



National Mall Turf and Soil Reconstruction

ENVIRONMENTAL ASSESSMENT

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1 Reconstruction of the

2 Turf and Soil on the National Mall

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Environmental Assessment

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20 **August 2010** NATIONAL MALL AND MEMORIAL PARKS

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PROJECT SUMMARY

The National Park Service (NPS) has prepared this Environmental Assessment (EA) to evaluate a range of alternatives for the reconstruction of the turf and soil within an area of the National Mall in Washington, D.C., between the Washington Monument to the west and the U.S. Capitol Grounds to the east.

The National Mall is a highly recognizable space and one of the most significant historic landscapes in the United States, extending east to west from the Potomac River to the U.S. Capitol building and north to south from the Thomas Jefferson Memorial to Constitution Avenue NW. The smaller area within the National Mall, located between Madison Drive and Jefferson Drive from 1st Street SW to 14th Street NW, is known as the Mall. The Mall is a historic landscape composed of turf panels which are flanked by rows of trees to the north and south and along Madison and Jefferson Drives.

The project area occupies some of the oldest parkland in the national park system and hosts some of the most prominent buildings, museums, and monuments in the country. As one of the most popular national tourist destinations, the Mall is one of the most-used public areas in the District of Columbia for national celebrations, First Amendment demonstrations, special events, and recreation with an annual visitorship of nearly 25 million. However, due to intense use, the turf panels on the Mall have deteriorated; the soil is heavily compacted, the turf is worn away, irrigation systems are compromised, and drainage is inadequate. Action is needed to address the management of this civic space to alleviate the intense soil compaction and to enable proper air, water, and nutrient infiltration. Reducing soil compaction will also improve site drainage, stormwater management, and the condition of turf. To support the new turf system, the current irrigation system needs to be replaced because it has been compromised by the intense use and does not adequately service the project area.

This EA presents a range of alternatives to improve the vegetation and soil on the Mall by removing and replacing the existing soil and irrigation system in the project area and installing new curb and gutter profiles around the turf panels.

The action alternative is the NPS preferred alternative and the implementation thereof would result in long-term beneficial impacts to visitor use, utilities and infrastructure, soils, vegetation, visual resources, and cultural resources. There would be long-term minor to moderate adverse impacts to Park management and operations and public safety. There would be short-term minor to moderate adverse impacts to visitor use, Park management and operations, public safety, soils, vegetation, visual resources, and cultural resources due to the closure of the project area and removal of turf and soil during construction. Park resources or values would not be impaired as a result of implementing any of the options of the preferred alternative.

Note to Reviewers and Respondents:

To comment on this EA, you may mail comments or submit them online within 30 days of the publication of this EA. 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. The preferred method for commenting is to go online at <http://parkplanning.nps.gov/NAMA> and follow the appropriate links. Comments may also be submitted via mail addressed to:

Patrick MacDonald
Attn: Reconstruction of the Turf and Soil on the National Mall
12795 West Alameda Parkway
Lakewood, CO 80288-2838

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CHAPTER 1: PURPOSE AND NEED

Introduction

The National Park Service (NPS) has prepared this Environmental Assessment (EA) to evaluate a range of alternatives for the reconstruction of the turf and soil within an area of the National Mall in Washington, D.C., between the Washington Monument to the west and U.S. Capitol Grounds to the east.

The National Mall is a highly recognizable space and one of the most significant historic landscapes in the United States, extending east to west from the Potomac River to the U.S. Capitol building and north to south from the Thomas Jefferson Memorial to Constitution Avenue NW. The smaller area within the National Mall, located between Madison Drive and Jefferson Drive from 1st Street SW to 14th Street NW, is known as the Mall. The Mall is a historic landscape composed of turf panels aligned at the center of the east-west axis, which is flanked by rows of trees to the north and south and along Madison Drive and Jefferson Drive. The project area for this EA includes the turf panels within the Mall and is shown in Figure 1.1.

This EA presents a range of alternatives to improve the vegetation and soils on the Mall by removing and replacing the existing soil and irrigation system in the project area and installing new curb and gutter profiles around the turf panels.

Purpose of and Need for Action

The purpose of the proposed actions is to improve and protect historic resources, enhance visitor use and experience, and increase the efficiency of Park management and operations. The goal of the project is to achieve a more sustainable civic space by implementing strategies and guidelines to alleviate the compaction of soil and worn turf and to ensure proper drainage and stormwater management in a manner that respects the character of the National Mall.

The project area occupies some of the oldest parkland in the national park system in a place that hosts some of the most prominent buildings, museums, and monuments in the country. As one of the most popular national tourist destinations, the project area is one of the most-used public areas in the District of Columbia for national celebrations, First Amendment demonstrations, special events, and recreation with nearly 25 million visits annually (NPS 2009c). Because of intense use, the project area has deteriorated; the soil is heavily compacted, the turf is worn away, irrigation systems are compromised, and drainage is inadequate.

Action is needed to address the management of this civic space to alleviate the intense soil compaction and enable proper air, water, and nutrient infiltration. Reducing soil compaction will also improve site drainage, stormwater management, and the condition of turf. To support the new turf system, the current irrigation system needs to be replaced because its components have been compromised by the intense use in the project area and are inoperable and unfixable.

Figure 1.1 - Existing Conditions of the Turf and Walkways on the Mall



1 Objectives

2 Objectives are “what must be achieved to a large degree for the action to be considered a success” (NPS
3 Director’s Order 12 [DO-12]; NPS 2001) and represent more specific statements of purpose and need. All
4 alternatives selected for detailed analysis must meet all objectives to a large degree and must resolve the
5 purpose and need for action. The following objectives were identified by the planning team for this
6 project:

- 7 ▪ Improve the visual quality of the National Mall
- 8 ▪ Accommodate high levels of use in the project area in a manner that sustains the character and
9 integrity of the National Mall
- 10 ▪ Create a more sustainable and healthier urban ecosystem that implements best management
11 practices
- 12 ▪ Maximize the site’s potential for stormwater management and minimize reliance on public water
13 sources
- 14 ▪ Address the various soil and landscape treatment conditions in the project area in a manner that is
15 integrated with and complementary to anticipated types and levels of Park use
- 16 ▪ Re-establish the historic greensward on the Mall

17 Project Location

18 The proposed actions are located within the turf panels on the National Mall between 3rd Street and 14th
19 Street and between Madison Drive and Jefferson Drive. The project location is delineated in Figure 1.2.

20 Figure 1.2 – Project Area



1 Several landscape features on the Mall are adjacent to
 2 the project area, as shown in Figure 1.3. The turf
 3 panels are defined as the open turf areas in the center
 4 of the Mall. The turf panels extend from 3rd Street to
 5 14th Street, and are bound on the north and south by
 6 the existing gravel walks. The 180-foot-wide turf
 7 panels endure the heaviest use from events,
 8 demonstrations, passive recreation, and sports use and
 9 are traversed by crossing streets and sidewalks.

10 The turf panels are flanked to the north and south by
 11 tree panels composed of American elm trees and turf.
 12 Trees also line the curbs of Madison Drive and
 13 Jefferson Drive. These street trees are bordered by
 14 brick rings and gravel walkways. Concrete sidewalks
 15 are located outside the gravel on one side and street
 16 curbs on the other. Some of the poorest tree
 17 conditions on the Mall can be found here because of
 18 heavy pedestrian use, inadequate drainage, and
 19 compacted gravel and soil.

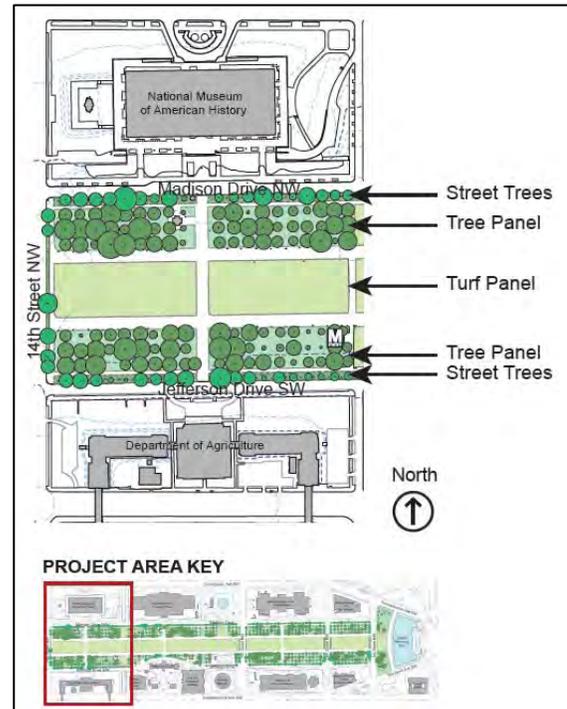
20 The tree panels and street trees were initially included
 21 in the scope of proposed actions, but due to funding
 22 limitations, these areas were removed and will be considered as a subsequent NPS project.

23 Project Background

24 The National Mall receives more than 25 million visits a year (NPS 2009c) which presents enormous
 25 challenges for the NPS to accommodate and balance the intensity, volume, and diversity of use within this
 26 limited area while preserving the lawns that are the centerpiece of the intended greensward. The project
 27 area functions as a venue for both passive and active recreational use and as a civic stage for First
 28 Amendment demonstrations, national celebrations, and regional and local special events and activities. In
 29 2009 there were 115 permitted activities on the Mall resulting in 821 permit days and 750 event days¹
 30 (NPS 2009b).

31 To respond to the ever-increasing visitor demand, the NPS has analyzed the impacts of visitor use over
 32 the last 40 years, and has concluded that heavy and sustained use of the Mall creates a strain on both
 33 natural resources (soil, turf, and trees) as well as human resources (Park management and operations).
 34 Consequently, the project area has undergone several changes and renovations to accommodate more
 35 intensive visitor use. Table 1.1 is not intended to provide a complete morphological history of the Mall,
 36 but rather an overview of the past planning efforts that inform the current proposed actions. The cultural
 37 resources section of “Chapter 3: Affected Environment” provides a more detailed history of the project
 38 area.

Figure 1.3 – Landscape Features on the Mall



¹ Permit days are the total number of days for which an event has been permitted, including the time required for set up and take down. Event days are the days the event actually occurs, not including set up and take down.

