shall not be withheld, NPS, CFA, and NCPC will consider and approve the Memorial Center's design. In considering site and design approvals, CFA and NCPC shall be guided but not limited by the following criteria called for in the Commemorative Works Act:

- Surroundings - To the maximum extent possible, a commemorative work shall be located in surroundings that are relevant to the subject of the work.
- Location - A commemorative work shall be located so that it does not interfere with, or encroach on, an existing commemorative work; and to the maximum extent practicable, it protects open space, existing public use, and cultural and natural resources.
- Material - A commemorative work shall be constructed of durable material suitable to the outdoor environment.
- Landscape features - Landscape features of commemorative works shall be compatible with the climate.
- Site-specific guidelines - NCPC and CFA may develop such criteria or guidelines specific to each site that are mutually agreed upon to ensure that the design of the

commemorative work carries out the purposes of this chapter.

- Donor contributions - Donor contributions to commemorative works shall not be acknowledged in any manner as part of the commemorative work or its site.

NPS Organic Act

Through the NPS Organic Act of 1916 (Organic Act), Congress has directed the U.S. Department of Interior and NPS to manage units "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations" (16 USC 1). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (16 USC 1a-1). Despite these mandates, the Organic Act and its amendments afford the NPS latitude when making resource decisions that balance resource preservation and visitor recreation.

Because conservation is an important function of the agency, NPS seeks to avoid or to minimize adverse impacts on park resources and values. NPS has discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park (NPS, 2006 sec. 1.4.3). While some actions and activities cause impacts, NPS cannot allow an adverse impact that would constitute impairment of the affected resources and values (NPS,

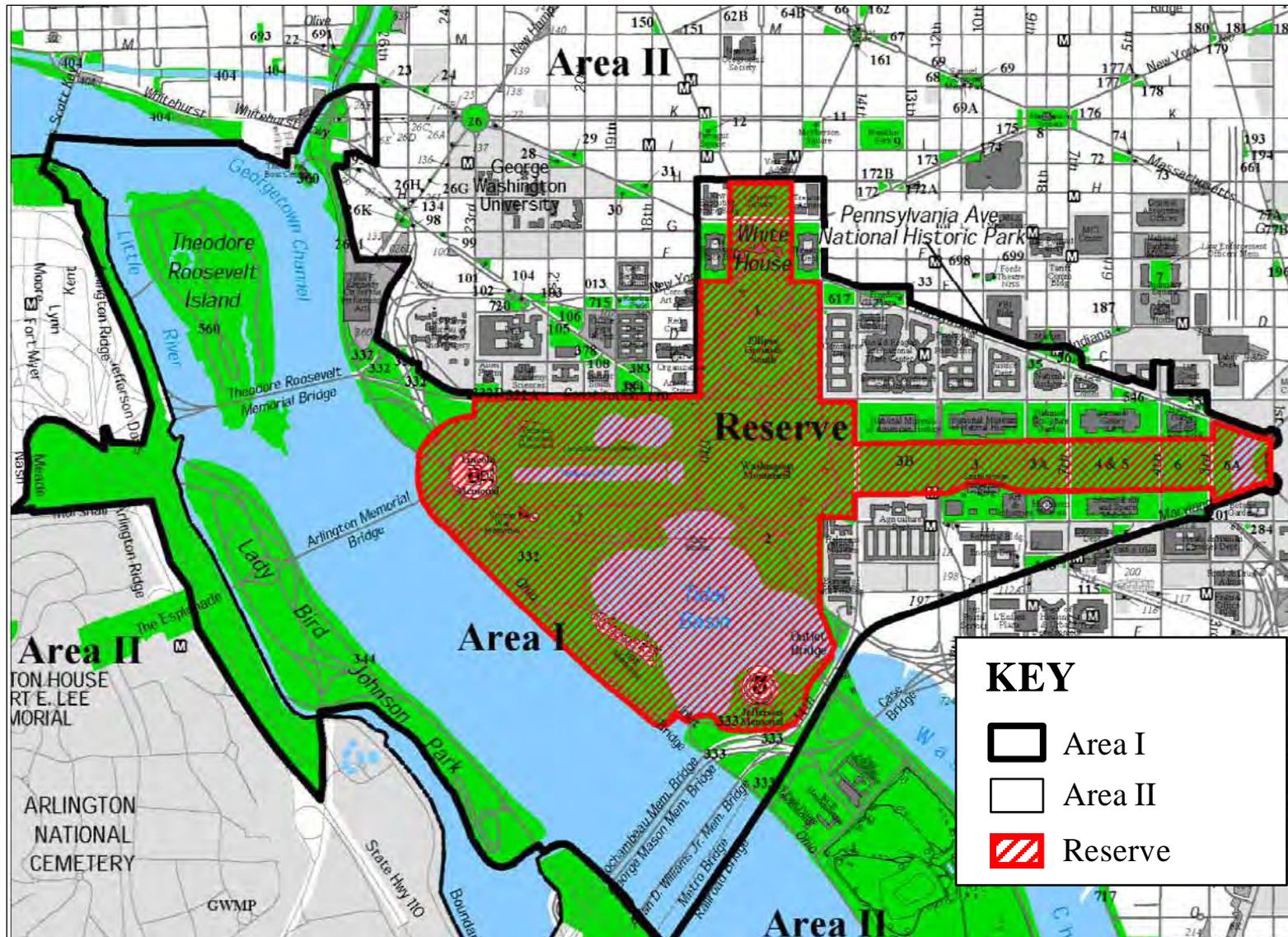


Figure 1-2: Commemorative Works Act Memorial Zones
Source: Public Law 108-126, Commemorative Works Clarification Act of 2003

2006 sec. 1.4.3). The Organic Act prohibits actions that permanently impair park resources unless a law directly and specifically allows for the acts (16 USC 1a-1). An action constitutes an impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS, 2006 sec. 1.4.5). To determine impairment, NPS must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS, 2006 sec. 1.4.5).

Park units vary based on their enabling legislation, natural resources, cultural resources, and missions; management activities appropriate for each unit and for areas within each unit vary as well. An action appropriate in one unit could impair resources in another unit. This EA analyzes the context, duration, and intensity of impacts related to the development of a Memorial Center, as well as the potential for resource impairment as required by the Organic Act and other regulations described below.

National Environmental Policy Act, 1969, as Amended

NEPA was passed by Congress in 1969 and took effect on January 1, 1970. This legislation established this country’s environmental policies, including the goal of achieving productive harmony between human beings and the physical environment for present and future generations. It provided the tools to implement these goals by requiring that every federal agency prepare an in-depth study of the impacts of “major federal actions having a significant effect on the environment” and alternatives to those actions. It required that each agency make that information an integral part of

its decisions. NEPA also requires that agencies make a diligent effort to involve the interested and affected public before they make decisions affecting the environment.

NEPA is implemented through CEQ regulations (40 CFR 1500–1508) (CEQ 1978) and U.S. Department of Interior regulations (43 CFR Part 46). NPS has in turn adopted procedures to comply with the Act and the CEQ regulations, as found in Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making (NPS, 2006a), and its accompanying handbook. This EA complies with NEPA, NCPC’s Environmental and Historic Preservation Practices and Procedures, and the procedures outlined in Director’s Order 12.

National Historic Preservation Act, as Amended Through 2000 (16 U.S.C. 470), Including Section 106

NHPA of 1966, as amended through 2000, protects buildings, sites, districts, structures, and objects that have significant scientific, historic, or cultural value. The act established affirmative responsibilities of federal agencies to preserve historic and prehistoric resources. Section 106 of the NHPA directs federal agencies to take into account the effects of any undertaking on historic properties. “Historic property” is defined as any district, building, structure, site, or object that is listed or eligible for listing in the National Register of Historic Places (NRHP). Section 106 also provides the Advisory Council on Historic Preservation (ACHP) and the state historic preservation officer (SHPO) an opportunity to comment on the assessment of effects that would result from the undertaking. Section 1.4 of this EA describes the Section 106 process that will continue throughout the design period for the Memorial Center.

National Parks Omnibus Management Act of 1998

The National Parks Omnibus Management Act (16 USC 5901 et seq.) underscores NEPA and is fundamental to NPS park management decisions. It provides direction for articulating and connecting resource management decisions to the analysis of impacts, using appropriate technical and scientific information. Both the National Parks Omnibus Management Act and NEPA also recognize that such data may not be readily available and provide options for resource impact analysis should this be the case.

The National Parks Omnibus Management Act directs the NPS to obtain scientific and technical information for analysis. The NPS handbook for Director's Order 12 states that if "such information cannot be obtained due to excessive cost or technical impossibility, the proposed alternative for decision will be modified to eliminate the action causing the unknown or uncertain impact or other alternatives will be selected" (NPS, 2006a; NPS, 2006b, sec 4.4). This EA has been prepared consistent with the National Parks Omnibus Management Act, using appropriate technical and scientific information.

Energy Independence and Security Act of 2007

Enacted in 2007, the stated purpose of the Energy Independence and Security Act of 2007 (EISA) is "to move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes." Under Section 438 of

EISA, federal agencies are required to reduce stormwater runoff from federal development and redevelopment projects to pre-development levels in order to protect water resources. These stormwater requirements are addressed in this EA.

Architectural Barriers Act

Pursuant to the Architectural Barriers Act of 1968, all public buildings, structures, and facilities must comply with specific requirements related to architectural standards, policies, practices, and procedures that accommodate people with hearing, vision, or other disability and access requirements. NPS must comply with the Architectural Barriers Act Accessibility Standards (ABAAS) for this project, as provided in the action alternatives.

Migratory Bird Treaty Act of 1918, as Amended 1989

The original 1918 Migratory Bird Treaty Act implemented a 1916 treaty between the U.S. and Great Britain (for Canada) for the protection of migratory birds. Later amendments implemented treaties between the U.S. and Mexico, the U.S. and Japan, and the U.S. and the Soviet Union (now Russia). Specific provisions in the statute include a Federal prohibition to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention ...for the protection of migratory birds... or any part, nest, or egg of any such bird" (16 U.S.C. 703). These actions would be considered a take. This applies to birds included in international conventions

between the U.S. and Great Britain, the U.S. and Mexico, the U.S. and Japan, and the U.S. and Russia.

The responsibilities of federal agencies to protect migratory birds are set forth in Executive Order 13186. U.S. Fish and Wildlife Service (FWS) is the lead agency for migratory birds. The Directors of the NPS and the FWS signed a Memorandum of Understanding to Promote the Conservation of Migratory Birds (MOU) on April 12, 2010, in order to meet the requirements under Section 3 of Executive Order 13186 concerning the responsibilities of federal agencies to protect migratory birds. The MOU specifies procedures that the superintendent of a NPS unit, or a designated representative of the superintendent, will conduct prior to starting any activity that is likely to result in unintentional take. NPS will follow these procedures if it is determined that an action would result in take.

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

Executive Order 12898 – Minority Populations and Low-Income Populations

On February 11, 1994, President Clinton issued Executive Order 12898. This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these populations. This EA complies with Executive Order 12898 by determining whether minority and low-income communities would be disproportionately adversely affected by the establishment of the Memorial Center.

Executive Order 11593 – Protection and Enhancement of the Cultural Environment

This Executive Order directs NPS to support the preservation of cultural properties, to identify and nominate to the National Register cultural properties within the park, and to “exercise caution . . . to assure that any NPS-owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered.” Section 106 consultations were undertaken for the Memorial Center to ensure that actions regarding cultural properties are consistent with Executive Order 11593.

Executive Order 11988: Floodplain Management

Executive Order 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this

objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities." This EA used these standards in its evaluation of floodplains in Section 1.6.1.

Executive Order 11990: Protection of Wetlands

The purpose of Executive Order 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, the Executive Order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. Therefore, NPS considers wetlands in its planning of the proposed action.

Executive Order 13112: Invasive Species

This Executive Order addresses the prevention of the introduction of invasive species and provides for their control and minimization of the economic, ecological, and human health impacts the invasive species causes. This EA evaluates invasive species in Section 4.7: Vegetation.

Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performance

This Executive Order sets sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance. It requires federal agencies to

set a 2020 greenhouse gas emissions reduction target; increase energy efficiency; reduce fleet petroleum consumption; conserve water; reduce waste; support sustainable communities; and leverage federal purchasing power to promote environmentally responsible products and technologies. This EA documents the Memorial Center's strategies to meet these goals.

Executive Order 13508: Chesapeake Bay Protection and Restoration

Executive Order 13508 requires numerous federal agencies, including NPS, to develop and coordinate reporting, data management, and other activities involved in the restoration of the Chesapeake Bay. In addition, agencies with land within the Chesapeake Bay are required to implement land management practices to protect the Chesapeake Bay in its tributaries with the standards identified through this Executive Order. NPS requires that the construction of the Memorial Center meet these standards.

Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making

Director's Order 12 (NPS, 2006a) and its accompanying handbook outline policies and procedures by which NPS carries out NEPA and the NPS Organic Act. This order provides specific guidance on analysis standards required by legislation, and describes the roles and responsibilities for decision makers within NPS. It encourages the use of interdisciplinary approaches to decision-making, establishment of benchmarks demonstrating best management practices, use of alternative dispute resolution, peer review panels, and analysis of impairment to resources as part of the environmental impact analysis process. As part of the development of this EA, NPS created an interdisciplinary science team.

Comprised of members with technical expertise in the resources identified in this EA, the team reviewed analysis to ensure its quality. This EA was prepared in accordance with the instructions, guidance, and policies of Director's Order 12.

Director's Order 24: NPS Museum Collections Management

Director's Order 24 (NPS, 2008) provides policy guidance, standards, and requirements for preserving, protecting, documenting, and providing access to, and use of, NPS museum collections. This order is intended to improve the internal management of NPS museum collections by ensuring that NPS managers and staff have information on the standards and actions and to provide a means of measuring and evaluating progress. The order identifies the responsibilities of staff members responsible or accountable for museum collections, including cataloging, planning, training, and inventorying. The order also outlines reporting requirements.

Director's Order 28: Cultural Resource Management

Director's Order 28 calls for NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the NPS Management Policies (NPS, 2006). This order also directs NPS to comply with the substantive and procedural requirements described in the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation*, the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for Treatment of Cultural Landscapes*, and the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating,*

Restoring and Reconstructing Historic Buildings. Additionally, NPS will comply with the 2008 Programmatic Agreement (PA) among the NPS, ACHP, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the NHPA. The accompanying handbook to this order addressed standards and requirements for research, planning, and stewardship of cultural resources as well as the management of archeological resources, cultural landscapes, historic and prehistoric structures, museum objects, and ethnographic resources. This EA was prepared in accordance with the standards described in Director's Order 28. Section 106 consultation regarding the Memorial Center described in this EA helps to ensure that actions will comply with Director's Order 28.

Director's Order 77-1: Wetlands

Director's Order 77-1 establishes NPS policies, requirements, and standards for implementing Executive Order 11990: Protection of Wetlands. The order calls for a goal of "no net loss of wetlands" and the long-term goal of net gain of wetlands. It also identifies the standard for defining, classifying, and inventorying wetlands. Director's Order 77-1 identifies responsibilities of NPS staff to comply with the order.

Director's Order 77-2: Floodplain Management

Director's Order 77-2 is NPS's floodplain management guidance required by Executive Order 11988: Floodplain Management. The purposes of Director's Order 77-2 are to reduce the risk of flood loss; minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. The order establishes three classes of actions

based on the use and location of the proposed action: Class I addresses facilities in the 100-year floodplain, Class II addresses critical facilities in the 500-year floodplain, and Class III addresses facilities in High Hazard Areas. The order also outlines procedures for each class.

Legacy Plan

In 1997, NCPC released its vision plan for the nation's capital, *Extending the Legacy: Planning America's Capital for the 21st Century*. The Legacy Plan built upon the foundations of the L'Enfant and McMillan Plans and recommended dispersing new museums, memorials, and federal office buildings in all quadrants of the city. Several subsequent studies were a direct outgrowth of the Legacy Plan, including the *Memorials and Museums Master Plan*, completed in 2001.

Memorials and Museums Master Plan

The *Memorials and Museums Master Plan*, prepared by NCPC and the Joint Memorial Task Force at the request of Congress "to guide the location and development of future Commemorative and cultural facilities in the District of Columbia and its environs," expands on some of the principles laid out in the Legacy Plan. Released in 2001, it also guided the development of the Commemorative Zone Policy, included in the 2003 amendments to the Commemorative Works Act that established the Reserve and Areas I and II. The Memorials and Museums Master Plan establishes a framework for future memorials within the circles and squares of major avenues, at urban gateways and scenic overlooks, and along the Anacostia and Potomac Rivers.

Comprehensive Plan for the National Capital, Federal Elements

The *Comprehensive Plan for the National Capital: Federal Elements* (NCPC, 2004) is the principal planning document adopted by NCPC for the planning of federal facilities. The Comprehensive Plan contains goals, objectives, and planning policies for the growth and development of the Nation's Capital. The Comprehensive Plan looks to the L'Enfant and McMillan Plans to preserve and enhance the image and identity of the national capital region. It also seeks to ensure that visitors have an enjoyable and educational experience and that regional planning goals are supported. The Vietnam Veterans Memorial Center Site Selection Environmental Assessment included an analysis of the site's impacts on planning policies, including the Comprehensive Plan: Federal Elements.

Comprehensive Plan for the National Capital, District Elements

The *Comprehensive Plan for the National Capital: District Elements* (DCOP, 2006) was prepared by the District of Columbia government and contain policies and maps that guide local government and private development in Washington, DC.

The Central Washington Area Element identified a number of goals for the area that includes the National Mall. Among these goals were to have a "living downtown" and to integrate the "federal city," or the federal buildings and structures, with the "domestic city," or local community. Relevant policies in support of the goals include reinforcing the physical qualities that distinguish Central Washington from other major American cities, such as the L'Enfant framework of diagonal avenues and park reservations.

Monumental Core Framework Plan

The *Monumental Core Framework Plan* (NCPC, 2009) is a document that focuses on improving the setting of federal precincts that surround the National Mall in order to encourage future museum and memorial sponsors to locate in those areas and as a result relieve some of the development pressure from the National Mall. The stated goals of the *Monumental Core Framework Plan* are “to protect the National Mall from overuse; create distinctive settings for cultural facilities and commemorative works; improve connections between the National Mall, the city, and the waterfront; and transform the monumental core into a vibrant and sustainable place to visit, work, and live.”

National Mall Plan

The National Mall Plan, completed by NPS in 2010, sets forth a vision for sustainable use, refurbishment, improvement, and maintenance of one of our nation’s most iconic historic spaces, the National Mall. The plan provides for important uses, including commemoration, celebration, First Amendment demonstration and civic activities, as well as recreation, education, events, and relaxation. Acknowledging the National Mall as a complete work of civic art and as a source of national pride, the vision will protect memorials, views, and other resources; improve the health and appearance of these areas; and provide quality facilities and experiences desired by the American people. The National Mall Plan acknowledges the planned establishment of the Memorial Center, stating that pedestrian amenities and circulation patterns for the Memorial Center would be re-examined after the Memorial Center’s construction.

Urban Design and Security Plan Objectives and Policies

Adopted in 2005, NCPC’s *Urban Design and Security Plan Objectives and Policies* address urban planning and design issues while acknowledging the need for risk management strategies. The policies advise that security measures should be tailored to the setting and should include operational strategies, in addition to physical security measures. The policies call for allowing multi-modal transportation, such as maintaining open roadways and parking, to the extent possible. Physical perimeter security should be located and integrated into the building yard. If that is not possible, barriers should be integrated into the urban landscape.

District of Columbia Stormwater Management Program

The District of Columbia Stormwater Management Program establishes requirements and procedures to control the adverse impacts of increased storm water runoff. A key element to the program is the requirement that new development control stormwater discharge to pre-development levels. Additionally, all stormwater facilities must be designed to accommodate 15-year storm events.

1.4 SCOPING

NEPA Scoping Process

As part of the preparation of this EA, and building upon the site selection EA prepared in 2006, appropriate government agencies, public organizations, and interested citizens were contacted and informed about the project. Notices were placed in NPS's Planning, Environment, and Public Comment (PEPC) website and distributed via VVMF's email list for ten nearby states. The purpose of the communications was to solicit comments on the proposed center, identify potential environmental concerns, and obtain other relevant information. Scoping input was obtained from the following agencies and organizations:

- NPS
- NCPC
- CFA
- DC SHPO
- National Coalition to Save Our Mall

In addition, a public scoping meeting was hosted on September 15, 2011, to convene the interested parties and generate further discussion of issues. NCPC staff were the only attendees. NPS and VVMF considered all scoping comments in the preparation of this EA. The comments are identified in Section 1.5: Issues and Impact Topics.

Historic Preservation Consultation (NHPA-related)

The National Mall, Lincoln Memorial, the West Potomac Park Historic District, and the L'Enfant Plan are listed as historic

resources in the NRHP. Because this project is a federal undertaking, NPS and NCPC are required to take into account potential adverse affects to historic properties. As a result, a review of the project's potential effects on historic resources is being undertaken consistent with Section 106 of NHPA. NPS formally began the Section 106 consultation process on February 17, 2005. Consultation with the consulting parties has continued through the design process. The Section 106 consultation process is being carried out concurrently with the NEPA process.

1.5 ISSUES

Several key issues were identified during the scoping process:

- *Visibility.* Comments raised during the Section 106 consultation process expressed concern about the potential visibility of the Memorial Center. The comments indicated that the location of the Memorial Center has the potential to impact views to and from resources, such as the Lincoln Memorial, on the National Mall.
- *Entry to site.* Due to the change in grade required for entry to an underground facility, comments expressed concern that the entry to the site should not be too reminiscent of the Vietnam Veterans Memorial.
- *Relationship to existing food service kiosk.* Comments requested that the existing food service kiosk be removed or incorporated into the design and/or placement of the Memorial Center within the project site.
- *Lighting.* Comments indicated that due to its sensitive location on the Lincoln Memorial grounds, lighting should be minimized to the extent possible. Comments indicated that lighting should not distract from the Lincoln Memorial.
- *Protection of trees.* Comments called for the protection of historic trees on the project site. Specifically, comments asked that the designs consider avoidance of the trees' critical root zones.
- *Identification of historic resources.* Comments requested that the cultural resources be individually identified, rather than considered as a group under the heading of the National Mall and Memorial Parks.
- *Preservation of open space.* Comments requested that the open space character of the site be maintained, possibly through the use of an on- or off-site entry kiosk.
- *Size.* Comments received expressed concern about the size of the facility, speculating that a smaller facility could adequately address the Congressionally-required "minimum" necessary programming needs of the Memorial Center sponsor.
- *Conflict with Memorial experience.* Comments expressed concern that the Memorial Center would diminish the opportunity for some to visit the Vietnam Veterans Memorial, as well as distract visitors from the memorial experience.
- *Pedestrian safety.* Comments expressed concern for pedestrian safety in navigating sidewalks and crosswalks in the vicinity.
- *Climate change.* When considering floodplains, water table, and other environmental conditions, future

conditions due to climate change should be fully evaluated.

1.6 IMPACT TOPICS ANALYZED IN THIS EA

A number of impact topics were identified for the Memorial Center through a variety of sources, including scoping for this EA; NPS knowledge of memorials in the national capital area; federal laws, regulations, and executive orders; and NPS management policies. The 2006 *Vietnam Veterans Memorial Center Site Selection EA* also informed decisions about impact topics addressed in this EA. Many of the findings related to resource areas in the Site Selection EA would not be affected by the Memorial Center's design, and are therefore dismissed from consideration in this EA. Other resource areas, such as cultural resources, could be affected by the specific design of the Memorial Center, and are therefore revisited. The impact topics that have been determined to require a more detailed analysis of potential impacts as part of this EA are described below.

Cultural Resources

As specified in Chapter 5 of the NPS Management Policies 2006, the NPS is committed to identifying, documenting, and protecting cultural resources. NPS NEPA guidance requires the consideration of five types of cultural resources:

- Cultural Landscapes: A geographic area, including both cultural and natural resources and the wildlife and wildlife habitat or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.
- Historic Structures or Districts: Historic properties significant in the history of American architecture, culture, engineering, or politics at the national, state, or local level.

- Archeology: Material remains or physical evidence of past human life or activities of archeological interest.
- Museum Collections: Prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens. Prevention of damage and minimization of potential for deterioration are NPS management goals.
- Ethnography: Cultural and natural features of a Park that are of notable significance to traditionally associated peoples, which include contemporary Park neighbors and ethnic or occupational communities that have been associated with a Park for at least two or more generations (40 years), and whose interests in the Park's resources began before the Park's establishment.

The project area contains and has the potential to impact historic structures or districts, archeology, and cultural landscapes. Although the Memorial Center would display the Vietnam Veterans Memorial Collection (the collection is housed off-site), the museum collection itself would not be impacted. No ethnographic resources would be impacted. Therefore, museum collections and ethnography have been dismissed from further analysis (see Section 1.6.1 for dismissal).

The project site is situated along the historic shoreline of the Potomac River and historic maps suggest it lay mostly within the waters of the Potomac in the 18th and 19th centuries. Because of proximity to the river and to Tiber Creek, prehistoric use of the area is likely. Urban development grew out of the 1791 L'Enfant Plan, and continues to the present. In the late 19th century, fill was introduced to create an area of reclaimed land and it was subsequently used for recreational purposes as part of West

Potomac Park. Alluvial deposits could have led to the preservation of prehistoric archaeological sites and features in this area, although subsequent land use may have already impacted them. It is also possible that sub-surface features associated with historic activities remain capped below fill at the project site. Therefore, the project site has potential for both prehistoric and historic resources.

The establishment of the Memorial Center could have potential impacts on the integrity of the L'Enfant Plan for the City of Washington, which is comprised of the 1791 L'Enfant Plan and the associated McMillan Plan, and its characterizing features for the area where the Memorial Center would be located, as well as historic resources within the Area of Potential Effect (APE), as defined in Section 3.1. The project site is bordered by 23rd Street, which originally appeared in the 1791 L'Enfant Plan for Washington. This plan is one of the best American examples of a comprehensive Baroque city plan, featuring strong visual axes, roadways, and views. The L'Enfant Plan for the City of Washington is listed in the NRHP. Additionally, several buildings adjacent to the site are listed in the NRHP. Therefore, historic resources are addressed as an impact topic in this EA.

The Memorial Center would be located on land that is part of the Lincoln Memorial Grounds Cultural Landscape and is adjacent to the Constitution Gardens Cultural Landscape. Contributing features of the Lincoln Memorial Grounds Cultural Landscape include Henry Bacon Drive and its vista; 23rd Street and its vista; Constitution Avenue; active recreation areas with grass panels; rows of elms along Henry Bacon Drive, 23rd Street, and Constitution Avenue; and sidewalks along 23rd Street, Henry Bacon Drive, Constitution Avenue, and Memorial Circle. Contributing features of the Constitution Gardens Cultural Landscape include the continued use

of visiting memorials and ceremonies at the Vietnam Veterans Memorial and the Vietnam Women's Memorial; and vistas to the Lincoln Memorial and the Vietnam Veterans Memorial. The Washington Monument and Grounds are also included in the APE.

Visitor Use and Experience

In its current condition, the project site receives visitors using the site as a connection to the National Mall, access to the food service kiosk, and for recreation. The site is currently used for multi-purpose recreational uses. The Memorial Center would increase visitor use at the site over current levels and intensity and alter the recreation opportunities at the site. Therefore, visitor use and experience is considered an impact topic.

Park Operations and Management

Operation and management of the Memorial Center would be more intense than the current site use. Operation and management of the site would require more NPS resources than is currently needed for the existing open space. The Memorial Center would require a minimum ten interpretation and six maintenance staff. Additional professionally-trained staff would be required to address curatorial operations at the Memorial Center. Overall operation and maintenance of the Memorial Center would require more intense management due to increased visitation and use and the addition of the education facility. Therefore, this resource area is addressed as an impact topic in this EA.

Soils

Activities associated with the construction of the Memorial Center would disturb approximately 2.35 acres and would remove soil, which may result in the loss of soil productivity. As a result, soil resources are addressed as an impact topic in this EA.

Transportation

The Memorial Center would have the potential to alter pedestrian circulation in and attract more buses to the vicinity of the site, which could affect traffic and bus parking. Therefore, transportation is analyzed as an impact topic in this EA.

Vegetation

Existing vegetation on the project site consists of trees and open lawn. During construction of the Memorial Center, much of the open lawn would be removed, but the trees would be protected. Although the Memorial Center would install new plant materials, vegetation is considered as an impact topic for this EA.

Utilities and Infrastructure

Utilities currently serving the site include sanitary sewer systems and stormwater management. Geothermal wells are also used to provide heating and cooling to the site, resulting in energy savings. The installation of the Memorial Center would reduce the stormwater runoff at the site. Geothermal wells would also be used. Therefore, utilities were analyzed as an impact in this EA.

1.6.1 Impact Topics Dismissed from Further Analysis

The following topics were eliminated from further analysis in this EA. With mitigation, the potential impacts on these resources, to the extent they would occur, would be negligible or localized.

Air Quality

The 1963 Clean Air Act and the 1970 and 1990 Clean Air Act Amendments require public land managers, including NPS Park Superintendents, to protect air quality in national parks. The U.S. Environmental Protection Agency (EPA) has issued National Ambient Air Quality Standards for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter with a diameter less than or equal to 10 micrometers (PM₁₀) and particulate matter with a diameter less than or equal to 2.5 micrometers (PM_{2.5}), lead (Pb), and sulfur dioxide (SO₂). Areas across the country are monitored for their criteria pollutant level. Air-quality Control Regions are monitored for their attainment or non-attainment of the standards. Air-quality Control Regions that exceed the allowable criteria pollutant level are designated as “non-attainment” areas; there are different levels of severity of nonattainment from marginal, moderate, serious, severe or extreme. The Washington, DC area is in moderate nonattainment for the criteria pollutant O₃, and nonattainment for PM_{2.5}; the area is in attainment for all other criteria pollutants.

This topic was addressed as part of the *Vietnam Veterans Memorial Center Site Selection EA* (NPS and VVMF, 2006). Due to the limited potential grading area, the limited duration of construction equipment use, and the few vehicle trips that would be generated by the Memorial Center’s operation, the project-generated emissions

for O₃ and PM_{2.5} would be below minimum pollutant thresholds and would not change regional air quality. Best management practices related to vehicle and equipment emissions, such as the use of electric power sources for construction equipment, rather than portable fuel-combustion generators, would further reduce construction emissions. Therefore, this impact topic was dismissed from further analysis.

Ethnographic Resources

Ethnographic resources are defined by NPS as any “site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence or other significance in the cultural system of a group traditionally associated with it” (NPS, 1998). In this analysis, the NPS’ term “ethnographic resource” is equivalent to the term Traditional Cultural Property (TCP). As defined by NPS’s National Register Bulletin, *Guidelines for Evaluating and Documenting Traditional Cultural Properties*, a TCP is the “association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community.” There are no properties that meet the definition of a TCP within the APE. Therefore, this impact topic has been dismissed from further consideration.

Museum Collections

The Memorial Center would provide exhibit space, which could be used to show the Vietnam Veterans Memorial Collection (the Collection). However, the Memorial Center would not permanently house the Collection, which is stored and curated at the NPS Museum Resource Center, or any other recognized museum

collections (historic artifacts, natural specimens, and archival and manuscript material). The Memorial Center's interior would be designed to meet collections and exhibition standards. Appropriate protocols would be instituted for handling and display of museum objects. As a result, the Memorial Center would not have an impact on museum collections. Changes in staff and responsibilities that would occur in order to curate and operate exhibits are addressed under Park Operations and Management. Therefore, this impact topic was dismissed from further analysis.

Environmental Justice

Executive Order 12898, "Federal 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 the programs and policies on minorities and low-income populations and communities. According to the EPA, environmental justice is

"...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."

There are no disproportionately minority or low-income populations present near the project site. Therefore, this impact topic was dismissed from further analysis.

Floodplains

According to FEMA Flood Insurance Rate Map #1100010018C, dated September 2010, the project site is located outside the 100-year (one percent annual chance flood hazard) and 500-year (0.2 percent annual chance flood hazard) floodplains, as shown in Figure 1-3. When implemented, the nearby Potomac Park Levee Project will further protect the project site from flooding during a catastrophic flood event. The use of berms and slight grade changes would prevent the ponding of water at the site. Because the Memorial Center is outside the 100-year and 500-year floodplain, NPS would not require a statement of findings for this project, consistent with Director's Order 77-2, Floodplain Management.

Additionally, the National Oceanic and Atmospheric Administration has estimated that the sea level in Washington would rise one to two feet over the next century, which would be accommodated by the Potomac Park Levee improvements. The levee improvements include an increase in elevation across 23rd Street from the project site, which would be approximately two feet. Additionally, the construction of the facility would not change the existing floodplain drainage. Therefore, this topic area was dismissed as an impact topic.

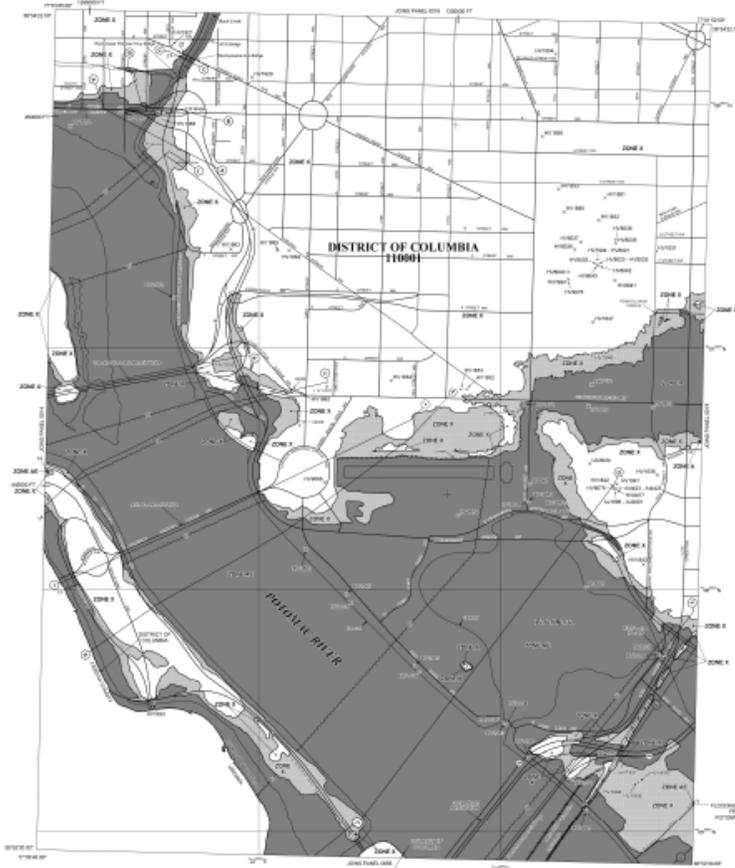


Figure 1-3: Floodplain map for project site
 Source: FEMA Flood Insurance Rate Map #1100010018C

Human Health and Safety

Because the Memorial Center would be surrounded by roads, the potential threats to human health and safety include pedestrian safety, security, access to emergency responders, and any hazardous

materials currently located at the site. The site is considered a relatively low-priority target for terrorism. The Memorial Center would provide an emergency egress at its northeastern corner. The issue of pedestrian safety is addressed under the impact topic of transportation. Additionally, the Memorial Center would comply with the Architectural Barriers Act, enabling those with disabilities or specific access needs to experience the Memorial Center.

Construction of the Memorial Center would disturb existing soils that are potentially contaminated by heavy metals, lead, and volatile organic compounds that are not suitable for reuse, as discussed in the *Vietnam Veterans Memorial Center Site Selection EA* (VVMF and NPS, 2006). Any disturbance would be a result of construction activities. Mitigation measures would include the removal and treatment of any waste or materials found and the wearing of protective gear by those who would potentially come into contact with such materials in accordance with an approved safety plan. Such materials would not pose health risks to the general public through best management practices and due to their location underground, posing little opportunity for contact with the general public.

The staging of the Memorial Center construction would be conducted on the project site and across 23rd Street. Fencing would be used to limit access to the staging and construction areas during the construction. Therefore, human health and safety was dismissed from further consideration as an impact topic.

Land Use

Land use is often divided into categories depending upon the types of activities for which the land is used, such as industrial, retail,

open space, etc. In the case of the Memorial Center, the existing land use is open space, which hosts a food service kiosk and ball field. The Memorial Center would continue use of the site as open space, providing an overall open area with the existing kiosk. The use of the site as an education facility was addressed in the Site Selection EA. Therefore, this topic was dismissed from further analysis.

Socioeconomics

Socioeconomics, or community facilities and services, were addressed as part of the *Veterans Memorial Center Site Selection EA* (VVMF and NPS, 2006), and it was determined that the Memorial Center would not significantly affect parks and recreation facilities, cultural facilities, public safety, or educational facilities. The EA called for the openness of the site to be maintained and passive recreation uses be permitted on the undeveloped balance of the site to the extent possible. The Site Selection EA stated that the Memorial Center would enhance the overall cultural experience and provide a positive educational experience. Implementation of the Memorial Center could provide beneficial impacts on the local economy. These beneficial impacts would be temporary or minimal in nature and would result from minimal increases in employment opportunities from the construction of the site and increased retail activity from visitors. Therefore, socioeconomic resources were dismissed as an impact topic.

Threatened, Endangered, Rare, and Special Concern Species

There are no rare, threatened, or endangered species or habitat known or expected to occur in the project area, as indicated by the U.S. Fish and Wildlife Service (USFWS 2011). Therefore, this impact topic was dismissed from consideration.

Unique Ecosystems, Biospheres Reserves, or World Heritage Sites

There are no known biosphere reserves, World Heritage sites, or unique ecosystems listed at the project site. Therefore, this impact topic was dismissed from further analysis.

Water Resources

Currently, the water table is found at six to thirteen feet below grade, a condition which is anticipated to continue due to the area's confined aquifer. There are no bodies of water located at the site; the Potomac River is located approximately 0.7 miles from the site. The main impacts on water resources from the proposed action would be due to the disruption of groundwater flow by the proposed subsurface structures and the increased amount of impermeable surface on the project site. Effects to the Potomac River would be indirect and negligible, because of the hydrologically isolated character of the project area.

Groundwater would be encountered during construction because the depth of excavation for the Memorial Center would be approximately 35.5 feet. In order to build the Memorial Center, construction would use a slurry wall. As a result, the displacement of the soil, plus the hydrostatic pressure sent outward from the bentonite coated subsurface walls, could possibly raise the groundwater level of the project site. The slurry wall construction process would not contaminate ground water and the use of pumping would minimize changes to the groundwater level.

As part of the implementation of the proposed action, the amount of impermeable surface at the site would increase. To offset this addition, the Memorial Center would be designed with a green roof

that would reduce the amount of stormwater runoff it would generate, along with on-site stormwater collection for reuse. This anticipated increase in impermeable surface would produce a minimal increase in stormwater runoff affecting nearby water bodies. Additionally, approved sediment control measures would minimize sedimentation to water as a result of grading and excavation operations during construction. These measures would allow the Memorial Center to meet the requirements of the District's Stormwater Management Program, Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performance, Executive Order 13508: Chesapeake Bay Protection and Restoration, and the Clean Water Act. Therefore, this topic was dismissed from further analysis.

Wetlands

Wetlands are defined by three characteristics: hydrophytic vegetation, soils inundated or saturated for more than 12.5% of the growing season, and hydric soils. Given that the project site is located in an urban setting with no indicators for the presence of wetlands, this topic was dismissed from further analysis.

Wildlife or Wildlife Habitat

This topic was addressed as part of the *Vietnam Veterans Memorial Center Site Selection EA* (VVMF and NPS, 2006). The project site is located in an urban setting. Vegetation is limited to grass and mature trees along the site's edge. Animals such as gray squirrels, rats, pigeons, starlings, and sparrows are common to the urban environment and may exist at the site. There are no animal species identified as threatened or endangered by the US Fish and Wildlife Service or the District of Columbia within the site or in the

surrounding area. Therefore, wildlife or wildlife habitat was dismissed from further analysis as an impact topic.

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2.0 ALTERNATIVES

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2.1 INTRODUCTION

The proposed action is the design, construction, and operation of the Vietnam Veterans Memorial Center on land located within the grounds of the Lincoln Memorial and boundaries of West Potomac Park, and bounded by Constitution Avenue, 23rd Street Henry Bacon Drive, and the Lincoln Memorial Circle. This EA evaluates a range of alternatives related to the proposed center for the Vietnam Veterans Memorial, including two action alternatives, which were refined during the consultation process, and a No Action Alternative. This section defines the No Action Alternative, describes the alternative designs for the Memorial Center, identifies the preferred alternative, and summarizes the environmental impacts and mitigation measures for each alternative.

2.2 DESCRIPTION OF ALTERNATIVES

2.2.1 NO ACTION ALTERNATIVE

As part of the environmental review process, the consequences of a No Action Alternative are considered. Under the No Action Alternative, all existing site features would remain in their current condition and use, as illustrated in Figure 2-1. This would include visitor use, management of the site, existing vegetation, site grading, and pedestrian access.

Under the No Action Alternative, NPS would continue to manage and operate the site, continuing its current management practices to maintain the site. The existing open space would still be used for active and passive recreation. NPS would continue its permitting process for the site. The chain link backstop would remain available for visitor use. The existing food service kiosk would continue to operate and to provide visitors outdoor seating.

The existing vegetation would remain at the site. Existing trees would stay at the site. Grass, which covers most of the site, would remain as the primary groundcover.

The existing topography, which is relatively flat, could minimally change as a result of the Phase 2 Potomac Park Levee implementation. The highest existing elevation would be raised two feet or less than the existing 20.5 feet.

Access to the site would still be provided by sidewalks surrounding the site. Pedestrians would continue to use the worn footpath across the site between the intersection of Constitution Avenue and Henry Bacon Drive. The existing post-and-chain barriers that discourage mid-block crossings along Henry Bacon Drive would remain.



Figure 2-1: No Action Alternative existing conditions
Source: AECOM, Google Earth 2011

2.2.2 ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

Each of the two action alternatives would establish and operate a center dedicated to educating visitors about the history of the Vietnam War and the Vietnam Veterans Memorial. The intent of the designs is to minimize the Memorial Center's visibility while welcoming visitors and to support the Vietnam Veterans Memorial experience and emotional impacts while being distinctly secondary to the memorial. Although specific elements may vary between the two designs, there are many design features common to both action alternatives.

Design

- *Underground facility.* In both action alternatives, the Memorial Center would be located underground. Visitors would primarily use the path from Henry Bacon Drive that would provide stairs and a ramp down to the below-grade entrance of the structure. The two-level structure would house exhibit space, a bookstore, restrooms, and lobby areas.
- *Courtyard.* Each of the alternatives would provide a courtyard, although the configuration varies between Alternatives 1 and 2. Under Alternative 1, the courtyard would be open to the outside, and would have no roof. Under Alternative 2, the courtyard would be partially covered with openings covered by grates for safety. Alternative 1 would also provide sunlight to the Memorial Center using skylights, which would be located above the exhibit space.
- *Site grading.* The grade of the site would change under each action alternative, although the specific elevation adjustments vary between alternatives. Overall, the existing elevation north of the building would continue to be approximately 19 feet, while the grade south of the building would continue to be 20.5 feet. Both action alternatives would use berms to minimize views of the Memorial Center, increasing the maximum grade at the site to 22.5 feet. Under Alternative 1, this maximum grade would occur at the southern edge of the underground structure; for Alternative 2, the maximum grade would be near the largest skylights directly over the Memorial Center.
- *Landscape.* Although some changes would be made, Alternatives 1 and 2 would maintain the existing landscape of trees surrounding the perimeter of the site. Existing trees, which are remnants or replacements of the original parallel rows of street trees, would stand in the northeastern and northwestern corners of the site, as well as the southern border of the site. Additional trees would be installed, primarily along the northern edge of the site and portion of the site south of the food service kiosk. The Memorial Center would be covered by a green roof made up of turf that would be integrated into the landscape.
- *Low-impact development techniques.* Under both alternatives, low-impact development techniques would be incorporated into the design of the Memorial Center. Energy-efficient lighting and fixtures would be used. Stormwater runoff would be reused within the building. As mentioned above, the green roof to be installed would

minimize stormwater runoff. The turf for the green roof would be similar to that found in the rest of the site.

arborist. The existing thermal field for the kiosk would continue to operate.

Operation and Maintenance

Once constructed, NPS would maintain and operate the Memorial Center. NPS operations would include staffing the facility (including maintenance and curation of the collections), managing the landscape and facilities maintenance, providing stewardship and preservation of the Memorial Center, and any other potential services. NPS would use a cooperating association, Eastern National, to operate and manage the bookstore on site. Existing chain-and-post barriers along the roadways around the site would remain to dissuade pedestrians from jaywalking.

Food Service Kiosk and Playfield

In each of the alternatives, the existing food service kiosk would remain and continue to operate, providing visitors the opportunity to purchase refreshments or other visitor needs. The tables and chairs provided at the kiosk would continue to offer patrons seating.

The existing chain link backstop would be removed, as this equipment is not in keeping with the use of a center designed to augment the experience of the Vietnam Veterans Memorial.

Geothermal Wells

A geothermal field would be established in order to address the energy needs of the Memorial Center. The field would consist of approximately 83 wells to a depth of 300 feet. The wells would be located around the Memorial Center, but would be located in the exterior limits of the tree root zones, in coordination with the NPS

2.2.3 ALTERNATIVE 1

Alternative 1 would place an underground structure near the Memorial Center of the project site. The building would be in approximate alignment with Lincoln Memorial Circle at the site's southern edge. Most of the building's rectangular shape would not be visible to visitors, with the exception of the recessed entry area, open courtyard, and skylights (see Figure 2-2 through Figure 2-10). The two-level Center would include exhibit space, a bookstore, restrooms, and a lobby. The Memorial Center would be approximately 31,000 square feet.

The approach to the facility would be from Constitution Avenue and Henry Bacon Drive. From Henry Bacon Drive, a set of stairs would descend below-grade along an angled wall to a plaza in front of the Memorial Center's entrance. From Constitution Avenue, a sidewalk would extend to Henry Bacon Drive, where the stairway begins. From the approximate midpoint of this sidewalk, a ramp would extend to the plaza and entry to the Memorial Center. This connection would also serve to comply with the Architectural Barriers Act.

Under Alternative 1, the courtyard would be accessible from the lower level of the Memorial Center. Four sections of the building, covered by a green roof, would jut into the otherwise rectangular courtyard, breaking up the space. These sections would be

separated by skylights. Additionally, a bridge connecting the entry lobby to the exhibit space would extend over the courtyard. A railing and semi-transparent screen would provide a barrier along the rim of the courtyard to ensure safety.

Two skylights of varying lengths would extend from the courtyard north; the third skylight would run from the entry plaza north. These skylights, all of which are four feet wide but vary in length from 120 feet to 160 feet, would be staggered in their placement. Although they would be flush with the ground and therefore minimally visible at the site, these skylights would be used to illuminate exhibit space within the underground building. Visitors to the project site would be able to walk directly on the skylights.

Once visitors have entered the Memorial Center, they would cross the courtyard via the entry bridge and would then follow a series of ramps, which would serve as exhibit space, down to the lower level. Once on the bottom floor, visitors would explore the exhibit space, open-air courtyard, and the bookstore before returning to the upper floor.

The landscape of Alternative 1 would maintain the existing trees, as well as add new trees near the perimeter of the site. The placement and variety of trees would be in accordance to the historic planting plan for the site.

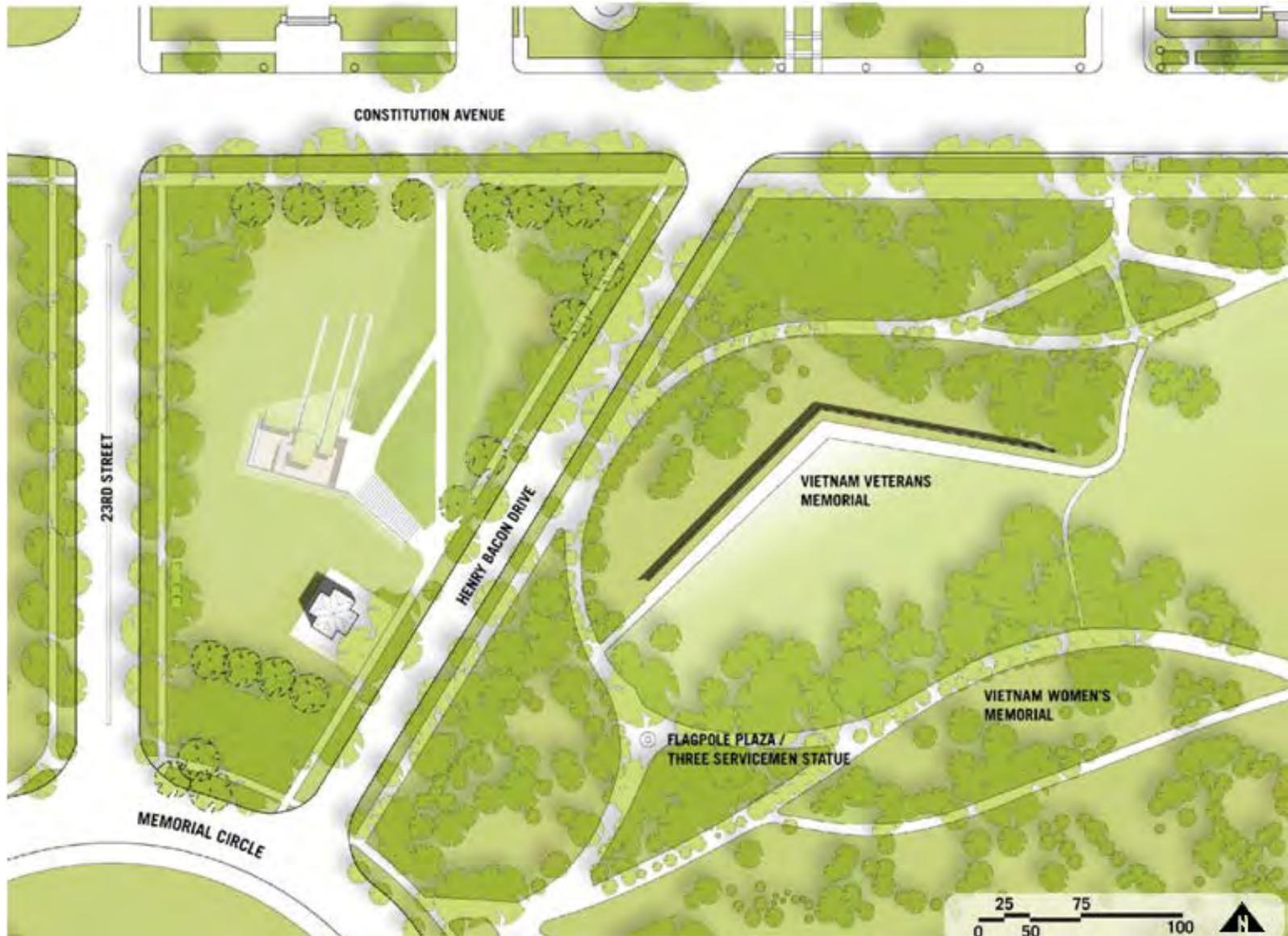


Figure 2-2: Alternative 1 site plan

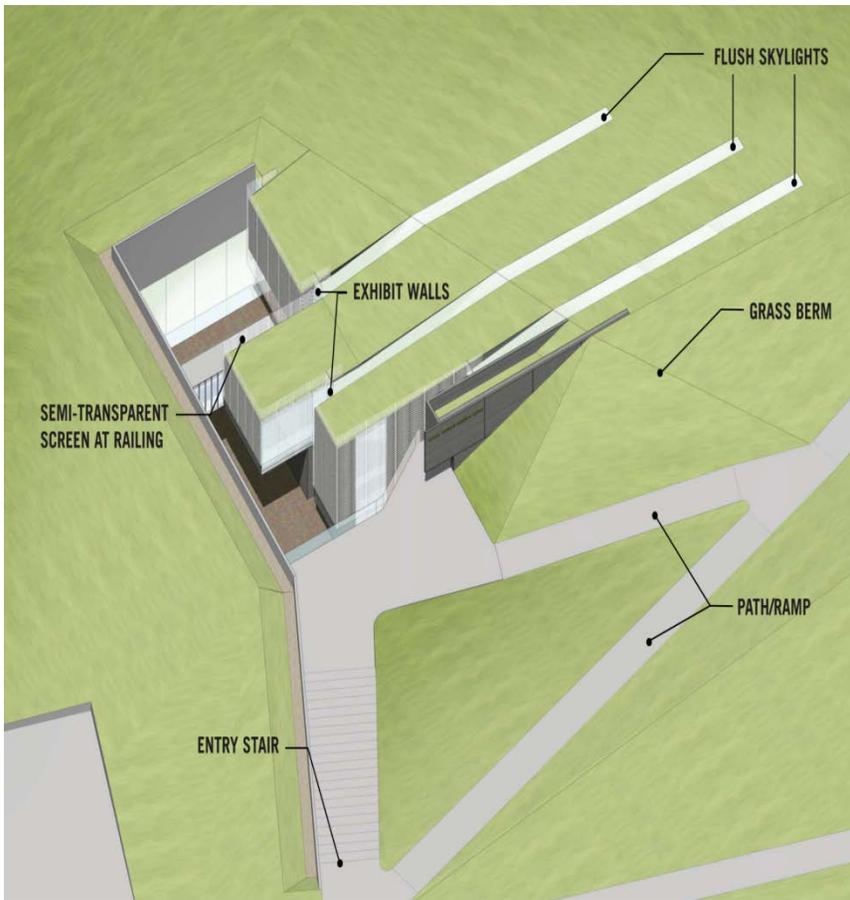


Figure 2-3: Alternative 1 axonometric view

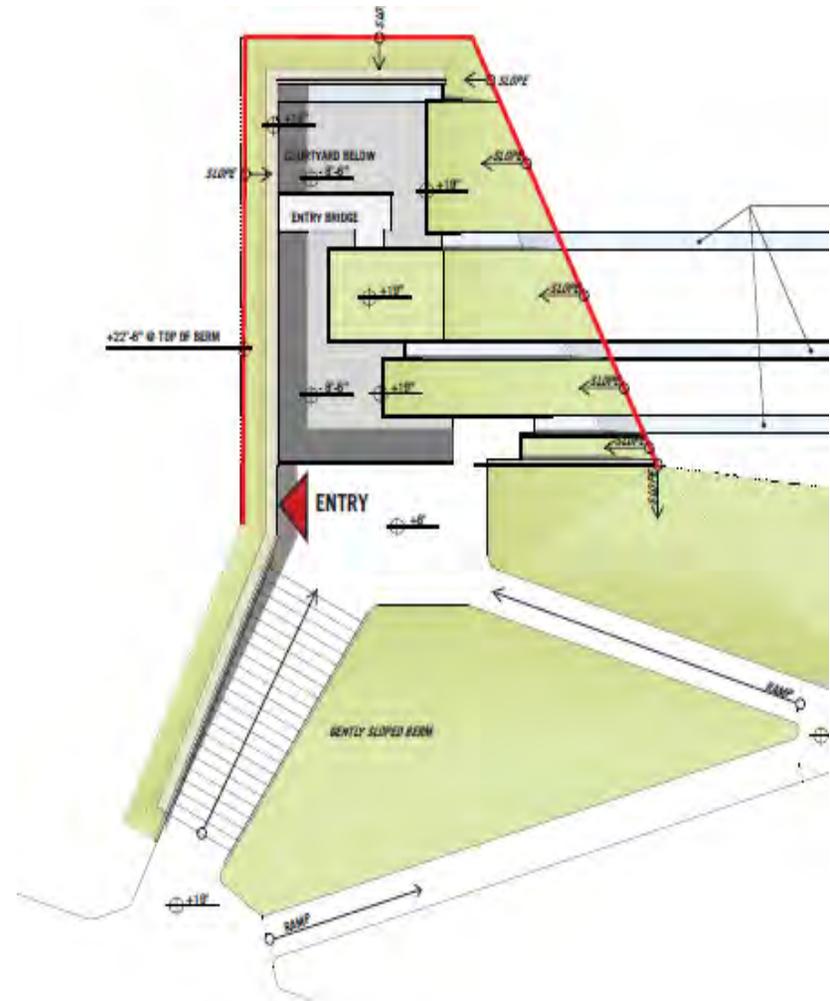


Figure 2-4: Alternative 1 roof plan

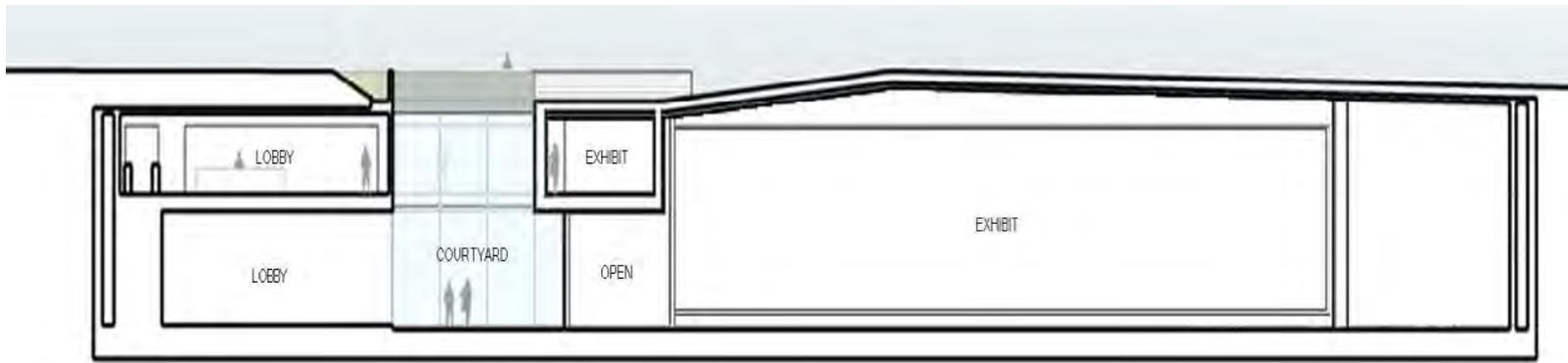


Figure 2-5: Alternative 1 north-south section



Figure 2-6: Alternative 1 entry perspective from Henry Bacon Drive

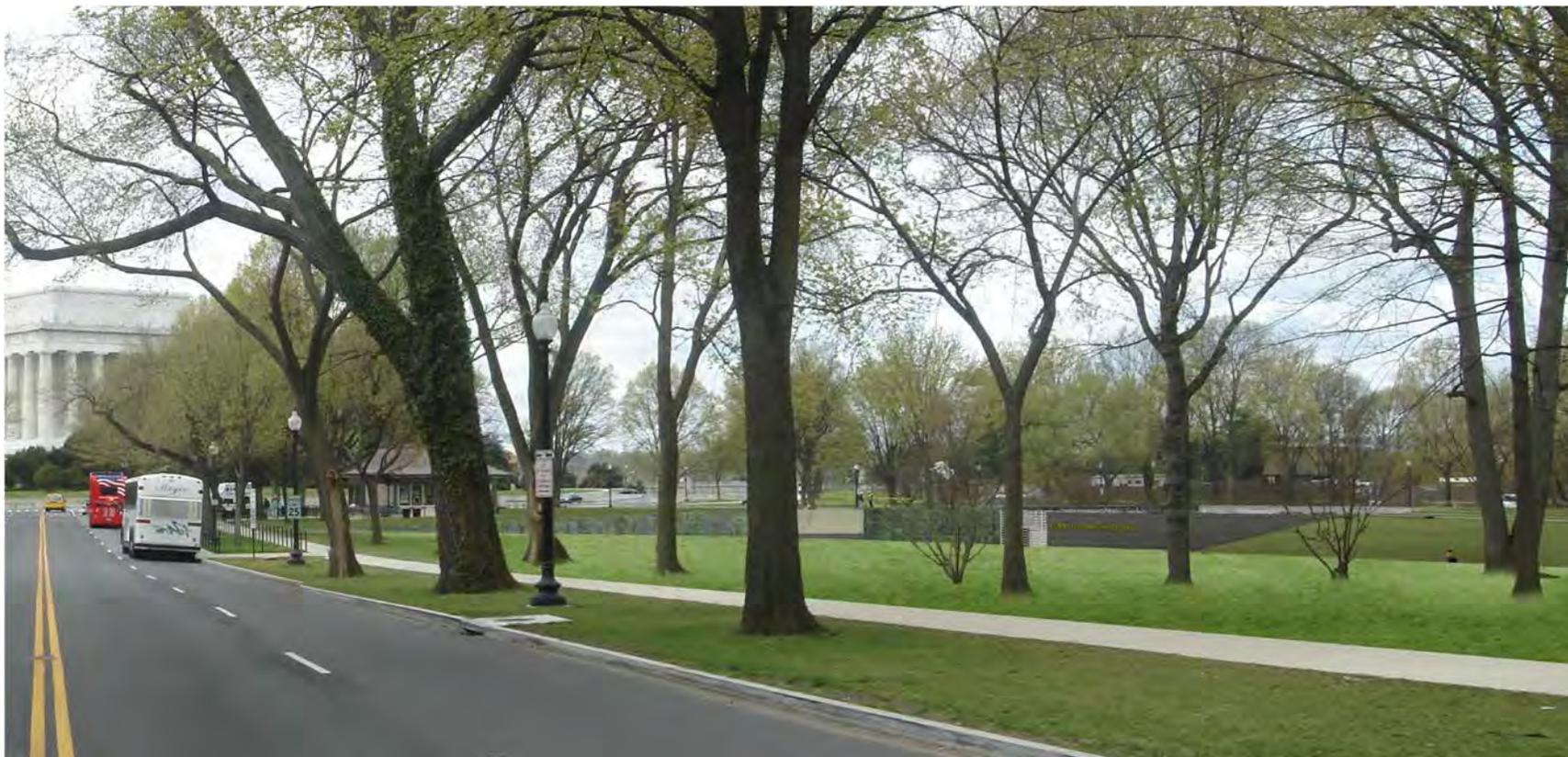


Figure 2-7: Alternative 1 Henry Bacon Drive looking south



Figure 2-8: Alternative 1 view from crosswalk at 22nd Street and Constitution Avenue looking south



Figure 2-9: Alternative 1 view from the corner of 23rd Street and Constitution Avenue looking south



Figure 2-10: Alternative 1 view from the top stair of the Lincoln Memorial looking north (ovals indicate new trees as per historic plan)



Figure 2-11: Alternative 1 view from the Vietnam Veterans Memorial looking west

2.2.4 ALTERNATIVE 2

Alternative 2 is similar to Alternative 1 in terms of building size, alignment, general layout, and landscaping, but the visible elements of Alternative 2 exhibit a different form. The irregular pentagonal shape would be located near the Memorial Center of the site, aligning with the Memorial Circle to the south. The two-level building, approximately 37,000 square feet, would feature a green roof. The facility would include exhibit space, an enclosed courtyard, an entry plaza, a bookstore, restrooms, a lobby, and office space for administrative purposes (see Figure 2-12 through 2-20. Figure 2-9 also represents the view of Alternative 2 from Constitution Avenue and 23rd Street). The facility's program would be refined in order to limit the size of the Memorial Center to the minimum necessary to carry out education and interpretive functions.

Under Alternative 2, the entrance would be connected to the Henry Bacon Drive sidewalk via an elliptical path. Leading directly from the sidewalk, stairs next to a curvilinear retaining wall would lead visitors to the below-grade entry. Also connecting to the sidewalk, a curved walkway would surround an elliptical green area, allowing visitors access to the building without the use of stairs. A stone seatwall with recessed lighting would border the northern edge of the elliptical green space. A metal horizontal railing would be installed above the entry way at the stair wall and at building's green roof edge to protect against potential falls from the roof, which appears as lawn, to the entry plaza.

A total of eight skylights (including open-air skylights not covered by glass) would be installed for the Memorial Center, which would be visible from above. The largest, an approximately 860-square foot uncovered opening, would allow light and air into the courtyard, as would three 32-square feet open-air skylights. Four of the smaller skylights would be located over the lobby. The largest skylight would be depressed approximately one foot from the grass surface, with stone edging and metal edging providing a four-inch barrier from the grass. The seven smaller skylights would be flush with the ground, with the three open-air skylights be covered by a grate, which could be walked on by visitors. The four glass-covered skylights could also be walked on by visitors.

Visitors would access the Memorial Center from a depressed entry point, leading to the entry lobby and bookstore. Visitors would then follow a series of ramps, which would also serve as exhibit space, to the lower level. There, visitors would access additional exhibit space, the courtyard, and restrooms. Elevators and stairs would return visitors to the main entrance, providing egress from the Memorial Center.

The landscape of Alternative 2 would maintain the existing trees, as well as incorporate new trees. Most of the added trees would be near the perimeter of the project site, along Constitution Avenue and in the southern corner, consistent with the historic planting plan for the site.

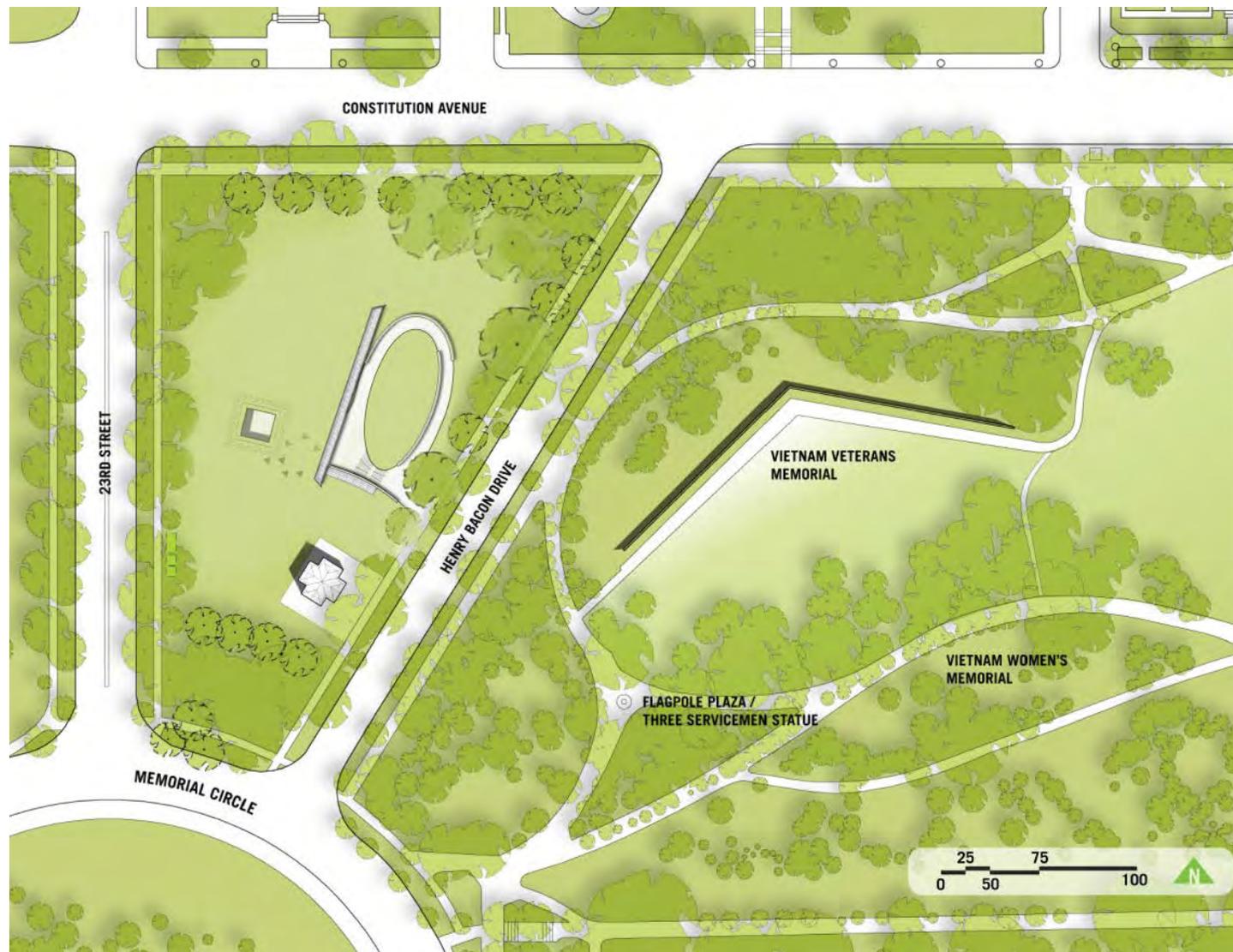


Figure 2-12: Alternative 2 site plan

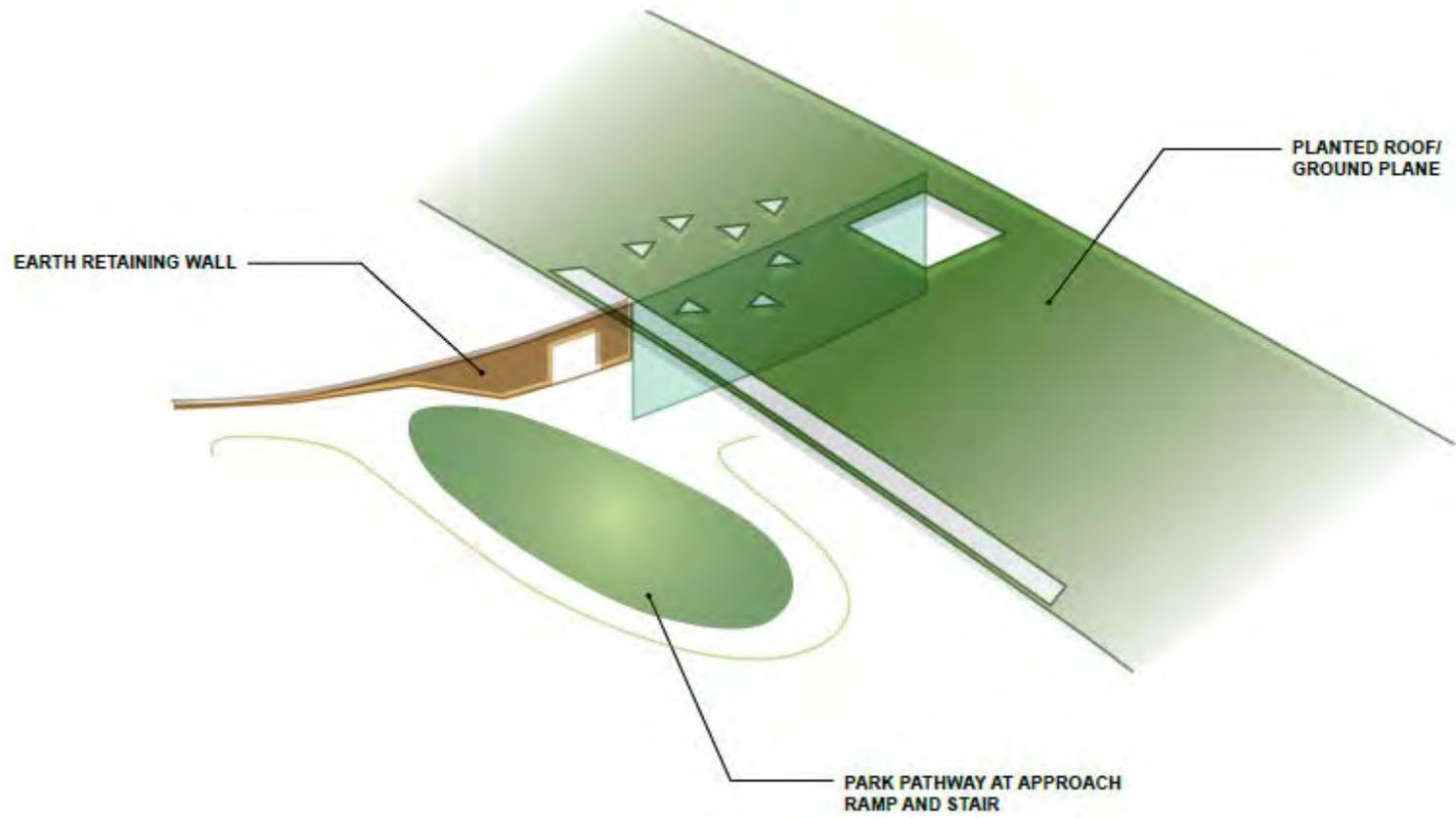


Figure 2-13: Alternative 2 site diagram

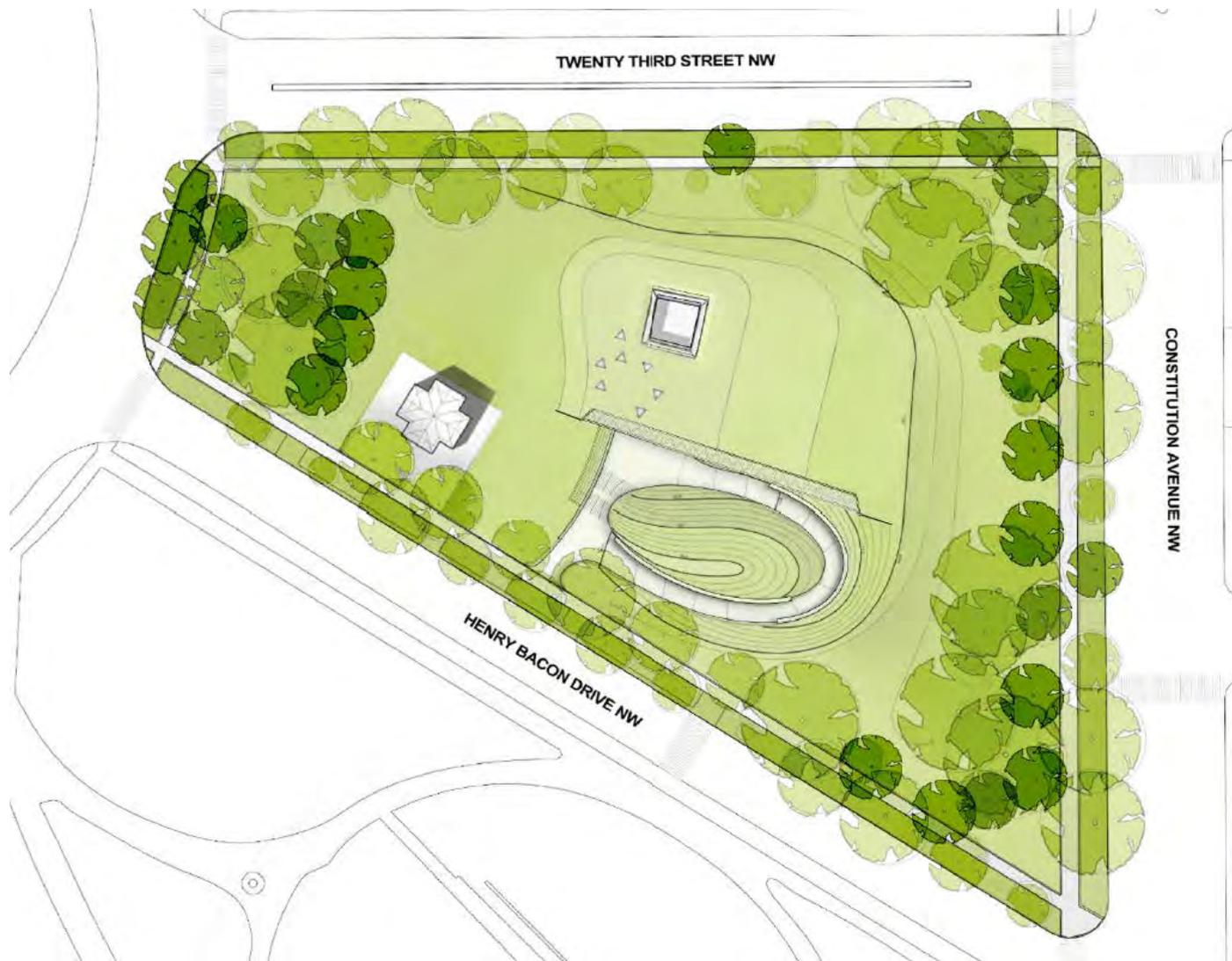


Figure 2-14: Alternative 2 landscape and grading plan

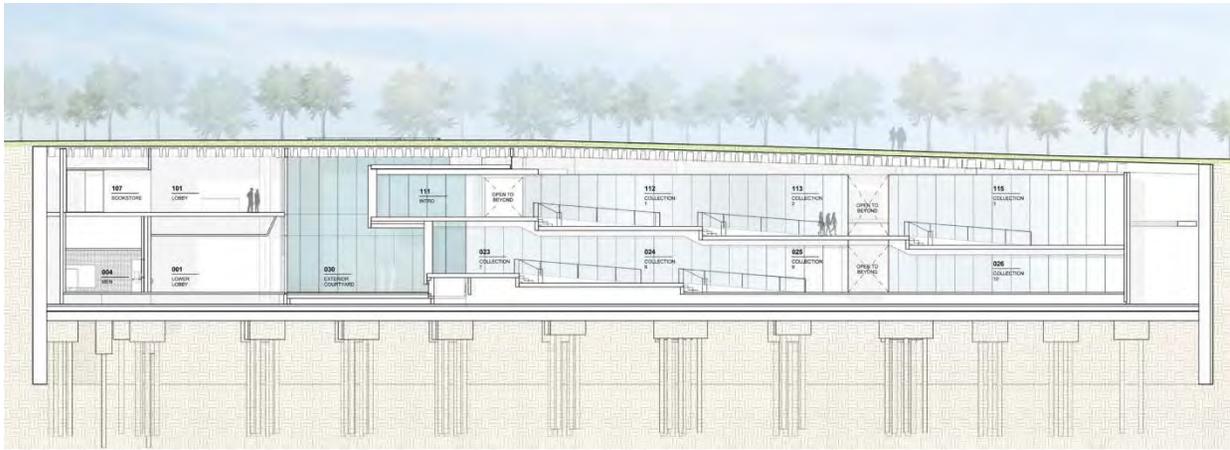


Figure 2-15: Alternative 2 north-south section



Figure 2-16: Alternative 2 entry perspective from Henry Bacon Drive



Figure 2-17: Alternative 2 Henry Bacon Drive looking south



Figure 2-18: Alternative 2 view from crosswalk at 22nd Street and Constitution Avenue looking south



Figure 2-19: Alternative 2 view from the top stair of the Lincoln Memorial looking north (ovals indicate new trees as per historic plan)



Figure 2-20: Alternative 2 view from the Vietnam Veterans Memorial looking west

2.3 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

NPS and VVMF have identified Alternative 2 as the preferred alternative. Alternative 2, which is shown comparatively with Alternative 1 in Figure 2-21, best meets the purpose and need for establishing a visitor center for the Vietnam Veterans Memorial. The design would contain numerous facilities to help educate the public about the Vietnam War, in keeping with the project authorization. The design includes features that are most sensitive to the surrounding National Mall. The sensitive design elements include limiting access points and a curved retaining wall, which better preserves the distinct character and design of the Vietnam Veterans Memorial by not directly echoing its sharp angularity.

Alternative 2 better addresses the design guidelines developed by NCPC and CFA. Because the entrance would be obscured from view through a berm and trees, the Memorial Center would be only minimally visible from the Vietnam Veterans Memorial. The largest skylight in Alternative 2 is depressed, thereby minimizing its visibility. Unlike Alternative 1, the only pavement to the site would be that required for entry to and exit from the building,

Alternative 1 would also meet the purpose and need of the project. This design would likewise contain numerous facilities to help educate the public about the Vietnam War. However, due to its multiple access points and lengthy skylights, the design does not complement its surrounding environment to the extent of Alternative 2 and does not as effectively address the CFA and NCPC design guidelines. The angled entrance mimics the angle of the Vietnam Veterans Memorial, thereby making the Memorial less distinct. The sidewalk from Constitution Avenue leading to the site's entrance, while minimal, adds an additional break to the views

and vistas along Constitution Avenue. Under Alternative 1, the skylights would be larger and would be flush with the ground, rather than depressed.