1

Table 1.1 – Project Background

| | |
|---------------|--|
| 1936-7 | The National Mall construction is completed. |
| 1976 | The 1976 U.S. Bicentennial Celebration provides the motivation for planning to accommodate large numbers of expected visitors to the nation’s capital. The Skidmore, Owings, & Merrill Plan follows the general layout of L’Enfant and McMillan plans, while suggesting several alterations to accommodate increased congestion and development. Roads were tunneled under the Mall at 9th Street, 12th Street, and I-395 (between 1st and 3rd Streets), and Washington Drive and Adams Drive were converted to gravel walkways. |
| 1977 | The Mall Use Task Force recommends that use of structures be prohibited (tents, platforms, stages, stationary trucks, etc.), all excavation of any kind be prohibited because of injury to elm tree panels, sod and sprinkler systems, and events lasting longer than two days be prohibited. |
| 1986 | <i>Soils of the Mall in Washington, D.C.</i> is published in the Soil Science Society of America and concludes that soils on the Mall are prone to compaction. |
| 1989 | Federal Register notice is released in September 1989 that amends the regulations of the 36 CFR and states that “special events produce excessive soil compaction,” threatening the health of the elms and turf and damaging the Mall’s “aesthetic quality.” The notice concludes “If uncontrolled use of this area continues, this trend will be irreversible.” |
| 1990 | A study by Dr. Philip J. Craul concludes that serious and ongoing damage to the landscape features of the Mall is being inflicted as a result of the continued intensive usage. |
| 1991 | NPS creates guidelines for the management of elm and turf grass panels on the Mall. |
| 1993 | <i>Report on Elms of the National Mall: Studies, Findings, and Recommendations</i> reports that soil compaction adversely affects the turf and soil on the Mall. |
| 1994 | A memo between the NPS and the Smithsonian Institution outlines a cooperative agreement regarding mutual responsibilities for the Folklife Festival where “high-impact events” would be held in the center grass panels, while “low-impact activities” that do not require structures needing trenching, and that seat 75 people or fewer, could be held in the tree panels. |
| 2006 | <i>Inventory and Condition Assessment: Site Furnishings and Plant Material</i> identifies numerous deficiencies in the grass panels and tree panels. In December, the Turfgrass Management Plan makes recommendations for vegetation, water, soil, and nutrient management. |

2

1 Purpose and Significance of the National Mall and Memorial Parks

2 ESTABLISHMENT

3 In 1924, Public Law 202 established the National Capital Park Commission (renamed the National
4 Capital Planning Commission [NCPC] following the passage of the 1952 National Capital Planning Act)
5 and broadly mandated the commission to “prevent pollution of Rock Creek, and the Potomac and
6 Anacostia Rivers, to preserve forests and natural scenery in and about Washington.” In 1930, the
7 Shipstead-Luce Act gave the U.S. Commission of Fine Arts (CFA) authority to review the designs of
8 private construction projects within certain areas of the National Capital, specifically for construction that
9 fronts or abuts the grounds of the Capitol, the grounds of the White House, and the Mall park system, as
10 well as Rock Creek Park, the National Zoo, the Rock Creek and Potomac Parkway, the southwest
11 waterfront, and Fort McNair. In 1933 – 1934, federal parkland in the District of Columbia was
12 consolidated under the management of the NPS. In the years that followed, a number of major memorials
13 were added to the area that would come to be known as the National Mall. The boundary of the National
14 Mall and Memorial Parks (NAMA) is delineated in Figure 1.4.

15 PURPOSE

16 According to the Final National Mall Plan/ Environmental Impact Statement (NPS 2010d), the purposes
17 of the National Mall are to:

- 18 ▪ Maintain the National Mall in the heart of our nation’s capital as a stage for national events and a
19 preeminent national civic space for public gatherings because “it is here that the constitutional
20 rights of speech and peaceful assembly find their fullest expression.”
- 21 ▪ Provide a monumental, dignified, and symbolic setting for the governmental structures, museums,
22 and national memorials as first delineated by the L’Enfant Plan and further outlined in the
23 McMillan Plan, as well as other significant plans.
- 24 ▪ Maintain and provide for the use of the National Mall with its public promenades as a completed
25 work of civic art – a designed historic landscape providing extraordinary vistas to symbols of our
26 nation.
- 27 ▪ Maintain National Mall commemorative works (memorials, monuments, statues, sites, and
28 gardens) that honor presidential legacies, distinguished public figures, ideas, events, and military
29 and civilian sacrifices and contributions.
- 30 ▪ Forever retain the West Potomac Park section of the National Mall as a public park for recreation
31 and enjoyment of the people.

32 SIGNIFICANCE

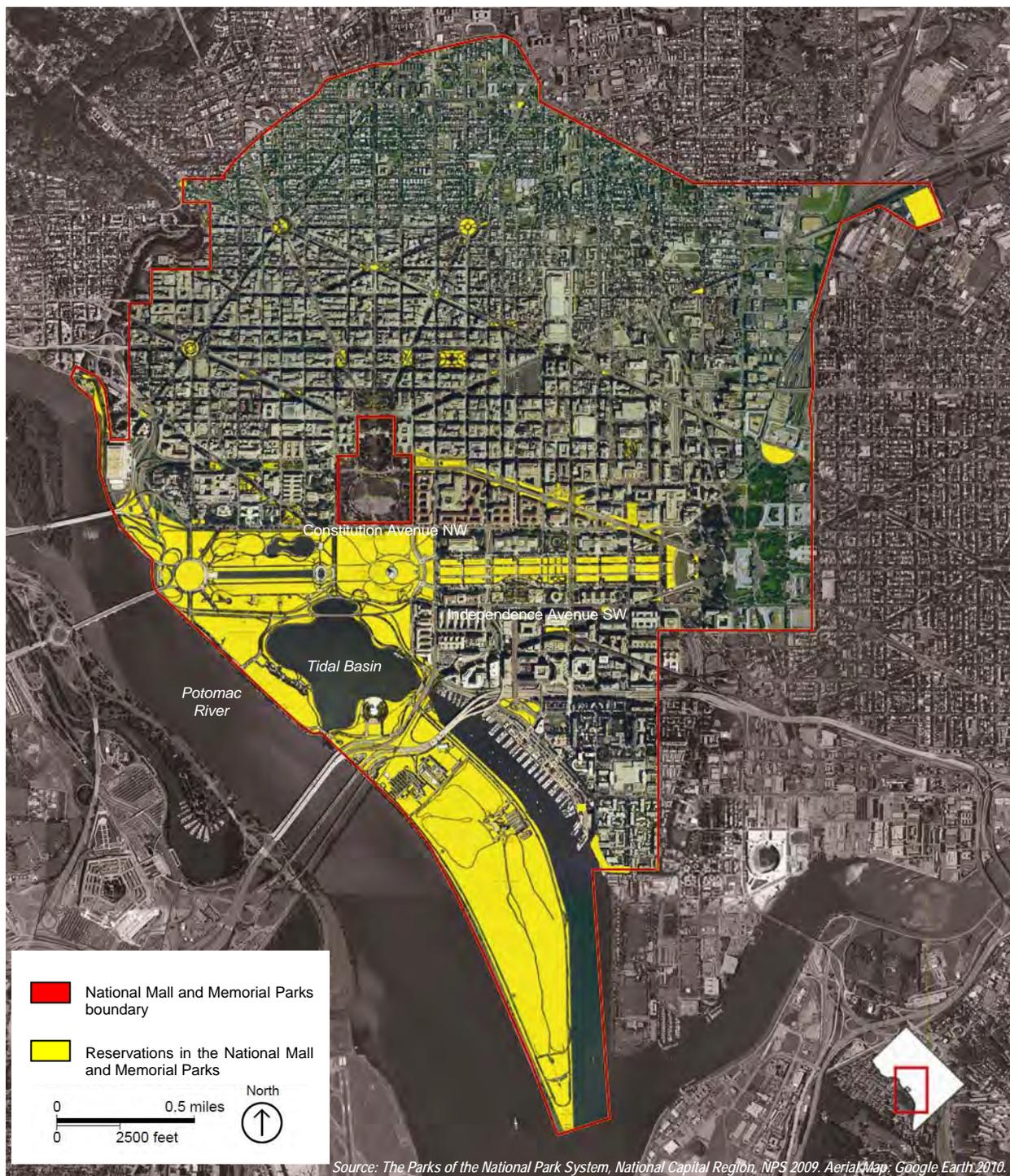
33 As stated in the Final National Mall Plan/ Environmental Impact Statement (NPS 2010d), the National
34 Mall is significant for the following reasons:

- 35 ▪ *The National Mall is the heart of our nation’s capital and has endured since the city’s original*
36 *design by Pierre L’Enfant more than 200 years ago.* The form and character of our planned
37 national capital still reflect the historic L’Enfant and McMillan Plans.
- 38 ▪ *The National Mall is an inclusive and open environment where we celebrate our national identity*
39 *and important events.* The National Mall, the nation’s foremost civic space, is the primary
40 location for political demonstrations, First Amendment activities, rallies, parades, and numerous
41 festivals. Visitors of every race, nationality, and faith come to the National Mall to celebrate,
42 commemorate, demonstrate, or recreate.

- 1 ▪ *The National Mall is a preeminent national landscape, and its history and appearance have been*
2 *enriched by gifts to the United States from other countries.* It is a combination of formal designed
3 areas, such as the Mall and the grounds of the Washington Monument, and naturalistic areas, such
4 as the Tidal Basin and West Potomac Park. Various trees and gardens symbolize cultural and
5 diplomatic exchanges and gifts from other nations – such as the Japanese cherry trees, pagoda,
6 and lantern, the German-American Friendship Garden, and Italy’s gift of the *Arts of Peace*.
- 7 ▪ *The National Mall is the center of our nation’s cultural heritage.* The National Mall is
8 surrounded by many of the country’s most significant educational and cultural institutions,
9 including the national museums of the Smithsonian Institution and the National Gallery of Art,
10 along with the nearby National Archives, the U.S. Bureau of Engraving and Printing, and the U.S.
11 Holocaust Memorial Museum.
- 12

Figure 1.4 – Lands under the Jurisdiction of the National Mall and Memorial Parks

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1 **Applicable Federal Laws and Regulations**

2 The NPS is governed by laws, regulations, and management plans before, during, and following any
3 management action considered under any National Environmental Policy Act (NEPA) analysis. The
4 following are those that are applicable to the proposed action.

5 **NATIONAL ENVIRONMENTAL POLICY ACT, 1969, AS AMENDED**

6 The NEPA was passed by Congress in 1969 and took effect on January 1, 1970. This legislation
7 established this country's environmental policies, including the goal of achieving productive harmony
8 between human beings and the physical environment for present and future generations. It provided the
9 tools to implement these goals by requiring that every federal agency prepare an in-depth study of the
10 impacts of "major federal actions having a significant effect on the environment" and alternatives to those
11 actions. It also required that each agency make that information an integral part of its decisions. NEPA
12 also requires that agencies make a diligent effort to involve the interested members of the public before
13 they make decisions affecting the environment.