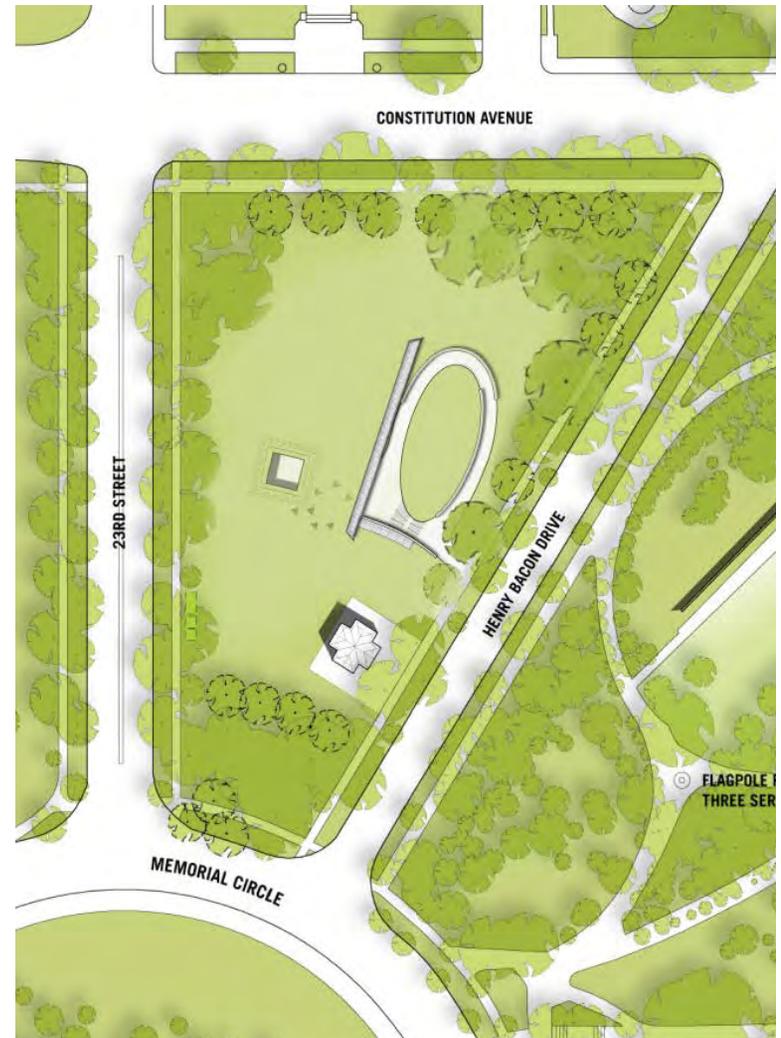
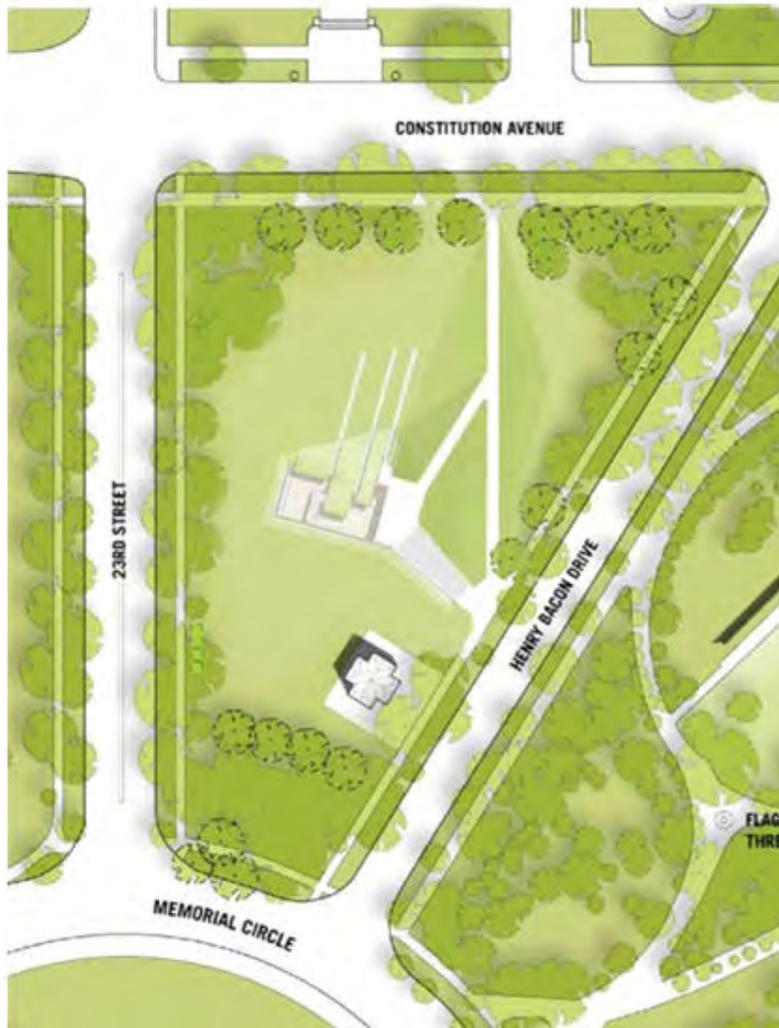


Figure 2-21: Comparative illustration of Alternatives 1 and 2

2.4 CONSTRUCTION STAGING

Staging for the construction of the Memorial Center will take place on site and potentially on the open space across 23rd Street from the site. This area is currently being used as a construction staging area for work on Constitution Avenue. On-site support staff will be positioned in temporary trailers with a lay down area at this location. Minimal lane closures of 23rd or Henry Bacon Drive would occur in order to deliver materials to the site. Such closures would be infrequent and temporary in nature. The closures would occur at off-peak periods and would allow at least one lane of traffic to pass. Sidewalks adjacent to the project site and staging area would be temporarily closed. Temporary fencing or other barriers will be installed for safety purposes.

2.5 MITIGATION MEASURES OF THE ACTION ALTERNATIVES

NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of the natural and cultural resources and the quality of the visitor experience, the following protective measures would be implemented as part of the selected action alternative. The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving their intended result:

Cultural Resources

- If during construction, archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources can be identified and documented and an appropriate mitigation strategy developed. If necessary, consultation with the DC Historic Preservation Officer, NPS, and/or the NPS Regional Archeologist will be coordinated to ensure that the protection of resources is addressed. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.
- Additional mitigation for impact on archeological, historic, and visual resources, may be determined during the Section 106 consultation process. A memorandum of agreement (MOA) between NPS, NCPC, DC SHPO, ACHP,

and VVMF would be developed as part of this process to mitigate adverse impacts to cultural resources. Potential mitigation measures that could be identified in the MOA for all alternatives include:

- VVMF would complete an illumination study to ensure that lighting levels of the Memorial Center would be deferential to the Lincoln Memorial. Lighting of the Memorial Center would not exceed levels of or distract from nearby memorials, monuments, or buildings.
 - VVMF would include an interpretation/education element about the memorial tree program of the 1920s (such as a historic tree plaque from the collection) and how memorial trees are handled today.
 - Revise landscape plan to reflect historic planting plan for the site. In addition to the installation of new trees that were historically part of the site, existing trees that are not historic in nature would be removed from the site.
 - Prepare documentation for nearby historic resources.
- During construction, soils exposed by clearing, grading, excavation, or construction would be stabilized. Soils would be stockpiled using appropriate best management practices.
 - Excavated soils would be subject to sampling and testing should indicators of petroleum-impacted soils present themselves during excavation and construction.
 - If determined to contain petroleum hydrocarbons, the soils would be removed and disposed of in accordance with a DDOE-approved safety plan.
 - Appropriate regulatory notification would occur if contaminated soils are identified.
 - Impacted soils would be segregated through field screening.
 - Waste characterization samples would be collected.
 - Contaminated soils would be disposed of at an appropriate waste disposal facility.
 - Removal activities would be documented.

Soils

- Prior to construction, an erosion and sediment control plan would be prepared, establishing measures to minimize erosion in cleared areas and the transport of soil and sediments.

Vegetation

- NPS National Capital Region Guidelines for Tree Preservation would be followed during the construction process.
- All trees with critical root zones affected by construction disturbance would be root pruned according to the NPS National Capital Region Guidelines for Tree Preservation.

- All trees with critical root zones affected by construction disturbance would be treated with the growth regulator Cambistat (Paclobutrazol).
- All trees with critical root zones affected by construction disturbance would be mulched after root pruning and Cambistat application. Mulch would be applied according to the NPS National Capital Region Guidelines for Tree Preservation.
- In times of little or no rainfall, and especially during the hot summer months, each tree on the project site would be treated with 25 gallons of water per week.
- After the construction of the Memorial Center, the planting recommendations of the NPS personnel would be implemented as shown on the September 2011 Tree Survey and Assessment. Their recommendations include removing and replacing 10 trees, planting 26 trees missing from the historical landscape plan, and moving 2 trees that appear to conflict with underground utilities.

2.6 ALTERNATIVES CONSIDERED BUT DISMISSED

Several alternatives or alternative elements were identified during the design process and internal and public scoping. Some of these were determined to be unreasonable, or much less desirable than similar options included in the analysis, and were therefore not carried forward for analysis in this EA. Justification for eliminating alternatives from further analysis was based on factors relating to:

- Conflicts with already-established Park uses;
- Duplication with other less environmentally damaging alternatives;
- Conflicts with the statement of purposes and need, or other policies; and
- Severe impact on environmental or historic resources.

The following represent the alternatives considered and dismissed from further consideration in this EA.

2.6.1 Concept A

Concept A would be very similar to Alternative 1 due to its underground location, approach to the site, and skylights. The design uses mounds of the surrounding earth to reduce the amount of ramp required to descend down to the entry to seven feet up and seven feet down, yielding a ramp length of 140 feet at a slope of one foot per 20 (see Figure 2-22). This alternative was dismissed because while it is similar to Alternative 1 in form, the grade changes proposed would be more environmentally damaging to cultural resources due to changes in views and vistas. Therefore, the alternative was dismissed from further consideration.

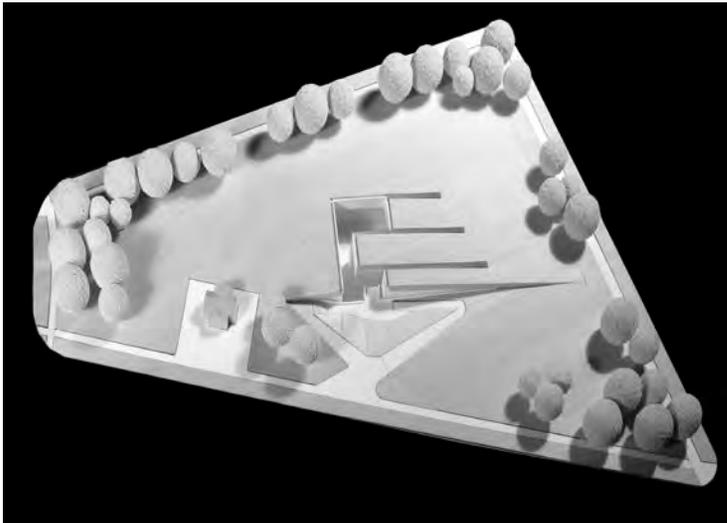


Figure 2-22: Model of Concept A
Source: Ennead, 2011

2.6.2 Concept B

Concept B would also be very similar to Alternative 1 in its overall design, but Concept B would not change the existing grade of the site. In order to provide access to the Memorial Center without stairs, the walkway ramps down the entire 14 feet from the sidewalk level by using a switchback (see Figure 2-23). Concept B incorporates a 280-foot long approach ramp and stair within an extended courtyard. The ramp is incorporated into the architecture. This alternative was dismissed because while it minimizes disturbance to the existing topography, and is in keeping with the cultural environment of the National Mall, the ramp places an unnecessary burden on visitors and increases the likelihood of visitor confusion. Therefore, this alternative did not as effectively address the purpose and need of the project as the action alternatives, and was dismissed from further consideration.

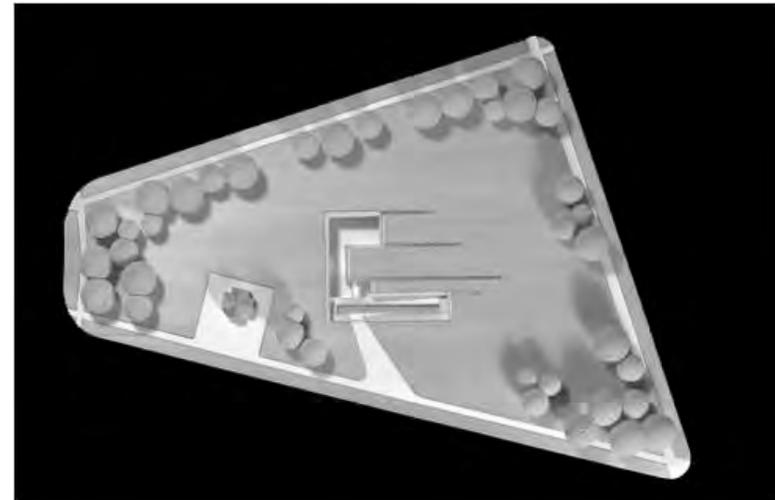


Figure 2-23: Model of Concept B
Source: Ennead, 2011

2.6.3 Underground Kiosk

This alternative would install an underground education facility, and would also remove the existing kiosk. Food service and other kiosk amenities would be located elsewhere within NAMA. The removal of the existing kiosk would serve to reduce visual impacts to cultural resources in the vicinity of the site. The relocation of the kiosk would not, however, necessarily result in an overall reduction in visual impacts on cultural resources. Given the concentration of cultural resources in and around the National Mall, it is possible that the kiosk relocation would have impact on historic resources elsewhere.

The existing kiosk serves several functions. First, it addresses visitor needs by providing refreshment or other products that enhance the visitor experience and visitor safety. The system of kiosks also serves to change tourism patterns near the Lincoln Memorial. Prior to the kiosks, the area around the Lincoln Memorial served as a hub for visitor services, including food service, and transportation. By siting the food service kiosk at its existing location, the kiosk helps disperse visitors from the previous congested location.

The removal of the kiosk would be inconsistent with other plans and policies. In 2003, NPS submitted to NCPC a preliminary plan for Lincoln Circle Rehabilitation and Security Improvements. At that time, NCPC approved the preliminary site and building plans for two concession buildings, including the one located at the project site. NCPC found the kiosks to be consistent with the Commemorative Works Clarification and Revisions Act of 2003 (Public Law 108-126, Title II, Section 206(2)), which charged NPS “to relocate, redesign or otherwise alter the concession facilities that are within the Reserve

to the extent necessary to make them compatible with the Reserve’s character.” Therefore, due to its conflicts with existing policy and plans, this alternative was dismissed from further consideration.

2.7 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is defined by CEQ as the alternative that would promote the national environmental policy as expressed in NEPA Section 101. This includes:

- Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assuring for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserving important historic, cultural, and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieving a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and
- Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources (NEPA, Section 101).

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. The NPS, in accordance with the Department of the Interior policies contained in the Departmental Manual (516 DM 4.10) and the

council on Environmental Quality's *NEPA's Forty Most Asked Questions*, defines the environmentally preferable alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA (Section 101(b)(516 DM 4.10). In their *Forty Most Asked Questions*, CEQ further clarifies the identification of the environmentally preferable alternative, stating "Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (Q6a).

The No Action Alternative would not impact biological or natural resources or cultural resources. It would not degrade the environment through disturbance of soils or removal of vegetation. Views and other elements of cultural resources would not be affected by the No Action Alternative; the existing cultural resources would continue to be managed similar to existing practices. The No Action Alternative would continue to provide open and cultural space to the visiting public. As a result, after completing the environmental analysis, NPS identified the No Action Alternative as the environmentally preferable alternative in this EA and the alternative that best meets the definition established by the CEQ.

2.8 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

A summary of the environmental consequences as a result of the alternatives described in this chapter follows in Table 2-1. The full analysis for each impact topic is found in Section 4.

Table 2-1 : Summary of Impacts to Resources by Alternative

Impact Topic	No Action Alternative	Alternative 1	Alternative 2
Cultural Resources: Archeology	Because non-ground-disturbing activities would take place, there would be no impact.	Alternative 1 has the potential for long-term moderate adverse impacts on archeological resource due to the possible presence of historic and pre-historic resources at the site.	Alternative 2 has the potential for long-term moderate adverse impacts on archeological resource due to the possible presence of historic and pre-historic resources at the site.
Cultural Resources: Historic Resources	The Memorial Center would not be constructed. Therefore, there would be negligible impacts on historic resources.	Alternative 1 would alter the existing grass panel and change views and vistas along Constitution Avenue and 23 rd Street, resulting in long-term moderate adverse impacts on the L'Enfant Plan of the City of Washington. Alternative 1 would result in moderate adverse impacts on the Lincoln Memorial due to potential interference of night lighting. Elements of the Memorial Center would be visible, to varying degrees, from historic resource, resulting in minor adverse impacts on the American Pharmacists Association Building, the National Academy of Sciences, and the Harry S. Truman Building. There would be negligible impacts on the Arlington	Alternative 2 would alter the existing grass panel and change views and vistas along the Constitution Avenue and 23 rd Street, resulting in long-term moderate adverse impacts on the L'Enfant Plan of the City of Washington. Alternative 2 would result in moderate adverse impacts on the Lincoln Memorial due to potential interference of night lighting. Elements of the Memorial Center would be visible, to varying degrees, from historic resource, resulting in long-term minor adverse impacts on the American Pharmacists Association Building, and negligible impacts on the National Academy of Sciences, the Harry S. Truman Building, and the

Impact Topic	No Action Alternative	Alternative 1	Alternative 2
		<p>Memorial Bridge, and no impacts on the Federal Reserve Board Building, the Lockkeepers House, the 56 Signers Memorial, and the WWII Memorial. There would be long-term minor adverse impacts to the Vietnam Veterans Memorial and Vietnam Women’s Memorial. There would be long-term moderate adverse impacts on the East and West Potomac Parks Historic District due to changes in the existing grass panel. There would be long-term minor adverse impacts on the Northwest Rectangle Historic District. Alternative 1 would result in short-term adverse impacts on historic resources due to construction. In addition, there could be moderate adverse cumulative impacts on the L’Enfant Plan of the City of Washington, the Lincoln Memorial, and the East and West Potomac Park Historic District and minor adverse cumulative impacts on the Vietnam Veterans Memorial and the Vietnam</p>	<p>Arlington Memorial Bridge. There would be no impacts on the Federal Reserve Board Building, the Lockkeepers House, the 56 Signers Memorial, and the WWII Memorial. There would be long-term minor adverse impacts to the Vietnam Veterans Memorial and Vietnam Women’s Memorial. There would be long-term moderate adverse impacts on the East and West Potomac Parks Historic District due to changes in the existing grass panel. There would be long-term negligible impacts on the Northwest Rectangle Historic District. There would be short-term adverse impacts on historic resources due to construction. In addition, there could be long-term moderate adverse cumulative impacts on the L’Enfant Plan of the City of Washington, the Lincoln Memorial, and the East and West Potomac Parks Historic Districts, and minor adverse cumulative impacts on the Vietnam Veterans Memorial and the Vietnam</p>

Impact Topic	No Action Alternative	Alternative 1	Alternative 2
		Women’s Memorial.	Women’s Memorial.
<p>Cultural Resources: Cultural Landscapes</p>	<p>The Memorial Center would not be constructed. Therefore, there would be negligible impacts on cultural landscapes.</p>	<p>Alternative 1 would alter vistas along 23rd Street and Henry Bacon Drive. Alternative 1 would alter the existing grass panel, resulting in moderate adverse impacts on the Lincoln Memorial Grounds. Due to the installation of the Memorial Center and new trees, views from Constitution Gardens to the Lincoln Memorial would be little altered, resulting in negligible impacts on Constitution Gardens. Exhibits of the Memorial Center would augment the ceremonies conducted at The Wall in Constitution Gardens, which would result in a beneficial impact. There would be negligible impacts on the Washington Monument Grounds. Cumulatively, Alternative 1 could result in moderate adverse impacts on the Lincoln Memorial Grounds and beneficial impacts on Constitution Gardens.</p>	<p>Alternative 2 would alter vistas along 23rd Street and Henry Bacon Drive. Alternative 2 would alter existing grass panel, resulting in moderate impact on the Lincoln Memorial Grounds. Due to the installation of the Memorial Center and new trees, views from Constitution Gardens to the Lincoln Memorial would be little altered, resulting in negligible impacts on Constitution Gardens. Exhibits of the Memorial Center would augment the ceremonies conducted at The Wall in Constitution Gardens, which would result in a beneficial impact. There would be negligible impacts on the Washington Monument Grounds. Cumulatively, Alternative 2 could result in moderate adverse impacts on the Lincoln Memorial Grounds and beneficial impacts on Constitution Gardens.</p>

Impact Topic	No Action Alternative	Alternative 1	Alternative 2
Visitor Use and Experience	<p>The existing site would be used for active and passive recreation. The existing food service kiosk would continue to offer refreshments and provide for other visitor needs. Therefore, there would be no impacts.</p>	<p>Alternative 1 would offer visitors the opportunity to learn more about the Vietnam War and the Vietnam Veterans Memorial through an indoor exhibit space and education center. The open space available for multi-purpose recreation uses would be reduced. The food service kiosk would remain. As a result, there would be long-term beneficial impacts and minor adverse impacts for multi-purpose recreation users. Short-term moderate adverse impacts would occur due to limited site access during construction. Cumulatively, Alternative 1 would have short-term moderate adverse impacts and long-term beneficial impacts and minor adverse impacts on recreationists.</p>	<p>Alternative 2 would offer visitors the opportunity to learn more about the Vietnam War and the Vietnam Veterans Memorial through an indoor exhibit space and education center. The open space available for multi-purpose recreation uses would be reduced. The food service kiosk would remain. As a result, there would be long-term beneficial impacts and minor adverse impacts for multi-purpose recreation users. Short-term moderate adverse impacts would occur due to limited site access during construction. Cumulatively, Alternative 2 would have short-term moderate adverse impacts and long-term beneficial impacts and minor adverse impacts on recreationists.</p>
Park Management and Operations	<p>NPS would continue to manage and operate the site for active and passive recreation. NPS would continue to issue permits for active recreation uses. NPS would maintain the existing lawn and</p>	<p>Alternative 1 would require a higher level of maintenance and staffing than the current NPS management. Therefore, there would be a long-term minor adverse and short-term moderate</p>	<p>Alternative 2 would require a higher level of maintenance and staffing than the current NPS management. Therefore, there would be a long-term minor adverse and short-term moderate</p>

Impact Topic	No Action Alternative	Alternative 1	Alternative 2
	trees. Therefore, there would be no impacts.	adverse impacts . There would be short-term moderate averse cumulative impacts and long-term minor adverse cumulative impacts.	adverse impact. There would be short-term moderate averse cumulative impacts and long-term minor adverse cumulative impacts.
Soils	Passive and active recreation would continue to take place at the site, potentially compacting or disturbing soils. As a result, there would be negligible impacts.	Alternative 1 would disturb and remove existing soils on site and would improve the soil makeup. The amount of unpaved soils would decrease. Therefore, Alternative 1 would result in short-and long-term minor adverse impacts and cumulative impacts on soils.	Alternative 2 would disturb and remove existing soils on site and would improve the soil makeup. The amount of unpaved soils would decrease. Therefore, Alternative 2 would result in short-and long-term minor adverse impacts and cumulative impacts on soils.
Transportation	No changes to existing road or pedestrian infrastructure would occur and pedestrian circulation patterns would continue. Traffic growth in the study area would be limited. Therefore, there would be negligible impacts.	Alternative 1 would increase the number of pedestrians in the area, but it is not anticipated that vehicular traffic would increase due to the lack of on-site parking. Bus parking and public transportation service would not change. Therefore, long-term adverse impacts on public transportation and vehicular traffic would be negligible. Long-term impacts on tour bus access and pedestrian connections would be adverse and minor.	Alternative 2 would increase the number of pedestrians in the area, but it is not anticipated that vehicular traffic would increase due to the lack of on-site parking. Bus parking and public transportation service would not change. Therefore, long-term adverse impacts on public transportation and vehicular traffic would be negligible. Long-term impacts on tour bus access and pedestrian connections would be adverse and minor.

Impact Topic	No Action Alternative	Alternative 1	Alternative 2
		<p>Short-term impacts on vehicular traffic and pedestrians would be minor. Cumulative impacts would include long-term minor impacts on vehicular traffic and beneficial impacts on pedestrians, and short-term minor adverse impacts on pedestrians and vehicular traffic.</p>	<p>Short-term impacts on vehicular traffic and pedestrians would be minor. Cumulative impacts would include long-term minor impacts on vehicular traffic and beneficial impacts on pedestrians, and short-term minor adverse impacts on pedestrians and vehicular traffic.</p>
Vegetation	<p>The Memorial Center would not be built. Passive and active recreation would continue at the site, including the vegetated areas. Therefore, there would be negligible impacts.</p>	<p>Alternative 1 would remove some grass areas and would install more trees at the site than currently exist. Therefore, the short- and long-term adverse impacts on vegetation would be minor. Cumulatively, there would be long-term minor and adverse cumulative impacts.</p>	<p>Alternative 2 would remove some grass areas and would install more trees at the site than currently exist. Therefore, the short- and long-term adverse impacts on vegetation would be minor. Cumulatively, there would be long-term minor and adverse cumulative impacts.</p>
Utilities	<p>The Memorial Center would not be built. Therefore, there would be no impact on utilities.</p>	<p>Alternative 1 would manage stormwater on-site and install a geothermal field. Therefore, there would be short-term negligible impacts to utilities during construction. Long-term and cumulative impacts would be negligible.</p>	<p>Alternative 2 would manage stormwater on-site and install a geothermal field. Therefore, there would be short-term negligible impacts to utilities during construction. Long-term and cumulative impacts would be negligible.</p>

3.0 AFFECTED ENVIRONMENT

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3.1 CULTURAL RESOURCES

This section documents the cultural resources located on the project site and within the surrounding area. This information was derived from NRHP nominations, cultural landscape surveys, historic maps, and field surveys. For the purposes of this document, cultural resources impact topics include: prehistoric and historic archeological resources; historic (above-ground) properties, including historic structures and districts, and memorials; and cultural landscapes. Ethnographic resources and museum collections were dismissed as impact topics.

The National Historic Preservation Act (NHPA) of 1966 is the guiding legislation for the preservation of historic properties. As broadly defined by 36 CFR 800, historic properties are “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places.” According to the NHPA, properties that qualify for inclusion in the NHRP must meet at least one of the following criteria:

- Criterion A: Be associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion B: Be associated with the lives of persons of significance in our past;

Criterion C: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D: Have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

Properties that qualify for the NRHP must also possess integrity, which is defined as the ability of a property to convey its significance. The seven aspects of integrity are location, design, setting, materials, workmanship, feeling, and association. The term “eligible for inclusion in the NRHP” describes properties formally designated as eligible and all other properties determined to meet NRHP Criteria.

In accordance with Section 106 of the NHPA, federal agencies are required to consider the effects of a proposed project on properties listed in, or eligible for listing in, the NRHP. NPS has entered into consultation with SHPO and other interested agencies and individuals to identify historic properties that could be affected, to assess potential adverse effects, and to resolve the adverse effects through mutually agreed upon avoidance, minimization, or mitigation measures.

An initial step in the Section 106 process is the determination of the area within which historic properties would be affected or are likely to be affected. The area of potential effects (APE) as defined by 36 CFR 800.16(d) represents “the geographic area within which an undertaking may directly or indirectly cause alterations in the

character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.” For the development of the preferred Center design (the current undertaking), NPS initiated consultation with the DC SHPO in 2007.

For the Memorial Center design, the Primary APE for above-ground historic resources is the project site. A broader secondary APE was defined which represents the area within which the proposed Center has the potential to have both direct effects and indirect visual effects on historic properties.

Both the primary and secondary APEs for historic above-ground resources are identified in Figure 3-1. Historic properties that lie within this area are listed in Table 3-1 and located in Figure 3-1. Note that this list includes listed properties, properties determined eligible, and properties that may be eligible but have not yet been evaluated.

In deriving the APE for archeological resources, it was determined that the proposed project’s only effects on archeological resources would occur as a result of ground-disturbing construction activities. Thus, the APE for archeological resources is the Primary APE, project site, delineated in Figure 3-1 .

Table 3-1: Historic Properties within the Area of Potential Effects

HISTORIC STRUCTURES AND DISTRICTS
L’Enfant Plan of the City of Washington
Lincoln Memorial
Arlington Memorial Bridge
American Pharmacists Association Building
Harry S. Truman Building
National Academy of Sciences
Federal Reserve Board Building
Vietnam Veterans Memorial
Lockkeeper’s House
56 Signers Memorial
Vietnam Women’s Memorial
World War II Memorial
Northwest Rectangle Historic District
West Potomac Park Historic District
CULTURAL LANDSCAPES
Lincoln Memorial Grounds
Constitution Gardens
Washington Monument and Grounds

Source: AECOM, 2011

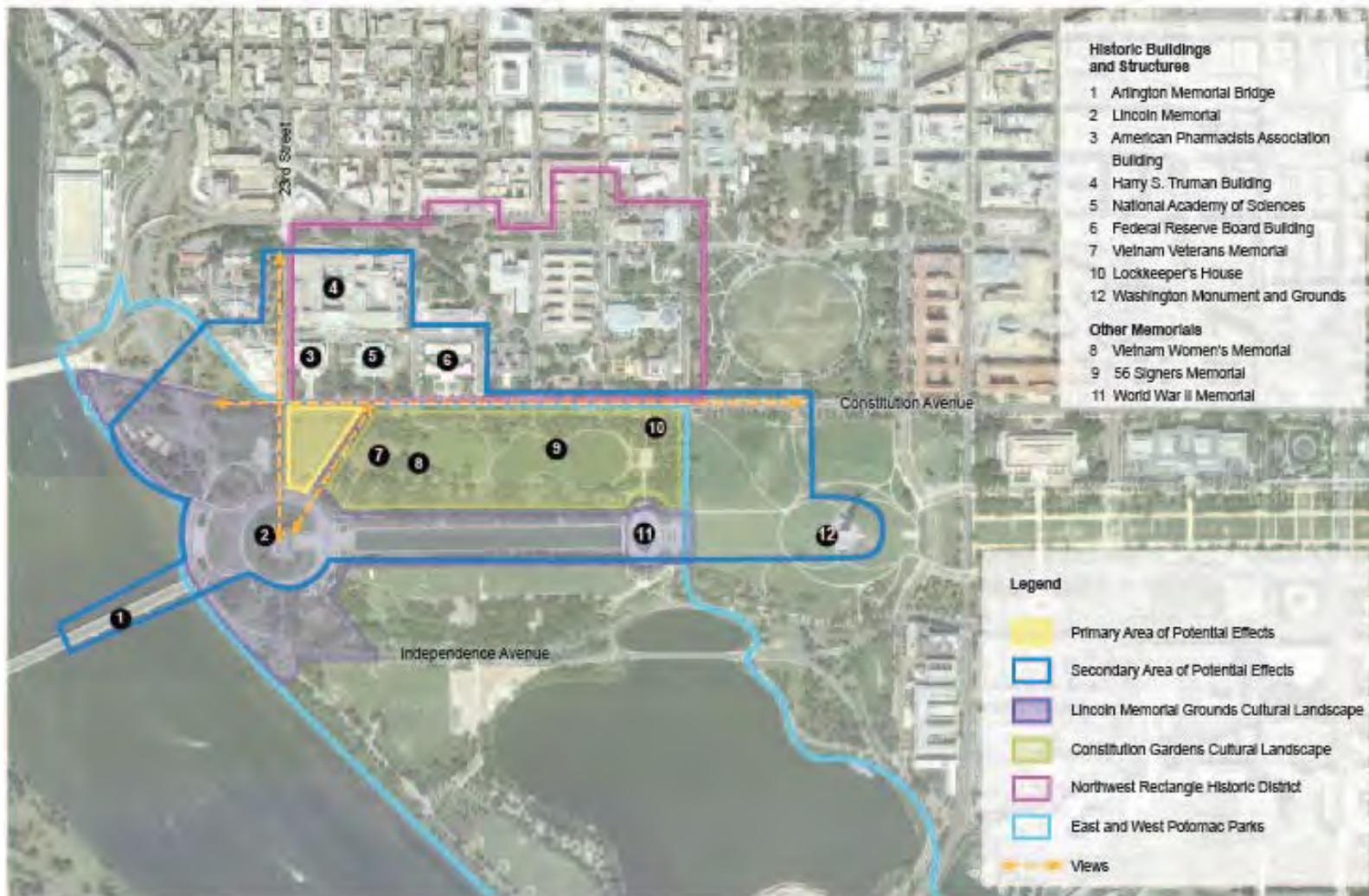


Figure 3-1: Area of Potential Effects (APE)
 Source: AECOM, 2011

3.1.1 Archeological Resources

The Potomac River Valley has a rich history of human occupation dating back at least 13,000 years. Prior to the 19th century, Tiber Creek drained a large portion of what is now downtown Washington, flowing from the north down Capitol Hill along what is now Constitution Avenue towards its confluence with the Potomac near what is now 17th Street. Native American settlements are known to have existed in the Tiber Creek area, and artifacts collected in the late 19th and early 20th centuries and housed at the Smithsonian Natural History Museum attest to prehistoric occupation spanning thousands of years. Because of its proximity to these important waterways, the project area would have been an ideal setting for different activities throughout many periods of prehistory, including fishing, hunting, and cultivation.

The monumental core area of Washington has been designated for public use since the city's founding. The National Mall was first conceptualized by Pierre Charles L'Enfant in his 1791 Plan for the City of Washington. Prior to the establishment of Washington, DC as the new US capital, the area was sparsely populated, consisting of farms, forests, marshland, and meadows. L'Enfant's Plan transformed the varied landscapes into a comprehensive Baroque city plan, based upon European examples. The National Mall in L'Enfant's Plan, running from Third Street in the east to Fourteenth Street in the west, was a 400-foot wide grand avenue, connecting the US Capitol to the Washington Monument. Although L'Enfant's Plan would provide the foundation and a point of departure for various designs of the National Mall over the next two centuries, it was never implemented. As late as 1850, the National Mall was used for the cultivation of vegetables and for the storage of lumber, firewood, and even trash. Between the founding of the City of

Washington and approximately 1880, the present project site was located to the west of the National Mall in the waters of the Potomac River.

Another aspect of L'Enfant's Plan was that it called for Tiber Creek to be widened and adapted into a canal system in order to facilitate commerce in the new city. The Washington City Canal was chartered in 1815, with a portion of its route following the old Tiber Creek. Construction was completed in 1840. The Chesapeake and Ohio (C & O) Canal, which followed the Potomac River from Washington D.C. to Cumberland, Maryland, had its southern terminus at Georgetown. In the 1830s, city officials proposed an extension to connect the C & O to the Washington Canal. The extension, built in 1833, began at Rock Creek and followed the Potomac from H Street to south of E Street, then headed southeast to 22nd Street, and then east to 17th Street. A lockkeeper's house now located at 17th Street and Constitution Avenue served the lock that connected the Washington branch of the C & O Canal to the Washington City Canal. While the canals eventually fell out of use and were filled in, the Lockkeeper's House has been moved slightly from its original location, and stands at 17th Street and Constitution Avenue. In spite of these efforts, the Washington Canal failed to develop as a commercial waterway. Sewage and runoff from the surrounding streets flowed into the canal and drained to the Potomac River, creating mud flats emanating offensive odors in the area just south of the White House. The canal was eventually filled in and a sewer line was installed in the 1870s during a period of extensive civic improvements.

In the 1880s, due to the excessive build up of silt in the Potomac River, the U.S. Army Corps of Engineers began dredging operations to keep shipping channels open. In an effort to keep the silt from

returning to the river, the dredged materials were deposited in marshlands, including what is now West Potomac Park in the vicinity of the project area. In 1897, Congress recognized 621 acres of reclaimed marsh and flats as public park land, and it was named Potomac Park.

Shortly thereafter, plans were underway to develop Potomac Park as an extension of the monumental core. West Potomac Park was recommended as the site for the Lincoln Memorial by the McMillan Commission in 1902. The Lincoln Memorial Commission was subsequently established in 1911 and a competition for the design of a memorial was announced that year. The Memorial and key elements of the new landscaping for the grounds were completed by the Memorial's 1922 dedication, and the reflecting pools were completed in 1923.

In 1933, NPS took over responsibility for the care and maintenance of the monuments in the nation's capital, which had previously been the domain of the War Department's Office of Public Buildings and Public Works.

Site History

The project site lies along the historic shoreline near the confluence of the Tiber Creek with the Potomac River. In the 18th and 19th centuries, the VVMEC site was partially on dry land and partially within the river bed.

In the 1760s, a town called Hamburgh or Funkstown was planned for the area directly to the north of the project area, but it is unclear the extent to which this settlement was realized. Jacob Funk originally owned 500 acres extending along the east side of the Potomac from Rock Creek to Tiber Creek. Some accounts suggest

Funk had a brick mansion on top of the hill (now Navy Hill), and that the rest of the settlement lay on lower land along the Potomac shoreline (see Figure 3-2).

In 1792, the Commissioners appointed to carry out construction of the Federal City authorized construction of a wharf along the shoreline of the Tiber Creek between 21st and 22nd Streets. Commissioners Wharf (Figure 3-3), planned to extend 90 feet into the river, was intended to facilitate construction of the President's House, located just a few blocks northeast, but it was eventually determined that the wharf was not sufficient to meet these demands.

L'Enfant's 1792 plan for the capital city called for the widening of Tiber Creek and its adaptation into a canal system which would carry commerce through the city. The Washington Canal was only partially constructed and did not fulfill the purpose for which it was designed. It was ultimately converted to a sewer and paved over by B Street, later re-named Constitution Avenue. An 1838 nautical map (Figure 3-4) shows the project site just south of Camp Hill (now known as Navy Hill), in a portion of the river that was intermittently dry land when the river's waters were low.

From 1807 to 1843, the Washington City Glass Works operated along the Potomac between what is now 22nd and 21st Streets Northwest. The enterprise is well documented in the papers of one of its founders, Jacob Cist. The works are described as including the main glass house, a sand and ash house, and a pounding house for the preparation of clay. In addition, six worker houses are documented as part of the property. GIS work undertaken for a study of this glassworks suggest that the glasshouse itself lie along



Figure 3-2: View of the City of Washington in 1792

Source: Library of Congress Geography and Map Division

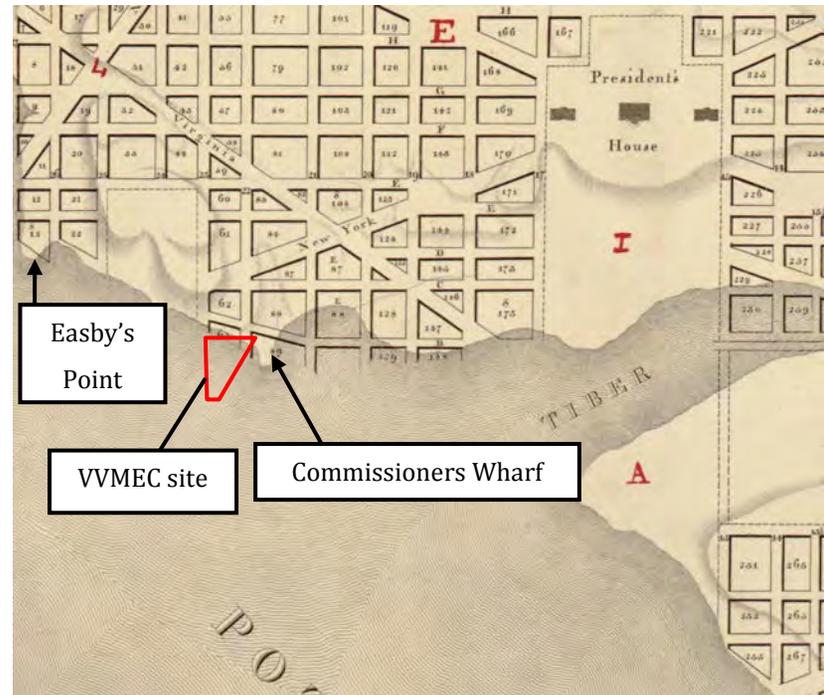


Figure 3-3: Detail of "A Map of the City of Washington in the District of Columbia" by R. King, 1818.

Source: Library of Congress Geography and Map Division

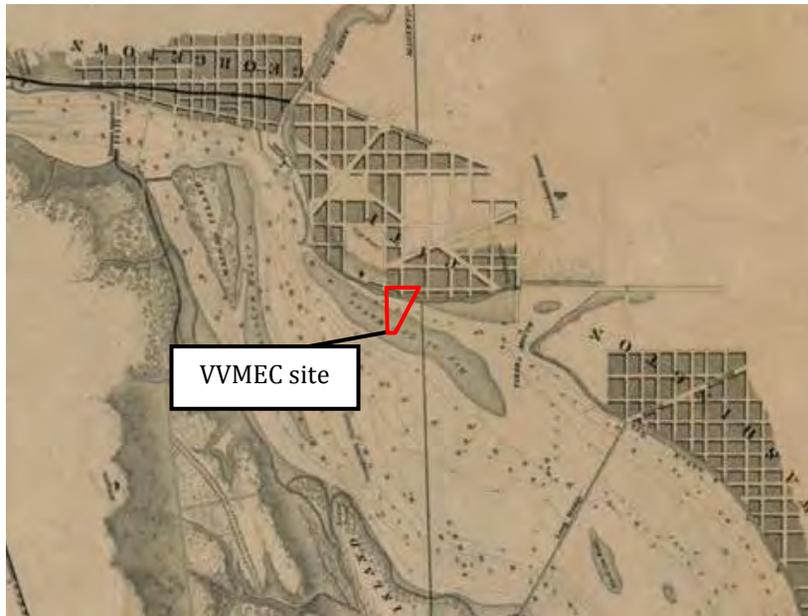


Figure 3-4: Detail of 1838 Nautical Chart

Source: USCGS, Office of Cost Survey Historic Map and Chart Collection

what is now Constitution Avenue, at the northeast corner of the present project area (Jessen and Palmer 2005). There was a wharf associated with this glassworks, and archeological materials possibly related to the glassworks were encountered during construction of the Vietnam Veterans Memorial in the early 1980s; these were likely secondary trash deposits that had been dumped from the wharf into the river.