14 NEPA is implemented through regulations of the Council on Environmental Quality (CEQ), effective
15 1978 (40 CFR 1500 – 1508). The NPS has in turn adopted procedures to comply with the act and the
16 CEQ regulations, as found in DO-12: *Conservation Planning, Environmental Impact Analysis, and*
17 *Decision-making* (NPS 2001), and its accompanying handbook.

18 **NATIONAL HISTORIC PRESERVATION ACT, AS AMENDED THROUGH 2004 (16 U.S.C. 470)**

19 The National Historic Preservation Act (NHPA) of 1966, as amended through 2004, protects buildings,
20 sites, districts, structures, and objects that have significant scientific, historic, or cultural value. The act
21 established affirmative responsibilities of federal agencies to preserve historic and prehistoric resources.
22 Effects on properties that are listed in or are eligible for the National Register of Historic Places (NRHP)
23 must be taken into account in planning and operations. Any property that may qualify for listing in the
24 NRHP must not be inadvertently transferred, sold, demolished, substantially altered, or allowed to
25 deteriorate.

26 Section 106 of the NHPA, 16 U.S.C. 470 et seq., requires federal agencies to take into account the effects
27 of their undertakings on historic properties either listed in or eligible to be listed in the National Register.
28 The historic preservation review process required by Section 106 is outlined in regulations (36 CFR Part
29 800, Protecting Historic Properties) issued by Advisory Council on Historic Preservation (ACHP), an
30 independent federal agency established by the NHPA in 1966 to promote the preservation, enhancement,
31 and productive use of our nation's historic resources. The goal of the Section 106 review process is to
32 seek ways to avoid, minimize, or mitigate any adverse effects to historic properties.

33 **HISTORIC SITES ACT OF 1935**

34 This act declares as national policy the preservation for public use of historic sites, buildings, objects, and
35 properties of national significance. It authorizes the secretaries of the interior and NPS to restore,
36 reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and
37 properties of national historical or archeological significance.

38 **NPS ORGANIC ACT**

39 By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the
40 Interior and the NPS to manage units "to conserve the scenery and the natural and historic objects and
41 wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as
42 will leave them unimpaired for the enjoyment of future generations" (16 USC § 1). Congress reiterated

1 this mandate in the Redwood National Park Expansion Act of 1978 by stating that NPS must conduct its
2 actions in a manner that will ensure no “derogation of the values and purposes for which these various
3 areas have been established, except as may have been or shall be directly and specifically provided by
4 Congress” (16 USC 1a-1). Despite these mandates, the Organic Act and its amendments afford the NPS
5 latitude when making resource decisions that balance resource preservation and visitor recreation.

6 Because conservation remains a predominant value, the NPS seeks to avoid or to minimize adverse
7 impacts on Park resources and values. However, the NPS has discretion to allow impacts on Park
8 resources and values when necessary and appropriate to fulfill the purposes of a Park (NPS 2006b). While
9 some actions and activities cause impacts, the NPS cannot allow an adverse impact that would constitute
10 impairment of the affected resources and values (NPS 2006b). The Organic Act prohibits actions that
11 permanently impair Park resources unless a law directly and specifically allows for the acts (16 USC 1a-
12 1). An action constitutes an impairment when its impacts “harm the integrity of Park resources or values,
13 including the opportunities that otherwise would be present for the enjoyment of those resources or
14 values” (NPS 2006b). To determine impairment, the NPS must evaluate “the particular resources and
15 values that would be affected; the severity, duration, and timing of the impact; the direct and indirect
16 effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS
17 2006b).

18 **NATIONAL PARKS OMNIBUS MANAGEMENT ACT OF 1998**

19 The National Parks Omnibus Management Act (NPOMA) (16 USC 5901 et seq.) underscores NEPA and
20 is fundamental to NPS Park management decisions. Both acts provide direction for articulating and
21 connecting the ultimate resource management decision to the analysis of impacts, using appropriate
22 technical and scientific information. Both also recognize that such data may not be readily available;
23 therefore, the acts provide options for resource impact analysis should this be the case.

24 NPOMA directs the NPS to obtain scientific and technical information for analysis. The NPS handbook
25 for DO-12 states that if “such information cannot be obtained due to excessive cost or technical
26 impossibility, the proposed alternative for decision will be modified to eliminate the action causing the
27 unknown or uncertain impact, or other alternatives will be selected” (NPS 2001).

28 **AMERICANS WITH DISABILITIES AND ARCHITECTURAL BARRIERS ACT GUIDELINES**

29 Pursuant to the Americans with Disabilities Act of 1990 (ADA) and the Architectural Barriers Act of
30 1968 (ABA), all public buildings, structures, and facilities must comply with specific requirements related
31 to architectural standards, policies, practices, and procedures that accommodate people with hearing,
32 vision, or other disability; and other access requirements. Public facilities and places must remove barriers
33 in existing buildings and landscapes, as necessary and where appropriate. The NPS must comply with the
34 Architectural Barriers Act Accessibility Standard (ABAAS) as well as ADA standards for this project.

35 **REDWOOD NATIONAL PARK ACT OF 1978, AS AMENDED**

36 All national park system units are to be managed and protected as Parks, whether established as a
37 recreation area, historic site, or any other designation. This act states that the NPS must conduct its
38 actions in a manner that will ensure no “derogation of the values and purposes for which these various
39 areas have been established, except as may have been or shall be directly and specifically provided by
40 Congress.”

1 **CODE OF FEDERAL REGULATIONS**

2 **36 CFR § 1.5**

3 CFR § 1.5 sets closures and public use limits for NPS units (CFR 1986). These regulations specify the
4 designated areas within Park units in the National Capital Region (NCR), including the project area, for
5 specific visitor activities and emergency use restrictions.

6 **36 CFR § 7.96**

7 The Code of Federal Regulations (CFR) sets forth guidelines to control special events and uses within
8 NPS units including the National Mall (CFR 2006). These regulations control site access, staging, risk
9 management, comfort facilities, first aid, security, transportation, and cost recovery for the special events
10 to minimize impacts to Park resources and the public. 36 CFR § 7.96 also specifies the location, timing,
11 and size of special events in the NCR NPS units, including the project area.

12 **COMMEMORATIVE WORKS ACT (1986)**

13 The Commemorative Works Act of 1986 provides guidance for the planning and design of projects within
14 the Monumental Core of downtown Washington, D.C. Specifically, the intent of the legislation is:

- 15 ▪ to preserve the integrity of the comprehensive design of the L’Enfant and McMillan Plans for the
16 Nation’s Capital;
- 17 ▪ to ensure the continued public use and enjoyment of open space in the District of Columbia and
18 its environs, and to encourage the location of commemorative works within the urban fabric of
19 the District of Columbia;
- 20 ▪ to preserve, protect, and maintain the limited amount of open space available to residents of, and
21 visitors to, the Nation’s Capital; and
- 22 ▪ to ensure future commemorative works in areas administered by the NPS and the Administrator
23 of General Services in the District of Columbia and its environs.

24
25 The Commemorative Works Act was amended in 2003 by Congress, who designated the cross axis of the
26 National Mall and the north-south axis between the Jefferson Memorial and the White House to be a
27 “substantially completed work of civic art” and prohibited new commemorative works or visitor centers
28 in this area. Congress also directed the NPS to begin planning for the future of the National Mall to
29 protect its character (NCPC 1986).

30 **Executive Orders and Director’s Orders**

31 **DIRECTOR’S ORDER 28: CULTURAL RESOURCE MANAGEMENT**

32 DO-28 calls for the NPS to protect and manage cultural resources in its custody through effective
33 research, planning, and stewardship and in accordance with the policies and principles contained in the
34 NPS Management Policies (NPS 1998b). This order also directs the NPS to comply with the substantive
35 and procedural requirements described in the Secretary of the Interior’s Standards and Guidelines for
36 Archeology and Historic Preservation, the *Secretary of the Interior’s Standards for the Treatment of*
37 *Historic Properties* with Guidelines for Treatment of Cultural Landscapes; and the Secretary of the
38 Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving,
39 Rehabilitating, Restoring and Reconstructing Historic Building (NPS 1992). Additionally, the NPS will
40 comply with the 2008 Service-wide Programmatic Agreement with the ACHP and the National
41 Conference of State Historic Preservation Officers. The accompanying handbook to this order addressed

1 standards and requirements for research, planning, and stewardship of cultural resources including
2 archeological resources, cultural landscapes, historic and prehistoric structures, museum objects, and
3 ethnographic resources.

4 **DIRECTOR'S ORDER 28A: ARCHEOLOGY**

5 DO-28A supplements DO-28: *Cultural Resources Management Guidelines*, providing guidance to Park
6 managers and staff regarding archeological programs. This order also details archeological program
7 requirements within NPS units and all applicable standards and guidelines (NPS 1998b).

8 **DIRECTOR'S ORDER 53: SPECIAL PARK USES**

9 DO-53 sets forth the policies and procedures for administering Special Park Uses on NPS lands. Special
10 Park Uses are identified as mandatory or discretionary based on whether they are a right or a privilege of
11 citizens. This DO specifies special uses compliance, permit terms and conditions, and guidelines for
12 specific use rights, such as special events (NPS 2010a).

13 **DIRECTOR'S ORDER 77-2: FLOODPLAIN MANAGEMENT**

14 Director's Order 77-2 was issued in response to Executive Order 11988, Floodplain Management. This
15 order applies to all proposed NPS actions that could adversely affect the natural resources and functions
16 of floodplains or increase flood risks. This includes those proposed actions that are functionally
17 dependent upon locations in proximity to the water and for which non-floodplain sites are not practicable
18 alternatives (NPS 2003).

19 **NATURAL RESOURCES MANAGEMENT GUIDELINE, NPS-77**

20 The purpose of this document is to provide guidance to Park managers for all planned and ongoing
21 natural resource management activities. Managers must follow all federal laws, regulations, and policies.
22 This document provides the guidance for Park management to design, implement, and evaluate a
23 comprehensive natural resource management program.

24 **Local Plans and Policies**

25 All action alternatives need to consider local plans and policies. The following initiatives serve to guide
26 development and address important planning issues facing the NCR, the Monumental Core, and the
27 National Mall.

28 **L'ENFANT PLAN (1791)**

29 The original comprehensive plan of Washington, D.C., was designed by Peter (Pierre) Charles L'Enfant
30 in 1791 as the site of the federal city. L'Enfant developed a plan that featured ceremonial spaces and
31 grand radial avenues while respecting the natural contours of land. The resulting plan was a system of
32 orthogonal streets with intersecting diagonal avenues that connected the most significant and important
33 landmarks in the city.