In the 1830s, the C&O Canal, which then terminated at Georgetown, was extended along the eastern shore of the Potomac around Easby Point in order to provide a connection with the Washington City Canal. This extension of the C&O Canal passed through the present project site, as depicted in the 1857 Boschke map (Figure 3-5). The former Washington City Glass Works building is visible in this 1857 map at the northeast corner of the present project area.

In the 1880s, the U.S. Army Corps of Engineers began its program of dredging the Potomac and filling the land in the vicinity of the present project area to create an area of reclaimed marsh. Historic maps from this era depict the progression of this project. The 1902 McMillan Commission Plan advocated for a public park system, of which the newly reclaimed land along the Potomac would be a part. In addition, it presented a vision for extending the National Mall to the west to incorporate this new park along the Potomac where a monument to Lincoln would be situated, and further connections to Arlington Cemetery via a new monumental bridge. The Lincoln Memorial was built in the 1910s, with the landscaping of the surrounding areas and the installation of the reflecting pool completed by the early 1920s. It was dedicated in 1922.

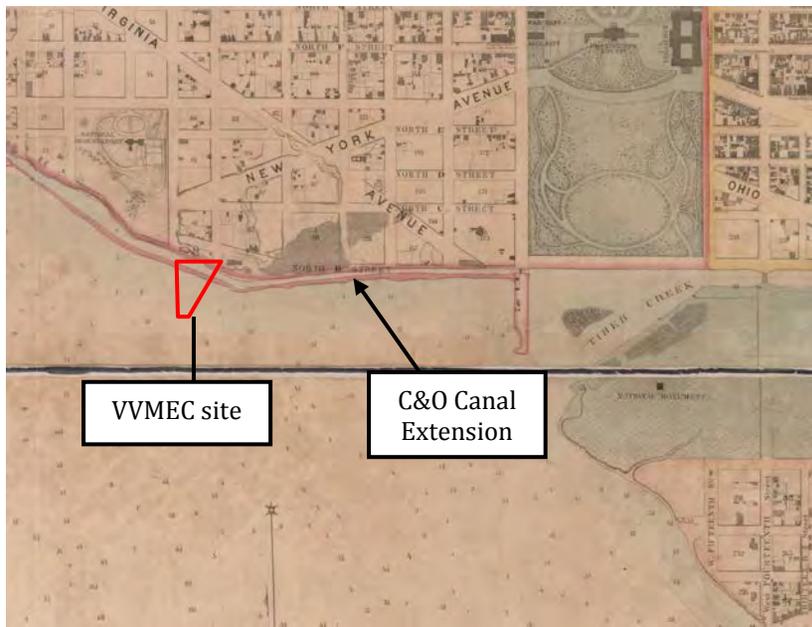


Figure 3-5: Map of Washington, A. Boschke, 1857
 Source: Library of Congress Geography and Map Division

For the most part, throughout the rest of the 20th century, the project site was used for recreational purposes. Portions of the park were home to polo fields, tennis courts, a golf course, and baseball fields. The reflecting pool was used for swimming, ice skating, and model sailboat racing. Passive forms of recreation such as picnicking and walking were also encouraged. A 1919-1921 Baist map (Figure 3-6) shows the project area as part of Potomac Park. This map also indicates the former location of the C&O Canal Line, which runs northwest to southeast across the northern portion of the project area and had presumably been filled by this time. Over the course of the 20th century, the Lincoln Memorial grounds, in particular, were increasingly used as a public forum and

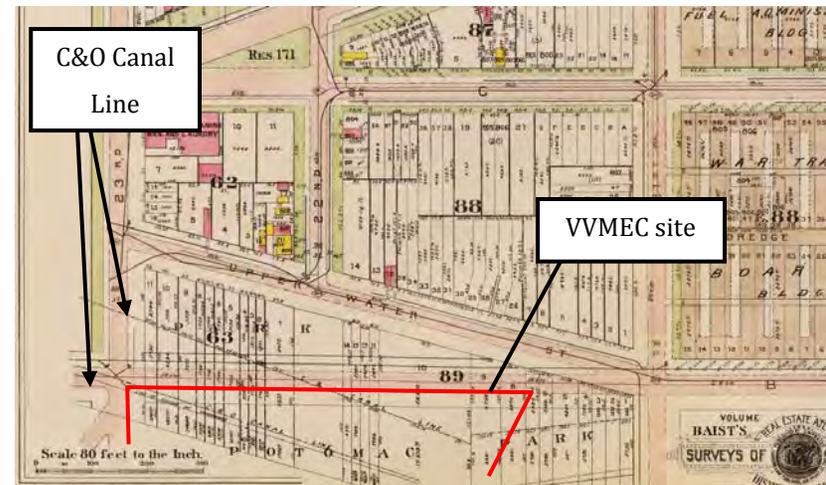


Figure 3-6: Baist Real Estate Map, 1919-1921
 Source: Library of Congress Geography and Map Division

the site of large demonstrations and public assemblies, particularly those associated with civil rights and freedom of speech.

During World War I, the Main Navy and Munitions Buildings had been constructed to the east of the project area for use by the War Department. More “tempo” were built during World War II. While intended as temporary, these buildings were not entirely removed from the Mall until the 1960s and 1970s.

Three new memorials were added to the west end of the Mall in the 1980s and 1990s: the Vietnam Veterans Memorial and the Vietnam Women’s Memorial on the north side of the reflecting pool, and the Korean War Memorial on the south side of the reflecting pool.

Previous Archeological Studies

An archeological records search for the project area was obtained from the DC SHPO in October 2011. Previously identified

archeological sites and previous investigations within a 0.5-mile radius of the present project area were reviewed. The eastern portion of the present project area has been subject to Phase IA study as part of the Potomac Park Levee project (LeeDecker and Baynard 2009). No archeological resources were recorded within the present project area as a result of that investigation. The study did not involve any subsurface testing and no other archeological investigations have been conducted within the present project area. Within one-half mile of the project area, six archeological sites have been recorded.

Archeological investigations conducted in the vicinity of the project site offer important information regarding the types of resources that might be present and the level of preservation that can be expected. The APE for the Phase IA investigation carried out in association with the Potomac Park Levee project overlaps partially with the present APE. This study reviewed historic documentation related to the 17th Street Wharf and focused on the potential for encountering remains associated with this wharf and with the Washington Monument Grounds site, a previously recorded archeological resource. Subsurface archeological testing will occur during the construction phase of the levee project. To the north of the project site, archeological deposits were encountered during the construction of the United States Institute of Peace in 2008 (Troccoli 2008). The artifacts recovered were likely a trash deposit from the late 19th and early 20th century Navy Hospital which operated on Navy Hill. Archeological investigations on Navy Hill have also resulted in the identification of a multi-component archeological site including a prehistoric component and a historic component, likely related to activities associated with the Naval Observatory and the Naval Hospital (Louis Berger Group 2005, 2007). To the east of the project site, along Constitution Avenue between 14th

Street and 15th Street, archeological survey, testing and monitoring have been conducted for the Smithsonian's National Museum of African American Heritage and Culture (LeeDecker et al. 2008; Mullen 2011b). This project site lies along what would have been the south bank of the Tiber Creek, the same channel where the Washington Canal was eventually constructed. These studies yielded prehistoric and historic assemblages, though the contexts largely appeared to be disturbed. Geoarcheological studies conducted for the National Mall Turf and Soil Reconstruction project identified tidal flat soils along the south bank of the Tiber Creek, which would have been part of the prehistoric and early historic period landscape (LeeDecker 2010). In addition, a possible loess deposit (wind-deposited silt) was identified in two of the test borings, and there is a possibility that an early prehistoric landscape surface could be buried beneath the loess. Geoarcheological testing conducted for the Washington Monument visitor screening facility revealed preserved A horizon beneath historic fill across much of the monument grounds (LeeDecker 2011). Investigations conducted as part of the Whitehurst Freeway Project near the confluence of Rock Creek with the Potomac River (approximately 1 mile north of the project area) resulted in the identification of several prehistoric sites along successive terraces on the east bank of Rock Creek. The results of this project demonstrate the potential for preservation of prehistoric remains beneath deep layers of fill; the prehistoric deposits at the Peter House site were preserved beneath 3 feet of fill, while one feature at Whitehurst Freeway site was identified beneath 8 feet of fill and another beneath 14 feet of fill (Knepper et al. 2006).

An archeological study was not conducted prior to the construction of the Vietnam Veteran's Memorial (VVM) to the east of Henry Bacon Drive, across the street from the present project site.

However, archeological materials are reported to have been encountered during construction of the VVM, and are thought to relate to the early 19th century Washington Glass Works, or to trash deposited into the river in this era (Potter, pers. comm., 2011).

Archeological Potential

Soils mapped at the site are classified as Udorthents, which are heterogeneous, earthy fill materials that have been placed atop poorly drained to somewhat excessively drained soils to provide sites for buildings, roads, recreation areas, and other uses. In the case of West Potomac Park, the introduction of these fills beginning in the 1880s was carried out by the US Army Corps of Engineers, which conducted dredging of the Potomac River to remove silt that threatened to block shipping channels. Dredged materials were deposited in marshy zones such as the project area. Approximately 621 acres of this reclaimed marsh and flats were designated as Potomac Park in 1897. Present surface elevations at the site are between 16 and 23 feet above mean sea level, with the location of the proposed structure at 19 to 20.5 feet. A geotechnical study conducted for VVMEC identified 8.5 to 13.5 feet of fill at the project site, underlain by alluvial deposits to a depth of 43.5 to 47 feet below current ground surface. Bedrock lies at approximately 45 to 55 feet. Sea level rise in the late Pleistocene and early to mid-Holocene (approximately 16,000 to 6,000 years before present) would likely have raised the grade of the Potomac River, flooding previously dry land and causing alleviation in the floodplain. Factors affecting potential site preservation at any location near the river are complex and it is difficult to accurately predict preservation, due to the nature of flood events that can either result in erosion or deposition.

Preliminary review of available information suggests that Native American use of the project area could have occurred throughout the periods of prehistory. The location of the project site in close proximity to the Potomac River and Tiber Creek would have afforded access to resources important to subsistence such as fish, shellfish, and waterfowl. Alluvial deposits could have led to the preservation of prehistoric archeological sites and features. Although deep fill is present at the site, ground disturbance proposed for the present project will extend below the depth of this fill. It is possible that prehistoric archeological deposits have been buried in alluvial deposits which lie beneath historic fill. Recent work for other projects along major waterways such as Whitehurst Freeway and the 11th Street Bridge have revealed preserved prehistoric resources beneath such fill. In addition, geoarchaeological testing to the east of the present project area has revealed preserved A horizon surface beneath historic fill.

In addition to the potential for encountering prehistoric archeological remains at the site, there is also potential for historic archeological resources. The project may contain archeological remains related to the 18th century settlement known as Hamburgh or Funkstown. The northern portion of the site may contain 19th century archeological remains related to the Commissioners Wharf, the Washington Glass Works, or the eastern extension of the C & O Canal. It is also possible that boat remains or archeological materials related to secondary refuse disposal in Tiber Creek could be encountered. The historic fill itself may contain 19th and early 20th century domestic trash. Finally, the site could contain archeological deposits related to its historic use for recreational activities as part of Potomac Park.

3.1.2 Historic Resources

This section documents historic resources, including historic structures, historic districts, and memorials. Although not all memorials within the Area of Potential Effect (APE) have been listed on the National Register either individually or as contributing resources to historic districts, they are treated similarly by the NPS.

L'Enfant Plan of the City of Washington

The project site is located immediately to the southwest of streets originally planned by Pierre Charles L'Enfant in the 18th century (Figure 3-7). The National Register Nomination for the L'Enfant Plan of the City of Washington encompasses both L'Enfant's 1791 Plan for Washington and the later McMillan Plan. L'Enfant's 1791 plan, one of the best American examples of a comprehensive Baroque city plan, defined the physical and symbolic character of the nation's capital through its arrangement of buildings, parks, roadways, and views. 23rd Street was a component of L'Enfant's orthogonal street grid. As planned by L'Enfant, 23rd Street ran from the Potomac River/E Street to P Street.

At the turn of the century, the McMillan Commission expanded on L'Enfant's Plan in a manner consistent with the City Beautiful movement, extending the National Mall to the west and terminating several visual axes with monuments (Figure 3-8). The McMillan Plan established Constitution Avenue (formerly north B Street) as a continuous east-west axis along the northern boundary of the Mall, altering the street pattern in the vicinity of the site.

The L'Enfant Plan of the City of Washington is listed in the NRHP. The nomination recognizes components of the McMillan Plan that

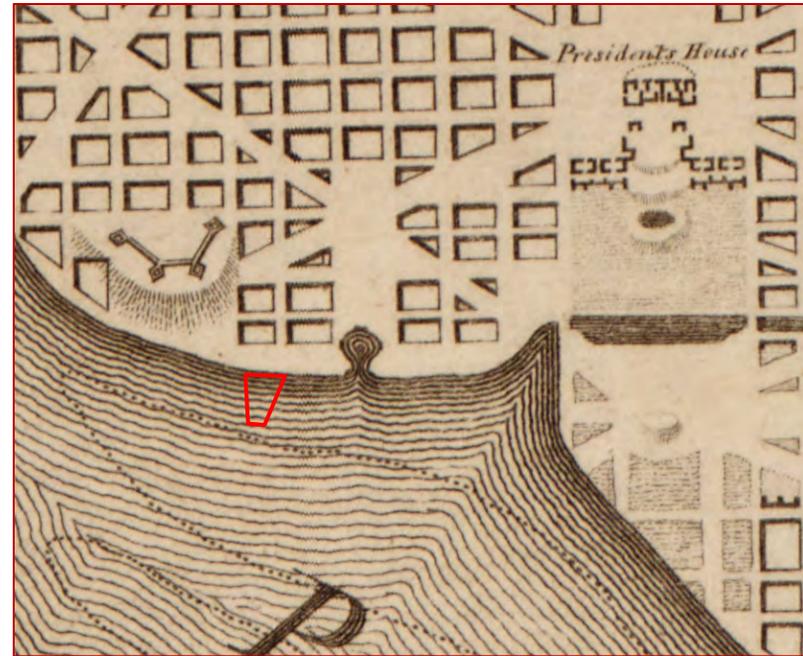


Figure 3-7: L'Enfant Plan as engraved by Andrew Ellicott, 1792

Source: *Library of Congress, Geography and Maps Division*

contribute to the L'Enfant Plan. Constitution Avenue is considered to be a Major Street in the Plan, and the vista along the avenue is a contributing vista. 23rd Street is considered to be a contributing street and the vista along the street a contributing vista. The Henry Bacon Drive roadway is also considered a contributing element.

Reservation 332 (West Potomac Park) is also a contributing element within the Plan. The site was originally conceived as a solid grass panel surrounded by rows of trees (as further discussed under the Lincoln Memorial Grounds in Section 3.1.3: Cultural Landscapes). Lincoln Memorial Circle and the Terminus of Rock Creek and Potomac Parkway are both contributing elements to the

L'Enfant Plan of the City of Washington due to their association with the McMillan Plan and the creation of Reservation 332.

According to the National Register nomination, the L'Enfant Plan of the City of Washington meets National Register Criterion A for its relationship with the creation of the new United States of America and the creation of a capital city. It also meets Criterion B because of its association with Pierre Charles L'Enfant and subsequent groups responsible for the planning and design of the city, and Criterion C as a representative example of a Baroque Plan with Beaux Arts modifications.

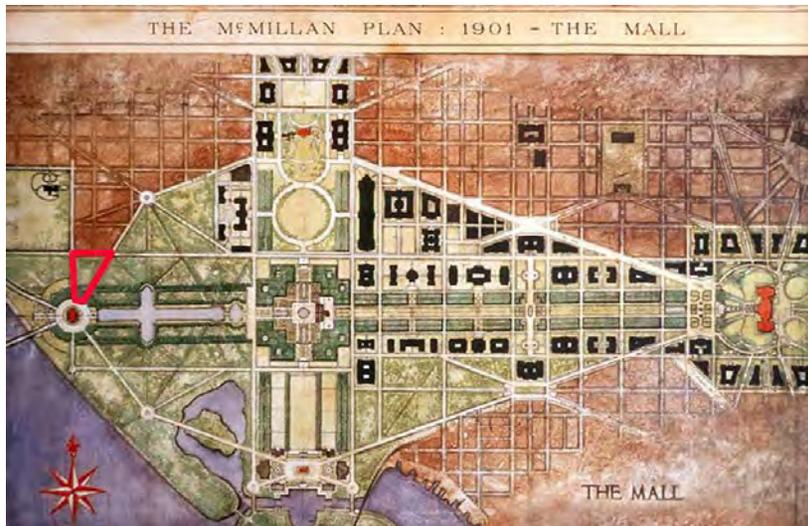


Figure 3-8: McMillan Plan

Source: NCPC

Arlington Memorial Bridge

Arlington Memorial Bridge and its related architectural, engineering, sculptural, and landscape features are significant as important elements in the Neo-classical urban design of the National Capital as it evolved during the first third of the 20th century. As a result, Memorial Bridge is listed on the National Register of Historic Places. Memorial Bridge symbolically links North and South in its alignment between the Lincoln Memorial and Arlington House, the Robert E. Lee Memorial. The adjacent Rock Creek and Potomac Parkway terminus, the Watergate steps, and monumental equestrian statuary join with the bridge in constituting a formal western terminus of the National Mall at the edge of the Potomac.



Figure 3-9: Arlington Memorial Bridge

Source: Library of Congress

American Pharmacists Association Building

Designed by John Russell Pope, the American Pharmacists Association Building, originally known as American Pharmacists Association Building, located north of the project site, is perched at the summit of a long sloping lawn, a position that mimics the siting of the Lincoln Memorial. The building was constructed in 1933-1934 and dedicated in May 1934. The American Pharmacists Association is listed in both the National Register of Historic Places and the DC Inventory of Historic Sites.



Figure 3-10: American Pharmacists Association Building
Source: Hartman Cox

Federal Reserve Board Building

Located northeast of the project site, the Federal Reserve Board was designed by Paul Cret in the “Stripped Classical” style and constructed in 1937. While the forms are classically inspired, nearly all stylistic ornament is omitted on the exterior of the building. The structure is surrounded on either side by landscaped gardens and broad marble walks. The Federal Reserve Board is listed in the DC Inventory of Historic Sites.



Figure 3-11: Federal Reserve Board Building
Source: AECOM

National Academy of Sciences

Under the direction of the Commission of Fine Arts, the National Academy of Sciences Building was the first of a series of buildings intended to frame the Lincoln Memorial, Constitution Avenue, and Potomac Park. Set topographically higher than the other buildings along Constitution Avenue, the National Academy of Sciences Building lacks the ceremonial garden space that the other buildings along Constitution Avenue possess. Designed by Bertram Grosvenor Goodhue, the building has both Neo-Classical Revival and Art Deco elements. A memorial to Albert Einstein, situated in an Elm and holly grove in the southwest corner of the Academy grounds, was unveiled in 1979 in honor of the centennial of the great scientist's birth. The National Academy of Sciences is located northeast of the project site and is listed in the National Register of Historic Places and the DC Inventory of Historic Sites.



Figure 3-12: National Academy of Sciences

Source: AECOM

Harry S. Truman Building

The original portion of the Harry S. Truman Federal Building, also known as the War Department Building, was designed in the Stripped Classical style with Art Moderne elements. To allow for expansion at a later date, the form was intentionally asymmetrical. The steel-framed building is clad in limestone and rises eight stories above the basement and sub-basement. A central spine connects a U-shaped configuration to the east with an E-shaped configuration to the west. The construction of the State Department Extension, completed in 1960, is reinforced concrete and was designed in the International style. The General Services Administration has determined that the building is eligible for the National Register of Historic Places.



Figure 3-13: Harry S. Truman Building

Source: GSA

Lockkeeper's House

The Lockkeeper's House is the only remnant of the C & O Canal Extension. The C & O Extension was built between 1832 and 1833 to connect the Washington City Canal with the C & O Canal. Envisioned by L'Enfant, the Washington City Canal was opened in 1815 and served as a major thoroughfare until the late 19th century. The Lockkeeper's House was constructed to house the Lockkeeper of the Canal, who collected the tolls and kept records of commerce on the canal. It was originally located near its present location but was moved in 1915 as 17th Street was extended across West Potomac Park. It was restored in the 1930s. Presently the building is used for park maintenance storage. It is listed in the DC Inventory of Historic Sites and the National Register of Historic Places.



Figure 3-14: Lockkeeper's House (prior to 2009 changes)

Source: NPS

Lincoln Memorial

The Lincoln Memorial stands at the foot of 23rd Street, NW, south of project site. Completed in 1922, the Lincoln Memorial was established as a tribute to President Abraham Lincoln and the nation he fought to preserve during the Civil War (1861-1865). The memorial was designed by Henry Bacon to resemble a Greek temple, with 36 Doric columns, representing the 36 states at the time of Lincoln's death. A 19-foot-tall statue of Lincoln, sculpted by Daniel Chester French, is sited in the center of the memorial chamber.

The Lincoln Memorial is significant as America's foremost memorial to the 16th President, as an original example of neoclassical architecture, and as the formal terminus to the extended National Mall in accordance with the McMillan Commission's plan for the Monumental Core of Washington. The Lincoln Memorial is listed in the National Register of Historic Places.



Figure 3-15: Lincoln Memorial
Source: *Encyclopedia Britannica*

Vietnam Veterans Memorial and Vietnam Women's Memorial

Towards the west end of Constitution Gardens, the Vietnam Veterans Memorial is set within a two-acre site. Dedicated in 1982, the memorial's design is starkly modern; two polished granite walls that meet and form a "V" bear the names of all the Americans killed or missing in action in Vietnam between 1963 and 1973. The design maintains the open feeling of the landscape through carefully engineered vistas connecting the site to the Washington Monument and the Lincoln Memorial. A flag, a figurative sculpture, and the In Memory Plaque have since been added to the area southwest of the memorial. The figurative sculpture is entitled "Three Servicemen" and features a Hispanic soldier, an African-American soldier, and a Caucasian soldier. The base of the flagstaff features the emblems of the five branches of the armed services.

The Vietnam Women's Memorial honors the women who served in Vietnam and was dedicated in 1993. It features a bronze sculpture of three nurses located on a terrace of granite pavers. The memorial faces across the lawn towards the Wall.



Figure 3-16: Vietnam Veterans Memorial
Source: AECOM, 2011



Figure 3-17: Vietnam Women's Memorial
Source: AECOM

World War II Memorial

On May 29, 2004, the World War II Memorial was dedicated at the east end of Reflecting Pool. On the site of the historic Rainbow Pool, the World War II Memorial was designed as a ring of pillars encircling a plaza and central pool. The pillars break at the east and west ends of the memorial so as not to obscure the historic vista between the Washington Monument and the Lincoln Memorial. The World War II Memorial honors the 16 million who served in the armed forces of the U.S., the more than 400,000 who died, and all who supported the war effort from home.



Figure 3-18: World War II Memorial
Source: Library of Congress

56 Signers Memorial

The Memorial to the 56 Signers of the Declaration of Independence was dedicated in 1984. Located on the small island in the Constitution Gardens lake, the memorial commemorates the 56 men who signed the Declaration. A wooden bridge provides access to the memorial and the last sentence of the Declaration of Independence is engraved at the entrance to the memorial. Each of the Declaration signers' signatures are incised on individual granite blocks and highlighted with gold leaf. The blocks create an arc that opens along a granite plaza out to the lake and to views of nearby memorials.



Figure 3-19: 56 Signers Memorial
Source: AECOM

Historic Districts

West Potomac Park Historic District

West Potomac Park encompasses approximately 400 acres of parkland, generally bounded by Constitution Avenue to the north, the Potomac River to the west, 17th Street and the banks of the Tidal Basin to the east, and the Potomac Railroad Bridge to the south. The parks were a primary feature of the McMillan Plan, a manifestation of the City Beautiful ideal of grand civic space. They were created through the reclamation of mudflats along the edge of the Potomac River. The original nomination for East and West Potomac Parks Historic District was prepared in 1972 and the district was accepted into the National Register of Historic Places in 1973. A revised nomination was prepared in 2001. Contributing elements within the Historic District include: the Lincoln Memorial and its grounds, the Reflecting Pool, the Rainbow Pool, the Dutch Elm trees that line the walkways along the Reflecting Pool, Constitution Gardens, the Vietnam Veterans Memorial, the Korean War Veterans Memorial, and Arlington Memorial Bridge.



Figure 3-20: Aerial view depicting a portion of West Potomac Park
Source: Library of Congress

Northwest Rectangle Historic District

Located north of the project site, the Northwest Rectangle encompasses the area bounded by Constitution Avenue to the south, 17th Street fronting the Ellipse to the east, and New York Avenue to North E Street, inclusive of Square 143 and the southern portion of Square 104 to 21st Street at Virginia Avenue where it extends west on South E Street and back to Constitution Avenue. Encompassing approximately 15 city blocks, the district is has clear visual boundaries on its east, west, and south sides.

The Public Buildings Commission was active in the development of this area. On May 25, 1926, the Commission was authorized to establish suitable approaches to the buildings, and to beautify and embellish their surroundings as nearly in harmony with the plans of L'Enfant as possible. Each of the buildings from 23rd to 19th Streets follows an established building line 246 feet from the curb of Constitution Avenue, and has a formal street front that includes a wide sidewalk and uniform tree planting space. This also conforms to the McMillan Commission's vision.

Architecturally, the buildings range in date from 1897 to 1975, illustrating the classically inspired architectural principles adopted by the federal government in the 20th century. Contributing buildings within the Northwest Rectangle include the American Pharmacists Association, the National Academy of Sciences, the Federal Reserve Board, the American Red Cross DC Chapter, the Civil Service Commission, the Harry S. Truman Building (War Department Building), the Public Health Service (now Interior South), the US Department of the Interior, the Corcoran Gallery of Art, the American Red Cross National Headquarters, the American Red Cross Administration, Memorial Continental Hall, Constitution

Hall, and Pan American Union (now Organization of American States). Other contributing elements include statues and several small parks. The Northwest Rectangle was determined eligible for listing in the National Register but is not yet listed.

3.1.3 Cultural Landscapes

The Lincoln Memorial Grounds

A 1996 Cultural Landscape Report for the Grounds of the Lincoln Memorial documents significant landscape elements and key views and vistas. According to the CLR, the grounds include the Lincoln Memorial Circle and Radial Roads, the Watergate Area northwest and west of the memorial, and the Reflecting Pool. The grounds have significance as an essential part of the McMillan Plan and as an important example of the landscape design of Frederick Law Olmsted, Jr.

The CLR also identifies elements of the landscape design as contributing features. The original 1916 planting plan for the radial roads and adjacent areas of Memorial Circle featured a double row of trees, planted in opposite position, on both sides of 23rd Street and Henry Bacon Drive. However, when these were implemented, the proposed double row of trees was scaled back to planting in alternative positions. Within the rows of trees, plans called for a grass panel.

For the outer portion of Memorial Circle, the plan showed a single circular band of trees in the grassy strip between the roadway and sidewalk. Outside the sidewalk, four bands of trees were to be planted. This plan was implemented in the eastern portion of the Memorial Circle, including the project site.

Over time, the original landscape design has changed. NPS has attempted to maintain the original planting plan for the radial road, but many trees have died due to Dutch elm disease. Disease-resistant varieties have been planted to replace some original trees. The existing open grass panel reflects the original design for the

project site. Figure 3-21 illustrates the existing vegetation in comparison to the historic planting plan.

The CLR identifies major and minor vistas that were implemented in the design of the Lincoln Memorial, as illustrated in Figure 3-22. The most prominent vista is the eastern axial vista from the steps of the Lincoln Memorial. This vista includes the Reflecting Pool, the Washington Monument, and the US Capitol, and is framed by allees of large Elm trees. Two minor vistas, one from the north-south midpoint of the Memorial north to 23rd Street and Washington Circle, and another from the east terrace up Henry Bacon Drive to B Street were developed along planted streets. A review of the 1932 planting plan shows that views across the project site were to be significantly screened by foundation plantings within the Lincoln Memorial Circle, or the street tree plantings along the outer edge of the circle. Instead, the vistas along the roadway corridors were emphasized. The planting plans accented the east façade, and with extensive shouldering plantings west of the memorial center line, the Mall vista to the west was closed by a green screen of hollies and magnolias. The plantings west of 23rd Street within Lincoln Memorial Circle were to serve as a visual terminus. As mentioned previously, although there is a single line of trees along the southern border of the sites, the 1932 planting plan called for multiple rows of trees along Memorial Circle. It should be noted that views between the Vietnam Veterans Memorial and the Lincoln Memorial are not considered to be contributing elements to the historic landscape.

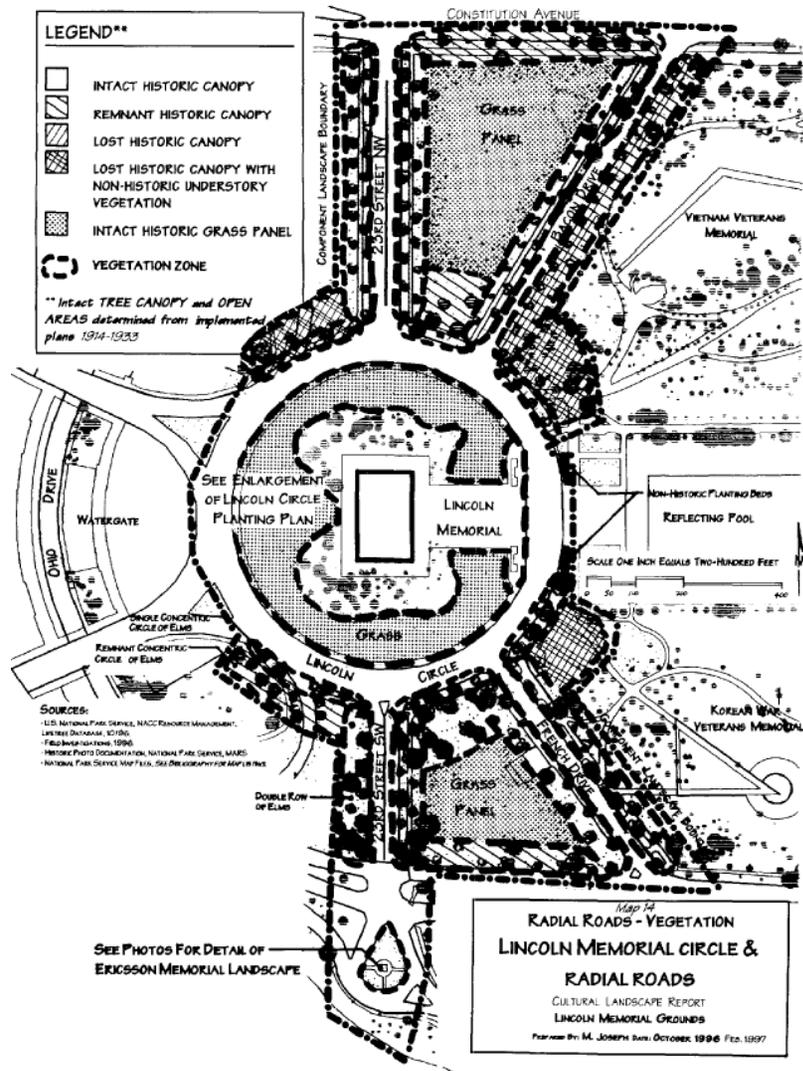


Figure 3-21: Existing condition of historic plantings
 Source: NPS, 1999

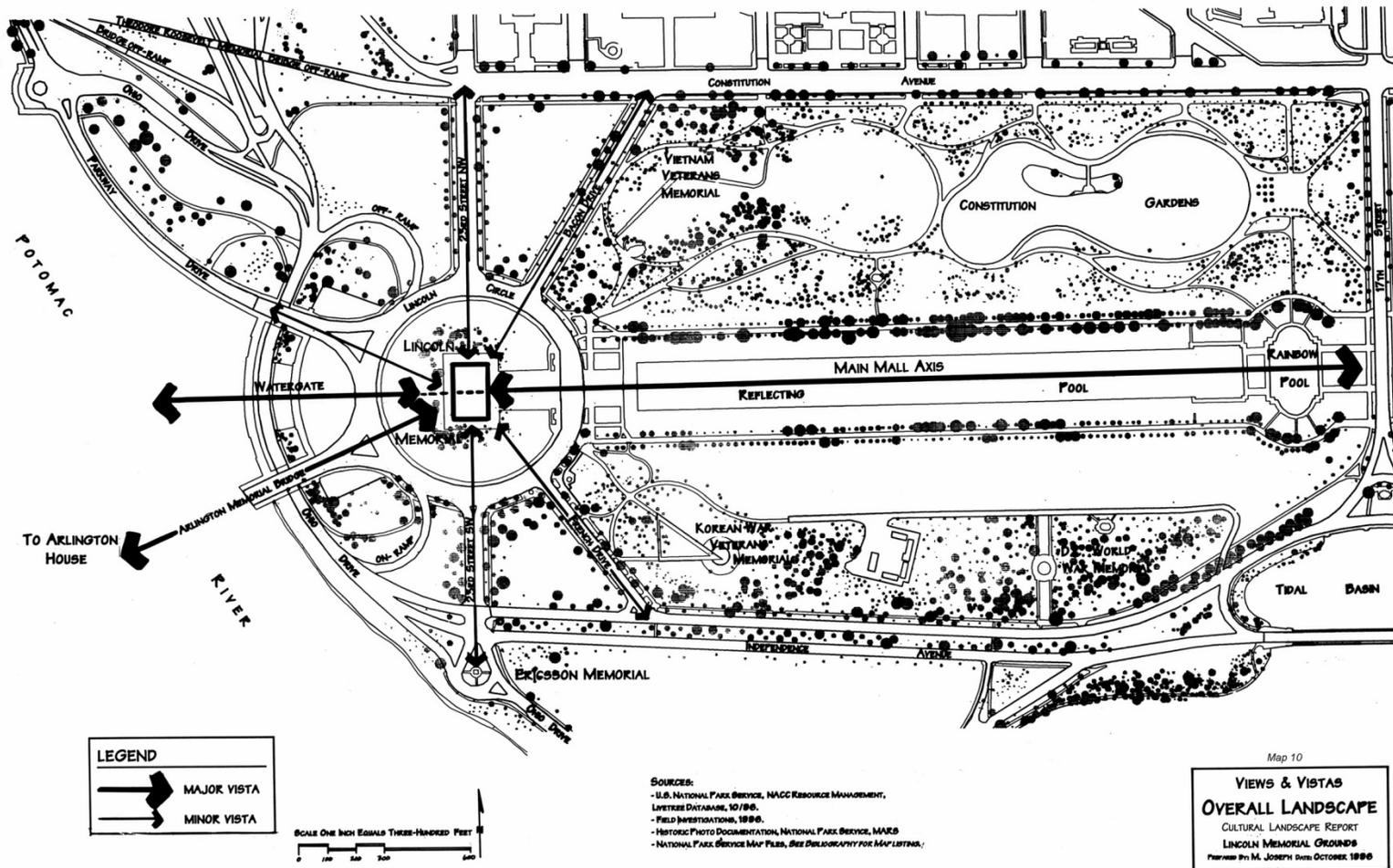


Figure 3-22: Major and Minor Vistas identified in the Lincoln Memorial Grounds Cultural Landscape Report
 Source: NPS, 1999

Constitution Gardens

Constitution Gardens is a 52-acre designed landscape located within West Potomac Park, east of the project site, and north of the Elm allee that frames the Reflecting Pool between 17th and 23rd Streets. Designed to provide quiet, intimate spaces, the landscape is characterized by winding paths that provide access to a combination of open grassy areas and dense groves of trees. The dominant feature of the gardens is a curvilinear-shaped lake with a small island in the center of it, located at the east end of the gardens. Towards the west end of Constitution Gardens, the Vietnam Veterans Memorial is set within a two-acre site. A flag, a figurative sculpture, and the Vietnam Women's Memorial are located in a treed area south of the memorial.



Figure 3-23: Constitution Gardens

Source: AECOM, 2011

Washington Monument

The Washington Monument was built in two campaigns between 1848 and 1884 as a memorial to George Washington. The massive, white marble clad Egyptian obelisk sits atop a grassy knoll in the heart of the city's Monumental Core. The monument grounds comprise approximately 106 acres and are bounded by 14th Street to the east, Constitution Avenue to the north, 17th Street to the west, and the Tidal Basin to the south.

The property was listed in the National Register in 1966. According to the nomination, the Washington Monument is significant as the nation's foremost memorial to George Washington, as a major example of 19th century Egyptian Revival architecture, and as a notable accomplishment in structural engineering. The monument and its landscaped grounds are central to the monumental core of the nation's capital. In addition to the monument and the grounds, the nomination identifies the Monument Lodge, the Survey Lodge, the Jefferson Pier Market, and the Sylvan Theater as contributing to the property's significance.



Figure 3-24: Washington Monument
Source: NPS, 2010

3.2 VISITOR USE AND EXPERIENCE

The existing site is used for active and passive recreation and as a source of refreshment by visitors. Visitors use the open space, including the ball fields, for organized recreation such as football, softball, or other games. Although ad-hoc games can occur, NAMA issues permits for organized active recreation activities.

Passive recreation also occurs at the site. The site offers a relatively quiet opportunity to view the Lincoln Memorial. The open space also offers the opportunity for rest, picnic, and other activities.

Visitors use the existing food service kiosk to buy refreshments and gifts. They also use the outdoor patio that surrounds the kiosk, taking advantage of the chairs and tables that are often available.

In addition to those using the project site, many more pass by it due to its presence on the National Mall and its location adjacent to Constitution Avenue. Beyond the project site, the National Mall hosts an estimated 25 million visits each year (NPS 2011). Special events, such as festivals and demonstrations, can draw hundreds of thousands of people to the National Mall. The adjacent Vietnam Veterans Memorial received approximately 4.5 million visits and the Lincoln Memorial received approximately 6 million visits in 2010 (NPS 2011a).

3.3 PARK OPERATIONS AND MANAGEMENT

The project site is under the jurisdiction of the National Mall and Memorial Parks (NAMA), which is part of the National Capital Region of the National Park Service (see Figure 3-25). NAMA manages various NPS units on the National Mall, which received approximately 25 million visits in 2010, and sites in the northwest section of Washington, DC that provide visitors with opportunities to commemorate presidential legacies; honor the courage and sacrifice of war veterans; and celebrate the United States commitment to freedom and equality. Included in NAMA are the Washington Monument, Lincoln Memorial, and Jefferson Memorial; World War II Memorial, Korean War Veterans Memorial, and Vietnam Veterans Memorial; and areas focusing on recreation, such as the National Mall and East and West Potomac Parks (NPS, 2010).

NPS manages and maintains over 1,000 acres in NAMA, including more than 80 historic structures and over 150 major named historic parks, squares, circles and triangles such as Dupont Circle, Farragut Square, and Columbus Plaza at Union Station. NAMA has employed an average of 378 full-time equivalent employees to manage its parkland since 1996 (NPS, 2010). Its management structure is divided into five divisions under the Office of the Superintendent: Administration, Facilities Management, Interpretation and Education, Permits Management, and Resource Management. Budgets are not assigned to specific memorials or areas of the park, but rather come as one appropriation. Operation and management activities range from interpretation to security to maintenance.

NPS does not currently have staff dedicated to the management of the project site. No ranger is stationed on site, although rangers are sometimes present as part of their established duties for the Lincoln Memorial and National Mall. Mowing and other landscaping activities for the site occur on a regular basis during the year as part of a coordinated program for multiple locations within NAMA. NPS currently has a contract with a private entity to operate and maintain the food service kiosk and patio. The proprietor independently provides outdoor seating.