34 **THE McMILLAN PLAN (1901)**

35 The ambitious McMillan Plan, created by the Senate Park Commission in 1901, sought to reestablish
36 elements of the L'Enfant Plan, which included the restoration of the east end of the Mall, the correction of
37 the awkward off-axis placement of the Washington Monument, the inclusion of the new "Potomac Park"
38 (i.e., East and West Potomac Parks), and the removal of railroad tracks from the Monumental Core
39 (Robinson & Associates 1999). The Commission envisioned the Mall as a formal tree-lined walk flanked
40 by classical buildings, creating an unbroken vista between the Capitol and the Washington Monument.

1 The visual focal point of the McMillan Plan was the Mall, which the Commission proposed to extend
2 westward and enhance as a formal, axial greensward. The McMillan Commission members interpreted
3 the L'Enfant Plan as calling for treating the entire Mall, now referred to as the National Mall, as a
4 continuous space to be set aside entirely for public use. A specific landscape treatment plan for the Mall
5 consisted of a greensward flanked on either side by four rows of elm trees (Moore 1902).

6 The implementation of most portions of the McMillan Plan was not achieved until the 1930's. It required
7 the sustained action of key public officials such as Charles Eliot II, Frederic A. Delano, and Frederic Law
8 Olmstead Jr. associated with agencies like the National Capital Park and Planning Commission, the
9 National Park Service, and the Commission of Fine Arts to achieve results on the ground. Buildings were
10 sited along the correct lines from the center of the Mall, diseased trees were replaced, grading was done to
11 level the ground, and roads were laid out and paved. New Deal public works funding paid the cost. The
12 results owed much to the interpretation of the distinguished practitioners of the period as well as to the
13 original McMillan Plan. However, there was no official new plan of the 1930's (NPS 2006c).

14 **NPS MASTER PLAN FOR THE WASHINGTON MALL (1976)**

15 In 1976, Skidmore, Owings, & Merrill prepared a master plan for the NPS that delineated how the
16 McMillan Plan would actually be realized in the Mall of the 1970s with an emphasis on pedestrian use.

17 **EXTENDING THE LEGACY PLAN (1997)**

18 In 1997, the NCPC completed the plan entitled Extending the Legacy: Planning America's Capital for the
19 21st Century, which is the current guiding document for the Monumental Core. This plan provides a
20 framework that expands upon the L'Enfant Plan and the McMillan Plan and advocates preserving the
21 open landscape of the National Mall.

22 **THE NATIONAL MALL PLAN (ONGOING)**

23 The NPS National Mall Plan provides a comprehensive long-term vision for the National Mall, and was
24 prepared with input from the public, numerous federal and local agencies, and other stakeholders. While
25 the plan addresses areas under NPS jurisdiction, it has been coordinated with plans by others such as the
26 NCPC, the District Office of Planning, the Architect of the Capitol, surrounding museums, and other
27 federal buildings. Under the plan, "the National Mall, as the premier civic and symbolic space for our
28 nation, would be respectfully rehabilitated and refurbished so that very high levels of use could be
29 perpetuated and the needs of all visitors and users could be met in an attractive, high-quality, energy-
30 efficient and sustainable manner" (NPS 2010d).

31 During planning, the NPS evaluated a range of alternatives against how well they resolved known issues,
32 addressed planning needs and objectives, fulfilled law and NPS policies, met NEPA goals, and what
33 advantages each set of alternative ideas offered. The preferred or proposed action combined ideas from all
34 the alternatives and was continually updated based on public comment. The plan addresses natural and
35 cultural resource protection, respects the history of development, and builds on the intent and extant
36 features of historic plans. It also addresses the civic space venues and management (including First
37 Amendment rights, national celebrations and special events/other permitted activities); multi-modal
38 access and circulation; multiple types of visitor experiences and enjoyment such as tourism, recreation,
39 visitor education/interpretation, visitor facilities and services; Park operations including revised
40 approaches to turf recovery; and socio-economic impacts.

41 The Mall is a component of the National Mall and is addressed within the plan. As the result of high
42 levels of use, the condition of the Mall between 3rd and 14th Streets has been adversely affected, which in
43 turn affects visual resources and visitor use and enjoyment.

1 The National Mall Plan addresses the goals of refurbishing the area so that: (1) its treasured memorials
2 and historic landscapes can be preserved, (2) very high levels of use can be sustained, and (3) the needs of
3 visitors can be met (NPS 2009b). Specific features of the National Mall Plan preferred alternative that are
4 related to this project include the management of soil and vegetation health to improve appearance; the
5 improvement of permit procedures to ensure that soil, turf, and vegetation resources are better protected;
6 the enhancement of pedestrian conditions; and the retrofitting of water features to be sustainable.

7 **THE MEMORIALS AND MUSEUMS MASTER PLAN (2001)**

8 The NCPC's Memorials and Museums Master Plan (2001) was generated out of the recognition that the
9 popularity of the Monumental Core may soon surpass its capacity to accommodate new monuments and
10 memorials in a setting that remains historic, open, and beautiful. The goal of the plan was to identify and
11 promote new sites outside the Monumental Core to disperse new monuments and memorials so the
12 environment and character of the National Mall could be protected. The basis for memorial location is the
13 Commemorative Works Act of 1986, which provides standards for the placement of memorials on certain
14 federal land in Washington, D.C., and environs². The project area is located in the "Reserve." Chapter 89
15 of Title 40 of the Commemorative Zone Policy of the Memorials and Museums Master Plan discourages
16 development on the National Mall and Washington Monument reservation and designates a "Reserve"
17 area on the cross-axis of the Mall where no new memorials will be permitted (NCPC 2001).

18 **COMPREHENSIVE PLAN FOR THE NATIONAL CAPITAL: FEDERAL ELEMENTS (2004)**

19 In August 2004, NCPC adopted the Comprehensive Plan for the National Capital: Federal Elements. The
20 plan is a statement of goals, principles, and planning policies for the growth and development of the
21 National Capital during the next twenty years. The federal elements of the Comprehensive Plan for the
22 National Capital identify and address the current and future needs of federal employees and visitors to the
23 Nation's Capital; provide policies for locating new federal facilities and maintaining existing ones;
24 promote the preservation and enhancement of the region's natural resources and environment; protect
25 historic resources and urban design features that contribute to the image and functioning of the Nation's
26 Capital; and, working with local, state, and national authorities, support access into, out of, and around the
27 Nation's Capital that is as efficient as possible for federal and nonfederal workers (NPS 2004).

28 **PROPOSED FEDERAL CAPITAL IMPROVEMENTS PROGRAM (2004)**

29 In 2006, the NCPC completed the Federal Capital Improvements Program (FCIP) for fiscal years 2007 –
30 2012. This document lays out the proposed budgetary commitments as reviewed and evaluated by the
31 NCPC regarding federal activities in Washington, D.C., and the surrounding Maryland and Virginia
32 counties. The FCIP plans the budget for a six-fiscal-year cycle. Projects listed in this document are not
33 assumed to be approved, but rather the document includes the NCPC's comments and recommendations
34 for future projects. The NCPC drafted an FCIP for fiscal years 2008 – 2013 on June 7, 2007. The relevant
35 recommendations of the plan include:

- 36 ▪ Stormwater management system throughout Washington, D.C.

² The Commemorative Works Act provides standards and approval requirements as well as permitting requirements for location and design of new memorials and monuments in the District. The act distinguishes between the adjacent portions of the District, where the commemorative works of "pre-eminent historical and lasting significance" to the nation may be located, and areas outside this zone where works of "lasting historical significance" can be placed. It also seeks to preserve the urban design legacy of the L'Enfant and McMillan plans by protecting public open space and ensuring that future museums and memorials are appropriately located and designed.

- 1 ▪ Improved pedestrian linkages between the National Mall attractions and the Anacostia/Potomac
- 2 River waterfronts
- 3 ▪ National Mall road improvements, resurfacing, streetscaping, etc.

4 **NATIONAL CAPITAL FRAMEWORK PLAN (2010)**

5 The National Capital Framework Plan (Framework Plan) is a multi-agency effort led by the NCPC with
6 the CFA. This planning effort illustrates opportunities to create new and accessible destinations for
7 cultural attractions throughout the city. The Framework Plan provides a comprehensive approach to
8 easing demand for construction on the National Mall in addition to creating attractive urban locations
9 throughout the city. A preliminary plan was released in fall 2007, accentuating the Extending the Legacy
10 Plan and the Malls and Memorials Master Plan. A final plan was completed and approved in 2010.

11 **THE NPS NATIONAL CAPITAL REGION REQUIREMENTS FOR SPECIAL EVENTS HELD ON PARKLAND**

12 The NPS NCR Requirements for Special Events Held on Parkland establishes specific regulations to
13 ensure that special events do not conflict with general Park uses or degrade Park resources. These
14 regulations manage for site access, staging, risk management, comfort facilities, first aid, security,
15 transportation, and cost recovery for the special events to minimize impacts to Park resources and the
16 public (NPS 2007).

17 **NPS Management Policies**

18 The NPS *Management Policies 2006* (NPS 2006b) is the basic NPS-wide policy document, adherence to
19 which is mandatory unless specifically waived or modified by the NPS director or certain departmental
20 officials, including the U.S. secretary of interior. Actions under this EA are in part guided by these
21 management policies. Sections which are particularly relevant to this project are as follows:

22 **SECTION 4.1.3 - EVALUATING IMPACTS ON NATURAL RESOURCES**

23 The NPS will ensure that the environmental costs and benefits of proposed actions are fully and openly
24 evaluated before implementing actions that may impact the natural resources of Parks. The process of
25 evaluation must include public engagement; the analysis of scientific and technical information in the
26 planning, evaluation, and decision-making processes; the involvement of interdisciplinary teams; and the
27 full incorporation of mitigation measures and other principles of sustainable Park management (NPS
28 2006b).

29 **SECTION 4.8.2.4 - SOIL RESOURCE MANAGEMENT**

30 The NPS will actively seek to understand and preserve the soil resources of Parks and to prevent, to the
31 extent possible, the unnatural erosion, physical removal, or contamination of soils. Management actions
32 will be taken to prevent or at least minimize adverse impacts to soils. These actions include obtaining
33 adequate soil survey information, soil conservation, and to every extent possible, avoiding soil excavation
34 (NPS 2006b).