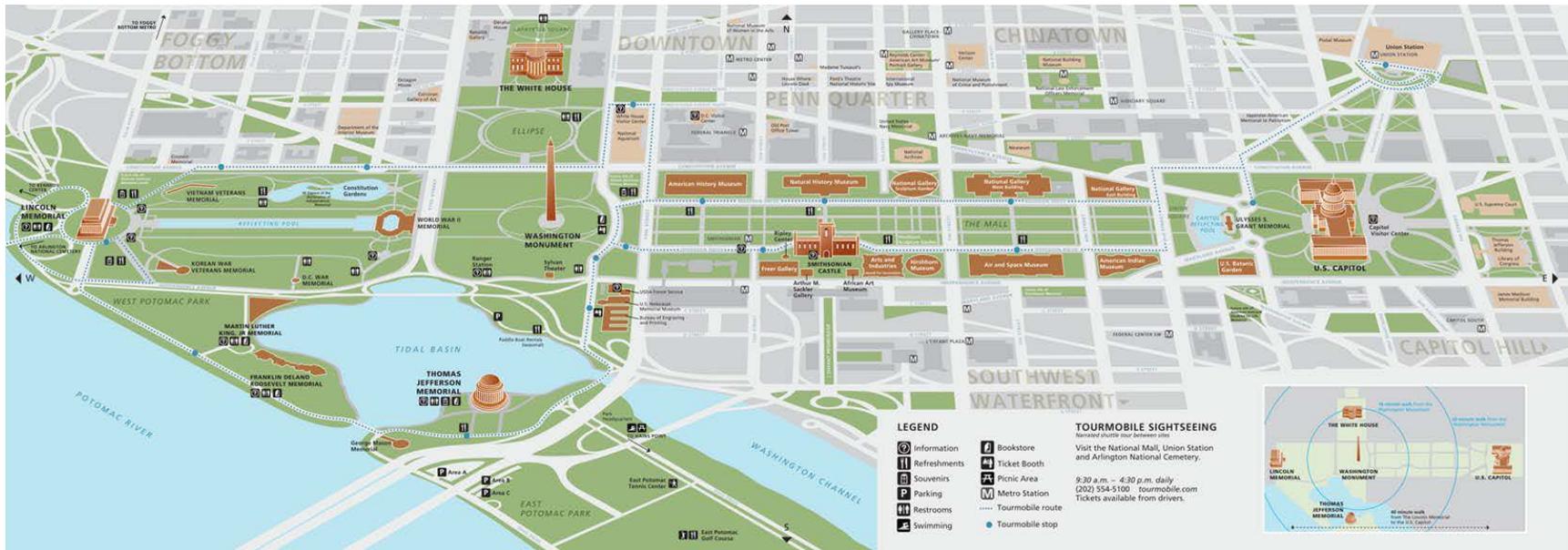


Figure 3-25: Map of the National Mall and Memorial Parks (National Mall portion of jurisdictional area)
 Source: NAMA, 2011

3.4 SOILS

The land comprising the project site is relatively flat. Surrounding elevations range from a maximum elevation of about 23 feet above mean sea level near the corner of Henry Bacon Drive and Lincoln Memorial Circle and to a minimum elevation of 17 feet above mean sea level at the intersection of 23rd Street and Constitution Avenue, near the Tidal Basin.

The soils present in the project site are primarily fill, having been placed over 100 years ago when the Tiber Creek valley was drained and filled. They are classified by the US Natural Resource Conservation Services (NRCS) as Udorthents, a general term which is used to describe soils that result from cut and fill activities. Such soils are generally heterogeneous in nature, with properties that are both inconsistent and unevenly distributed throughout the profile.

Site soils have very poor properties for most engineering applications. They tend to have variable drainage, medium to rapid runoff, and are generally subject to subsidence. They are highly compacted and continue to compact due to active foot traffic from various events and tourist activities. Water infiltration is low because of the compressed pore space. The bulk density of such soils has the potential to be equal to, or greater than, concrete. This is a common occurrence on the National Mall, where compaction is so great in some areas that the soil surfaces are considered impervious. Impervious surface, which is made up of the food service kiosk and sidewalks, comprises approximately 0.6 acres (11.5 percent) of the 5.2 acre site.

3.5 TRANSPORTATION

A variety of transportation options exist in the vicinity of the project site. Visitors can use public transportation, private automobiles and taxis, tour buses, and bikes to the site, in addition to walking. Most visitors to the site walk (57.7 percent), while others use a sightseeing service (12.5 percent), use Metrorail (9.5 percent), or arrive via a charter or school bus (9.3 percent) (NPS, 2003). Table 3-2 illustrates how visitors traveled to the nearby Vietnam Veterans Memorial. Although the data is approximately nine years old, it is estimated that only one major transportation improvement or reduction have been made during that time. The sightseeing services described here are no longer available at this time. It is assumed that these visitors would use the other modes of transportation in the same proportion as the overall visitor population. More specific information regarding transportation options is discussed below.

Table 3-2: How visitors traveled to Vietnam Veterans Memorial

Mode	Percentage Using Mode
Car	8.7%
Taxi	0.8%
Sightseeing Service	12.5%
Public Bus	1.4%
Subway (Metrorail)	9.5%
Walk	57.7%
Charter/School Bus	9.3%
Other	2.2%
Not specific	2.4%

Source: Washington, DC Visitor Transportation Study, 2003

Vehicular Traffic

The project area, served by a robust roadway network, is defined by Constitution Avenue (US-50) to the north, 23rd Street to the west and Henry Bacon Drive to the southeast. Roadways are classified according to their urban or rural setting, and the type of service they provide based on considerations such as connectivity, mobility, accessibility, vehicle miles traveled, average annual daily traffic, and abutting land use. The purpose of the roadway functional classification is to describe how traffic is channeled through the roadway. Roadway classification around the project, based on the DDOT/FHWA Functional Classification, is shown below. The latest available 2009 Average Daily Traffic (ADT) volumes are summarized in Table 3-3.

Table 3-3: Adjacent roadway classifications and traffic volumes

Roadway	No. of Lanes	Classification	ADT
Constitution Avenue (US-50)	6	Principal Arterial	34,100
23 rd Street	4	Principal Arterial	17,300
Henry Bacon Drive	4	Principal Arterial	10,900

Source: DDOT

- Constitution Avenue (US-50) is a six-lane undivided principal arterial which carries 34,100 vehicles per day. It runs in an east-west orientation and connects northeast Washington with Virginia, and serves as a commuter route. Constitution Avenue intersects with 23rd Street and Henry Bacon Drive. Both intersections are controlled by traffic signals and provide crosswalks for pedestrians.
- 23rd Street is a north-south four-lane undivided principal arterial with traffic volume of 7,300 vehicles per day. The roadway serves to connect the Foggy Bottom area to other arterial roads within Washington. The intersection of 23rd Street and Constitution Avenue is at the north side and the intersection with Lincoln Memorial Circle is at the south side. This intersection is also signalized and has pedestrian crosswalks.
- Henry Bacon Dr NW runs diagonally between its intersections with Lincoln Memorial Circle and Constitution Avenue. It is a 4-lane undivided principal arterial with traffic volume of 10,900 vehicles per day. Henry Bacon Drive connects to commuter routes between the District of Columbia and Virginia.

Tour Bus Access

The project site is surrounded by popular destinations, such as the Vietnam Veterans Memorial and the Lincoln Memorial. Many visitors to these destinations arrive by motorcoach. A designated loading and unloading area exists along southbound Henry Bacon Drive for up to six motorcoaches (Figure 3-27 and Figure 3-28). This parking area has rush hour restrictions with no standing. Additional loading unloading designated area is located along

Daniel French Drive with six spaces and along Constitution Avenue NW eastbound between 23rd Street and 17th Street NW with nineteen spaces. The nearest motorcoach parking is at the Washington Monument with eight curbside spaces.

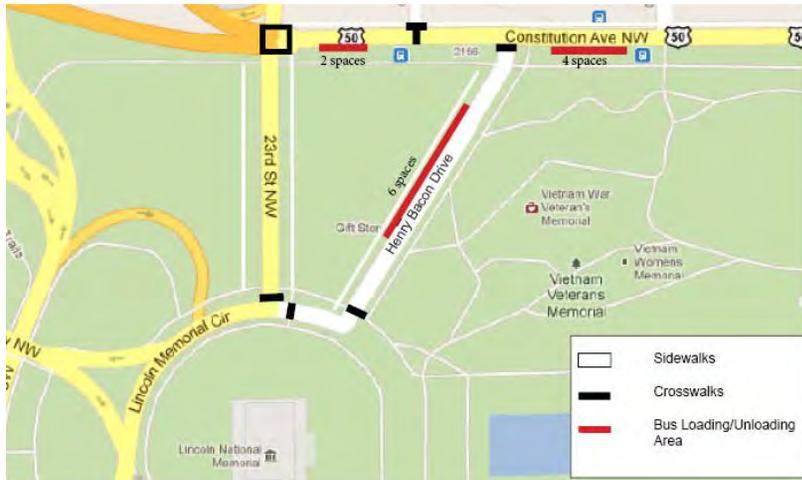


Figure 3-27: Transportation connections near the project site
 Source: AECOM

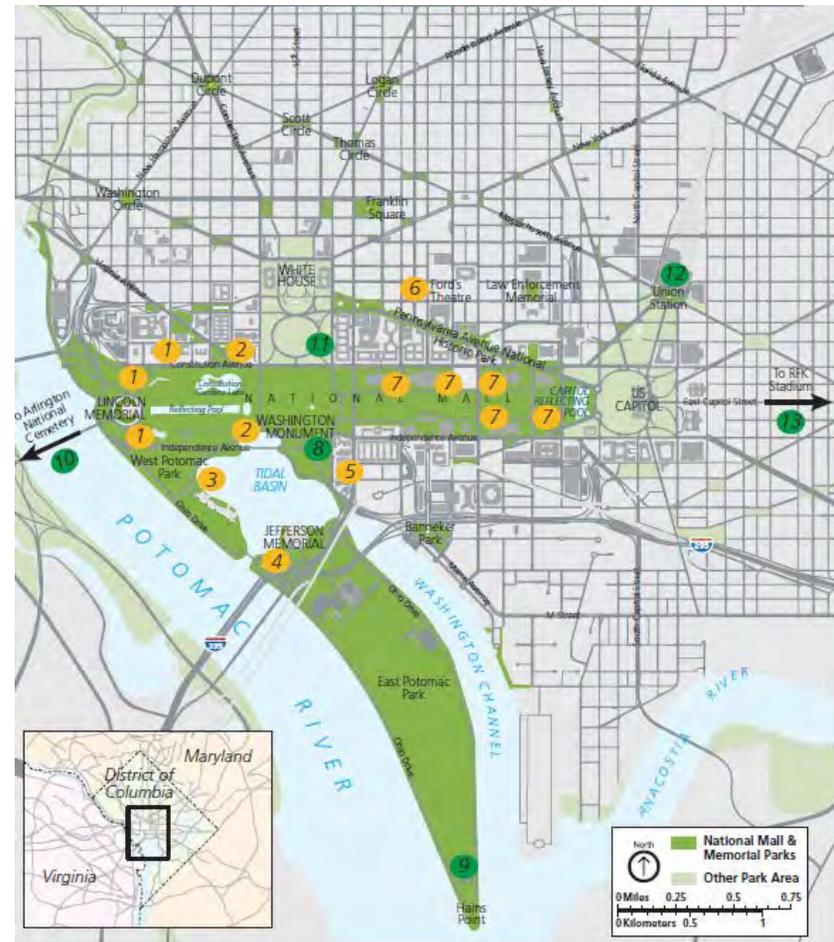


Figure 3-28: Tour bus access: National Mall and vicinity
 Source: NPS, 2011

Pedestrian and Bicycle Connections

The site is well-served by pedestrian and bicycle access, as shown in Figure 3-27. Existing sidewalks surround the site, providing connections to the National Mall and Constitution Avenue, and generally accommodate pedestrian volumes. The site is surrounded by three principal arterials with heavy traffic volumes. Pedestrian crosswalks provide access at all intersections around the site. Because each crosswalk has a traffic light with a walk signal, pedestrians can cross these busy intersections safely. The project site has good bicycle access with an off-road designated bikeway

trail along the east side of Henry Bacon Drive. This trail provides bicycle access through the Arlington Memorial Bridge to the Virginia trail system and to the east follows the south side of Constitution Avenue to the National Mall. Rock Creek Parkway and trails leading to Maryland are also accessible nearby. There are no bicycle racks at the project site.

3.6 VEGETATION

The existing vegetation in and around the project site is the result of more than 200 years of urban development and bears no resemblance to the native vegetation patterns characteristic of the Atlantic Coastal Plain and Piedmont provinces. The National Mall is primarily characterized by open lawns, which are a fundamental resource providing settings for buildings and memorials as well as space for recreational activities and special events. Lawns are bordered by trees intended to define specific viewsheds. The NPS maintains all vegetation, including turfgrass, trees, and other plantings.

Turfgrass

Turfgrass is a substantial component of the project site's vegetation. Grassy areas are very important to the National Mall visitor's experience. Generally, turfgrass is comprised of species that are not native to the temperate climate of Washington, DC. Only the most cold-tolerant warm-season turfgrasses and the most heat- and drought-tolerant cool-season turfgrasses can survive from year to year. Species typically planted in the National Mall area include hybrid Bermuda grasses (*Cynodon dactylon*), perennial ryegrass (*Lolium perenne*), turf-type tall fescue (*Festuca arundinacea*), and Kentucky Bluegrass (*Poa pratensis*).

Trees

Trees line the perimeter of the project site. A preliminary tree inventory conducted by NPS personnel in September 2011 found approximately 60 trees located on the project site, ranging from two to 60 inches in diameter at breast height (DBH) in size (NPS, 2011). Species include, but are not limited to, Elm (*Ulmus* spp.),

Maple (*Acer* spp.), Oak (*Quercus* spp.), and Sweetgum (*Liquidambar styraciflua*). The size and species distribution of the inventoried trees can be seen in Table 3-4 and Table 3-5.

Trees on the National Mall are considered intrinsic to the landscape and to the visitor's experience, and it is important to maintain them in a healthy condition. Typical stressors of urban trees include restricted growth space, soil compaction, heat stress, insects, disease, salt and other chemicals used for deicing, and vandalism. Large mature trees are generally more prone to these stressors than smaller young trees. Just under half (24) of the trees present on the project site are located in the grass strip between the sidewalk and the street curb. This strip is a less than optimal growing space, especially as trees become larger, requiring more space for their root systems. Trees in this strip are also exposed to high concentrations of deicing chemicals and more prone to physical damage from passing or parking vehicles.

Of the trees found on the project site, 80 percent are in the Elm genus (*Ulmus*). Large mature Elms are predominantly American Elms (*Ulmus americana*), with the occasional European Elm (*Ulmus x hollandica* spp.). American Elms are prone to several diseases. Dutch Elm Disease is a fungus that disrupts the vascular (water conducting) system of the tree and eventually leads to its death. Bacterial leaf scorch is another disease that, if left untreated, can lead to severe decline in tree health and eventually death. NPS has been working to develop disease-resistant Elms and uses such cultivars as replacement trees on the National Mall. Trees less than 10 inches DBH are likely to be such disease resistant cultivars, including the "Washington," "Princeton," and "Jefferson" Elms.

Table 3-4: Size distribution of trees found on the project site

Size Class	No. of Trees
2 to 12 inch d.b.h.	15
13 to 24 inch d.b.h.	23
25 to 36 inch d.b.h.	14
37 inch d.b.h. or greater	8
Total	60

Source: AECOM, 2011

Table 3-5: Species distribution of trees found on the project site

Species	No. of Trees
Elm (<i>Ulmus</i> spp.)	48
Sweetgum (<i>Liquidambar styraciflua</i>)	3
Maple (<i>Acer</i> spp.)	2
Oak (<i>Quercus</i> spp.)	2
Unknown Species	5
Total	60

Source: AECOM, 2011

3.7 UTILITIES

Utilities on and adjacent to the project site include sanitary sewer systems, water supply systems, stormwater management systems, and energy systems. This information is based on field survey data and record drawings.

Stormwater Management

Of the 5.2-acre site, approximately 26,010 s.f. (0.6 acre) is made up of impervious surfaces, such as the food service kiosk and perimeter sidewalks. The permeable surface of the site is open space. The project site drains generally to the northwest, following the contours of the land. After a storm event, precipitation that is not intercepted by the tree canopy or does not infiltrate into the soil drains into the Combined Sewer System (CSS) of Washington, DC. Developed before 1900, the CSS conveys both sanitary sewage and stormwater in one piping system. During normal dry weather conditions, sanitary wastes collected in the CSS are diverted to the Blue Plains Advanced Wastewater Treatment Plant through facilities called regulators. During periods of significant rainfall, the capacity of a combined sewer may be exceeded. When this occurs, the regulators are designed to let the excess flow, which is a mixture of stormwater and sanitary wastes, to be discharged directly into a natural water body, such as a river or creek. The project site is located in the Easby Point CSS drainage area. During periods of significant rainfall, the drainage area outfalls to the Potomac River, just south of the Roosevelt Bridge (DC Water, 2011).

The District's combined sewer interceptor lines lead to the Blue Plains Treatment Facility where combined stormwater and sewage are treated to standards in accordance with the Facility's National Pollutant Discharge Elimination System (NPDES) permit prior to

release as treated effluent to the Potomac River. In general, pollutants such as fuel, oil, antifreeze, grease from moving and parked vehicles, sediment from disturbed or exposed soil, and solid waste collected in catch basins or storm drains can contaminate storm water runoff. Therefore, contaminated stormwater can adversely affect the treatment process at the Blue Plains Facility.

Currently, there are no stormwater detention facilities on the project site. Stormwater is collected through numerous stormwater drains along the curbside of the roadways adjacent to the site, and discharged either to the District's combined storm and sanitary sewer system, or directly to the Potomac River.

Sanitary Sewer Systems

DC Water provides wastewater management in the District of Columbia that includes the collection and treatment of wastewater (sewage) and the discharge of treated effluent to the Potomac River. The project site is part of the combined sewer system, which collects both sewage and stormwater. The eight-inch sanitary sewer line runs along Henry Bacon Drive and over Lincoln Memorial Circle and Constitution Avenue. Wastewater generated at the site by the food service kiosk is instead piped directly to the Blue Plains Wastewater Treatment Plant.

Geothermal Energy

A geothermal field is located in the southern portion of the site, west of the food service kiosk. The field is made up of four lines of boreholes, totaling 16 wells. This was originally established as part of a pilot project to heat the food service kiosk, and continues to operate for these purposes.

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4.0 ENVIRONMENTAL CONSEQUENCES

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4.1 GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURING EFFECTS BY RESOURCE

This Environmental Consequences chapter analyzes both beneficial and adverse impacts that would result from implementing the alternatives considered in this EA. This chapter also includes definitions of impact thresholds (e.g., negligible, minor, moderate, and major), methods used to analyze impacts, and the analysis used for determining cumulative impacts. As required by CEQ regulations implementing NEPA, a summary of the environmental consequences for each alternative, which can be found in Chapter 2: Alternatives, is provided in Table 2-1. The resource topics presented in this chapter, and the organization of the topics, correspond to the resource discussions contained in Chapter 3: Affected Environment of this EA.

General Methodology for Establishing Impact Thresholds and Measuring Effects by Resources

The following elements were used in the general approach for establishing impact thresholds and measuring the effects of the alternatives on each resource category:

- General analysis methods as described in guiding regulations, including the context and duration of environmental effects;
- Basic assumptions used to formulate the specific methods used in this analysis;
- Thresholds used to define the level of impact resulting from each alternative;

- Methods used to evaluate the cumulative impacts of each alternative in combination with unrelated factors or actions affecting park resources; and
- Methods and thresholds used to determine if impairment of specific resources would occur under any alternative.

4.1.1 General Analysis Methods

The analysis of impacts follows CEQ guidelines and Director's Order 12 procedures (NPS, 2001) and is based on the underlying goal of providing long-term protections, conservation, and restoration of native species and cultural landscapes. This analysis incorporates the best available scientific literature applicable to the region and setting, the species being evaluated, and the actions being considered in the alternatives.

As described in Section 1, NPS created an interdisciplinary science team to provide important input to the impact analysis. For each resource topic addressed in this chapter, the applicable analysis methods are discussed, including assumptions and impact intensity thresholds. Impacts described in this section are direct unless otherwise indicated.

4.1.2 Basic Assumptions

As stated above, the analysis of impacts follows CEQ guidelines and Director's Order 12 procedures (NPS, 2001) and incorporates the best available scientific literature applicable. However, applicable literature is not always available. In such cases, analysis may require assumptions of specific conditions. Assumptions used for

analysis in this EA are identified and explained for each resource, as needed.

4.1.3 Impact Thresholds

Determining the impact thresholds is a key component in applying NPS *Management Policies* and Director's Order 12. These thresholds provide the reader with an idea of the intensity of a given impact on a specific resource. The impact threshold is determined primarily by comparing the effect to a relevant standard based on applicable or relevant/appropriate regulations or guidance, scientific literature and research, or best professional judgment. Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document. Intensity definitions are provided throughout the analysis for negligible, minor, moderate, and major impacts. In all cases, the impact thresholds are defined for adverse impacts. Beneficial impacts are addressed qualitatively.

Potential impacts of the action alternatives are described in terms of type (beneficial or adverse); context; duration (short-or long-term); and intensity (negligible, minor, moderate, and major). Definitions of these descriptors include:

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.

Context: The affected environment within which an impact would occur, such as local, park-wide, regional, global, affected interest, society as a whole, or any combination of these. Context is variable and depends on the circumstances involved with each impact topic. As such, the impact analysis determines the context, not vice versa.

Duration: The duration of the impact is described as short-term or long-term. Duration is variable with each impact topic; therefore, definitions related to each impact topic are provided in the specific impact analysis narrative.

Intensity: Because definitions of impact intensity (negligible, minor, moderate, and major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed.

4.1.4 Cumulative Impacts Analysis Method

The CEQ regulations to implement NEPA require the assessment of cumulative impacts in the decision-making process for federal actions. 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, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7). As stated in the CEQ handbook, “Considering Cumulative Effects” (1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected and should focus on effects that are truly meaningful. Cumulative impacts are considered for all alternatives, including the No Action Alternative.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects and plans at NAMA and, if applicable, the surrounding area. Table 4-1 summarizes these actions that could affect the various resources at the site, along with the plans and policies of both the park and surrounding jurisdictions, which were discussed in Section 2. Additional explanation for most of these actions is provided in the narrative following the table.

The analysis for cumulative impacts was accomplished using four steps:

Step 1: Identify Resources Affected. Fully identify resources affected by any of the alternatives. These include the resources addressed as impact topics in Sections 3 and 4 of this document.

Step 2: Set Boundaries. Identify an appropriate spatial and temporal boundary for each resource. The temporal boundaries are noted at the top of Table 4-1, and the spatial boundary for each resource topic is listed under each topic.

Step 3: Identify Cumulative Action Scenario. Determine which past, present, and reasonably foreseeable future actions to include with each resource. These are listed in Table 4-1 and described below.

Step 4: Cumulative Impact Analysis. Summarize the impacts of other actions, plus impacts of the proposed action to arrive at the total cumulative impact. This analysis is included for each resource in Section 4.

Table 4-1: Summary of Cumulative Projects

Impact Topic	Study Area	Present Actions	Future Actions
Cultural Resources: Archeology	Area of Potential Effect (APE)	National Mall Plan, Mall Turf Rehabilitation, Potomac Park Levee (Phase 1), perimeter security projects within the nation's capital	National Museum of African American History and Culture, Redesign of Union Square, Sylvan Theatre Area, and Constitution Gardens, Potomac Park Levee (Phase 2)
Cultural Resources: Historic Resources	APE	Lincoln Memorial Reflecting Pool and Grounds Rehabilitation, National Mall Plan, Potomac Park Levee (Phase 1)	Redesign of Constitution Gardens, Potomac Park Levee (Phase 2), Arlington Memorial Bridge Repairs
Cultural Resources: Cultural Landscapes	APE	Lincoln Memorial Reflecting Pool and Grounds Rehabilitation, National Mall Plan	Redesign of Constitution Gardens
Visitor Use and Experience	NAMA	National Mall Plan, Lincoln Memorial Reflecting Pool and Grounds Rehabilitation, Mall Turf Rehabilitation, National Gallery of Art Renovation	National Museum of African American History and Culture, Redesign of Union Square, Sylvan Theatre Area, and the Constitution Gardens; President's Park South improvements; Washington Monument Security Screening; Jefferson Memorial Vehicular Security Barriers, Arlington Memorial Bridge Repairs, Dwight D. Eisenhower Memorial; American Veterans Disabled for Life Memorial; National Museum of Women's History; National Museum of the American Latino

Impact Topic	Study Area	Present Actions	Future Actions
Park Operations and Management	NAMA	National Mall Plan, Potomac Park Levee (Phase 1), Mall Turf Rehabilitation, Lincoln Memorial Reflecting Pool and Grounds Rehabilitation	Eisenhower Memorial, American Veterans Disabled for Life Memorial, Jefferson Memorial Vehicular Security Barriers, Potomac Park Levee (Phase 2), Washington Monument Security Screening, President’s Park South improvements, Redesign of Union Square, the Sylvan Theater Area, and Constitution Gardens
Transportation: Traffic	Adjacent roadway and pedestrian intersections within two blocks of project site	Constitution Avenue Street Improvements	Arlington Memorial Bridge Repairs
Soils	Adjacent sites	Potomac Park Levee (Phase 1)	Redesign of Constitution Gardens
Vegetation	Adjacent sites	Potomac Park Levee (Phase 1)	Redesign of Constitution Gardens
Water Quality	Watershed	Potomac Park Levee (Phase 1)	
Utilities	Adjacent sites	Potomac Park Levee (Phase 1)	

Descriptions of Cumulative Projects

American Veterans Disabled for Life Memorial: The American Veterans Disabled for Life Memorial is planned for a two-acre landscaped parcel one block east and north of the Switzer Building. Bordered by 2nd Street, Washington Avenue, and ramps to I-395, the memorial will include a reflecting pool, treed walkways, and a landscaped area, all with commanding views of the U.S. Capitol Building.

Dwight D. Eisenhower Memorial: The Dwight D. Eisenhower Memorial will be established at a four-acre site bounded by Independence Avenue and 4th and 6th Streets, SW, and the Lyndon Baines Johnson Building. The project will establish a memorial, including the realignment and closure of Maryland Avenue to vehicular traffic, provide a visitor serves facility, and transfer land from the U.S. General Services Administration and the District Department of Transportation to NPS.

National Museum of African American History and Culture: The Smithsonian Institution is planning to establish and construct a museum dedicated to African American History and Culture on a five-acre site at the southwest intersection of Constitution Avenue and 14th Street NW. Depending upon the final design, the museum would be approximately five levels above ground with two levels below ground. Access points would be from Constitution Avenue to the north and from the National Mall to the south.

National Mall Plan: The NPS's National Mall Plan lays out management policies and strategies to restore the National Mall. It focuses on cultural resources, visitor circulation, natural resource

protection, visitor amenities, health and public safety, and park operations.

National Women's History Museum: This private institution is planning to establish and construct a museum dedicated to reclaiming women's history and creating an accurate historical record inclusive of women at the intersection of Independence Avenue and 12th Street SW.

Potomac Park Levee, Phases 1 and 2: This project would introduce an improved levee system in the area between 23rd Street and 17th Street and along the north side of the Reflecting Pool. At 17th Street, just south of Constitution Avenue, a closure structure would be built with abutments that support posts and panels that would be erected during a flood emergency. At 23rd Street and along the Reflecting Pool, existing low spots in the levee would be filled and brought to an elevation that complies with USACE standards.

Lincoln Memorial Reflecting Pool and Grounds Rehabilitation: This project would rehabilitate and enhance the infrastructure, circulation, and accessibility around the Lincoln Memorial east plaza. At the Reflecting Pool, upgrades to the structural and water systems would improve its functionality and sustainability and formalize walkways along the north and south edges of the pool. Site furnishings throughout the project area would be refurbished and reconfigured.

Constitution Avenue Street Improvements: Constitution Avenue between 23rd and 15th Streets would be rehabilitated; streetscape improvements would introduce new street lighting and storm sewer upgrades.

National Aquarium Renovation: The National Aquarium is located in the Herbert C. Hoover Building, which is currently under renovation. The improvements would relocate the Aquarium's entrance to Constitution Avenue. It would also improve the quality of exhibits and facilities.

National Museum of the American Latino: This organization has preliminarily identified four sites as potential locations for this future museum: the Yates Building and South Monument, near the intersection of 14th Street and Independence; the Witten Building on Independence Avenue, currently home to the USDA; the Smithsonian Arts and Industries Building along Independence Avenue; and a site at the U.S. Capitol Grounds. The museum would be approximately 300,000 to 350,000 square feet of building space.

Mall Turf Rehabilitation: NPS seeks to improve the vegetation and soil on the Mall by removing and replacing the existing soil and irrigation system in portions of the Mall and installing new curb and gutter profiles around turf panels.

Jefferson Memorial Vehicular Security Barrier: NPS proposes the installation of permanent vehicle barriers and security monitoring at the Jefferson Memorial. This would replace the temporary concrete jersey barriers around the Memorial and the parking area that was closed to vehicular traffic in 2001 to provide security to the Memorial and to protect its visitors and staff.

Washington Monument Security Screening: NPS proposes to replace and improve the existing visitor screening facility at the base of the Washington Monument, replacing the existing temporary facility and improve the overall security of the Monument in a manner that

maintains and preserves the visitor experience and cultural landscape of the Washington Monument Grounds.

Redesign of Union Square, Sylvan Theater Area, and Constitution Gardens: These projects building on the foundation of the National Mall Plan, which called for improvements to these spaces. NPS seeks to redesign Union Square as a symmetrical and formally laid out civic square that is flexible and suitable for multiple uses, including large First Amendment demonstrations and national celebrations, as well as general tourism. The redesign of the Sylvan Theater area would include a multi-purpose entertainment facility. For Constitution Gardens, the improvements would include upgrading the pedestrian circulation system, improving soils, reconstructing the lake to be self-sustaining, constructing a flexible performance space, and adding a multipurpose visitor facility that would coordinate with the Potomac Park levee and plans for the canal Lockkeeper's House, which may be relocated from 17th Street and Constitution Avenue.

President's Park South Improvements: Plans are currently under development for President's Park South, located south of the White House and managed by NPS. The designs will include landscape and infrastructure changes to the area that respond to the proposed street closures and re-design of security elements to preserve the iconic historic landscape that is the White House and its environs and an important destination for visitors.

Arlington Memorial Bridge Repairs: The NPS proposes to address the need for increased load carrying capacity. As a result, the U.S. Department of Transportation proposes to repair existing support columns and beams.

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4.2 CULTURAL RESOURCES

4.2.1 Archeological Resources

As archeological resources exist essentially in subsurface contexts, potential impacts are assessed according to the extent to which the proposed alternatives would involve ground disturbing activities such as excavation or grading. In the absence of a technical study to support the determination of archeological sensitivity, the analysis presented here was conducted based on limited archival research, a review of previous archeological studies, consideration of the proposed design concepts, and other information provided by NPS.

Potential effects to historical archeological resources are assumed to be local to the Washington, DC area, unless identified as regional within the analysis. Potential effects to prehistoric archeological resources are assumed to have regional impacts, unless otherwise identified in the analysis in this document.

Study Area

The APE for archeological resources is the 5.2-acre Project Site, as defined in Figure 3-1. It is the roughly triangular shaped area bound by 23rd Street to the west, Constitution Avenue to the north, Henry Bacon Drive to the east, and Lincoln Memorial Circle to the south.

Impact Thresholds

A proposed alternative is considered to have an impact on archeological resources when it results in the whole or partial destruction of the resource. The impact thresholds for archeological resources outlined here take into account both the degree to which

the alternative has the potential to destroy an archeological resource and the degree to which the losses could be mitigated through strategies such as archeological data recovery or preservation in place.

Under Section 106 of the National Historic Preservation Act (NHPA), an undertaking must be evaluated for its effects on resources eligible for listing on the National Register of Historic Places (NRHP). Resources can meet four eligibility criteria, and must also be found to have sufficient integrity. No archeological resources have been identified within the project area to date. The impacts discussion is therefore based on a preliminary assessment of archeological potential and not on known archeological resources.

- *Negligible.* The impact is barely measurable, with no perceptible adverse or positive consequences. Under Section 106, this would be considered *no adverse effect*.
- *Minor.* A minor adverse impact on archeological sites with the potential to yield important information in prehistory or history is detectable and measurable, but does not diminish the overall integrity of the resource. For purposes of Section 106, a determination of minor impact would be considered *no adverse effect*.
- *Moderate.* A moderate adverse impact is sufficient to cause a noticeable change, substantially affecting archeological sites with the potential to yield information, even if most of the resource can be avoided, and resulting in loss of overall integrity. For purposes of Section 106, a determination of moderate impact would be considered an *adverse effect*.

- *Major.* A major adverse impact consists of highly noticeable disturbance, degradation, or destruction of an archeological resource that results in the loss of most or all of the site and its potential to yield important information. For the purposes of Section 106, a determination of major impact would be considered an *adverse effect*.
- *Beneficial Impacts.* The site would be actively stabilized or preserved in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to accurately depict its form, features, and character as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be no adverse effect.
- *Duration.* All impacts to archeological resources are considered to be long-term since they result in the loss of non-renewable cultural resources.

Archeological Impacts of No Action Alternative

Under the No Action Alternative, there would be no ground-disturbing activities on the site as the VVMEC would not be constructed. Thus, there would be no direct or indirect impacts to archeological resources and there would be no adverse effect under Section 106.

Cumulative Impacts

With no ground-disturbing activities on the site under the No Action Alternative, there would be no cumulative impacts to archeological resources.

Conclusion

Under the No Action Alternative, there would be no ground disturbing activities on the site as the VVMEC would not be constructed. Thus, there would be no direct, indirect, or cumulative impacts to archeological resources and no adverse effect under Section 106.

Archeological Impacts of Alternative 1

Under Alternative 1, the underground structure for the Memorial Center would be located near the Memorial Center of the project site. The approach to the building would include stairs and linear ramps and paths. The limits of mass excavation for the structure would be 30.4 feet, with an additional 5 feet of excavation required for slabs, sump pumps, and elevator pits. Excavation for the Memorial Center is planned to make use of a slurry-wall system. This method would require excavation of a 3-foot wide trench at the perimeter of the limits of disturbance for the building to the depth of bedrock. This is estimated to be an additional 13 feet below the depth of excavation otherwise required for the building and slabs. During construction, the trench would be filled with a bentonite slurry mix which would ensure adjacent soils do not collapse into the excavation. In addition, this would limit groundwater from entering the project site. Later, cast-in-place concrete would be pumped into the trench and the slurry mix would be pumped out. Alternative 1 would also include the installation of a new geothermal field to serve the Memorial Center, which would include 83 wells. The installation of these geothermal wells would require drilling 6-1/4" boring holes in each well location to a depth of 300 feet. The wells would be positioned around the exterior of the Education Center, with a spacing of 20 feet between boring holes.

At the current time, impacts to archeological resources cannot be fully evaluated because an archeological study has not been conducted, and no archeological sites have yet been identified. Possible impacts to archeological resources could result from ground disturbance related to construction of the Memorial Center, excavation for the slurry-wall system, drilling for geothermal wells, or landscaping components. Based on archival research, there is

potential for moderate impacts to archeological resources, constituting an adverse effect under Section 106.

Adverse effects on historic properties, including archeological resources, would be evaluated and mitigated through the Section 106 process, guided by the MOA, which would include stipulations to ensure an appropriate level of archeological documentation prior to project construction. These stipulations would include a phased approach to the identification and evaluation of archeological resources, beginning with geoarcheological consultation. Mitigation of adverse effects would be accomplished by archeological documentation and/or in-place preservation, followed by publication of results to the scientific community and the public. The terms of the MOA would be determined in consultation with DC SHPO, VVMF, NPS, and NCPC, and all work would follow the "Guidelines for Archaeological Investigations in the District of Columbia" (1998, as amended), the "Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation" (1983), and Director's Order 28: Cultural Resource Management.

Cumulative Impacts

To the extent that they involve ground disturbing activities in areas of archeological sensitivity, several past, current, and future projects have the potential to impact archeological resources in the Nation's Capital. However, it is unlikely that the present project would contribute to cumulative impacts to archeological resources.

The Potomac Park Levee project is being conducted in an area with an identified archeological site, a prehistoric site on the Washington Monument grounds from which artifacts were collected in the 19th century. In addition, this project is in the location of the historic 17th Street Wharf, evidence of which may be preserved subsurface.

Further archeological investigations for the levee project are being conducted as part of the early phases of construction so that it can be determined whether the physical remains of these resources are preserved within the project footprint. In addition, Phase 2 of the levee project involves construction of embankments southwest of the intersection of 23rd Street and Constitution Avenue, in the vicinity of the present project area. This component of the project includes re-grading to raise the ground elevation and is not anticipated to result in impacts to significant archeological resources.

Geoarcheological research conducted for the National Mall Turf and Soil Reconstruction project showed areas of preserved natural landscape with the potential for archeological resources. Further study was recommended to assess the potential for Paleoindian sites. A multi-component (prehistoric and historic) archeological site was identified in the future location of the NMAAHC, but this project was found to have no significant impact on archeological resources because the site did not have sufficient integrity to be considered NRHP eligible; it therefore does not impact significant archeological resources (LeeDecker et al. 2008).

Planned future projects include the implementation of the National Mall Plan, which involves the re-design of Constitution Gardens, Sylvan Theater, and Union Square; and Phase 2 of the Potomac Park Levee project. The projects related to the National Mall Plan may result in impacts to archeological resources, however they are still in the design phase, so these impacts cannot be fully evaluated. The re-design of Constitution Gardens calls for the creation of multi-purpose facilities and infrastructure within the site such as food service, restrooms, visitor information, recreational equipment rental, and retail gift shop space. It also calls for the creation of a

flexible performance space. The new design of Union Square involves plans to update the space as an attractive civic square that can accommodate more visitors and provide flexibility for the necessary security and temporary facilities for large events. Planned changes to the Washington Monument Grounds include replacing Sylvan Theater with a flexible outdoor space for small and large events or performances, as well as incorporation of multi-purpose facilities to fill food service, seating, retail, restroom, and visitor information needs. To the extent that these planned changes would involve ground disturbance in areas of archeological sensitivity, they could result in impacts to archeological resources.

As described above, Alternative 1 has the potential to have long-term moderate adverse impacts on archeological resources. Potential archeological remains that could be preserved within the project area include possible prehistoric and/or historic sites (see Section 3.1.1), but none have been identified to date. In order for Alternative 1 to contribute to cumulative impacts on archeological resources, similar types or classes of archeological sites would need to be impacted by multiple projects. Based on the currently available information for projects in the vicinity of the National Mall and the classes of archeological sites, there would be no cumulative impacts on archeological resources as a result of Alternative 1.

Conclusion

Activities associated with implementation of Alternative 1 have the potential for long-term moderate adverse impacts on archeological resources. However, these impacts would be mitigated through implementation of an MOA developed in consultation with DC SHPO. Mitigation of impacts would ensure that there would be no impairment of archeological resources.

Archeological Impacts of Alternative 2

Under Alternative 2, the arrangement of the underground structure for the Memorial Center would be similar to Alternative 1, but the approach would feature an elliptical path and a curvilinear retaining wall. Alternative 2 would require the same depth of excavation as Alternative 1 and would employ the slurry-wall system. The design would include 83 geothermal wells, similar to Alternative 1.

At the current time, impacts to archeological resources cannot be fully evaluated because an archeological study has not been conducted, and no archeological sites have yet been identified. Possible impacts to archeological resources could result from ground disturbance related to construction of the Memorial Center, excavation for the slurry-wall system, drilling for geothermal wells, or landscaping components. Based on archival research, there is the potential for moderate impacts to archeological resources, constituting an adverse effect under Section 106.

Adverse effects on historic properties, including archeological resources, would be evaluated and mitigated through the Section 106 process, guided by an MOA that would include stipulations to ensure an appropriate level of archeological documentation prior to project construction. These stipulations would include a phased approach to the identification and evaluation of archeological resources, beginning with geoarcheological consultation. Mitigation of adverse effects would be accomplished by archeological documentation and in-place preservation, followed by publication of results to the scientific community and the public. The terms of the MOA would be determined in consultation with DC SHPO, VVMF, NPS, and NCP, and all work would follow the “Guidelines for Archaeological Investigations in the District of Columbia” (1998, as

amended), the “Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation” (1983), and NPS “Director’s Order 28: Cultural Resource Management” (1998).

Cumulative Impacts

Under Alternative 2, the cumulative projects would be the same as those described in Alternative 1. As described above, Alternative 2 would have the potential to result in long-term moderate adverse impacts on archeological resources. Based on the information currently available for projects in the vicinity of the National Mall and the classes of archeological sites, there would be no cumulative impacts on archeological resources under Alternative 2.

Conclusion

Activities associated with implementation of Alternative 2 have the potential for long-term moderate adverse impacts on archeological resources. However, these impacts would be mitigated through implementation of an MOA developed in consultation with DC SHPO. Mitigation of impacts would ensure that there would be no impairment of archeological resources.

4.2.2 Historic Resources

Methodology and Assumptions

Historic resources located within the APE that are listed in, or potentially eligible for listing in, the NRHP were identified as part of this study through the Section 106 process. For each of the alternatives, a determination was made regarding possible adverse effects under Section 106 and these determinations correlate to the NEPA impacts as indicated in the impact thresholds below.

A range of sources were used in analyzing the impacts to these resources, including National Register nominations, historic maps, and field surveys.

Study Area

The study area for historic resources is the Secondary APE, as delineated in Figure 3-1. The area is bounded by the Lincoln Memorial and southern walk to the south, Constitution Avenue and C and D Streets to the north, the Potomac River and the Arlington Memorial Bridge to the west, and the Washington Monument to the east.

Impact Thresholds

The impact thresholds for historic resources are described in the following categories:

- *Negligible.* The impact does not result in any noticeable changes to the resource or its visual context. For the purposes of Section 106, a determination of negligible impact would be considered *no adverse effect*.
- *Minor.* A minor adverse impact occurs when there are noticeable changes to the resource or its context, but these changes do not affect the resource's character-defining features or integrity. For the purposes of Section 106, a determination of minor impact would be considered *no adverse effect*.
- *Moderate.* A moderate adverse impact results in a change to one or more of the resource's character-defining features, but would not diminish the integrity of the resource to the extent that its NRHP eligibility would be lost. For the purposes of Section 106, a moderate impact would be an *adverse effect*.
- *Major.* A major adverse impact results in substantial and highly noticeable changes to character-defining features such that the integrity of the resource would be compromised to the extent that it may no longer be eligible for listing in the National Register. For the purposes of Section 106, a major impact would be an *adverse effect*.
- *Beneficial:* A beneficial impact would improve or increase character-defining features or would reduce features that

impede character-defining features. For purposes of Section 106, the determination of effect would be *no adverse effect*.

- *Duration:* Short-term impacts would occur and last through the construction period. Long-term impacts would extend beyond the construction period.

Historic Resources Impacts of No Action Alternative

Under the No Action Alternative, no changes would be made to the project site including to the existing grade. The existing trees and open space would remain, as would the existing food service kiosk. There would be no change to historic resources located within the APE, including elements of the L'Enfant Plan of the City of Washington, Arlington Memorial Bridge, the American Pharmacists Association Building, the National Academy of Sciences, the Federal Reserve Board, the Harry S. Truman Building, the Lockkeeper's House, the World War II Memorial, the 56 Signers Memorial, the Vietnam Veterans Memorial, and the East and West Potomac Parks and Northwest Rectangle Historic Districts. As a result, there would be no impacts on historic resources and no adverse effect under Section 106.

Cumulative Impacts

Because there would be no impacts on historic resources under the No Action Alternative, there would be no cumulative impacts.

Conclusion

Under the No Action Alternative, no changes would be made to the project site. Historic resources located within the APE, including elements of the L'Enfant Plan of the City of Washington, Arlington Memorial Bridge, the American Pharmaceutical Association, the National Academy of Sciences, the Harry S. Truman Building, the Lockkeeper's House, the World War II Memorial, and the East and West Potomac Parks and Northwest Rectangle Historic Districts, would remain unchanged. Thus, there would be no impacts on historic resources under the No Action Alternative and no adverse effect under Section 106.

Historic Resources Impacts of Alternative 1

L'Enfant Plan of the City of Washington

Under Alternative 1, the Center would be sited within a portion of Reservation 332, a contributing element to the L'Enfant Plan of the City of Washington. The character of the existing grass panel would be altered through the addition of an entry way, open courtyard, and skylights. However, due to the siting of the Memorial Center below grade, the majority of the site would still be experienced by visitors as a grass panel.

No changes would be made to Constitution Avenue, Henry Bacon Drive, or 23rd Street, all contributing roadways that border the project site. In addition, there would be no changes to Lincoln Memorial Circle or the Terminus of Rock Creek as a result of Alternative 1. The vista along Constitution Avenue is framed by mature trees that line the roadway. Under Alternative 1, the vista would be reinforced by the installation of new trees along the northern portion of the site consistent with historic plantings at the site. The Memorial Center would not be visible within this vista due to its below-grade location and ascending changes in grade away from the road. The new pedestrian access point would be visible, but would not block views within the corridor and would not alter the character of the view due to its low profile and peripheral location.

Looking south on the 23rd Street axis (Figure 2-9), the vista to the Lincoln Memorial is framed by the lines of existing trees. The

underground Center would appear as a grassy slope from this vantage point. No built features would be visible along 23rd Street. Looking north on the 23rd Street axis from the Lincoln Memorial, the vista is also framed by lines of existing trees along 23rd Street and by trees adjacent to the Memorial. These trees would obscure the Memorial Center when looking north on 23rd Street.

Overall, impacts on the L'Enfant Plan of the City of Washington would be moderate, due to the changes to the character of the existing grass panel, a portion of Reservation 332. Thus, there would be an adverse effect under Section 106. Through the Section 106 consultation process, it is anticipated that a MOA outlining mitigation measures would be signed by NPS, NCPC, ACHP, and the VVMF. A potential mitigation measure could include a revision in the landscape plan to further reflect historic planting plan for the site (Figure 4-1), including both the installation of new trees that are consistent with the plan, as well as the removal of existing trees that are not historic in nature.

Arlington Memorial Bridge

Due to its underground location and the grading and vegetative cover, the Memorial Center would not be visible from the bridge. The addition of trees along the southern portion of the site would partially shield the food service kiosk from view. There would be no direct impact on the bridge and negligible long-term indirect impacts. There would be no adverse effect under Section 106.

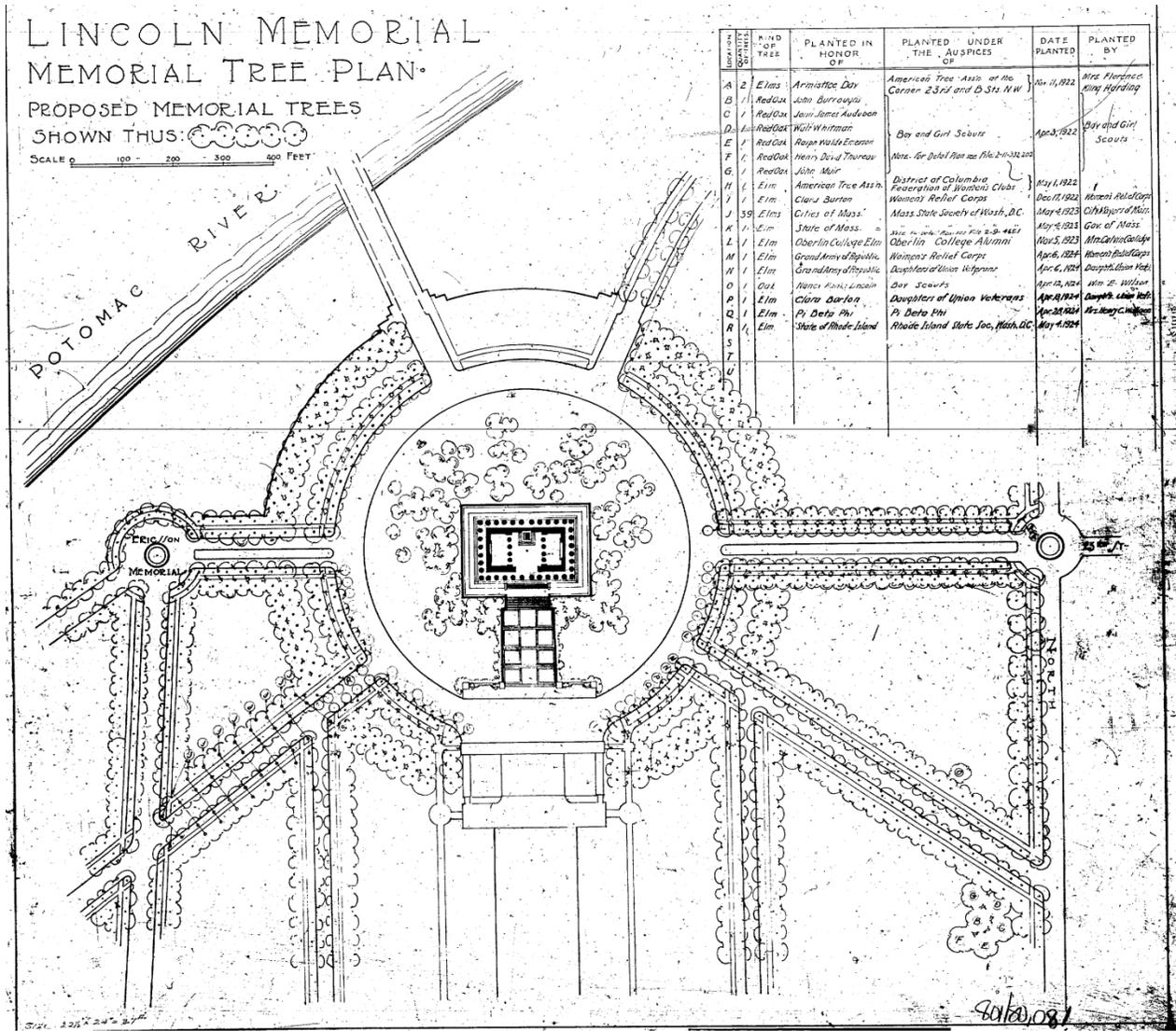


Figure 4-1: Historic Tree Plan
 Source: NAMA

American Pharmacists Association Building

The American Pharmacists Association Building is located directly across Constitution Avenue from the project site. Although it would be partially shielded by grading and new and existing trees, much of the entry stairs and ramp to the Memorial Center and a portion of entrance would be visible from the American Pharmacists Association Building. The pedestrian access to the site from Constitution Avenue would also be visible.

During the day, interior lighting from the Memorial Center would not be visible. The interior lighting would be minimally visible from the American Pharmacists Association Building during early evening hours through the skylights, when the Memorial Center would be open past dusk. There would be no direct impact on the American Pharmacists Association Building. There would be long-term minor adverse impacts on the resource due to the potential visibility of the entry. Potential mitigation measures would limit lighting so that it would not exceed levels of or distract from nearby memorials, monuments, or buildings, possibly through the use of shades. There would be no adverse effect under Section 106.

National Academy of Sciences

The National Academy of Sciences is located diagonally across Constitution Avenue from the project. Views from the National Academy of Sciences to the Memorial Center would be filtered by existing trees and new trees installed along Constitution Avenue, which would also block light emitted from the Memorial Center. There would be no direct impact on this resource and long-term indirect impacts would be minor. Potential mitigation measures

would further minimize interior light visibility. There would be no adverse effect under Section 106.

Federal Reserve Board Building

The Center would not be visible from the Federal Reserve Board Building. Thus, there would be no impacts on this resource and no adverse effect under Section 106.

Harry S. Truman Building

The Harry S. Truman Building is situated behind the National Academy of Sciences and the American Institute of Pharmacy on C Street. Views of the site would be afforded from the upper stories of the Truman Building and along 22nd Street. Due to the underground nature of the Center, the grading of the site, the existing and new street trees along Constitution Avenue and Henry Bacon Drive, and the distance from the site, the Center would be minimally visible from the building. There would be no direct impact on the building and long-term indirect impacts would be minor. There would be no adverse effect under Section 106.

Lockkeeper's House

The Center would not be visible from the Lockkeeper's House. Thus, there would be no impacts to this resource and no adverse effect under Section 106.

Lincoln Memorial

Alternative 1 would not have direct impacts on the Lincoln Memorial itself. However, there is the potential for indirect impacts from night lighting of the Memorial Center. At night, the Lincoln Memorial is illuminated from within and from exterior lights on the east side; it appears much brighter than other structures in the surrounding area at the western end of the National Mall. The Memorial Center would be open primarily during daylight hours, and shortly after dusk during the winter. Interior lighting from the Memorial Center would be minimally visible during early evening hours through the skylights, when the Memorial Center would be open past dusk. The lighting for the Memorial Center would be engineered to minimize interference with other light sources and to minimize dispersion from the site while still meeting appropriate building codes for safety. Due to the underground nature of the Memorial Center, the placement of trees at the southern portion of the project site, and existing trees on the grounds of the Lincoln Memorial, the Memorial Center would be minimally visible from the steps of the Lincoln Memorial (illustrated in Figure 2-10).

Overall, the long-term impacts on the Lincoln Memorial would be moderate and adverse due to potential interference of night lighting. This would constitute an adverse effect under Section 106. Through the Section 106 process, it is anticipated that an MOA outlining mitigation measures will be signed by NPS, NCPC, ACHP, and the VVMF. Potential mitigation measures identified in the MOA could include a stipulation that lighting would not exceed levels of or distract from nearby memorials, monuments, or buildings. One possible measure to minimize interior light visibility would include the use of shades over the skylights. An additional mitigation

measure identified in the MOA could include a stipulation requiring historic resources documentation.

Vietnam Veterans Memorial and Vietnam Women's Memorial

The Vietnam Veterans Memorial and the Vietnam Women's Memorial lie east of the project site. Because the Memorial Center would be adjacent to, but not on the site of the Vietnam Veterans and Vietnam Women's Memorials, there would be no direct impacts on these resources. From the eastern ramp descending to The Wall, the entrance to the Memorial Center would be visible due to the height of the facility (approximate five feet above street grade) and the descending path to the Memorial Center's subterranean entrance. Views of low interruptions of the grass plane would be filtered through the existing post-and-chain pedestrian barriers and through existing trees on both the Memorial and project sites. Trees would further obscure the view from the Flagpole, Three Servicemen Statue, and the Vietnam Women's Memorial. The appearance of interior lighting would be filtered through trees. Because the entrance to the Memorial Center would be minimally visible due to trees and its low elevation, there would be long-term minor adverse impacts on the Vietnam Veterans Memorial and the Vietnam Women's Memorial. Mitigation would further minimize the amount of light emitted from the Memorial Center through lighting design and other methods, such as shades. There would be no adverse effect under Section 106.

World War II Memorial

The Center would not be visible from the World War II Memorial. Thus, there would be no impacts on this resource and no adverse effect under Section 106.

56 Signers Memorial

The Center would not be visible from the 56 Signers Memorial. Thus, there would be no impacts to this resource and no adverse effect under Section 106.

East and West Potomac Parks Historic District

The East and West Potomac Parks Historic District includes a combination of monuments, memorials, and open space. The Lincoln Memorial and its Grounds, which include the project site, is considered a Contributing Site. Alternative 1 would alter the character of the open grass area by introducing the below-grade entry, open courtyard, and skylight.

Other contributing elements proximate to the project site include, the Vietnam Veterans Memorial, and the Vietnam Women's Memorial. Although the construction of the Memorial Center would alter the existing use, the new use would be consistent with other attractions within the historic district. In addition, its siting below grade would limit its visual impact on adjacent elements of the historic district, as would the installation of new trees consistent with the historic plantings plan. However, due to the changes to the existing grass panel, long-term adverse impacts would be moderate and would constitute an adverse effect under Section 106.

Northwest Rectangle Historic District

Several elements that contribute to the significance of the Northwest Rectangle Historic District are located in the vicinity of the Memorial Center. These include the American Pharmacists Association Building, the National Academy of Sciences, and the

Harry S. Truman Building. Although there would be indirect visual effects on these contributing elements, the Memorial Center would not diminish the integrity of the District. Thus long-term adverse impacts on the Northwest Rectangle Historic District would be minor and there would be no adverse effect under Section 106.

Short-term Impacts

Construction activities, as well as the associated location of trailers and materials at the project site, would be visible from historic resources in the vicinity but would not intrude on the L'Enfant and McMillan Plan vistas. The open space character of the site would be temporarily altered. Therefore, there would be short-term minor adverse impacts on the L'Enfant Plan of the City of Washington, the Arlington Memorial Bridge, the American Pharmacists Association Building, the National Academy of Sciences, the Harry S. Truman Building, the Lincoln Memorial, and the Northwest Rectangle and East and West Potomac Parks Historic Districts.

Cumulative Impacts

The Lincoln Memorial Reflecting Pool Rehabilitation would result in minor impacts on the Lincoln Memorial, the East and West Potomac Parks Historic District and the L'Enfant Plan of the City of Washington due to changes in design, materials, and views. The Potomac Park Levee Projects would have minor adverse impacts on the West Potomac Park Historic District and negligible impacts on the L'Enfant Plan of the City of Washington. The Arlington Memorial Bridge Repairs project would result in long-term beneficial impacts on the bridge as a result of improvements to corroded materials.

The National Mall Plan outlines a range of improvements to the iconic landscape. The long-term impacts on cultural resources under the Mall Plan would be beneficial due to the relocation of the Lockkeeper's House. Pedestrian enhancements, such as seating, and changes in circulation patterns would result in long-term negligible to minor adverse impacts on the Vietnam Veterans Memorial and the Vietnam Women's Memorial, which are included in the East and West Potomac Parks Historic District, by affecting the character of the memorials. The National Mall plan would also have long-term minor-to-negligible adverse impacts on the Lincoln Memorial as a result of construction of a new restroom facility.

As described above, Alternative 1 would result in long-term moderate adverse impacts on the L'Enfant Plan of the City of Washington and the East and West Potomac Parks Historic District as a result of changes to the character of the existing grass panel. There would be moderate adverse impacts on the Lincoln Memorial as a result of interference from night lighting. There would be long-term minor impacts on the Vietnam Veterans and Vietnam Women's Memorials due to changes in views and vistas resulting from the Memorial Center.

There would be moderate long-term adverse cumulative impacts on the L'Enfant Plan of the City of Washington, the Lincoln Memorial, and the East and West Potomac Park Historic District as a result of Alternative 1 when combined with the Potomac Park Levee Project, and the Lincoln Memorial Reflecting Pool Rehabilitation. Alternative 1 could also result in minor adverse cumulative impacts on the Vietnam Veterans and Vietnam Women's Memorials and moderate adverse cumulative impacts on the Lincoln Memorial and East and West Potomac Parks Historic District as a result of the

National Mall Plan. Cumulatively, there would be beneficial impacts on the Arlington Memorial Bridge.

Conclusion

Alternative 1 would change the grade of the site, install new trees, add pedestrian access to the site from Constitution Avenue, create openings for a courtyard and skylights, and establish an entry to the Memorial Center from Henry Bacon Drive. As a result, there would be long-term moderate adverse impacts on the L'Enfant Plan of the City of Washington and the East and West Potomac Parks Historic District due to the potential for the Memorial Center's entrance, courtyard, and skylights to interrupt the existing grass panel. There would be long-term moderate adverse impacts on the Lincoln Memorial due to the potential for interference of night lighting. There would be long-term minor adverse impacts on the American Pharmacists Association Building the National Academy of Sciences, and the Harry S. Truman Building due to changes to views of the site. There would be negligible impacts on the Arlington Memorial Bridge, and no impacts on the Federal Reserve Board Building, Lockkeepers House, the 56 Signers Memorial, and the WWII Memorial. There would be long-term minor adverse impacts to the Vietnam Veterans Memorial and Vietnam Women's Memorial. There would also be long-term minor adverse impacts on the Northwest Rectangle Historic District due to alterations in views. There would be adverse effects under Section 106 to the L'Enfant Plan of the City of Washington, the Lincoln Memorial, and the East and West Potomac Parks Historic District. Alternative 1 would result in short-term minor adverse impacts on historic resources due to construction. In addition, there could be moderate adverse cumulative impacts on the L'Enfant Plan of the City of Washington, the Lincoln Memorial, and the East and West Potomac Parks

Historic District and minor adverse cumulative impacts on the Vietnam Veterans Memorial and the Vietnam Women's Memorial.

Historic Resources Impacts of Alternative 2

L'Enfant Plan of the City of Washington

Similar to Alternative 1, the Memorial Center would be sited within a portion of Reservation 332. While the Memorial Center would be located below grade, with features restricted to a recessed entry area, courtyard with openings to the ground-level above, and a relatively compact cluster of six skylights, it would alter the character of the grass panel. No changes would be made to Constitution Avenue, Henry Bacon Drive, or 23rd Street, all contributing roadways that border the project site. In addition, there would be no changes to Lincoln Memorial Circle or the Terminus of Rock Creek as a result of Alternative 2.

Like Alternative 1, under Alternative 2, the Constitution Avenue vista would be reinforced by the installation of new trees along the northern portion of the site. The Memorial Center would not be visible within this vista due to its below-grade location and ascending changes in grade away from the road. No built features would be visible along the 23rd Street vista, which is framed by lines of existing trees along 23rd Street and by trees adjacent to the Lincoln Memorial that would obscure the Memorial Center when looking north on 23rd Street. Because Alternatives 1 and 2 would result in such similar levels of visibility, Figure 2-9 provides an approximate simulation of Alternative 2.

Overall, long-term impacts to the L'Enfant Plan of the City of Washington would be moderate, due to the interruption of the solid grass panel by the entrance and skylights. There would be an adverse effect under Section 106.

Arlington Memorial Bridge

Like Alternative 1, due to its underground location and the grading and vegetation cover, the Memorial Center would not be visible from the bridge under Alternative 2. There would be no direct impact on the bridge and negligible long-term indirect impacts. There would be no adverse effect under Section 106.

American Pharmacists Association Building

Like Alternative 1, although it would be partially shielded by grading and new and existing trees, under Alternative 2 much of the entry stairs and ramp to the Memorial Center and a portion of entrance would be visible from the American Pharmacists Association Building. Interior lighting from the Memorial Center would be minimally visible during early evening hours through the skylights. There would be no direct impact on this resource. There would be long-term minor adverse impacts on the American Pharmacists Association Building due to the potential visibility of the entry. Mitigation would further limit light levels of the Memorial Center so that interior lighting would not distract from nearby memorials, monuments or buildings. There would be no adverse effect under Section 106.

National Academy of Sciences

Under Alternative 2, views from the National Academy of Sciences to the Memorial Center would be filtered by existing trees and new trees installed along Constitution Avenue, which would also block light emitted from the Memorial Center. There would be no direct impact to this resource and long-term indirect impacts would be negligible. Additionally, mitigation measures would further

minimize light visibility. There would be no adverse effect under Section 106.

Federal Reserve Board Building

The Memorial Center would not be visible from the Federal Reserve Board Building. Thus, there would be no impacts on this resource and no adverse effect under Section 106.

Harry S. Truman Building

The Harry S. Truman Building is situated behind the National Academy of Sciences and the American Pharmacists Association Building on C Street. Views of the site would be afforded from the upper stories of the Truman Building and along 22nd Street. Due to the underground nature of the site, the grading of the site, the existing and new street trees along Constitution Avenue and Henry Bacon Drive, and the distance from the site, the Memorial Center would be minimally visible from the building. There would be no direct impact on the building and long-term indirect impacts would be negligible. There would be no adverse effect under Section 106.

Lockkeeper's House

The Memorial Center would not be visible from the Lockkeeper's House. Thus, there would be no impacts to this resource and no adverse effect under Section 106.

Lincoln Memorial

Like Alternative 1, Alternative 2 would not have direct impacts on the Lincoln Memorial itself. However, there is the potential for indirect impacts from night lighting of the Memorial Center. At night, the Lincoln Memorial is illuminated from within and from exterior lights on the east side; it appears much brighter than other structures in the surrounding area at the western end of the National Mall. The Memorial Center would be open primarily during daylight hours, and shortly after dusk during the winter. Interior lighting from the Memorial Center would be minimally visible during early evening hours through the skylights, when the Memorial Center would be open past dusk. The lighting for the Memorial Center would be engineered to minimize interference with other light sources and to minimize dispersion from the site including the use of metal grates to diffuse the light. The lighting design would meet appropriate building codes for safety. Due to the underground nature of the Memorial Center, the placement of trees at the southern portion of the project site, and existing trees on the grounds of the Lincoln Memorial, the Memorial Center would be minimally visible from the steps of the Lincoln Memorial (illustrated in Figure 2-19).

Overall, the long-term impacts on the Lincoln Memorial would be moderate and adverse due to potential interference of night lighting. This would constitute an adverse effect under Section 106. Through the Section 106 process, it is anticipated that an MOA outlining mitigation measures will be signed by NPS, NCPC, ACHP, and the VVMF. Potential mitigation measures identified in the MOA could include a stipulation that lighting would not exceed levels of or distract from nearby memorials, monuments, or buildings. One potential method to minimize interior light visibility would be the

use of shades. An additional mitigation measure identified in the MOA could include a stipulation requiring additional historic resources documentation.

Vietnam Veterans Memorial and Vietnam Women's Memorial

The Vietnam Veterans Memorial and the Vietnam Women's Memorial lie east of the project site. Because the Memorial Center would be adjacent to, but not on the site of the Vietnam Veterans and Vietnam Women's Memorials, there would be no direct impacts on these resources. From the eastern ramp descending to The Wall, the entrance to the Memorial Center would be visible due to the height of the facility (approximately five feet above street grade) and the descending path to the Memorial Center's subterranean entrance. Unlike Alternative 1, Alternative 2 would contain an elliptical vegetated area in the center of the entrance ramp whose highest elevation would be approximately one foot higher than the street grade. This element would minimize the view of the Memorial Center's entrance. The Memorial Center's low interruptions of the grass plane would be filtered through the existing post-and-chain pedestrian barriers and through existing trees on both the Memorial and project sites and new trees. Trees would further filter the view from the Flagpole, Three Servicemen Statue, and the Vietnam Women's Memorial. The appearance of interior lighting would be filtered through trees and metal grates over the skylights. Because the entrance to the Memorial Center would be minimally visible due to trees and its low elevation, there would be long-term minor adverse impacts on the Vietnam Veterans Memorial and the Vietnam Women's Memorial. Mitigation measures, such as shades, could further minimize interior light visibility. There would be no adverse effect under Section 106.

World War II Memorial

The Memorial Center would not be visible from the World War II Memorial. Thus, there would be no impacts to this resource and no adverse effect under Section 106.

56 Signers Memorial

The Memorial Center would not be visible from the 56 Signers Memorial. Thus, there would be no impacts to this resource and no adverse effect under Section 106.

East and West Potomac Parks Historic District

Similar to Alternative 1, the entrance and skylights of Alternative 2 would alter the character of a portion of the Lincoln Memorial Grounds, considered a contributing element to the historic district. In addition, the construction of the Memorial Center would alter the existing use under Alternative 2, however, the new use would be consistent with other attractions within the East and West Potomac Parks Historic District. In addition, its siting below grade would limit its visual impact. Due to the changes to the existing grass panel, long-term adverse impacts would be moderate and would constitute an adverse effect under Section 106.

Northwest Rectangle Historic District

Several elements that contribute to the significance of the Northwest Rectangle Historic District are located in the vicinity of the Memorial Center. These include the American Pharmacists Association Building, the National Academy of Sciences, and the Harry S. Truman Building. Although there would be indirect visual effects on these contributing elements, the Memorial Center would

not diminish the integrity of the District. Thus long-term adverse impacts on the Northwest Rectangle Historic District would be negligible and there would be no adverse effect under Section 106.

Short-term Impacts

Similar to Alternative 1, construction activities, as well as the associated location of trailers and materials at the project site, would be visible from historic resources in the vicinity but would not intrude on the L'Enfant and McMillan Plan vistas under Alternative 2. The open space character of the site would be temporarily altered. Therefore, there would be short-term minor adverse impacts on the L'Enfant Plan of the City of Washington, the Arlington Memorial Bridge, the American Pharmacists Association Building, the National Academy of Sciences, the Harry S. Truman Building, the Lincoln Memorial, and the Northwest Rectangle and East and West Potomac Parks Historic Districts.

Cumulative Impacts

Under Alternative 2, the cumulative projects would be the same as those in Alternative 1. As described above, Alternative 2 would result in long-term moderate adverse impacts on the L'Enfant Plan of the City of Washington and the East and West Potomac Parks Historic District as a result of changes to the character of the existing grass panel. There would be moderate adverse impacts on the Lincoln Memorial as a result of interference from night lighting. There would be long-term minor impacts on the Vietnam Veterans and Vietnam Women's Memorials due to changes in views and vistas resulting from the Memorial Center.

There could be moderate long-term adverse cumulative impacts on the L'Enfant Plan of the City of Washington, the Lincoln Memorial, and the East and West Potomac Parks Historic District as a result of Alternative 2 when combined with the Potomac Park Levee Project and Lincoln Memorial Reflecting Pool Rehabilitation. Alternative 2 could also result in moderate adverse cumulative impacts on the Lincoln Memorial and the East and West Potomac Parks Historic District and minor adverse cumulative impacts on the Vietnam Veterans and Vietnam Women's Memorials as a result of the National Mall Plan.

Conclusion

Alternative 2 would change the grade of the site, install new trees, add openings for skylights, and establish an entry to the Memorial Center from Henry Bacon Drive. As a result, there would be long-term moderate adverse impacts on the L'Enfant Plan of the City of Washington and the East and West Potomac Parks Historic District through changes to the character of the grass panel. There would be long-term moderate adverse impacts on the Lincoln Memorial due to the potential for interference of night lighting. There would be long-term minor adverse impacts on the American Pharmacists Association Building due to alterations of views to the site. There would be negligible impacts on the Arlington Memorial Bridge, National Academy of Sciences, and the Harry S. Truman Building, and no impacts on the Lockkeepers House, the 56 Signers Memorial, and the WWII Memorial. There would be long-term minor adverse impacts to the Vietnam Veterans Memorial and Vietnam Women's Memorial. There would be negligible impacts on the Northwest Rectangle Historic District. As a result, there would be adverse effects under Section 106 to the L'Enfant Plan of the City of Washington, the Lincoln Memorial, and the East and West Potomac

Parks Historic District. Alternative 2 would result in short-term minor adverse impacts on historic resources due to construction. In addition, there could be moderate adverse cumulative impacts on the L'Enfant Plan of the City of Washington, Lincoln Memorial, and the East and West Potomac Parks Historic District, and minor adverse cumulative impacts on the Vietnam Veterans Memorial and the Vietnam Women's Memorial.

4.2.3 Cultural Landscapes

Methodology and Assumptions

Cultural landscapes located within the APE that are recognized by NPS were identified as part of this study through the Section 106 process. For each of the alternatives, a determination was made regarding possible adverse effects under Section 106 and these determinations correlate to the NEPA impacts as indicated in the impact thresholds below.

A range of sources were used in analyzing the impacts to these resources, including National Register nominations, cultural landscape reports, historic maps, and field surveys.

Study Area

The study area for cultural landscapes is the Secondary APE, as delineated in Figure 3-1. The area is bounded by Lincoln Memorial and southern walk to the south, Constitution Avenue and C and D Streets to the north, the Potomac River and the Arlington Memorial Bridge to the west, and the Washington Monument to the east.

Impact Thresholds

The proposed alternatives would impact character-defining features of three cultural landscapes: the Washington Monument and Grounds, Constitution Gardens, and the Lincoln Memorial Grounds.

Impact Thresholds

The impact thresholds for cultural landscapes are described in the following categories:

- *Negligible*: The impact is at the lowest level of detection with neither adverse nor beneficial consequences. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- *Minor*: Alteration of a pattern(s) or feature(s) of the cultural landscape listed on or eligible for the NRHP would not diminish the integrity of a character-defining feature(s) or the overall integrity of the landscape. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- *Moderate*: The impact would alter a character-defining feature(s) of the cultural landscape and diminish the integrity of that feature(s) of the landscape. For purposes of Section 106, the determination of effect would be *adverse effect*.
- *Major*: The impact would alter character-defining feature(s) of the cultural landscape and severely diminish the integrity of that feature(s) and the overall integrity of the historic property. For purposes of Section 106, the determination of effect would be *adverse effect*.
- *Beneficial*: A beneficial impact would improve or increase character-defining features or would reduce features that impede character-defining features. For the purposes of Section 106, the determination of effect would be *no adverse effect*.
- *Duration*: Short-term impacts would occur and last through the construction period. Long-term impacts would extend beyond the construction period.

Cultural Landscape Impacts of No Action Alternative

Under the No Action Alternative, no changes would be made to the project site. The grade would not be changed, and the existing trees, open space, and food service kiosk would remain. There would be no change to cultural landscapes located within the APE, including the Lincoln Memorial Grounds, Constitution Gardens, and the Washington Monument Grounds as a result of the No Action Alternative. Thus, there would be no adverse effect under Section 106.

Cumulative Impacts

Because there would be no impacts on cultural landscapes under the No Action Alternative, there would be no cumulative impacts.

Conclusion

Under the No Action Alternative, no changes would be made to the project site. Cultural landscapes located in the APE, including the Lincoln Memorial Grounds, Constitution Gardens, and the Washington Monument Grounds, would remain unchanged. Thus, there would be no impacts on cultural landscapes under the No Action Alternative.

Cultural Landscapes Impacts of Alternative 1

Lincoln Memorial Grounds

Alternative 1 would alter the existing open space at the site, which currently offers both active and passive recreation opportunities that are considered contributing features of the Lincoln Memorial Grounds cultural landscape. Although it would be smaller, the existing open space and multiple recreation uses would continue.

The vistas along Henry Bacon Drive, 23rd Street, and east from the Lincoln Memorial are also contributing features of the Lincoln Memorial Grounds cultural landscape. Looking south on Henry Bacon Drive toward the Lincoln Memorial, the view is framed by lines of existing Elm trees as shown in Figure 2-7. The food service kiosk at the southern portion of the site is visible through the treeline. Under Alternative 1, the framing of the vista by Elms and the visibility of the food service kiosk would remain. The entrance pathways and existing sidewalks would be visible at the edge through the existing trees. The entry to the building would be visible due to the approximately five-foot increase in elevation above the street and the lowering of grade required for the subterranean entry. The Memorial Center would not block views of the Lincoln Memorial. The installation of trees consistent with the historic planting plan for the site along the southern portion of the site would further filter views of Memorial Circle and the Lincoln Memorial Grounds south and east of the Lincoln Memorial structure. Although elements of the Memorial Center would be visible along Henry Bacon Drive, it would not alter the existing character of the view.

As described in Section 4.2.2 and illustrated in Figure 2-9, the Memorial Center would appear as a grassy slope in views looking

south on 23rd Street. In addition, the axial vista east from the Lincoln Memorial would not be altered. Although the open courtyard of the Memorial Center would be partially visible in the view northeast from the steps of the Lincoln Memorial as shown in Figure 2-10, this view is not identified within the Cultural Landscape Report as contributing to the significance of the cultural landscape. In addition, the view to the Memorial Center would be largely obscured by existing trees.

Several vegetative features are considered contributing features of the memorial landscape. Alternative 1 would alter the open grass panel of the project site, a contributing feature, by adding skylights, changing the grade, and installing a below-grade entrance. However, the majority of the site would still be experienced by visitors as a grass panel. Existing rows of Elms along the bordering streets, which are contributing features of the landscape, would not be removed as part of Alternative 1.

Through the Section 106 process, it is anticipated that an MOA outlining mitigation measures will be signed by NPS, NCPC, ACHP, and the VVMF. A potential mitigation measure identified in the MOA could be a revision in the landscape plan to further reflect historic planting plan for the site. In addition to the installation of new trees that were historically part of the site, this stipulation would call for the removal of existing trees that are not historic in nature from the site. The MOA could also stipulate that no vegetation, other than elms identified in the historic planting plan, taller than groundcover would be included at the site in order to maintain the open quality of the grass panel. Another potential mitigation measure in the MOA could be an interpretation element about the memorial tree program of the 1920s, and information about memorial trees today. The MOA could also contain a

stipulation requiring additional documentation of historic resources in the vicinity.

There would be no changes to sidewalks along the bordering streets, also contributing features to the cultural landscape.

Overall, Alternative 1 would result in long-term moderate adverse impacts on the Lincoln Memorial Grounds due to the below-grade entrance, alterations in grade, and skylights that project out into the landscape, all features that alter the character of the existing grass panel. The Memorial Center would also impact vistas along 23rd Street and Henry Bacon. This would constitute an adverse effect under Section 106.

Constitution Gardens

The Constitution Gardens Cultural Landscape abuts the project site along Henry Bacon Drive. Because the project site is not located within this cultural landscape, there would be no direct impacts.

The vista from Constitution Gardens to the Lincoln Memorial is a contributing element of the cultural landscape. The project site lies to the west of Constitution Gardens and north of the Lincoln Memorial and would therefore not be within, but rather adjacent to the vista to the Memorial. As described above under the Lincoln Memorial Grounds, elements of the building would be apparent within the Henry Bacon Drive vista. The entry to the building would include an approximately five-foot increase in elevation above the street and the lowering of grade required for the subterranean entry. However, the Memorial Center's entrance would be shielded by trees within the heavily-wooded Constitution Gardens, and would not greatly alter the intended views of the Lincoln Memorial.

The programs held at the Vietnam Veterans Memorial and Vietnam Women's Memorial have also been identified as contributing features of the cultural landscape. The programs and exhibits at the Memorial Center would augment the ceremonies held at these memorials by offering additional background information.

Although views would be altered slightly, overall Alternative 1 would result in negligible impacts due to changes in views to the Lincoln Memorial, with beneficial impacts resulting from the improved interpretation through exhibits at the Memorial Center. There would be no adverse effect under Section 106.

Washington Monument Grounds

Views from the top of the Washington Monument to the surrounding city and important sites are a contributing feature of the Washington Monument Grounds Cultural Landscape. From this perspective, the project site is visible. However, the individual features of the site, such as the food-service kiosk and grass panels, are virtually hidden by trees. Because the Memorial Center would be located underground, when combined with the new and existing trees, the Memorial Center would not be visible from the Washington Monument. Alternative 1 would add additional trees to this landscape, which would not noticeably alter the landscape from this elevated perspective.

Views from the Lincoln Memorial to the Washington Monument are also a contributing feature of this cultural landscape. As described in Section 4.3.2, this visual axis is reinforced by the long Reflecting Pool and the allees of trees. Under Alternative 1, this view would not be visibly altered because the site would be outside the dominant sight lines and because new trees located at the southern portion of the project site would provide additional screening.

Therefore, there would be long-term negligible impacts to the Washington Monument Grounds Cultural Landscape. There would be no adverse effect under Section 106.

Short-term Impacts

Construction activities, as well as the associated location of trailers and materials at the project site, would be visible from the Lincoln Memorial Grounds and Constitution Gardens under Alternative 1. However, these activities would not obstruct vistas that are contributing features of the landscapes. During construction, the Lincoln Memorial Grounds would be unavailable for active or passive recreation and would disturb the existing grass panel, a contributing feature. Therefore, there would be short-term moderate adverse impacts on the Lincoln Memorial Grounds. There would be short-term minor adverse impacts on Constitution Gardens due to the partial visibility of construction staging and activities.

Cumulative Impacts

Implementation of the Lincoln Memorial Reflecting Pool and Grounds Rehabilitation would result in long-term minor adverse impacts on the Lincoln Memorial Grounds due to changes in design, materials, and views.

The National Mall Plan outlines a range of improvements to the iconic landscape. The rehabilitation of Constitution Gardens would result in a beneficial impact, while new food service and restroom facilities and changes in circulation patterns would result in long-term minor adverse impacts on Constitution Gardens.

As described above, Alternative 1 would result in long-term moderate impacts on the Lincoln Memorial Grounds due to disruptions to the open character of the existing grass panel and impacts to vistas along adjacent roadways, as well as potential impacts as a result of changes to views and vistas resulting from the Memorial Center. Alternative 1 would result in long-term negligible impacts, as well as beneficial impacts, on Constitution Gardens.

When combined with the Lincoln Memorial Reflecting Pool and Grounds Rehabilitation, Alternative 1 would result in moderate adverse cumulative impacts on the Lincoln Memorial Grounds. When combined with the National Mall Plan, Alternative 1 could result in long-term beneficial cumulative impacts on Constitution Gardens.

Conclusion

Alternative 1 would reduce the amount of multi-purpose recreation space, change the grade of the site, install new trees, and establish an entry to the Memorial Center from Henry Bacon Drive, thereby impacting the vistas along 23rd Street and Henry Bacon Drive. In addition, it would alter the use from active recreation in order to accommodate the Memorial Center, and would impact the open, uninterrupted character of the existing grass panel. Overall, this would result in a moderate adverse impact on the Lincoln Memorial Grounds and an adverse effect under Section 106. There would be negligible impacts on views from Constitution Gardens to the Lincoln Memorial due to the limited elevation of the Memorial Center and the trees at the project site and in Constitution Gardens. In addition, the exhibits of the Memorial Center would augment the ceremonies conducted at The Wall in Constitution Gardens, which would result in a beneficial impact. Due to the underground

location of the Memorial Center and additional trees, there would be negligible impacts on the Washington Monument Grounds. In combination with the cumulative projects, Alternative 1 would result in long-term moderate adverse impacts on the Lincoln Memorial Grounds and long-term beneficial impacts on Constitution Gardens.

Cultural Landscape Impacts of Alternative 2

Lincoln Memorial Grounds

Alternative 2 would alter the existing open space at the site, which currently offers both active and passive recreation opportunities that are considered contributing features of the Lincoln Memorial Grounds cultural landscape. Although it would be smaller, the existing open space and multiple recreation uses would continue.

The vistas along Henry Bacon Drive, 23rd Street, and east from the Lincoln Memorial are contributing features of the Lincoln Memorial Grounds Cultural Landscape. As described under Alternative 1, Alternative 2 would impact the vista on Henry Bacon Drive as a result of the slight visibility of the entrance and pathway of the Memorial Center, illustrated in Figure 2-17. As described in Section 4.2.2, the vista along 23rd street would offer views of a grass panel, and the Memorial Center's entrance would not be visible, similar to Figure 2-9. Alternative 2 would not alter the iconic vista east from the Lincoln Memorial to the Washington Monument and the U.S. Capitol. Although the largest skylight of the Memorial Center would be partially visible in the view northeast from the steps of the Lincoln Memorial as shown in Figure 2-20, this view is not identified within the Cultural Landscape Report as contributing to the significance of the cultural landscape. In addition, the view to the Memorial Center would be largely obscured by existing trees.