35 **SECTION 5.3.1 - PROTECTION AND PRESERVATION OF CULTURAL RESOURCES**

36 The NPS will endeavor to protect cultural resources against overuse, deterioration, environmental
37 impacts, and other threats without compromising the integrity of cultural resources (NPS 2006b).

1 **SECTION 8.2.1 - VISITOR CARRYING CAPACITY**

2 The NPS will identify visitor carrying capacities for managing public use and will identify ways to
3 monitor and address unacceptable impacts on Park resources and visitor experiences (NPS 2006b).

4 **SECTION 8.2.2 - RECREATIONAL ACTIVITIES**

5 The NPS will allow a variety of recreational uses and will monitor these visitor uses to determine their
6 appropriateness for the specific Park unit as well as the level of impairment to Park resources (NPS
7 2006b).

8 **SECTION 8.2.2.1 - MANAGEMENT OF RECREATIONAL USE**

9 Management of visitor uses will be the responsibility of the Park superintendent in the form of a visitor
10 use management plan. Other management actions may be used if deemed appropriate to enable Park
11 visitors to enjoy and experience the Park while protecting Park resources from impairment (NPS 2006b).

12 **SECTION 8.2.4 - ACCESSIBILITY FOR PERSONS WITH DISABILITIES**

13 The NPS will make all reasonable efforts to make NPS facilities, programs, and services accessible to and
14 usable by all people, including those with disabilities. The NPS will comply with the ABA of 1968, the
15 Rehabilitation Act of 1973, and section 507 of the ADA (NPS 2006b).

16 **SECTION 9.1.3.2 - REVEGETATION AND LANDSCAPING**

17 During replanting following construction, to the maximum extent possible, plantings will consist of
18 species that are native to the Park or that are historically appropriate for the period or event
19 commemorated. This section also dictates parameters to be considered prior to modifying soil, such as the
20 avoidance of any undesired plants or fungi (NPS 2006b).

21 **SECTION 9.1.4 - MAINTENANCE**

22 There is a maintenance responsibility and cost for every asset administered by the NPS. A regular,
23 periodic inventory and conditions assessment of all Park assets will be performed to identify deficiencies
24 and further maintenance requirements. To promote cost savings and to prevent degradation of resources,
25 the NPS will conduct a program of preventative and rehabilitative maintenance and preservation. In
26 carrying out maintenance responsibilities, the NPS will utilize environmentally preferable and sustainable
27 maintenance practices whenever possible (NPS 2006b).

28 **SECTION 9.1.5.1 - WATER SUPPLY SYSTEMS**

29 The NPS will use water efficiently and sustainably and will only build new water systems or extensions to
30 existing water systems if reasonable conservation measures will not be sufficient to cover Park needs or
31 protect Park values. Outdoor use of water will be limited to those applications deemed essential to Park
32 operations. The NPS will use efficient methods for irrigation and whenever possible, and rainwater will
33 be collected for maintenance and landscape uses (NPS 2006b).

34 **Scoping Process and Public Participation**

35 NEPA regulations require an “early and open process for determining the scope of issues to be addressed
36 and for identifying the significant issues related to a proposed action.” To determine the scope of issues to
37 be analyzed in depth in this plan, meetings were conducted with Park staff and the public.

1 In addition to internal and agency scoping, public scoping for the Reconstruction of the Turf and Soil in
2 the National Mall EA began March 9, 2010, and concluded April 8, 2010. During this time, a public
3 scoping meeting was held on March 9, 2010, at the NCR Headquarters at 100 Ohio Drive SW,
4 Washington, D.C., 20024. Notice of the public meetings was posted on the NPS Planning, Environment,
5 and Public Comment website (PEPC). Approximately 22 people attended the meeting, including
6 representatives from the National Coalition to Save Our Mall, the Smithsonian Institution, ACHP, and
7 NCPC. The purpose of this meeting was to solicit public input on the purpose, need, and objectives of the
8 project, major issues, and potential alternatives.

9 At the public meeting and during the 30-day public comment period, comments were received from the
10 National Coalition to Save Our Mall and the National Turfgrass Federation. The comments articulated
11 support for the proposed turf reconstruction options and offered several suggestions for improving the
12 project. One commenter suggested the NPS develop a pilot program to test the most viable soil and seed
13 mixtures for each turf panel within the project area. This commenter also suggested that special events
14 hosts be required to supply increased funding for turf repair following large-scale special events. Another
15 commenter identified several project needs including the need for a comprehensive National Mall master
16 plan to guide this project; a clarification of the title and scope of this project; the need to accurately
17 identify historic and cultural resources within the project area; and the need to work with other
18 stakeholders to provide a multi-use plan that considers the historic plans, larger interests of Mall users,
19 and sustainability goals.

20 **Agency Consultation**

21 Coordination with local and federal agencies and various interest groups was conducted during the NEPA
22 process to identify issues and/or concerns related to the proposed turf and soil reconstruction on the
23 National Mall. In accordance with Section 7 of the Endangered Species Act, consultation letters were sent
24 from the NPS to the U.S. Fish and Wildlife Service (USFWS); the District of Columbia Department of
25 the Environment, Fisheries and Wildlife Division; and the District Department of Health, Environmental
26 Health Administration, on June 2, 2010 (See Appendix A).

27 Throughout the Section 106 review process the NPS has consulted with the ACHP, the District of
28 Columbia Historic Preservation Officer (DC HPO), and representatives of state and local governments,
29 agencies, organizations, and the general public. Due to the potential for adverse effects on archeological
30 resources, a possible outcome of the Section 106 consultation could be a Memorandum of Agreement that
31 would stipulate measures for mitigation of these potential adverse effects. Results of the consultations
32 will be documented in the EA or the NEPA decision document, which is anticipated to be a Finding of No
33 Significant Impact (FONSI).

34 **Issues and Impact Topics**

35 Issues describe problems or concerns associated with current impacts from environmental conditions or
36 current operations as well as problems that may arise from the implementation of any of the alternatives.
37 Park staff identified potential issues associated with the reconstruction of turf panels on the National Mall
38 during internal scoping. The NPS' primary concern is to ensure that any alternative considered will allow
39 for minimal disturbance of the existing Park uses and the cultural landscape. The issues and concerns
40 identified during scoping were grouped into impact topics that are discussed in "Chapter 3: Affected
41 Environment" and are analyzed in "Chapter 4: Environmental Consequences".

1 **Impact Topics Analyzed in this EA**

2 **VISITOR USE AND EXPERIENCE**

3 The turf panel reconstruction would result in impacts on visitor use and experience, affecting movement
4 and circulation, recreation, and special events, with both short- and long-term impacts. To the maximum
5 extent practicable, construction activity would be timed to avoid impacts to special events such as the 4th
6 of July celebration and the Smithsonian Institution’s Folk Life Festival. As a result of potential impacts to
7 visitor use and experience that would occur from both the no action and action alternatives, this resource
8 area is addressed as an impact topic in this EA.

9 **PUBLIC SAFETY**

10 The majority of visitor incidents within the Park are related to visitors tripping over curbs, uneven
11 surfaces, or steps. The reconstruction of turf and other proposed actions would result in impacts on public
12 safety, likely improving visitor circulation and reducing the number of incidents currently attributed to
13 deteriorating pathways and infrastructure. As a result of potential impacts to public safety that would
14 occur from both the no action and action alternatives, this resource area is addressed as an impact topic in
15 this EA.

16 **PARK MANAGEMENT AND OPERATIONS**

17 Due to continuous heavy use of the turf panels, standard National Mall maintenance practices have
18 become insufficient to maintain the vegetative and visual quality of the turf. In addition to reconstructing
19 the turf panels and exploring different maintenance techniques, the NPS is considering various best
20 management practices for visitor use to reduce the wear and tear of the turf. As a result of potential
21 impacts to Park management and operations that would occur from both the no action and action
22 alternatives, this resource area is addressed as an impact topic in this EA.

23 **UTILITIES AND INFRASTRUCTURE**

24 The National Mall contains numerous underground utilities that could be affected by the reconstruction of
25 turf panels. The proposed actions would also affect irrigation in the project area and stormwater
26 management in the context of downtown Washington, D.C. As a result, utilities and infrastructure is
27 addressed as an impact topic in this EA.

28 **SOILS**

29 As a result of intensive use by visitors to the nearby monuments, museums, other attractions, special
30 events, and recreational areas, the project area is currently subject to continued soil compaction. The
31 proposed actions would potentially reduce soil compaction. As a result of prospective impacts to soils that
32 would occur from both the no action and action alternatives, this resource area is addressed as an impact
33 topic in this EA.

34 **VEGETATION**

35 Similar to soils, heavy use by visitors to the project area impacts the vegetation, wearing down the turf
36 and exposing the tree roots. The proposed actions would affect the turf and trees in the project area,
37 potentially reducing the negative impacts that have resulted from heavy use. As a result of potential
38 impacts to vegetation that would occur from both the no action and action alternatives, vegetation is
39 addressed as an impact topic in this EA.

1 **VISUAL RESOURCES**

2 The turf reconstruction and other proposed actions would result in changes to the visual character and
3 views and vistas in the project area. As a result of heavy visitor use, the turf panels are worn with areas of
4 bare dirt resulting in diminished visual quality. The proposed actions would potentially restore the visual
5 quality of the turf panels; therefore, this resource area is addressed as an impact topic in this EA.

6 **CULTURAL RESOURCES**

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

- 10 ▪ Cultural Landscapes: A geographic area, including both cultural and natural resources and the
11 wildlife and wildlife habitat or domestic animals therein, associated with a historic event,
12 activity, or person or exhibiting other cultural or aesthetic values.
- 13 ▪ Historic Structures or Districts: Historic properties significant in the history of American
14 architecture, culture, engineering, or politics at the national, state, or local level.
- 15 ▪ Archeology: Material remains or physical evidence of past human life or activities of
16 archeological interest.
- 17 ▪ Museum Collections: Prehistoric and historic objects, artifacts, works of art, archival documents,
18 and natural history specimens. Prevention of damage and minimization of potential for
19 deterioration are NPS management goals.
- 20 ▪ Ethnography: Cultural and natural features of a Park that are of traditional significance to
21 traditionally associated peoples, which include contemporary Park neighbors and ethnic or
22 occupational communities that have been associated with a Park for at least two or more
23 generations (40 years), and whose interests in the Park's resources began before the Park's
24 establishment.

25 The project area contains and has the potential to impact historic structures, cultural landscapes, and
26 archeology. No museum collections or ethnographic resources would be impacted and have been
27 dismissed from further analysis.

28

29 **HISTORIC STRUCTURES AND DISTRICTS**

30 The National Mall has been placed on the NRHP as a historic site. Therefore, historic structures and
31 districts are addressed as an impact topic in this EA.