Several vegetative features are considered contributing features of the memorial landscape. Alternative 2 would alter the grass panel of the project site, a contributing feature, by adding skylights, changing the grade, and installing a below-grade entrance. However, the entrance and skylights would be clustered together on the site, such that the majority of the site would still be experienced

by visitors as a grass panel. The existing rows of Elms, which are contributing features, along the bordering streets would not be removed as part of Alternative 2. The new trees installed would be consistent with the historic planting plan for the site. A potential mitigation measure identified in the MOA could be a revision in the landscape plan to further reflect historic planting plan for the site. The MOA could also stipulate that no vegetation taller than groundcover, with the exception of elms identified in the historic planting plan, would be included at the site in order to maintain the open quality of the grass panel. Another potential mitigation measure in the MOA could include an interpretation element about the memorial tree program of the 1920s, and how memorial trees are addressed today.

There would be no changes to sidewalks along the bordering streets, also contributing features to the cultural landscape.

Overall, Alternative 2 would result in moderate long-term adverse impacts on the Lincoln Memorial Grounds due to the potential visibility of the entry. The Memorial Center would also impact vistas along 23rd Street and Henry Bacon. This would constitute an adverse effect under Section 106.

Constitution Gardens

The Constitution Gardens Cultural Landscape abuts the project site along Henry Bacon Drive. Because the project site is not located within this cultural landscape, there would be no direct impacts.

The vista from Constitution Gardens to the Lincoln Memorial is a contributing element of the cultural landscape. The project site lies to the west of Constitution Gardens and north of the Lincoln Memorial and would therefore not be within, but rather adjacent to

the vista to the Memorial. Elements of the Memorial Center would be visible within the Henry Bacon Drive vista, including the entry ramp and elliptical grass area; however, the building would be shielded by new and existing trees at the site and within the heavily wooded Constitution Gardens, and would not block views of the Lincoln Memorial.

The programs held at the Vietnam Veterans Memorial and Vietnam Women's Memorial have also been identified as contributing features of the cultural landscape. The programs and exhibits at the Memorial Center would augment the ceremonies held at these memorials by offering additional background information. Although there would be minimal changes to the changes in views to the Lincoln Memorial, overall, Alternative 2 would result in negligible impacts due to changes in views to the Lincoln Memorial, and beneficial impacts resulting from the improved exhibits. There would be no adverse effect under Section 106.

Washington Monument and Grounds

Views from the top of the Washington Monument to the surrounding city and important sites are a contributing feature of the Washington Monument Grounds Cultural Landscape. From this perspective, the project site is visible. However, the individual features of the site, such as the food-service kiosk and grass panels, are virtually hidden by trees. Like Alternative 1, the Memorial Center would be located underground, and when combined with the new and existing trees, the Memorial Center would not be visible from the Washington Monument. Alternative 2 would add additional trees to this landscape, which would not noticeably alter the landscape from this elevated perspective.

Views from the Lincoln Memorial to the Washington Monument are also a contributing feature of this cultural landscape. As described in Section 4.3.2, this visual axis is reinforced by the long Reflecting Pool and the allees of trees. Under Alternative 2, this view would not visibly be altered because the site would be outside the dominant sight lines and because new trees located at the southern portion of the project site would provide additional screening. Therefore, there would be long-term negligible impacts to the Washington Monument Grounds Cultural Landscape. There would be no adverse effect under Section 106.

Short-term Impacts

Under Alternative 2, construction activities, as well as the associated location of trailers and materials at the project site, would be visible from the Lincoln Memorial Grounds and Constitution Gardens. However, these activities would not obstruct vistas that are contributing features of the landscapes. During construction, the Lincoln Memorial Grounds would be unavailable for active or passive recreation and would disturb the existing grass panel, a contributing feature. Therefore, there would be short-term moderate adverse impacts on the Lincoln Memorial Grounds. There would be short-term minor adverse impacts on Constitution Gardens due to the partial visibility of construction staging and activities.

Cumulative Impacts

The cumulative projects for Alternative 2 would be the same as those described in Alternative 1. As described above, Alternative 2 would result in long-term moderate impacts on the Lincoln Memorial Grounds due to disruptions to the open character of the existing grass panel and impacts to vistas along adjacent roadways,

as well as potential impacts as a result of changes to views and vistas resulting from the Memorial Center. Alternative 2 would result in long-term negligible impacts and beneficial impacts on Constitution Gardens.

When combined with the Lincoln Memorial Reflecting Pool and Grounds Rehabilitation, Alternative 2 would result in moderate adverse cumulative impacts on the Lincoln Memorial Grounds. When combined with the National Mall Plan, Alternative 2 would result overall in long-term beneficial cumulative impacts on Constitution Gardens.

Conclusion

Alternative 2 would reduce the area dedicated to multi-purpose recreation, change the grade of the site, install new trees, and establish an entry to the Memorial Center from Henry Bacon Drive, thereby impacting the vistas along 23rd Street and Henry Bacon

Drive. In addition, the use of the site for active recreation would be altered to accommodate the Memorial Center, and the open, uninterrupted character of the existing grass panel would change, resulting in long-term moderate adverse impacts on the Lincoln Memorial Grounds and an adverse effect under Section 106. Because views from Constitution Gardens to the Lincoln Memorial would continue to be filtered through trees and the limited elevation of the Memorial Center, there would be negligible impacts on Constitution Gardens. In addition, the exhibits of the Memorial Center would augment the ceremonies conducted at The Wall in Constitution Gardens, which would result in a beneficial impact. There would be negligible impacts on the Washington Monument Grounds. In combination with cumulative projects, Alternative 2 would result in moderate adverse impacts on the Lincoln Memorial Grounds and could result in beneficial impacts on Constitution Gardens.

4.3 VISITOR USE AND EXPERIENCE

Methodology and Assumptions

This analysis considered the area's current uses and the potential effects of constructing an education facility on the visitor experience and use at the site. The Memorial Center could affect the activities and the type of visitor experience and use/visitation at the Memorial Center and the surrounding area. The visual character of the National Mall area experienced by the visitors was also considered.

VVMF estimates that approximately 1.25 million visitors will visit the Memorial Center each year. VVMF determined the number of yearly visitors using the maximum allowable occupancy, as prescribed by code, at any given interval. It is estimated that visitors would spend approximately 45 minutes at Center, which was then extrapolated for eight hours of daily operation. The estimate was then adjusted for seasonal and peak conditions.

Study Area

The study area for visitor use and experience is the project site and the broader National Mall area.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on visitor use and experience:

- *Negligible:* Visitors would likely be unaware of any effects associated with implementation of the alternative. There would be no noticeable change in visitor use and experience

or in any defined indicators of visitor satisfaction or behavior.

- *Minor.* Changes in visitor use and/or experience would be slight and detectable but would not appreciably limit critical characteristics of the visitor experience. Visitor satisfaction would remain stable.
- *Moderate.* A few critical characteristics of the desired visitor experience would change and/or the number of participants engaging in a specified activity would be altered. Some visitors who desire their continued use and enjoyment of the activity/visitor experience might pursue their choices in other available local or regional areas. Visitor satisfaction would begin to decline.
- *Major.* Multiple critical characteristics of the desired visitor experience would change and/or the number of participants engaging in an activity would be greatly reduced or increased. Visitors who desire their continued use and enjoyment of the activity/visitor experience would be required to pursue their choices in other available local or regional areas. Visitor satisfaction would markedly decline.
- *Beneficial.* Characteristics of the desired visitor experience would improve and/or the number of participants engaging in an activity would increase. Visitor satisfaction would increase.

- *Duration.* Short term impacts would occur during the time of construction and the first year of operation. Long-term impacts would last beyond the first year of operation.

Visitor Use and Experience Impacts of No Action Alternative

The No Action Alternative would maintain the existing visitor uses and experience. The project site would continue to offer active recreation opportunities through the open space and existing backstop. Active recreation activities would continue to require a permit issued by NAMA.

Passive recreation opportunities would also continue. The open space, when not in use for active recreation, would still offer visitors a relatively quiet area from which to view the Lincoln Memorial. Visitors would rest, picnic, or take part in other passive recreation activities, similar to existing conditions.

The food service kiosk would continue to operate at the project site. Visitors would continue to take advantage of the refreshments, gifts, and other visitor services and products. Outdoor seating on the patio would continue to be offered. Therefore, there would be no impacts on visitor use and experience as a result of the No Action Alternative.

Cumulative Impacts

Because there would be no impacts on visitor use and experience, there would be no cumulative impacts as a result of the No Action Alternative.

Conclusion

Under the No Action Alternative, the existing visitor use and experience would continue. The site would offer active recreation opportunities, requiring NAMA permits, and passive recreation.

The existing food service kiosk would continue operation and the offer of visitor services.

Visitor Use and Experience Impacts of Alternative 1

Under Alternative 1, a visitor education center would be located underground in the area currently used for active and passive recreation. The Memorial Center would be accessible through an entry on the eastern portion of the site from either Constitution Avenue or Henry Bacon Drive. The entry area would remove some existing open space. Although flush with the ground's surface, further breaks in the open space would occur due to skylights in a north-south alignment. A below-grade courtyard would be open.

VVMF estimates that approximately 1.3 million visits to the Memorial Center would occur each year. For comparison, this figure represents approximately 29 percent of visits to the Vietnam Veterans Memorial, which received 4.56 million visits in 2010 (NPS, 2011a). Comparatively, annual visits to the Lincoln Memorial, National World War II Memorial, and the Korean War Veterans Memorial are estimated to be six, four, and three million, respectively (NPS, 2011a).

It is anticipated that people would generally visit the Vietnam Veterans Memorial first, followed by a visit to the Memorial Center. Visitors would spend the amount of time necessary for them to experience the Memorial. Afterwards, visitors would go to the Memorial Center to find out more about the Memorial they had just experienced and its history. The Memorial Center would build upon and augment the existing experience offered by the Memorial. However, it is possible that in the first year of operation, people who had previously visited the Vietnam Veterans Memorial would visit only the Memorial Center, relying on earlier experience of the Memorial. This phenomenon is expected to be temporary in nature.

Under Alternative 1, the Memorial Center would offer visitors an opportunity to learn more about the Vietnam War. Visitors would access the Memorial Center from walkways leading from Henry Bacon Drive or Constitution Avenue. Although the interior configuration may be adjusted in the future, it is anticipated that once they have arrived, visitors would enter into the main lobby where a ticket and information counter would be located. From there, visitors would cross the garden and descend a series of ramps, which would also serve as exhibit space about those who served in the Vietnam War. Once on the lower level, visitors would have the opportunity to visit several exhibit areas about the Vietnam War and the Vietnam Veterans Memorial. A book sales area and restrooms would also be located on the lower floor. From the exhibition areas, visitors would access an open-air garden would offer a contemplative space. Rangers would be stationed in the Memorial Center to provide additional interpretation. Visitors would exit the facility by using stairs or elevators near the book sales area to return to the entry. By offering visitors an additional education opportunity, Alternative 1 would result in long-term beneficial impacts on visitor use and experience.

Lighting would be installed at the Memorial Center for visitor safety. Lights would be used to illuminate pedestrian pathways and handrails, enabling visitors to use the pathways safely in the dark.

The grass area of the site would be available for multi-purpose recreation under Alternative 1. The skylights, courtyard, and grading of the site would reduce the portion of open space available for multi-purpose recreation. The existing grassy open space would be altered by the skylights and below-grade courtyard, both of which would serve to fragment the existing grass panel. The remaining open space would continue to offer opportunities to view

the Lincoln Memorial, picnic, rest, or other activities. The existing food service kiosk would continue to operate and provide refreshments and other visitor services. The existing patio and seating would also remain. As a result, long-term impacts on visitors who use the site for recreation would be adverse and minor.

During construction of the Memorial Center, visitor use of the project site would be limited. Fencing would prohibit visitor entry and the existing recreation fields would be removed, thereby resulting in short-term moderate adverse impacts.

Cumulative Impacts

Because many people see numerous attractions in the Monumental Core during one visit, there are a number of projects that have the potential to impact the cumulative visitor use and experience. Implementation of the National Mall Plan would provide improved maintenance, educational opportunities, a more welcoming atmosphere, and improved visitor services and amenities. As part of the National Mall Plan, Constitution Gardens, the Sylvan Theater Area, and Union Square would be redesigned.

Elsewhere on the National Mall, the Lincoln Memorial Reflecting Pool Rehabilitation would improve an existing visitor attraction, as would the redesign of President's Park. The Mall Turf Rehabilitation, Washington Monument Security Screening, the Jefferson Memorial Vehicle Security Barriers, and National Gallery renovation would augment existing visitor facilities.

The National Museum of African American History and Culture would offer a large new attraction on the National Mall. As a result

of its installation, there would be a reduction in open space for multi-purpose recreation.

Other planned attractions near the National Mall include the National Museum of Women's History, the National Museum of the American Latino, the Dwight D. Eisenhower Memorial, and the American Veterans Disabled for Life Memorial. The renovation of the National Aquarium would also offer an improved visitor experience. All of the cumulative projects discussed would have long-term beneficial impacts on visitor use and experience. Construction of these projects would result in re-routing of pedestrian and vehicular re-routing and temporary closure of areas and attractions. As a result, there would be short-term minor impacts on visitor use and experience.

The Arlington Memorial Bridge Repairs would require temporary re-routing of pedestrians and vehicles due to sidewalk and road lane closures, which would be limited to non-rush hour times and weekends. Therefore, there would be short-term minor impacts on visitor use and experience. There would be no long-term impacts on visitor use and experience.

As described above, Alternative 1 would result in overall long-term beneficial impacts and short-term moderate adverse impacts on visitor use and experience. When combined with the short-term adverse impacts and long-term beneficial impacts of the cumulative projects, the Alternative 1 would result in short-term moderate adverse cumulative impacts and long-term beneficial cumulative impacts on visitor use and experience. Alternative 1 would also result in minor adverse cumulative impacts on visitors who use the site for multi-purpose recreation.

Conclusion

Alternative 1 would offer visitors the opportunity to learn more about the Vietnam War and the Vietnam Veterans Memorial through an indoor exhibit space and education center. Alternative 1 would augment an existing attraction, the Vietnam Veterans Memorial, on the National Mall, resulting in long-term beneficial impacts. The reduction of multi-purpose recreation space would result in long-term minor adverse impacts for this user group. Short-term moderate adverse impacts would occur due to limited site access during construction. Combined with the cumulative projects, Alternative 1 would have short-term moderate adverse impacts and overall long-term beneficial impacts on visitor use and experience. Alternative 1 would also result in minor adverse cumulative impacts on visitors who use the site for multi-purpose recreation.

Visitor Use and Experience Impacts of Alternative 2

Alternative 2 would result in similar visitor use and experience as Alternative 1. Like Alternative 1, Alternative 2 features a visitor education center located underground in the area currently used for active and passive recreation. The Memorial Center would be accessible through an entry on the eastern portion of the site, which would remove some existing open space. Access to the entry stairs and ramp would be from Henry Bacon Drive only. Additionally, a seatwall near three trees would provide seating in a partially-shaded area. Two skylights would be flush with the ground's surface, and skylights to the courtyard would break the open space. Lighting in Alternative 2 would offer the same level of illumination as Alternative 1, providing lighting for paths and handrails for visitor safety.

With a few exceptions, the experience of the Memorial Center would be similar between Alternatives 1 and 2. Each would offer visitors an opportunity to learn more about the Vietnam War. Under Alternative 2, visitation volumes and patterns are anticipated to be the same due to the same level of programming and visitor amenities provided. Under Alternative 2, visitors would access the Memorial Center from walkways leading from Henry Bacon Drive. Although the interior configuration may change as the design progresses, it is anticipated that after arrival, visitors would enter into the main lobby where a ticket counter and book sales area would be located. From there, visitors would descend a series of ramps, which would also serve as exhibit space about those who served in the Vietnam War. Once on the lower level, they would have the opportunity to visit several exhibit areas about the Vietnam War and the Vietnam Veterans Memorial. A garden would offer a contemplative space and would connect to multiple exhibit

areas. Visitors would then exit the facility by using stairs or elevators to return to the entry. Like Alternative 1, Alternative 2 would result in long-term beneficial impacts on visitor use and experience.

Like Alternative 1, the multi-purpose recreation space available at the site would be decreased due to the installation of skylights, courtyard, and grading of the site. The existing grass open space would be altered by the skylights and openings to the below-grade courtyard in a more compact disruption of open space than under Alternative 1. The remaining open space would continue to offer opportunities to view the Lincoln Memorial, picnic, rest, or engage in other activities. Additionally, seating at the entrance of the building would provide additional opportunities for rest and passive recreation. The existing food service kiosk and patio with seating would remain. As a result, long-term impacts on visitor use and experience would be adverse and minor.

During construction of the Memorial Center, visitor use of the project site would be limited. Fencing would prohibit visitor entry and the existing recreation fields would be removed, thereby resulting in short-term moderate adverse impacts.

Cumulative Impacts

Due to its same location and similar use, the cumulative projects and their associated impacts are the same for Alternative 2 as Alternative 1. As described above, Alternative 2 would result in long-term minor adverse impacts on some users of the site and beneficial impacts and short-term moderate adverse impacts on visitor use and experience. When combined with the short-term adverse impacts and long-term beneficial impacts of the cumulative

projects, Alternative 2 would result in short-term moderate adverse cumulative impacts and overall long-term beneficial cumulative impacts on visitor use and experience. Alternative 2 would also result in minor adverse cumulative impacts on visitors who use the site for multi-purpose recreation.

Conclusion

Alternative 2 would offer visitors the opportunity to learn more about the Vietnam War and the Vietnam Veterans Memorial through an indoor exhibit space and education center. Alternative 2 would augment an existing attraction, the Vietnam Veterans Memorial, on the National Mall, resulting in long-term beneficial

impacts. The reduction of multi-purpose recreation space would result in long-term minor adverse impacts for this user group. Short-term moderate adverse impacts would occur due to limited site access during construction. Combined with the cumulative projects, Alternative 2 would have short-term moderate adverse impacts and overall long-term beneficial impacts on visitor use and experience. Alternative 2 would also result in minor adverse cumulative impacts on visitors who use the site for multi-purpose recreation.

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4.4 PARK OPERATIONS AND MANAGEMENT

Methodology and Assumptions

Park operations and management, for the purpose of this analysis, refers to the quality and effectiveness of the park staff to maintain and administer park resources and facilities and to provide for an effective visitor experience. This includes an analysis of the condition and maintenance of facilities used to support park operations. The impact analysis is based on the current description of park operations presented in Section 3: Affected Environment.

Study Area

The study area for operations and management is the NAMA boundaries, including staffing, facilities, and budget.

Impact Thresholds

Impact thresholds are as follows:

- *Negligible*: Park operations would not be impacted or the impact would not have a noticeable or appreciable impact on park operations.
- *Minor*: Impacts would be noticeable, but would be of a magnitude that would not result in an appreciable or measurable change to park operations.
- *Moderate*: Impacts would be readily apparent and would result in a substantial change in park operations that would be noticeable to staff and the public. Mitigation could be required and may be effective.

- *Major*: Impacts would be readily apparent and would result in a substantial change in park operations that would be noticeable to staff and the public and would require the park to readdress its ability to sustain current park operations.
- *Duration*: Short-term impacts would occur during the construction of the alternative and the first two years of its operation; long-term impacts extend beyond the construction of the alternative.

Park Operations and Management Impacts of No Action Alternative

Under the No Action Alternative, existing park management and operations would continue. NPS would continue its operation of NAMA with current staffing levels, unless otherwise dictated by budgetary constraints. Current maintenance levels would continue for parks and memorials. A private entity would continue to operate and maintain the existing food service kiosk located at the project site.

NPS would continue to maintain the project site. This would include mowing grass, and maintaining sidewalks, chain and post fencing, and the existing backstop. Visitors would continue to apply for permits for active recreation at the location.

Because there would be no change to the operation of the site, there would be no impacts on park operations and management as a result of the No Action Alternative.

Cumulative Impact

Under the No Action Alternative, there would be no change in park operations and management. Thus, there would be no cumulative impacts on this resource area as a result of the No Action Alternative.

Conclusion

The No Action Alternative would continue existing NAMA operation and management practices, both for the project site and for NAMA as a whole. Because no changes would result as part of the No Action Alternative, no impact on park management and operations would occur.

Park Operations and Management Impacts of Alternative 1

Alternative 1 would expand the facilities at the project site. As such, NPS would incur greater maintenance responsibilities. Alternative 1 would place an underground education facility with a green roof at the site. The Memorial Center design would include three skylights and an open-air interior courtyard. Additional trees would be installed near the perimeter of the site. NPS would continue to maintain the outdoor space at the site, including the grass open space and trees. Watering of new trees during periods of drought, mowing, and other landscape services would be needed. The re-use of on-site stormwater treatment for irrigation would require additional maintenance. Occasional maintenance of the structure may require removal of small portions of the turf comprising the green roof, which would then be replanted. Additional general upkeep of the site, such as snow and trash removal, would increase because the entrance walkways and sidewalks would have an increased footprint over the site and the use levels of the site are anticipated to be higher than existing conditions.

In Alternative 1, the interior of the Memorial Center would contain a ticket desk, exhibit space, bookstore, restrooms, and administrative office space. Exhibits at the site would require monitoring to ensure that conditions for artifacts or other collections are appropriate. Staffing would be required to provide information to visitors as well as to distribute tickets. The Memorial Center would require maintenance, such as cleaning, plumbing, trash removal, and overall upkeep.

Alternative 1 would require staffing at the site for both visitor services and to perform the activities described above. A minimum

of ten interpretation and six maintenance personnel would be required. The on-site bookstore would be operated by an independent organization.

Additional staff would be needed to perform curatorial duties. The National Capital Region's Museum Resource Center, which houses and curates the Collection, would have more responsibility associated with managing exhibits on public display and the increased visibility to the collection, which heretofore has never been permanently exhibited on the National Mall. The visibility would also require NAMA to have professionally-trained staff available on-site.

In the short-term, the additional staff required for operation of the Memorial Center would place more burden on NAMA operations and management than the current conditions. The staff time required for the site would either add more responsibility to existing staff or would add more staff to NAMA operations, potentially resulting in strains on existing budgets. In both cases, changes to NAMA management would be required as resources currently allocated to the park are redistributed. NPS would also be responsible for monitoring activities during the construction phase to ensure that mitigation measures and NPS policies are followed. As a result, the short-term impacts of Alternative 1 on park operations and management would be moderate and adverse.

In the long-term, budgets would be adjusted to address the Memorial Center and staffing levels would be adjusted or redistributed to adequately serve the Memorial Center. Therefore, the long-term impacts on park operations and management would be minor and adverse as future maintenance and operational resources increase and are modified.

Cumulative Impact

Numerous projects within NAMA are currently underway or are planned. These projects would create demands on park staff time, as well as funding needed for construction and management. When taken cumulatively, these projects and Alternative 1 could affect park management. NAMA budgets come as one appropriation, rather than for specific attractions within the park.

The implementation of the National Mall Plan and the construction of the Potomac Park Levee, the Lincoln Memorial Reflecting Pool Rehabilitation, the National Mall Turf Rehabilitation, the Jefferson Memorial Vehicular Security Barriers, the Washington Monument Security Screening, the Redesign of Union Square, Constitution Gardens, the Sylvan Theater Area, the Eisenhower Memorial, and the American Veterans Disabled for Life Memorial would cause additional pressures on NAMA resources and budgets, due to additional staffing and maintenance requirements.

The energy-efficient components and sustainable systems incorporated into these projects would lower the overall operational costs of these facilities. Constitution Avenue roadway improvements would enhance street conditions, which would also reduce operational costs. Construction activity related to these projects would result in short-term increase in NPS staff responsibilities due to construction monitoring and contract management.

Over the long-term, the projects listed above would represent improvements to NAMA's facilities and require less frequent maintenance. However, their operation would increase staff requirements. Similarly, budgets would be adjusted over time to

support additional resources. These projects would have short- and long-term minor adverse cumulative impacts on park management and operations, both as part of the National Mall and other areas within NAMA.

Under Alternative 1, NAMA staff would be required to take on additional duties and responsibilities. This would result in short-term moderate adverse impacts during construction and the first year of operation, and long-term minor adverse impacts on park operations and management. Therefore, when combined with other projects within NAMA, the cumulative impacts of Alternative 1 in the short term would be adverse and moderate and in the long-term, the cumulative impacts would be adverse and minor.

Conclusion

Alternative 1 would place additional budgetary, maintenance, and staffing responsibilities on NPS and NAMA. Changes in funding and staffing would be required. However, as the park incorporates new operational needs into their annual budget and park staffing, these burdens would decline over time as they become less noticeable and incorporated into the long-term activities of NAMA and NPS park staffing and operations. Therefore, short-term adverse impacts on park operations and maintenance would be moderate. Long-term impacts on park operations and maintenance would be adverse and minor as future maintenance and operational resources would increase, and as future projects within NAMA would be implemented. The cumulative effect of Alternative 1 and other projects within NAMA would be moderate and adverse in the short term and minor and adverse in the long term.

Park Operations and Management Impacts of Alternative 2

Alternative 2 would also expand the facilities at the project site. Similar to Alternative 1, Alternative 2 would install an underground education center at the project site that would include two skylights and three openings to the below-grade courtyard. The staffing requirements for the bookstore, ticket and information area, exhibit space, restrooms, other visitor services, and outdoor walkways would not vary between alternatives due to similar scales of operation.

Although Alternative 2 would install five more trees than Alternative 1 and would include a vegetated area near the entrance, the overall level of maintenance would be similar between the two alternatives. New trees would need water during periods of drought, and moving and other landscape services would be needed.

Because Alternative 2 is similar to Alternative 1 in terms of scale of park operations and maintenance, the staffing requirements would be the same under Alternative 2. A minimum of ten interpretation and six maintenance personnel would be needed to effectively operate and maintain the site. Additional staff would be needed at the National Capital Region's Museum Resource Center and at NAMA.

Like Alternative 1, Alternative 2 would place additional burdens on NAMA operations and management in the short-term due to the additional staff required for operating the Memorial Center. Impacts on park operations and management in the short-term would be moderate and adverse.

Like Alternative 1, under Alternative 2, budgets and staffing levels would be adjusted or redistributed over time to adequately serve the Memorial Center. Therefore, the long-term impacts on park operations and management would be minor and adverse as future maintenance and operational resources increase or are modified.

Cumulative Impact

The same projects would have the potential to cause cumulative impacts under Alternative 2 as under Alternative 1. Under Alternative 2, NAMA staff would be required to take on additional duties and responsibilities. This would result in short-term moderate adverse impacts during construction and the first year of operation, and long-term minor adverse impacts on park operations and management. Therefore, when combined with other projects within NAMA, the cumulative impacts of Alternative 2, would be adverse and moderate in the short term, and the long-term impacts would be adverse and minor.

Conclusion

Like Alternative 1, Alternative 2 would place additional budgetary, maintenance, and staffing responsibilities on NPS and NAMA. Changes in funding and staffing would be required. However, as the park incorporates new operational needs into their annual budget and park staffing, these burdens would decline over time as they become less noticeable and incorporated into the long-term activities of NAMA and NPS park staffing and operations. Therefore, short-term adverse impacts on park operations and maintenance would be moderate. Long-term impacts on park operations and maintenance would be adverse and minor as future maintenance and operational resources would increase, and as future projects

within NAMA would be implemented. The cumulative impacts of Alternative 2 and other projects within NAMA would be moderate and adverse in the short-term and minor and adverse in the long term.

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4.5 SOILS

Methodology and Assumptions

Potential impacts on soils are determined based on the extent of disturbance to natural/undisturbed soils, the potential for soil erosion, limitations associated with the soils, and the change in productive soils. Analysis of potential impacts is based on on-site inspection of soils within the project area, review of existing literature and maps, and information provided by NPS and other agencies.

Study Area

The study area for soils is the Memorial Center site boundaries. It is expected that ground-disturbing construction activities would not occur outside this area.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on soil resources:

- *Negligible.* Soils would not be impacted or the impact would be below or at the lower levels of detection.
- *Minor.* Impacts on soils would be detectable. Impacts on undisturbed areas would be small. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.
- *Moderate.* Impacts on soils would be readily apparent and result in a change to the soil character over a relatively wide

area. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.

- *Major.* Impacts on soils would be readily apparent and substantially change the character of the soils over a large area both in and around the Memorial site. Mitigation measures to offset adverse impacts would be needed, with no guarantee of success.
- *Duration.* Short-term impacts would occur during construction of the Memorial Center; long-term impacts extend beyond the implementation of the alternative.

Soils Impacts of No Action Alternative

Under the No Action alternative, no changes would be made to the project site. The existing soils would remain in their current state, as would the existing trees, open lawn area, and food service kiosk. The open field would continue to be used as for active and passive recreation. Therefore, impacts to soils on the project site under the No Action Alternative would be negligible due to compaction or disturbance as a result of recreation.

Cumulative Impact

Past, present, and foreseeable future projects in the vicinity of the study area include the Potomac Park Levee Project and the future Improvements to Constitution Gardens. Phase 2 of the Potomac Park Levee Project would re-grade a portion of the grass panel southwest of the corner of 23rd Street and Constitution Avenue. This phase includes raising the ground elevation by approximately one to two feet to meet the congressionally authorized level of flood

protection. The future improvements to Constitution Gardens are currently the object of a design competition, but are anticipated to include grading and excavation to meet the design goals. Both the Potomac Park Levee Project and the improvements to Constitution Gardens will result in short-term minor adverse impacts to soils.

As described above, the No Action Alternative would result in no impacts to soils on the project site. Therefore, it would add no additional impacts to those of past, present, and future projects.

Conclusion

Under the No Action Alternative, no changes would be made to the project site. Soils conditions would not change or be disturbed. Therefore, long-term impacts on soils would be negligible. Cumulative impacts on soils would be short-term, minor and adverse as a result of the Potomac Park Levee Project and the future Improvements to Constitution Gardens.

Soils Impacts of Alternative 1

Alternative 1 would impact soils through ground disturbance and removal. Alternative 1 would result in the disturbance of approximately 2.35 acres of soil and vegetation near the Memorial Center of the project site. Soils would be trenched and excavated to a depth of 38 feet in order to construct the slurry wall and pile foundations of the Memorial Center. The required excavation would result in the removal of approximately 46,000 cubic yards of top- and subsurface soil. In addition, a geothermal field is proposed to generate energy for the building's heating and air conditioning systems. The geothermal field would involve digging 83 six-inch diameter wells to a depth of 300 feet. This would displace approximately 800 cubic yards of soil.

Once the Memorial Center is completed, disturbed soils in the areas not occupied by the building would be replaced in-kind with sod meeting NPS specifications. Existing grass would be replaced as sod and maintained as turfgrass, including the green roof. Overall the construction of the Memorial Center would result in a loss of 8,000 s.f. (0.18 acre) of pervious surface on the 5.2-acre project site. The establishment of new sod, with associated soil amendments such as fertilizer on the disturbed areas would partially offset the disturbance of soil.

The Memorial Center would retain stormwater on-site, using it for internal use in the building, such as toilet flushing. The Memorial Center's design would include methods to reduce stormwater runoff from the site, such as the installation of a green roof. These measures would minimize impacts on soils as a result of stormwater run-off.

Grading and excavation of the site for the construction of the Memorial Center would create the potential for increased soil erosion and sedimentation. During construction, approved sediment control measures would be implemented in accordance with applicable regulations.

The following construction-related measures would be taken to mitigate impacts on soils:

- Prior to construction, an erosion and sediment control plan would be prepared, establishing measures to minimize erosion in cleared areas and the transport of soil and sediments.
- During construction, soils exposed by clearing, grading, excavation, or construction would be stabilized. Soils would be stockpiled using appropriate best management practices.
- Excavated soils would be subject to sampling and testing should indicators of petroleum-impacted soils present themselves during excavation and construction.
- If determined to contain petroleum hydrocarbons, the soils would be removed and disposed of in accordance with a DDOE-approved safety plan.
- Appropriate regulatory notification would occur if contaminated soils are identified.
- Impacted soils would be segregated through field screening.
- Waste characterization samples would be collected.
- Contaminated soils would be disposed of at an appropriate waste disposal facility.
- Removal activities would be documented.

Overall, based on the above considerations, Alternative 1 is expected to result in short-term and long-term minor adverse

impacts on the project site's soils as a result of disturbance. As noted in Chapter 3, the affected soils are comprised of fill and no significant amount of natural or especially valuable soils would be affected.

Cumulative Impact

Cumulative projects described in the No Action Alternative could also result in cumulative impact under Alternative 1. As described earlier, Alternative 1 would result in short-and long- minor adverse impacts on soils. In combination with past, present, and foreseeable future projects, Alternative 1 would result in cumulative short-and long-term minor adverse impacts.

Conclusion

A total of 0.18 acres of pervious land would be replaced by impervious surface. About 46,800 cubic yards of soil would be removed from the site. Therefore, Alternative 1 would result in short-and long-term minor adverse impacts and cumulative impacts on soils.

Soils Impacts of Alternative 2

Like Alternative 1, Alternative 2 would impact soils through ground disturbance and removal. Due to the similar footprints and limit of disturbance for both alternatives, Alternative 2 would also result in the disturbance of approximately 2.35 acres of soil and vegetation near the center of the project site, and the removal of approximately 46,000 cubic yards of top- and subsurface soil. A geothermal field would displace approximately 800 cubic yards of soil.

Similar to Alternative 1, Alternative 2 would replace existing grass with sod and maintained as turfgrass, including the green roof. Overall the construction of the Memorial Center would result in a loss of 5,400 s.f. (0.12 acre) of pervious surface on the 5.2-acre project site. The establishment of new sod would partially offset the disturbance of soil. Stormwater retention and use measures would be similar to those described in Alternative 1.

Grading and excavation of the site for the construction of the Memorial Center would create the potential for increased soil erosion and sedimentation. During construction, approved sediment control measures would be implemented in accordance with applicable regulations.

The following construction-related measures would be taken to mitigate impacts on soils:

- Prior to construction, an erosion and sediment control plan would be prepared, establishing measures to minimize erosion in cleared areas and the transport of soil and sediments.

- During construction, soils exposed by clearing, grading, excavation, or construction would be stabilized. Soils would be stockpiled using appropriate best management practices.
- Excavated soils would be subject to sampling and testing should indicators of petroleum-impacted soils present themselves during excavation and construction.
- If determined to contain petroleum hydrocarbons, the soils would be removed and disposed of in accordance with a DDOE-approved safety plan.
- Appropriate regulatory notification would occur if contaminated soils are identified.
- Impacted soils would be segregated through field screening.
- Waste characterization samples would be collected.
- Contaminated soils would be disposed of at an appropriate waste disposal facility.
- Removal activities would be documented.

Overall, Alternative 2 is expected to result in short- and long-term minor adverse impacts on the project site's soils as a result of disturbance. The affected soils are comprised of fill and no significant amount of natural or especially valuable soils would be affected.

Cumulative Impact

Cumulative projects described in the No Action Alternative could also result in cumulative impact under Alternative 2. As described earlier, Alternative 2 would result in short- and long-term minor adverse impacts on soils. In combination with past, present, and foreseeable future projects, Alternative 2 would result in cumulative short- and long-term minor adverse impacts.

Conclusion

A total of 0.12 acres of pervious land would be replaced by impervious surface. About 46,800 cubic yards of soil would be removed from the site. Therefore, Alternative 2 would result in short-and long-term minor adverse impacts and cumulative impacts on soils.

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4.6 TRANSPORTATION

Methodology and Assumptions

The evaluation for the impact on roadways and intersections was performed in compliance with traffic engineering standards, DDOT standards, and safety standards. Vehicular traffic anticipated to be generated by the Vietnam Veterans Memorial Education Center is negligible. The proposed project is unlikely to affect the local traffic network. Vehicular trips generated by the site would be minimal and therefore a quantitative traffic analysis would not provide any additional insight.

The traffic analysis makes several assumptions for future traffic in the year in which the Vietnam Veterans Memorial Education Center would be fully operational. The assumptions include the following:

- Visitor trips by automobile to Vietnam Veterans Memorial Education Center are minimal, similar to current conditions.
- Visitors to the Memorial Center would follow existing patterns of transportation usage, with the same number using vehicles, transit, or other modes as current visitors.
- Visitors to the Vietnam Veterans Memorial Education Center area are mainly pedestrians drawn from the nearby attractions such as the Vietnam Veterans Memorial and the Lincoln Memorial.
- This analysis assumes that 1.3 million visits to the Memorial Center would occur each year, as described in Section 4.3: Visitor Use and Experience.

Study Area

The study area is defined by Constitution Avenue (US-50) to the north, 23rd Street NW to the west and Henry Bacon Dr NW to the southeast. The affected environment includes the following roadways:

- Constitution Avenue;
- Henry Bacon Dr NW;
- 23rd Street NW; and
- Regional roadway access.

Intersections for the study area include those directly adjacent to the site:

- Constitution Avenue at 23rd Street NW (signalized);
- Constitution Avenue at Henry Bacon Dr NW (signalized);
- 23rd Street NW at Henry Bacon Dr NW (signalized).

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on transportation:

- *Negligible.* The impact is barely detectable and/or results in no measurable or perceptible change to the transportation resource, including roadway network, pedestrian and bicycle facilities and motorcoach parking.

- *Minor.* The impact is slight but detectable and/or results in small but measurable changes to the transportation infrastructure; the effect is localized to the Vietnam Veterans Memorial Education Center or the adjacent transportation system.
- *Moderate.* The impact is readily apparent and/or easily detectable to visitors to the Vietnam Veterans Memorial Education Center grounds. However, the effects primarily occur within one-quarter mile of the Memorial Center.
- *Major.* The impact affects both the transportation system adjacent to the Vietnam Veterans Memorial Education Center as well as the regional transportation network. A major adverse impact occurs if changes generated by the construction or operation of additional projects lead to significant failure, without remediation, of particular modes of transportation or significantly alter/ degrade the flow of people and goods in the region.

Transportation Impacts of No Action Alternative

Under the No Action Alternative, the Memorial Center would not be built. Comparing 2009 to 2008 traffic volumes in the immediate area show almost no traffic growth (Virginia Department of Transportation 2010). Under the No Action Alternative, no additional trips would occur. It is anticipated that existing traffic conditions would increase at a rate less than one percent, which would minimally increase to the level of traffic and volumes on adjacent roadways. Public transportation would continue to be provided by WMATA, with no changes to service or ridership. The existing bus parking lanes in the vicinity would continue to operate as such.

Existing visitation levels and patterns would remain the same. Visitors would continue to use signalized crosswalks at intersections adjacent to the site that would accommodate the pedestrian volume. Because existing pedestrian patterns would continue and vehicular traffic would increase minimally, the long-term traffic impacts to transportation would be negligible.

Cumulative Impacts

The Constitution Avenue Street Improvements and the Arlington Memorial Bridge Repairs could result in cumulative impacts. Improvements to Constitution Avenue NW between 23rd and 15th Streets would occur, including new streetscape improvements and new street lighting. This project would result in long-term beneficial impacts.

The Arlington Memorial Bridge Repairs would require temporary lane and sidewalk closures, which would be limited to non-rush

hour times and weekends. As a result, this project could result in temporary minor adverse impacts on transportation.

As described above, the No Action Alternative would result in long-term negligible impacts. When combined with the cumulative project, the results would be long-term and beneficial. Cumulative short-term impacts would be minor and adverse.

Conclusion

No changes to the transportation infrastructure or visitor use patterns would occur as a result of the No Action Alternative. It is anticipated that minimal increases of traffic would occur. Therefore, there would be long-term negligible impacts on transportation. Cumulative impacts would be long-term and beneficial.

Transportation Impacts of Alternative 1

Public Transportation

Under Alternative 1, WMATA would continue to offer access to public transportation in the vicinity of the site. The existing Metrorail station serving the site, Foggy Bottom, would continue to operate. Additionally, the six bus routes that stop along Constitution Avenue would continue their existing routes. Because the Memorial Center is not anticipated to attract new visitors to the National Mall after the first year of operation, but rather provide an additional attraction to visitors already travelling to nearby attractions, such as the Vietnam Veterans Memorial, the Memorial Center would not change ridership levels of public transportation in the vicinity over the long term. As a result, there would be negligible impact on public transportation.

In the first year of operation, it is anticipated that some visitors would specifically visit the Memorial Center, rather than visiting it as part of a larger visit to the National Mall. Many of these visitors would use public transportation to arrive at the site, similar to existing patterns. Given the relatively small number of new visits that would occur in comparison to the capacity of public transportation services in the vicinity of the site, short-term impacts on public transportation would be negligible.

Vehicle Traffic

Under Alternative 1, existing traffic conditions would be expected to increase at an annual rate less than one percent, which would increase the level of traffic and volumes on adjacent roadways (District of Columbia Department of Transportation (DDOT) 2011).

Comparing 2009 to 2008, traffic volumes in the immediate area show almost no traffic growth (DDOT, 2009).

Based on projections by VVMF, visitors to the Vietnam Veterans Memorial and other attractions on the National Mall would extend their visit by going into the Memorial Center; it is not anticipated that visitors would travel exclusively to go to the Memorial Center after the first year of operation. Alternative 1 would not provide vehicular parking at the site. Because no new parking opportunities would be provided in close proximity of the Memorial Center and because no new overall visits would occur as a result of the Memorial Center after the first year of operation, it is anticipated that no new vehicular trips would occur as a result of the Memorial Center over the long-term.