32 **CULTURAL LANDSCAPES**

33 The inner National Mall, the greensward between 14th and 3rd Streets NW/SW has been documented by
34 the NPS as a cultural landscape. Therefore, cultural landscapes are addressed as an impact topic in this
35 EA.

36 **ARCHEOLOGY**

37 The proposed actions would require excavation and ground-disturbing activity in the project area;
38 therefore, archeological resources may be affected, and are addressed as an impact topic in this EA.

1 **Impact Topics Dismissed from Further Analysis**

2 **AIR QUALITY**

3 The 1963 Clean Air Act, as amended (42 USC 7401 et seq.), requires federal land managers to protect air
4 quality in national parks. The project site is located in the Washington Metropolitan Area nonattainment
5 zone for ozone. During construction, local air quality would be temporarily affected by dust and vehicle
6 emissions. Overall, there would be a slight and temporary degradation of local air quality due to dust
7 generated from construction activities, but these effects would be localized and negligible to minor. The
8 Park's current level of air quality would not be affected by the proposed replacement of turf and soil;
9 therefore, this topic was dismissed from further analysis in this EA.

10 **CULTURAL RESOURCES (OTHER)**

11 **MUSEUM COLLECTIONS**

12 None of the proposed actions would have any direct effect upon recognized museum collections
13 (historic artifacts, natural specimens, and archival and manuscript material); therefore, this topic was
14 dismissed from further analysis.

15 **ETHNOGRAPHIC RESOURCES**

16 Ethnographic resources are defined by the NPS as any "site, structure, object, landscape, or natural
17 resources feature assigned traditional, legendary, religious, subsistence, or other significance in the
18 cultural system of a group traditionally associated with it" (NPS 1998a). In this analysis, the NPS'
19 term "ethnographic resources" is equivalent to the term "Traditional Cultural Property" (TCP),
20 which is more widely used in cultural resource management. Guidance for the identification of
21 ethnographic resources is found in National Register Bulletin #38, *Guidelines for Evaluating and*
22 *Documenting Traditional Cultural Properties* (NPS 1998a). The key considerations in identifying
23 the TCPs are their association with cultural practices or beliefs of a living community that are (1)
24 rooted in the community's history, and (2) are important in maintaining the continuing cultural
25 identity of the community (Parker and King 1998). No properties meeting the definition of a TCP lie
26 within the APE; therefore, ethnographic resources are dismissed as an impact topic.

27 **ENVIRONMENTAL JUSTICE**

28 Presidential Executive Order 12898, *General Actions to Address Environmental Justice in Minority*
29 *Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental
30 justice into their missions by identifying and addressing the disproportionately high and/or adverse human
31 health or environmental effects of their programs and policies on minorities and low-income populations
32 and communities. According to the Environmental Protection Agency, environmental justice is the

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

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

1 Communities surrounding the National Mall contain both minority and low-income populations;
2 however, environmental justice is dismissed as an impact topic for the following reasons:

- 3 ▪ The Park staff and planning team actively solicited public participation as part of the
4 planning process and gave equal consideration to all input from persons regardless of age,
5 race, income status, or other socioeconomic or demographic factors.
- 6 ▪ Implementation of the proposed alternative would not result in any identifiable adverse
7 human health effects. Therefore, there would be no direct or indirect adverse effects on
8 any minority or low-income population.
- 9 ▪ The impacts associated with implementation of the preferred alternative would not
10 disproportionately affect any minority or low-income population or community.
- 11 ▪ Implementation of the preferred alternative would not result in any identified effects that
12 would be specific to any minority or low-income community.

13 The impacts to the socioeconomic environment resulting from implementation of any of the action
14 alternatives would be beneficial.

15 **INDIAN TRUST RESOURCES**

16 Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed
17 project or action by Department of Interior agencies be explicitly addressed in environmental documents.
18 The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the
19 United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry
20 out the mandates of federal law with respect to American Indian and Alaska Native tribes.

21 There are no Indian trust resources in the Washington, D.C., area. The lands comprising the National Mall
22 are not held in trust by the secretary of the interior for the benefit of Indians due to their status as Indians.
23 Therefore, Indian trust resources was dismissed as an impact topic.

24 **LAND USE**

25 NPS *Management Policies 2006* provides for the protection of parklands, federal lands, and privately
26 owned lands adjacent to Park units. Both the no action and action alternatives would be consistent with
27 and support NAMA plans and policies, and would not change land use in the project area; therefore, this
28 impact topic was dismissed from further consideration in this EA.

29 **FLOODPLAINS**

30 Executive Order 11988: Floodplain Management provides for the protection of floodplain values, while
31 DO 77-2: *Floodplain Management* (NPS 2003b) provides the NPS with requirements for implementing
32 the executive order. The project area is within the 100-year floodplain. Although the project would
33 include construction in a floodplain, a floodplain statement of finding is not necessary for this project
34 because the proposed actions would not affect floodplain functions or values, affect flood water flows, or
35 involve construction of structures that could be affected by flooding. Consequently, floodplains were
36 dismissed as an impact topic.

37 **PRIME FARMLAND**

38 Prime farmland is defined as land with the best combination of physical and chemical characteristics for
39 producing food, feed, forage, fiber, and oilseed crops and which is also available for these uses. Prime
40 farmland is protected under the Farmland Protection Policy Act of 1981 to minimize the extent to which
41 federal programs contribute to the unnecessary or irreversible conversion of farmland to nonagricultural
42 uses. No prime farmlands are found within the project area; therefore, this topic was dismissed from
43 further analysis.

1 SOCIOECONOMICS

2 NEPA requires an analysis of impacts to the human environment, which includes economic, social, and
3 demographic elements in the affected area. Construction activities associated with the proposed actions
4 may bring a short-term need for additional personnel in the Park, but this addition would be minimal and
5 would not affect the surrounding community's overall population, income, or employment base. The
6 proposed actions would neither change local and regional land use nor appreciably impact local
7 businesses or other agencies. Implementation of the proposed actions could provide a temporary
8 beneficial impact to the economies of nearby area (e.g. minimal increases in employment opportunities
9 for the construction workforce and revenues for local businesses and government generated from
10 construction activities and workers). Any increase, however, would be difficult to measure. Therefore,
11 socioeconomics was dismissed as an impact topic.

12 NATURAL SOUNDSCAPES

13 In accordance with NPS *Management Policies 2006* and DO-47: *Sound Preservation and Noise*
14 *Management*, an important part of the NPS' mission is preservation of natural soundscapes associated
15 with national park units (NPS 2006b). Natural soundscapes exist in the absence of human-caused sound.
16 The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together
17 with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the
18 range of sounds that humans can perceive and can be transmitted through air, water, or solid materials.
19 The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among
20 NPS units, as well as potentially throughout each park unit, being generally greater in developed areas
21 and less in undeveloped areas.

22 The project area is an urbanized setting, where the protection of a natural ambient soundscape and/or the
23 opportunity for visitors to experience natural sound environments is not an objective. Visitors would not
24 come to the National Mall to seek the quieter, intermittent sounds of nature. Because protection of a
25 natural ambient soundscape and/or opportunity for visitors to experience natural sound environments is
26 not a consideration for the National Mall, natural soundscapes was dismissed as an impact topic.

27 THREATENED, ENDANGERED, RARE, AND SPECIAL CONCERN SPECIES

28 In accordance with Section 7 of the Endangered Species Act, consultation letters were sent from the NPS
29 to the USFWS; the District of Columbia Department of the Environment (DDOE), Fisheries and Wildlife
30 Division; and the District Department of Health, Environmental Health Administration, on June 2, 2010.
31 No responses were received, but based on similar projects recently undertaken on the National Mall, there
32 are no rare, threatened, or endangered species or habitat known or expected to occur in the project area;
33 therefore, this impact topic was dismissed from consideration.

34 TRAFFIC AND TRANSPORTATION

35 Since the proposed actions are confined to the turf panels on the Mall and would not affect adjacent
36 roadways, there would be no long-term effect on traffic or transportation. There would be short-term
37 effects during construction due to increased vehicle traffic from the delivery of construction materials, but
38 the impact would be negligible; therefore, this impact topic was dismissed from consideration.

39 WETLANDS

40 There are no wetlands that would be affected by any of the proposed actions; therefore, wetlands were not
41 addressed as an impact topic in this EA.

1 WILDLIFE

2 The project area is in a relatively urban setting, surrounded by manicured lawns and landscaping. It is
3 adjacent to heavily used roads with attendant vehicle noise. As a result, wildlife in the project area is
4 limited to adapted urban species, such as raccoons, waterfowl, squirrels, songbirds, and an occasional
5 hawk using the larger trees to perch. No nesting of raptors is known or expected. Although construction-
6 related activities may temporarily displace wildlife from the area, the proposed action would not result in
7 greater than negligible effects on wildlife or wildlife habitat. Due to the area's urban context, level of
8 human activity, and minimal habitat value, this topic was dismissed from detailed analysis.

9 Impairment

10 According to NPS *Management Policies 2006*, an action constitutes an impairment when an impact
11 "would harm the integrity of park resources or values, including the opportunities that otherwise would be
12 present for the enjoyment of those resources or values" (NPS 2006b, sec.1.4.5). Whether an impact meets
13 this definition depends on the particular resource and values that would be affected; the severity, duration,
14 and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the
15 impact in questions and other impacts. An impact on any Park resource or value may constitute an
16 impairment, but an impact would be more likely to constitute an impairment to the extent that it affects a
17 resource or value whose conservation is:

- 18 ▪ Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of
19 the Park;
- 20 ▪ Key to the natural or cultural integrity of the Park or to the opportunity for enjoyment of the Park;
21 or
- 22 ▪ Identified as a goal in the Park's general management plan or other relevant NPS planning
23 documents.

24 Impairment findings are not necessary for visitor experience, public health and safety, and Park
25 management and operations because impairment findings relate to Park resources and values, and these
26 impact areas are not generally considered to be Park resources or values according to the Organic Act,
27 and cannot be impaired the same way that an action can impair Park resources and values. A draft
28 impairment determination for the NPS preferred alternative is provided in Appendix A of this document.
29 Park resources considered in this determination include utilities and infrastructure, soils, vegetation,
30 visual resources, and cultural resources. A final impairment determination will be provided in the
31 appropriate decision document developed on the findings of this EA.

1 CHAPTER 2: ALTERNATIVES

2 Introduction

3 NEPA requires that federal agencies explore a range of reasonable alternatives. The alternatives under
4 consideration must include the “no action” alternative as prescribed by 40 CFR 1502.14. Any alternative
5 analyzed must meet the management objectives of the Park, either wholly or partially, while also meeting
6 the purpose of and need for the project.