Additionally, it is assumed that visitors would continue take advantage of transportation options that include mass transit (subway and bus), personal vehicles, motorcoaches/tour buses, taxi, walking, and bicycling at existing levels because no changes to transportation services would occur. Pre-arrival information, such as brochures and websites, would include information on arrival via transit, as is currently provided for the Vietnam Veterans Memorial by NPS and VVMF. Therefore, the long-term traffic impacts to vehicular traffic would be negligible.

During construction, adjacent roadway lanes along 23rd Street and Henry Bacon Drive may be periodically blocked due to loading or unloading of materials; such closures would be temporary in nature. Additionally, these lane closures would take place during off-peak hours and would allow at least one lane of traffic to pass. Signage would be used at the site to alert motorists.

Additionally, it is anticipated that visitors would go to the Memorial Center at greater numbers during its first year of operation, similar to the opening of other attractions on the National Mall. Given the other transportation options available to visitors, the use of pre-arrival information about alternative transportation, and the lack of parking opportunities at the site and in the vicinity, it is anticipated that there would be small increase in the vehicular traffic as a result of the Memorial Center in proportion to the existing transportation modal split, which is estimated to be approximately nine percent. Therefore, there would be a short-term minor adverse impact on vehicular traffic.

Tour Bus Access

The existing motorcoach and school bus drop-off area along Henry Bacon Drive, Daniel French Drive, and Constitution Avenue would provide loading/unloading opportunities in the vicinity of the Memorial Center. The site would not generate new motorcoach trips, but visitors arriving by motorcoach would visit nearby tourist destinations and walk to the Memorial Center. This would be similar to existing visitation patterns for sites within NAMA and nearby locations. Some new trips may be generated by school field trips that are attracted by the Memorial Center. Bus drop off areas in the vicinity of the site would be minimally affected. In the event that the number of buses exceeds the nearby parking opportunities, buses would be forced to park in designated spaces outside adjacent areas, returning later to pick up visitors. Therefore, long-term impacts on bus parking would be minor.

Pedestrian Connections

Alternative 1 would maintain existing sidewalks and provide additional pedestrian connections to the interior of the site. A new

sidewalk west of the intersection with Henry Bacon Drive from Constitution Avenue would lead to Henry Bacon Drive, as well as a ramp down to the Memorial Center entrance. Pedestrians coming from the south would use this connection to Henry Bacon Drive to reach the Memorial Center.

To access the Memorial Center, most pedestrians would use the south crosswalk across Henry Bacon Drive. Near the site, the existing pedestrian connections at crosswalks, sidewalks, and trails in the area would provide access to the Memorial Center. These facilities would be able to accommodate the volumes of pedestrians expected in the area. Jaywalking across Henry Bacon Drive to the Vietnam Veterans Memorial would be discouraged by the continued use of post and chain barriers. No crosswalk would be installed due to the high vehicular traffic volumes on Henry Bacon Drive, thereby avoiding potentially dangerous conditions. Therefore, long-term impacts on pedestrian activity would be adverse and minor.

In the first year of operation, it is anticipated that some visitors would specifically visit the Memorial Center, rather than visiting it as part of a larger visit to the National Mall. However, the sidewalks and signalized crosswalks would be able to accommodate the temporary increase in the number of pedestrians.

During construction sidewalks around the site would be periodically closed. Signs would be installed at the site to alert pedestrians and re-route them around the construction by directing them to the other side of affected streets (23rd Street and Henry Bacon Drive), whose sidewalks would remain open, at signalized crosswalks. As a result, there would be short-term minor adverse impacts on pedestrians.

Cumulative Impacts

The cumulative impacts for Alternative 1 would be the same as those in the No Action Alternative. As described above, Alternative 1 would result in long-term negligible adverse impacts on public transit and vehicular traffic and minor impacts on tour bus access and pedestrians due to changes in the volume of visitors. Short-term impacts on vehicular traffic and pedestrians would be minor and adverse due to the temporary closure of travel lanes and sidewalks. Cumulative impacts would be long-term, minor, and adverse for vehicular transportation and beneficial for pedestrian connections. Short-term cumulative impacts on vehicular traffic and pedestrians would be adverse and minor.

Conclusion

Alternative 1 would increase the number of pedestrians in the area, but it is not anticipated that vehicular traffic would increase due to the lack of on-site parking. Bus parking and public transportation service would not change. Therefore, there would be long-term negligible impacts on public transportation, vehicular traffic, and tour bus access and minor adverse impacts on pedestrians. Short-term impacts on vehicular traffic and pedestrians would be adverse and minor due to the closure of sidewalks and travel lanes during construction and the short-term additional vehicular traffic generated by visits to the site. Cumulative impacts would include long-term minor impacts on vehicular traffic and beneficial impacts on pedestrians, while cumulative short-term impacts on both would be adverse and minor.

Transportation Impacts of Alternative 2

Public Transportation

Like Alternative 1, under Alternative 2, WMATA would continue to offer access to the Foggy Bottom Metrorail station and the existing bus routes. Because the Memorial Center is not anticipated to attract new visitors to the National Mall, but rather provide an additional attraction visitors already travelling to nearby attractions, such as the Vietnam Veterans Memorial, the Memorial Center would not change ridership levels of public transportation in the vicinity over the long term. As a result, there would be negligible long-term impacts on public transportation.

Also like Alternative 1, under Alternative 2, it is anticipated that some visitors would specifically visit the Memorial Center during its first year of operation, rather than visiting it as part of a larger visit to the National Mall. Many of these visitors would use public transportation to arrive at the site, similar to existing patterns. Given the relatively small number of new visits that would occur in comparison to the capacity of public transportation services in the vicinity of the site, short-term impacts on public transportation would be negligible.

Vehicle Traffic

Because Alternative 2 would not provide vehicular parking, like Alternative 1, there would be no additional vehicular traffic generated by the Memorial Center. Similar to the No Action Alternative and Alternative 1, there would be a small increase in traffic as a result of natural traffic growth. Also like Alternative 1, it is anticipated that visits to the Memorial Center would not represent new visitors to the National Mall and the vicinity after the

first year of operation, but the Memorial Center would extend existing visits. Visitors would continue to follow existing travel patterns, including the use of mass transit to the site. Therefore, there would be long-term negligible impacts on vehicular traffic.

Like Alternative 1, under Alternative 2 adjacent roadway lanes may be periodically blocked due to loading or unloading of materials during construction; such closures would be temporary in nature. Signs would be installed to alert motorists of the closures. Under Alternative 2, there would be an elevated visitation in the first year of operation, similar to Alternative 1. Given the other transportation options available to visitors, the use of pre-arrival information about alternative transportation, and the lack of parking opportunities at the site and in the vicinity, it is anticipated that there would be small increase in the vehicular traffic as a result of the Memorial Center. Therefore, there would be a short-term minor adverse impact on vehicular traffic.

Tour Bus Access

Like Alternative 1, under Alternative 2, the existing motorcoach drop off area along Henry Bacon Drive, Daniel French Drive and Constitution Avenue would provide parking opportunities in the vicinity of the Memorial Center. The site would not generate new motorcoach trips, but visitors arriving by motorcoach are expected to visit nearby tourist destinations and walk to the Memorial Center. This would be similar to existing visitation patterns for sites within NAMA and nearby locations. Bus drop off areas and long-term parking in the vicinity of the site would not be affected. Therefore, impacts on bus parking would be negligible.

Pedestrian Connections

Alternative 2 would maintain existing sidewalks, crosswalks, and trails. Like Alternative 1, the pedestrian connections at adjacent crosswalks would provide safe crossing conditions for the anticipated volume of visitors. Pedestrians coming from the south would use the crosswalk across Henry Bacon Drive at Memorial Circle to reach the Memorial Center. Jaywalking across Henry Bacon Drive to the Vietnam Veterans Memorial would be discouraged by the continued use of post and chain barriers. No crosswalk would be installed due to the high vehicular traffic volumes on Henry Bacon Drive, thereby avoiding potentially dangerous conditions. Therefore, impacts on pedestrian activity would be minor.

During construction sidewalks around the site would be periodically closed under Alternative 2. Signs would be installed at the site to alert pedestrians and re-route them around the construction. As a result, there would be short-term minor adverse impacts on pedestrians.

Cumulative Impacts

The cumulative impacts for Alternative 2 would be the same as those in the No Action Alternative. As described above, Alternative 2 would result in long-term negligible adverse impacts on public transit and vehicular traffic and minor impacts on tour bus access and pedestrians due to changes in the volume of visitors. Short-term impacts on vehicular traffic pedestrians would be minor and adverse due to the temporary closure of travel lanes and sidewalks. Cumulative impacts would be long-term, minor, and adverse for vehicular transportation and beneficial for pedestrian connections. Short-term cumulative impacts on vehicular traffic would be adverse and minor.

Conclusion

Like Alternative 1, Alternative 2 would increase the number of pedestrians in the area, but it is not anticipated that vehicular traffic would increase due to the lack of on-site parking. Bus parking and public transportation services would not change. Therefore, long-term adverse impacts on transportation would be negligible-to-minor. Cumulative impacts would include long-term minor impacts on vehicular traffic and beneficial impacts on pedestrians, while cumulative short-term impacts would be adverse and minor.

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4.7 VEGETATION

Methodology and Assumptions

Available information on the vegetation present on the project site, especially mature trees, was compiled and reviewed. Impacts on vegetation were determined based on the general characteristics of the site and vicinity, site observations, and the removal of vegetation.

Study Area

The study area for vegetation is the project site. The cumulative study area includes adjacent areas.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on vegetation:

- *Negligible.* Vegetation would not be impacted or the impact would be below or at the lower levels of detection.
- *Minor.* Impacts on vegetation would be detectable. Impacts to undisturbed areas would be small. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.
- *Moderate.* Impacts on vegetation would be readily apparent and result in a change to vegetation over a relatively wide area. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.

- *Major.* Impacts on vegetation would be readily apparent and substantially change the character of vegetation over a large area both in and out of the project site. Mitigation measures necessary to offset adverse impacts would be needed and extensive, with no guarantee of success.
- *Duration.* Long-term impacts would extend beyond the construction of the alternative.

Vegetation Impacts of No Action Alternative

Under the No Action Alternative, no vegetation would be removed from the site. The existing turfgrass would remain undisturbed, as would the 36 trees of various size and species that line the perimeter of the grass panel. The turfgrass area would continue to be used for passive and active recreation. The 24 trees located between the sidewalk and the street curb would also remain undisturbed. There would be no change to existing conditions and no conflict with the NCPC Design Principles. Therefore, the No Action Alternative would result in negligible impacts on vegetation.

Cumulative Impacts

Projects with the potential to result in cumulative impacts when considered along with the proposed action include the Potomac Park Levee Project and the future Improvements to Constitution Gardens. The Potomac Park Levee Project would remove approximately six large Elm trees as part of re-grading a portion of the grass panel southwest of the corner of 23rd Street and Constitution Ave. Turfgrass would also be removed temporarily during the grading of the site. The future improvements to Constitution Gardens are currently the object of a design

competition, but are anticipated to include some limited tree removal to meet the design goals. Both projects are anticipated to mitigate these impacts by replacing all removed trees in-kind. Hence, impacts on trees would be minor. The Potomac Park Levee Project would have short-term adverse and long-term negligible impacts to turfgrass. The improvements to Constitution Gardens will most likely have a short-term minor adverse impacts due to the construction process and long-term moderate adverse impacts due to the conversion of turfgrass areas to various tourist facilities.

As described above, the impacts on vegetation would be negligible. Cumulatively, the overall long-term impacts on vegetation would be adverse but minor.

Conclusion

No changes to vegetation would occur as a result of the No Action Alternative. Therefore, the No Action Alternative would result in negligible impact on vegetation. Cumulatively, the impacts on vegetation would be minor and adverse.

Vegetation Impacts of Alternative 1

Implementation of Alternative 1 would permanently remove existing turfgrass vegetation from the site. The remaining 60 trees would be preserved using the NPS National Capital Region Guidelines for Tree Preservation, dated April 2006. The Alternative 1 design would place approximately 16 additional trees into the landscape, replicating the historic plantings. NPS would likely specify disease-resistant elm cultivars. Adverse impacts would be minor and offset through the landscape plan, which would require more trees to be planted on site than would be removed during the construction of the Memorial Center. The proposed landscape plan would not introduce invasive species.

During the construction of the Memorial Center, existing vegetation would be removed, a short-term minor impact. As part of restoration of the site post-construction, turfgrass sod would be placed on the site to replace the turf removed during the grading, excavation, and construction processes. This sod would be a mixture of species appropriate for the site, including, but not limited to, hybrid Bermuda grasses, perennial ryegrass, turf-type tall fescue, or Kentucky Bluegrass. The geothermal field was designed to avoid the majority of critical root zones of the trees being to be preserved.

The following construction-related measures would be taken to mitigate impacts on vegetation:

- NPS National Capital Region Guidelines for Tree Preservation would be followed during the construction process.

- All trees with critical root zones affected by construction disturbance would be root pruned according to the NPS National Capital Region Guidelines for Tree Preservation.
- All trees with critical root zones affected by construction disturbance would be treated with the growth regulator Cambistat (Paclobutrazol).
- All trees with critical root zones affected by construction disturbance would be mulched after rooting pruning and Cambistat application. Mulch would be applied according to the NPS National Capital Region Guidelines for Tree Preservation.
- In times of little or no rainfall, and especially during the hot summer months, each tree on the project site would be treated with 25 gallons of water per week.
- After the construction of the Memorial Center, the planting recommendations of the NPS personnel would be implemented as shown on the September 2011 Tree Survey and Assessment. There recommendations include removing and replacing ten trees, planting 26 trees missing from the historical landscape plan, and moving two trees that appear to conflict with underground utilities.

As a result of Alternative 1, the short- and long-term impacts to vegetation of this component of the proposed action would be minor.

Cumulative Impact

Under Alternative 1, the cumulative impact project would be the same as those for the No Action Alternative. As described above, Alternative 1 would result in negligible impacts on vegetation. When considered along with the Potomac Park Levee Project and the future improvements to Constitution Gardens, Alternative 1 would result in long-term minor adverse cumulative impacts on vegetation due to removal of vegetation.

Conclusion

Under Alternative 1, a portion of the existing turfgrass would be removed from the project site. The disturbance of the existing vegetation would be limited to the construction phase. Mitigation measures, described above, would be employed to ensure the trees not proposed for removal survive the construction process. Lost trees would be replaced with a net gain of seven. The long-term adverse impacts on vegetation would be minor.

Vegetation Impacts of Alternative 2

Like Alternative 1, implementation of Alternative 2 would permanently remove existing vegetation from the sites. The remaining 60 trees would be preserved using the NPS National Capital Region Guidelines for Tree Preservation, dated April 2006. The Alternative 2 design would place approximately 16 additional trees into the landscape, replicating historic plantings. NPS would likely specify disease-resistant elm cultivars. Landscape plantings would be located adjacent to the retaining wall near the Memorial Center's entrance. Adverse impacts would be minor and offset through the landscape design, which would require more trees to be planted onsite than would be removed during the construction of the Memorial Center. The proposed landscape plan would not introduce invasive species to the site.

Like Alternative 1, during the construction of the Memorial Center under Alternative 2, existing vegetation would be removed, a short-term minor impact. As part of restoration of the site post-construction, turfgrass sod would be placed on the site to replace the turf removed during the grading, excavation, and construction processes. The geothermal field would be designed to avoid the majority of critical root zones of the trees being to be preserved.

The following construction-related measures would be taken to mitigate impacts on vegetation:

- NPS National Capital Region Guidelines for Tree Preservation would be followed during the construction process.

- All trees with critical root zones affected by construction disturbance would be root pruned according to the NPS National Capital Region Guidelines for Tree Preservation.
- All trees with critical root zones affected by construction disturbance would be treated with the growth regulator Cambistat (Paclobutrazol).
- All trees with critical root zones affected by construction disturbance would be mulched after rooting pruning and Cambistat application. Mulch would be applied according to the NPS National Capital Region Guidelines for Tree Preservation.
- In times of little or no rainfall, and especially during the hot summer months, each tree on the project site would be treated with 25 gallons of water per week.
- After the construction of the Memorial Center, the planting recommendations of the NPS personnel would be implemented as shown on the September 2011 Tree Survey and Assessment. There recommendations include removing and replacing 10 trees, planting 26 trees missing from the historical landscape plan, and moving two trees that appear to conflict with underground utilities.

As a result of Alternative 2, the short- and long-term impacts to vegetation of this component of the proposed action would be minor.

Cumulative Impact

Under Alternative 2, the cumulative impact project would be the same as those for the No Action Alternative and Alternative 1. As described above, Alternative 2 would result in negligible impacts on vegetation. When considered along with the Potomac Park Levee Project and the future improvements to Constitution Gardens, Alternative 2 would result in long-term minor and adverse cumulative impacts on vegetation due to removal of vegetation.

Conclusion

Under Alternative 2, a portion of the existing turfgrass would be removed from the project site. The disturbance of the existing vegetation would be limited to the construction phase. Mitigation measures, described above, would be employed to ensure the trees not proposed for removal survive the construction process. Lost trees would be replaced with a net gain of seven. The long-term adverse impacts on vegetation would be minor.

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4.8 UTILITIES

Methodology and Assumptions

Available information on the utilities present at the existing site was compiled and reviewed. Impacts on utilities were determined based on the general characteristics of the site and vicinity, a field data survey, and record drawings.

Study Area

The study area for utilities is the project site. The cumulative study area includes adjacent properties.

Impact Thresholds

Negligible. There would be no noticeable temporary or permanent disruption to utilities and the serviced community during construction of the Memorial Center.

Minor. The impact on the utility lines and the serviced community would not be substantial; utility lines would be relocated, but there would be no noticeable disruption to the service community during construction of the Memorial Center.

Moderate. The impact on the utility lines and the serviced community would be substantial; utility lines would be relocated, and there would be a noticeable disruption to the services community during construction of the Memorial Center. However, following the construction phase, service to the community would be restored to its former state.

Major. The impact on the utility lines and the serviced community would be substantial, resulting in permanent changes and diminished service experienced by the system and the community.

Duration. Long-term impacts would extend beyond the construction of the alternative.

Utilities Impacts of No Action Alternative

Under the No Action Alternative, no changes would be made to the project site. Excavation would not occur, and the existing trees, open space, and food service kiosk would remain.

Because there would be no change to the use of the site, there would be no impacts on utilities as a result of the No Action Alternative.

Cumulative Impact

Under the No Action Alternative, there would be no change in utilities. Thus, there would be no cumulative impacts on this resource area as a result of the No Action Alternative.

Conclusion

The No Action Alternative would continue the existing use of the project site. Because no changes would result as part of the No Action Alternative, no impact on utilities would occur.

Utilities Impacts of Alternative 1

Under Alternative 1, the Memorial Center would be located underground near the middle of the project site. The majority of the utility lines that serve the project site, sanitary sewer lines and storm drains, are located on the perimeter of the site. The Memorial Center's proposed building footprint and geothermal field would be located on a portion of the project site where utility lines do not currently exist.

Stormwater Management

The existing storm sewer and drain system, located at the perimeter of the site, would remain. The Memorial Center would retain stormwater on-site, using it for irrigation and gray water, such as toilet flushing. The short-term construction impacts to the storm sewer system would be negligible. In the long-term, no additional adverse impacts to the system are expected to result.

The Memorial Center's design would include methods to reduce stormwater runoff from the site, such as the use of stormwater runoff for irrigation, the installation of a green roof, and other low-impact development techniques. Therefore, long-term beneficial impacts to the storm sewer system could occur due to the increased capture and reuse of stormwater on site reducing the load on the system.

Sanitary Sewer Systems

The Memorial Center would connect to the existing sanitary sewer line that runs along Henry Bacon Drive at the southern end of the facility via an eight-inch pipe. The existing line would be shielded from accidental damage or earth shifting during construction, and

consultation would occur with DC Water. There would be a short-term negligible adverse impact to the sanitary sewer system in the immediate vicinity of the project site while the Memorial Center is connected to the system. Once construction is complete, no additional impacts to the system are anticipated. In order to reduce the sanitary sewer load generated by the Memorial Center, gray water would be used for irrigation and toilet flushing and water-saving devices such as low-flow toilets and faucets would be installed.

Energy Systems

The construction of the Memorial Center would include the installation of a geothermal field to address the heating and cooling needs of the Memorial Center. During the installation of the geothermal field, buried utilities would be identified and avoided.

The field would consist of approximately 83 wells to a depth of 300 feet. The wells would be located around the Memorial Center, but would avoid tree root zones, and would be located away from existing utilities. The existing thermal field for the kiosk would continue to operate.

Geothermal fields provide heating and cooling to buildings by transferring heat between the constant temperature of the earth and the building. Geothermal fields are highly efficient and use less energy than conventional heating and cooling systems. To further reduce the energy demand of the Memorial Center, energy-efficient lighting and fixtures would be used and skylights would be installed to bring daylight into the Memorial Center. The newly-installed geothermal fields would be located north of the existing geothermal fields that service the food service kiosk. Because the geothermal fields would not overlap and due to the depths of the drilling, the

new fields would not affect long-term service to the food service kiosk.

The manifold lines of the geothermal system serving the food service kiosk would be relocated during construction. However, efforts would be made to ensure that there would be no interruption of the heating and cooling systems, resulting in a short-term negligible adverse impact.

Cumulative Impact

The Potomac Park Levee Project would require the relocation and possible replacement of sanitary sewer and storm drains. These changes would result in short-term moderate adverse impacts on utilities as a result of the new construction. Under Alternative 1, there would be short- and long-term negligible impacts on sanitary sewer systems and energy systems. For stormwater management, Alternative 1 would result in short-term negligible impacts and long-term beneficial impacts. Given the capacity of these utilities for the proposed development, and the scheduling of outages related to construction, cumulative impacts on utilities in the area would be negligible.

Conclusion

Alternative 1 would connect to the existing utility system and would be located on a portion of the project site where utility lines do not currently exist. Therefore, existing utility lines would not be rerouted during the construction of the Memorial Center. Short-term negligible impacts to utilities could occur during construction. After construction is complete, no further impacts to utilities are anticipated, and long-term negligible impacts could occur due to

energy efficiency and stormwater management techniques deployed on the site.

Utilities Impacts of Alternative 2

The location and size of Alternative 2, as well as the location of utility connections in Alternative 2, are similar to that in Alternative 1. As a result, impacts on utilities would be similar to those described in Alternative 1.

Stormwater Management

Like Alternative 1, the existing storm sewer and drain system would remain and the Memorial Center would retain and reuse stormwater on site. The short-term construction impacts to the storm sewer system would be negligible. In the long-term, no additional adverse impacts to the system are expected to result and long-term negligible impacts could occur due to increased capture and reuse of stormwater on site under Alternative 2.

Sanitary Sewer Systems

Alternative 2 would connect to the existing sanitary sewer line in a similar manner to that described in Alternative 1. There would be a short-term negligible adverse impact to the sanitary sewer system in the immediate vicinity of the project site while the Memorial Center is connected to the system. Once construction is complete, no additional impacts to the system are anticipated due to Alternative 2. Like Alternative 1, sanitary sewer loads could be reduced by utilizing water-saving techniques on the site.

Energy Systems

Like Alternative 1, Alternative 2 would install a geothermal field to address heating and cooling needs. The geothermal fields would not overlap and due to the depths of the drilling, would not affect

long-term service to the food service kiosk. During construction, Alternative 2 would relocate the geothermal manifold lines, although heating and cooling would be maintained during the relocation. As a result, there would be negligible short-term adverse impacts on geothermal systems.

Cumulative Impact

The cumulative projects would be the same for Alternatives 1 and 2. Under Alternative 2, there would be short- and long-term negligible impacts on sanitary sewer systems and energy systems. For stormwater management, Alternative 2 would result in short-term negligible impacts and long-term beneficial impacts. Like Alternative 1, cumulative impacts on utilities could occur under Alternative 2 due to construction projects in the project area. Given the capacity of these utilities for the proposed development, and the scheduling of outages related to construction, cumulative impacts on utilities in the study area would be negligible.

Conclusion

Alternative 2 would connect to the existing utility system and would be located on a portion of the project site where utility lines do not currently exist. Therefore, existing utility lines would not be rerouted during the construction of the Memorial Center. Short-term negligible impacts to utilities could occur during construction. After construction is complete, no further impacts to utilities are anticipated, and long-term negligible impacts would occur due to energy efficiency and stormwater management techniques deployed on the site.

5.0 CONSULTATION AND COORDINATION

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5.1 AGENCY CONSULTATION AND COORDINATION

Public agencies and individuals were involved in the development of this EA through the public scoping process and the Section 106 consultation process. NPS initiated the formal scoping process on August 30, 2011, when NPS distributed letters to cooperating agencies and stakeholders. In addition to mailing these notices, there were also notices included on NPS's Planning, Environment, and Public Comment (PEPC) website, which NPS uses to notify the public about NPS activities and actions. The notice was also distributed via VVMF's 10-state mailing list. A public scoping meeting was held on September 15, 2011. The public comment period was closed on October 3, 2011. Comments received during this period were taken into consideration in the development of this EA.

In addition, meetings took place with stakeholders through the coordinated Section 106 and NEPA processes. NPS initiated the Section 106 process by sending a letter to the DC SHPO and to the Advisory Council on Historic Preservation on February 17, 2005, as part of the site selection process for the Memorial Center. The Section 106 process did not conclude with the site selection, but was rather continue through the design process. A Section 106 Consultation meeting occurred on May 3, 2005. The purpose of the meeting was to review potential sites for the Memorial Center.

Further Section 106 consultations were held in order to review the design of the Memorial Center. A meeting held September 12, 2007, served to introduce to the consulting parties, the site design scenarios for three alternatives. A subsequent meeting was held on October 24, 2007, to receive further comment on the designs.

Additional Section 106 meetings were held in order to present revisions to the 2007 conceptual design for the Memorial Center. On May 4, 2009, the consulting parties convened to comment on revised designs for the Memorial Center. Another Section 106 meeting occurred on May 24, 2011. The purpose of the meeting was to present revisions that have been made to the 2009 conceptual design for the Memorial Center. The meeting was also meant to finalize the Area of Potential Effect (APE), identify historic properties, and continue discussions on how to best minimize and/or mitigate potential adverse effects the undertaking may have on the surrounding cultural resources.

The Section 106 process is ongoing, and outcomes will be formalized in an MOA. That document will identify measures to be undertaken in order to mitigate adverse effects to cultural resources. It is anticipated that continued consultation with the Consulting Parties would be called for in the MOA.

In addition to the NEPA and Section 106 processes, the design team made several presentations to government bodies and agencies. The design team presented concept plans to CFA on October 18, 2007, and to NCPC on December 6, 2007. CFA provided comments and approved the concept plan. Because NCPC does not approve concept plans, they provided comments. CFA approved a revised concept plan on April 16, 2009, and on June 5, 2009, NCPC provided comments on the revised concept. At these times, each body provided initial feedback and questions regarding the design concepts. These comments were considered as part of the design process.

The following federal and district agencies heard informational presentations of the three designs and provided initial feedback:

- National Capital Planning Commission (NCPC);
- District of Columbia State Historic Preservation Office; and
- District of Columbia Department of Transportation.

Before construction, these bodies will review the final concept. Some of the approvals from NPS, CFA, and NCPC will occur before the NEPA process is completed, while others will occur after the process.

6.0 LIST OF PREPARERS

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6.1 LIST OF PREPARERS

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7.0 GLOSSARY AND ACRONYMS

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7.1 GLOSSARY OF TERMS

Affected Environment — The existing environmental conditions to be affected by a proposed action and alternatives at the time the project is implemented.

Alignment — The arrangement or relationship of several disparate configuration components along a common vertical or horizontal line or edge.

Best Management Practices (BMP) — Methods that have been determined to be the most effective, practical means of preventing or reducing pollution or other adverse environmental impacts.

Contributing Resource — A building, site, structure, or object that adds to the historic significance of a property or district.

Council on Environmental Quality (CEQ) — Established by Congress within the Executive Office of the President with passage of the National Environmental Policy Act of 1969. CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

Cultural Resources — Archaeological, historic, or visual resources including prehistoric and historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reason.

Cumulative Impacts — Under NEPA regulations, the incremental environmental impact or effect of an action together with the effects of past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

Enabling Legislation — The law that gives appropriate officials the authority to implement or enforce regulations.

Endangered Species — Any species that is in danger of extinction throughout all or a significant portion of its range. The lead federal agency for the listing of a species as endangered is the U.S. Fish and Wildlife Service and it is responsible for reviewing the status of the species on a five-year basis.

Environmental Assessment (EA) — An environmental analysis prepared pursuant to the National Environmental Policy Act to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement (EIS) or would not significantly affect the environment and thus conclude with a FONSI.

Environmental Impact Statement (EIS) — A report that documents the information required to evaluate the environmental impact of a project. It informs decision makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the environment.

Executive Order — Official proclamation issued by the president that may set forth policy or direction or establish specific duties in connection with the execution of federal laws and programs.

Finding of No Significant Impact (FONSI) — A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an

Environmental Impact Statement (EIS). A FONSI is based on the results of an Environmental Assessment (EA).

Floodplain — The flat or nearly flat land along a river or stream or in a tidal area that is covered by water during a flood.

Mall — The area west of the United States Capitol between Madison and Jefferson Drives from 1st to 14th streets NW/SW. The east end of the Mall from 1st to 3rd streets NW/SW between Pennsylvania Avenue and Maryland Avenue is also known as Union Square. The Mall is characterized by the east–west stretch of lawn bordered by rows of American elm trees and framed by museums and other cultural facilities.

Massing — The conceptual form of a building that conveys proportion and size.

Monumental Core — The monumental core is the central area of federal Washington that includes the National Mall and the areas immediately beyond it, including the United States Capitol, the White House and President’s Park, Pennsylvania Avenue and the Federal Triangle area, East and West Potomac Parks, the Southwest Federal Center, the Northwest Rectangle, Arlington Cemetery, and the Pentagon.

National Environmental Policy Act (NEPA) — The Act as amended, articulates the federal law that mandates protecting the quality of the human and natural environment. It requires federal agencies to systematically assess the environmental impacts of their proposed activities, programs, and projects including the “no build” alternative of not pursuing the proposed action. NEPA requires agencies to consider alternative ways of

accomplishing their missions in ways that would be less damaging to the environment.

National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.) — The Act that established a program for the preservation of historic properties throughout the nation, and for other purposes.

National Mall — The area comprised of the Mall, the Washington Monument, and West Potomac Park. It is managed by the National Park Service’s National Mall & Memorials Parks.

National Register of Historic Places (NRHP) — A register of districts, sites, buildings, structures, and objects important in American history, architecture, archeology, and culture, maintained by the secretary of the interior under authority of Section 2(b) of the Historic Sites Act of 1935 and Section 101(a)(1) of the National Historic Preservation Act of 1966, as amended.

Scoping — Scoping, as part of NEPA, requires soliciting public and agency comments on the proposed action and its possible effects; establishing the depth of environmental analysis needed; determining analysis procedures, data needs, and task assignments.

Threatened Species — Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Viewshed — A viewshed includes a total visible area from a particular fixed vantage point.

Vista – A distant or long view, especially one seen through some opening such as an avenue or corridor, street wall, or the trees that frame an avenue or corridor; a site offering such a view.

Wetlands — The U.S. Army Corps of Engineers and the Environmental Protection Agency jointly define wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands generally include swamps, marshes, bogs, and similar areas.

7.2 ACRONYMS

ACHP	Advisory Council on Historic Preservation	NAMA	National Mall & Memorial Parks
APE	Area of Potential Effect	NCMAC	National Capital Memorial Advisory Commission
ADT	Average Daily Traffic	NCPC	National Capital Planning Commission
BGS	Below Ground Surface	NEPA	National Environmental Policy Act
CFR	Code of Federal Regulations	NMAAHC	National Museum of African American History and Culture
CFA	Committee of Fine Arts	NHPA	National Historic Preservation Act
CEQ	Council on Environmental Quality	NHRP	National Register of Historic Places
CWA	Commemorative Works Act	NAGPRA	Native American Graves Protection and Repatriation Act
DBH	Diameter at Breast-Height	NPS	National Park Service
DDOE	District Department of the Environment	PEPC	Planning, Environment, and Public Comment website
DCOP	District of Columbia Office of Planning	SHPO	State Historic Preservation Office
DDOT	District Department of Transportation	SOF	Statement of Findings
EA	Environmental Assessment	TCP	Traditional Cultural Property
EPA	Environmental Protection Agency	USFWS	United States Fish and Wildlife Service
FONSI	Finding of No Significant Impact	WMATA	Washington Metropolitan Area Transit Authority
FIRM	Flood Insurance Rate Map	VVMF	Vietnam Veterans Memorial Fund
LOS	Level of Service		
MOA	Memorandum of Agreement		

8.0 REFERENCES

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8.1 REFERENCES

- Casey Trees Foundation. 2002, 2005, and 2006. Tree Inventory, <http://www.caseytrees.org/geographic/>, accessed May 2010. Washington, DC.
- District of Columbia Department of Transportation (DDOT). 2011. *2009 Traffic Volumes Map*. Washington, DC.
- District of Columbia Department of Transportation (DDOT). 2009. *2008 Traffic Volumes Map*. Washington, DC.
- District of Columbia Office of Planning (DCOP). 2006. *Comprehensive Plan for the National Capital: District Elements*. Washington, DC.
- DC Water. 2011. Waste Water Collection Services. http://www.dcwasa.com/wastewater_collection/css/default.cfm, accessed October 2011. Washington, DC.
- Federal Emergency Management Agency (FEMA). 2010 Flood Insurance Rate Map. Washington, DC, Community Panel Number 1100010019C); Effective date September, 2010.
- Jessen, Lawrence and Arlene Palmer. 2005. Fresh Insights into Early American Glass Manufacturing: The Jacob Cist Papers. *Journal of Glass Studies* 47: 137-175.
- Intergovernmental Panel on Climate Change. 2011. http://www.grida.no/publications/other/ipcc_tar/?src=/climate/ipcc_tar/wg2/index.htm, accessed October 18, 2011.
- National Capital Planning Commission (NCPC). 1997. *Extending the Legacy: Planning America's Capital for the 21st Century*. Washington, DC.
- NCPC. 2001. *Memorials and Museums Master Plan*. Washington, DC.
- NCPC. 2004. *Comprehensive Plan for the National Capital: Federal Elements*. Washington, DC.
- NCPC. 2009. *Monumental Core Framework Plan: Connecting New Destinations with the National Mall*. Washington, DC.
- National Park Service (NPS). 2011. <http://www.nps.gov/nama/planyourvisit/directions.htm>, accessed November 22, 2011. Washington, DC.
- NPS. 2011a. NPS Public Use Statistics Office. <http://www.nature.nps.gov/stats/viewReport.cfm>, accessed January, 2011. Washington, DC.
- NPS. 2010. *National Mall Plan/ Environmental Impact Statement*. Washington, DC.
- NPS. 2009. National Center for Recreation and Conservation. <http://www.nps.gov/ncrc/programs/rtca/nri/>, accessed October 2011. Washington, DC.
- NPS. 2008. *Director's Order 24: NPS Museum Collections Management*. Washington, DC.
- NPS. 2006. *NPS Management Policies*. Washington, DC.

- NPS. 2006a. *Director's Order 12: Conservation Planning, Environmental Impact Analysis and Decision-making*. Washington, DC.
- NPS. 2006b. *Director's Order 12 Handbook*. Washington, DC.
- NPS. 2003. *National Capital Parks Central Washington, DC Visitor Transportation Survey*. Washington, DC.
- NPS and Vietnam Veterans Memorial Fund (VVMF). 2006. *Proposed Vietnam Veterans Memorial Center Site Selection*. Washington, DC.
- NPS, Advisory Council on Historic Preservation, and National Council of State Historic Preservation Officers. 2008. *Programmatic Agreement among the National Park Service, Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the NHPA*. Washington, DC.
- Schnabel Engineering (Schnabel). 2009. *Final Geotechnical Report: Vietnam Veterans Memorial and Education Center*. Rockville, MD.
- Washington Metropolitan Area Transit Authority (WMATA). 2011. *Metrorail Passenger Surveys: Average Weekly Passenger Boarding*. http://www.wmata.com/pdfs/planning/FY11_Rail_Ridership_By_Station.pdf, accessed November 22, 2011. Washington, DC.
- WMATA. 2011a. *FY11 Metrobus Weekday Average Ridership*. http://www.wmata.com/pdfs/planning/FY11_Average_Weekday_Bus_Ridership.pdf, accessed November 22, 2011. Washington, DC.

APPENDIX A

NCPC SITE SELECTION APPROVAL

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COMMISSION ACTION

NCPC File No. 6597



VIETNAM VETERANS MEMORIAL VISITOR CENTER

Approval of Site Selection and Design Guidelines

On the Grounds of the Lincoln Memorial bounded by Constitution Avenue, Henry Bacon Drive, Lincoln Memorial Circle, and 23rd Street, NW
Washington, D.C.

Submitted by the National Park Service

August 3, 2006

Commission Action Requested by Applicant

Approval of site selection and design guidelines pursuant to Public Law 108-126 and the Commemorative Works Act (40 U.S.C. 8905).

Commission Action

The Commission:

Finds that the Environmental Assessment prepared by the applicant for the site selection phase of the project and the public comments on the Environmental Assessment provide additional useful information to guide the Commission in its decision-making and that based on the Environmental Assessment and the other submission materials the Executive Director has issued a finding of no significant impact for the site selection conditioned on a set of mitigation actions to be undertaken by the applicant.

Approves Site A for the Vietnam Veterans Memorial Visitor Center, on the parcel bounded by Constitution Avenue, Henry Bacon Drive, Lincoln Memorial Circle, and 23rd Street, NW as shown on NCPC Map File No. 1.43(73.10)42074, conditioned upon the implementation of the package of mitigation set forth in the design guidelines below that is necessary to reduce the otherwise significant impacts of the proposed action, as indicated in the Executive Director's finding of no significant impact for the site selection:

1. The Visitor Center will be constructed underground as required by the authorizing legislation for the project with no portion of the building or related building elements visible from any portion of the Lincoln Memorial steps and podium, from Constitution Avenue, and from within the axial viewsheds of 23rd Street, NW and Henry Bacon Drive, NW.

2. The Visitor Center's entrance will be only minimally visible from the Vietnam Veterans Memorial to satisfy the project's purpose and need, but in accordance with the authorizing legislation will not interfere with or encroach upon the Vietnam Veterans Memorial.
3. To maintain the character of the historic landscape, the Visitor Center's design concept will be based on maintaining the existing grade, and any new slopes will be gradual. The project will raise the existing site grade only to allow for an accessible entry ramp.
4. The Visitor Center will be designed such that light emanating from the Center's interior will not be visible from any portion of the Lincoln Memorial, from Constitution Avenue, and from the Vietnam Veterans Memorial so as not to interfere with or encroach upon the Lincoln Memorial or the Vietnam Veterans Memorial.
5. The Visitor Center will not intrude into the landscape. No protrusions, such as skylights, monitors, light wells, or sunken areaways, will be visible from the sidewalk surrounding the site.
6. The Visitor Center's site lighting for public safety will not interfere with or encroach upon views to and from the Lincoln Memorial and the Vietnam Veterans Memorial.
7. The Visitor Center's design will provide only the paved area necessary for visitors to enter and exit the building and which will also provide service access. The design will not include additional paved area for gathering space or queuing.
8. The project will not include new vehicle parking areas.
9. The Visitor Center will have a single entrance for both visitors and service.
10. The Visitor Center's associated pedestrian street crossing points will be designed to address traffic impacts effectively and to protect pedestrian safety.
11. The Visitor Center will be constructed only on the portion of the site that lies outside of the critical root zone of existing elm trees. The applicant will develop a tree protection plan to protect and preserve the trees both during and after construction in accordance with standard design and construction procedures.
12. The project will place new landscaping on the site in accordance with the National Park Service's Cultural Landscape Report for the Lincoln Memorial referenced in the Environmental Assessment and will maintain the open grass panel on the site surrounded at the site's perimeter by elm trees.
13. The Visitor Center design will not impede the use of the site for multi-purpose recreation on the site.
14. The Visitor Center will be designed without guardrails or perimeter security elements.

The above guidelines are mutually agreed upon by the National Capital Planning Commission and the Commission of Fine Arts pursuant to Public Law 108-126. These design guidelines supersede the design guidelines submitted by the applicant.

Requires the National Park Service to reconstruct softball fields lost as a result of this project on another site within one-half (1/2) mile of Site A, in accordance with the mitigation required in the Executive Director's finding of no significant impact for the project.

Notes the importance of the Commission's early consultation process and **recommends** that the applicant meet with staff for consultation during the development of concept and subsequent design phases to facilitate the Commission's review of the project under its statutory review and approval process.

Deborah B. Young
Secretary to the National Capital Planning Commission