7 Project alternatives may originate from the proponent agency, local government officials, or members of
8 the public. Alternatives may also be developed during the early stages of project development at public
9 meetings or in response to comments from coordinating or cooperating agencies. The alternatives
10 analyzed in this document are the result of internal scoping, public scoping, and agency consultation. The
11 components of the action alternative represent the outcome of extensive collaboration between the NPS
12 and the consultant design team.

13 The NPS explored and objectively evaluated a range of alternatives. After extensive collaboration
14 between the NPS, cooperating agencies, and the project consultant team’s designers and engineers,
15 several alternatives were dismissed from consideration and two alternatives (the no action alternative and
16 the action alternative, which contains several different options or alternatives for specific elements) were
17 carried forward for further analysis. These are briefly summarized below and in Table 2.1 and are
18 described in more detail later in this chapter.

19 For the purpose of this EA, the proposed actions affect only the turf panels with specific design solutions
20 for curb options, engineered soil profiles, and irrigation systems.

21 **ALTERNATIVE 1: THE NO ACTION ALTERNATIVE**

22 The no action alternative represents a continuation of the existing conditions, operations, and maintenance
23 of the turf and soil, and a continuation of current practices regulating visitor use and special events that
24 affect turf health within the project area.

25 **ALTERNATIVE 2: THE ACTION ALTERNATIVE (PREFERRED)**

26 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
27 and provide a comprehensive irrigation system for the turf panels in the project area. Options within the
28 action alternative explore different edge conditions (curb and gutters) at the turf panels, soil profiles, and
29 irrigation systems.

- 30 ▪ Three curb and gutter options are presented that explore the edge conditions of the turf panels and the
31 separation between the walkways and turf.
- 32 ▪ Three options for turf soil reconstruction that explore different ratios of new material added versus
33 reusing existing soil are proposed. All options explore the possible addition of a plastic mesh soil
34 stabilizing product to improve the capabilities of turf panels to withstand heavy and intensive wear.
- 35 ▪ Several irrigation systems are proposed that address water distribution (Options C1 – C4), water
36 supply (Options D1 and D2), and water storage (Options E1 and E2). In each option subsurface
37 drainage lines would be installed in the new soil profiles to transport the water collected from
38 potential water sources into a subsurface water storage system. A subsurface pump station would
39 enable the water to be discharged out of the storage systems for water distribution.

Table 2.1 – Summary Description of Alternatives

| | No Action | Action Alternative | | |
|---|---|--|---|---|
| Curb and Gutter Options | There would be no curb separation between the turf panels and walkways. | Option A1 | Option A2 (Preferred) | Option A3 |
| | | Block curbs with 90-degree corners would be installed. | Sloped “checkmark” curbs with 15-foot radius corners would be installed. | “V”-shaped curb profile with 25-foot radius corners would be installed. |
| Soil Profile Reconstruction Options | The existing sand and silt soil profile with heavy compaction would remain. | Option B1 (Preferred) | Option B2 | Option B3 |
| | | Soil Fracturing The top 12 inches of soil would be re-engineered and the subsoil would be fractured to a depth of 18 to 24 inches. | Add Sand The top 6 inches of existing soil would be re-engineered. Up to an additional 12 inches of soil would be removed and coarse concrete sand would be added to the topsoil and a soil mix would be added. | Sand Soil The top 20 to 26 inches of existing soils would be re-engineered and new sand soil would be introduced. |
| Irrigation Options: Water Distribution | The current irrigation system would remain in place with extensive deficiencies. The turf panels would remain relatively flat and water would be subject to occasional ponding. To supplement the irrigation system, the NPS would continue to irrigate manually as needed and when feasible. | Option C1 | | Option C2 |
| | | A manual system would be used with one row of quick couplers installed at grade down the center of the turf panels along the east-west axis. | | An automatic, high-pressure sprinkler system would be installed at the edges of the turf panels along the east-west axis. |
| | | Option C3 | | Option C4 (Preferred) |
| | | Automatic sprinklers would be used along the edges of the turf panels, and manual quick couplers would be installed at grade down the center. | | An automatic sprinkler system would be installed consisting of three rows along the east-west axis along the edges and center of the turf panels. |
| Water Supply | Potable city water would continue to be used for turf maintenance in the project area. | Option D1 (Preferred) | | Option D2 |
| | | On-site Drainage The curb and gutter system around the turf panels would direct stormwater within the project area to an underground water collection system. The city water would be the backup supply. | | Off-Site Water Capture Stormwater would be collected from roofs and hardscaping, or excess water resulting from the high water table in the area would be pumped from basements of buildings adjacent to the project area to supply water for the irrigation system. The city water would be the backup supply. |
| Water Storage | Since the city water supply would continue to be used, no on-site storage of water would be required. | Option E1 | | Option E2 (Preferred) |
| | | The water supply would be stored onsite in cisterns made from precast concrete pipes. | | The water supply would be stored onsite in cast-in-place concrete box cisterns or cisterns made from precast box culverts. |

1 **Alternative 1: the No Action Alternative**

2 The no action alternative represents a continuation of the existing conditions, operations, and maintenance
3 of the turf and soil and a continuation of current practices regulating visitor use within the project area.

4 The turf panels would continue to have no separation between the turf and walkways and would continue
5 to be subject to substantial wear at the corners. Loose gravel would continue to migrate into the turf, as
6 would millions of visitors a year who do not perceive a clear visual distinction between the turf panels
7 and walkways.

8 The current soil profile of sand and silt would be unchanged and would continue to be compacted at a
9 density comparable to impervious surface due to intense visitor use.

10 The current irrigation system consists of gear-driven sprinklers that draw water from potable water
11 sources located throughout the project area via subsurface water supply lines buried at a depth between 12
12 inches to 18 inches. However, these supply lines cannot be pressurized because they have been
13 compromised by the weight of vehicles and punctured by tent stakes used for special events. As a result,
14 the irrigation system is inoperable. To supplement the irrigation system, the NPS would continue to
15 irrigate manually as needed and when feasible.

16 The turf panels would continue to be maintained seasonally according to the current schedule for aeration,
17 fertilization, and overseeding. From mid-September to end of March, the NPS would continue to close
18 half the project area at a time (east and west of 7th Street NW) to maintain and regenerate the turf. As
19 needed, depressions and humps would be filled with topsoil.

20 The turf panels would continue to be subject to the intensity, frequency, and duration of activity within
21 the project area. The special events within the project area would continue to be permitted through the
22 Division of Park Programs at the National Capital Region Headquarters and would be subject to the
23 current regulations for site access, staging, risk management, comfort facilities, first aid, security,
24 transportation, and cost recovery for the events in a manner that minimizes impacts to Park resources and
25 the public.

26 **Alternative 2: the Action Alternative (Preferred)**

27 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
28 and provide a comprehensive irrigation system for the turf panels in the project area. Options within the
29 action alternative explore varying curbs, soil profiles, and irrigation systems.

30 **CURB OPTIONS**

31 The construction of a curb surrounding the turf panels is functionally the best way to properly set the
32 elevation of the panels to ensure proper drainage, prevent ponding, and capture water for reuse within the
33 project area, which is a relatively flat area with an average slope of less than one percent. A distinct curb
34 and gutter around the turf panels would create a clear visual distinction between elements and would
35 better protect the soils and subsurface irrigation system. Three curb options (Options A1, A2, and A3),
36 combined with configurations for the corners of the turf panels, are presented and are delineated in
37 Figures 2.1, 2.2., and 2.3, respectively. The curb options and the corner options were considered
38 separately in the alternatives development process, but have been combined here in logical combinations
39 to simplify the analysis.

40

1 **Option A1** – This option would restore the current condition of a 90-degree corner to the turf panels which
 2 was first introduced in the 1970’s Skidmore, Owings, & Merrill Plan for the National Mall. An 18-inch-
 3 wide “block” profile granite curb and gutter system would be installed around each turf panel and the
 4 curb would be raised by 6 inches (see Figure 2.1). To comply with ADA/ABAAS code, there would be
 5 several hard surface ramps between the walkways and the turf panels at the accessibility points. These
 6 ramps would be 6 feet long and spaced approximately 50 feet to 100 feet apart.

7 **Option A2** – This option would introduce 15-foot radius corners at each turf panel to protect and reduce
 8 the heavily worn edges. Each turf panel would be raised by approximately 2 inches and surrounded by an
 9 18-inch-wide curb and gutter system (see Figure 2.2). Accessibility and maintenance access would be
 10 continual around the turf panels.

11 **Option A3** – This option would introduce 25-foot radius corners on each of the turf panel corners to protect
 12 and reduce the heavily worn edges. An 18-inch-wide “V”-shaped granite curb and gutter system would be
 13 installed around each turf panel that would collect and conduct water to drain inlets (see Figure 2.3). The
 14 turf panels would not be raised so accessibility and maintenance access would be continual around the
 15 turf panels.

16

Figure 2.1 – Option A1

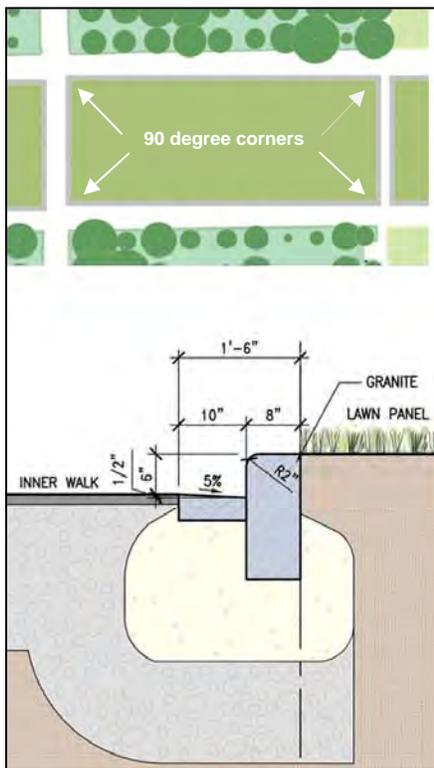


Figure 2.2 – Option A2

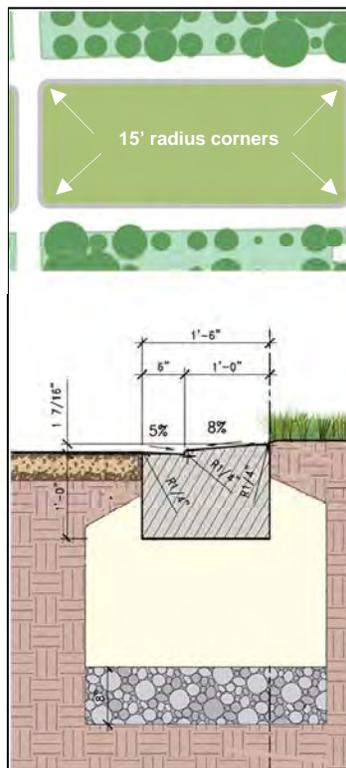
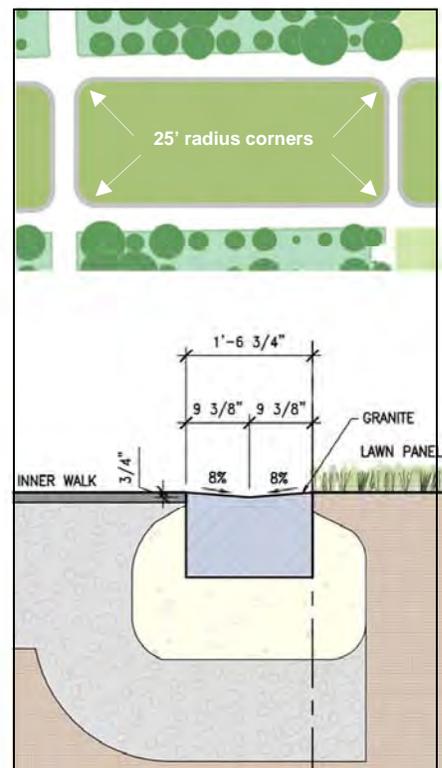


Figure 2.3 – Option A3



1 **SOIL PROFILE OPTIONS**

2 The design alternatives consider three
 3 options (Options B1, B2, and B3) for the
 4 soil reconstruction with different ratios of
 5 new to existing soil. As an option, plastic
 6 mesh soil stabilizing product or expanded
 7 shale could be added below the finished
 8 grade to improve compaction resistance.
 9 The mesh soil stabilizers tend to be
 10 relatively fine, are intended to help resist
 11 compaction and maintain space between
 12 the soil particles, and would not be visible
 13 above the finished grade

14 **Option B1** – In this option (see Figure 2.4),
 15 the top 12 inches of existing soil would be
 16 re-engineered and the soil below this grade
 17 would be fractured to a depth of 18 – 24
 18 inches. Stable compost would be added to
 19 the existing soil. The grade would be reset
 20 to achieve a cross slope on the turf panels
 21 to encourage positive drainage.

22 **Option B2** – In this option (See Figure 2.5),
 23 the top 6 inches of existing soil would be
 24 re-engineered. Up to an additional 12
 25 inches of soil would be removed and
 26 coarse concrete sand would be added to
 27 the topsoil and a soil mix would be added.
 28 The grade would be reset to achieve a
 29 cross slope on the turf panels to encourage
 30 positive drainage.

31 **Option B3** – In this option (see Figure 2.6),
 32 up to 20 – 26 inches of soil would be
 33 removed from the site. The new cross
 34 section of soil would consist of sand soil
 35 which is used for professional sport fields
 36 (with a mix of clay/silt content and
 37 organic matter) installed to a depth of 12 –
 38 18 inches. An impervious tray of bentonite
 39 clay topped with an aggregate that
 40 houses the drain lines would facilitate
 41 moisture retention, distribute water
 42 storage, and create soil that would support
 43 turf panels most similar to professional
 44 sports fields or golf course greens. The
 45 grade would be reset to achieve a cross
 46 slope on the turf panels to encourage
 47 positive drainage.

48

Figure 2.4 – Option B1 Soil Fracturing

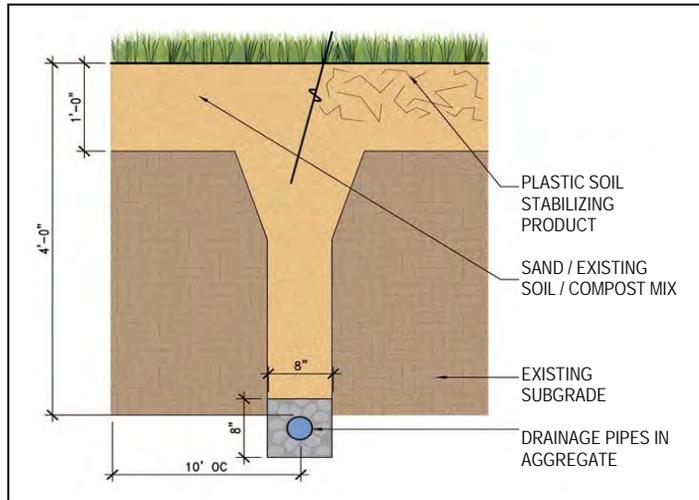


Figure 2.5 – Option B2 Existing Soil with Additional Sand

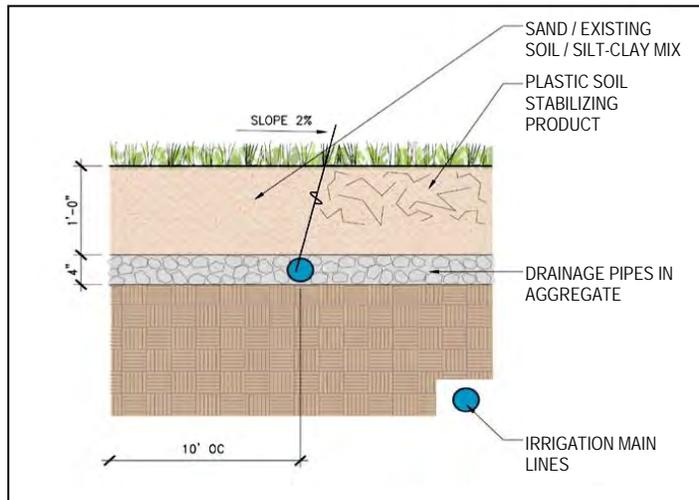
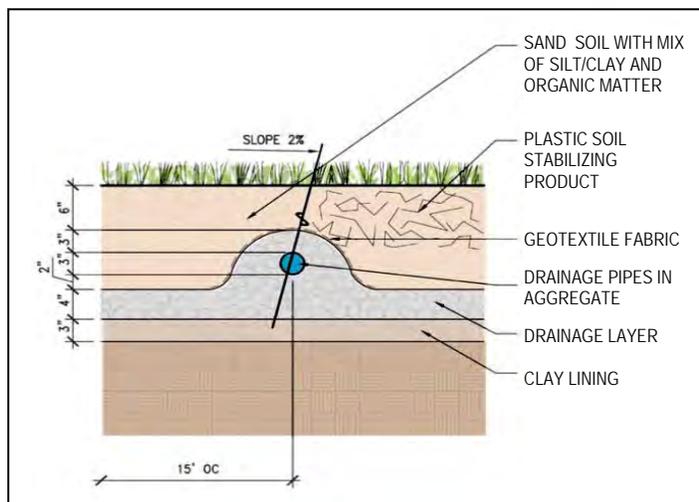


Figure 2.6 – Option B3 Sand Soil Option



1 **IRRIGATION SYSTEM OPTIONS**

2 Irrigation describes the application of water to soil to assist the vegetative health of turf and trees in
 3 conditions with disturbed soils and during periods of inadequate rainfall. Irrigation systems rely on
 4 several components to work in tandem such as drainage, water supply, and water storage to achieve
 5 successful water distribution across a given area.

6 Within this project, several irrigation systems are proposed that address water distribution (Options C1 –
 7 C4), water supply (Options D1 – D2), and water storage (Options E1 and E2). In each option, 4-inch-
 8 diameter perforated subsurface drainage lines would be installed in the new soil profiles to transport water
 9 that infiltrates through the turf panels back into a subsurface water storage system. A subsurface pump
 10 station would enable the water to be discharged out of the storage systems for distribution when irrigation
 11 is needed.

12 **WATER DISTRIBUTION**

13 Several options are proposed that rely on either manual or automatic water distribution systems, or a
 14 combination of both. Figure 2.7 delineates the water distribution options.

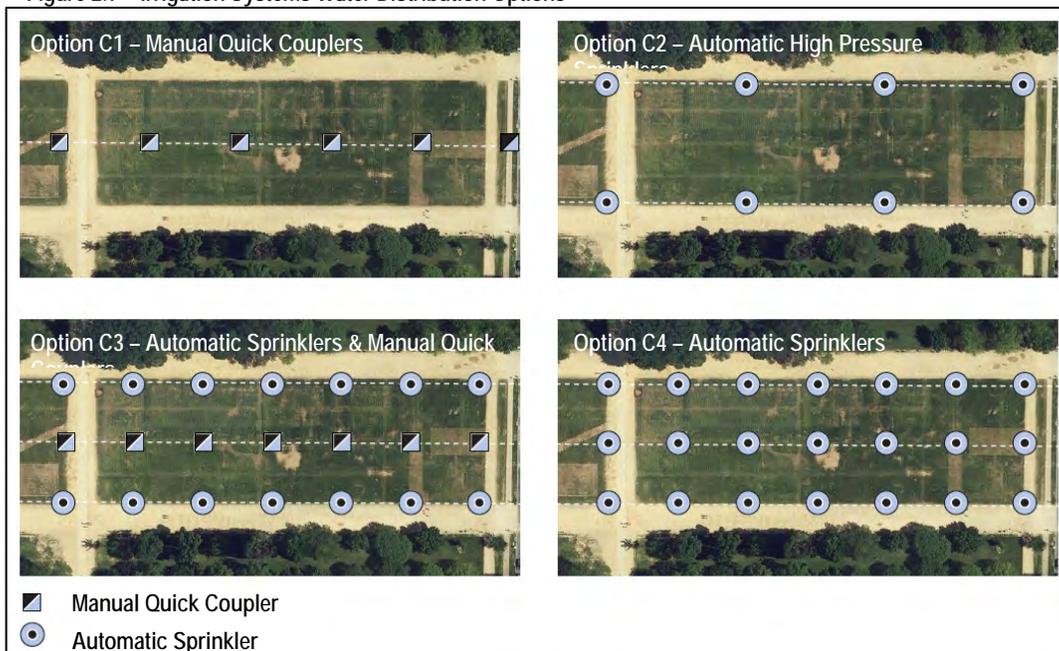
15 **Option C1** – In this manual irrigation system, a single row of quick couplers would be installed at grade
 16 down the center of the turf panels along the east-west axis. This would be a pressurized piping system.

17 **Option C2** – An automatic, high-pressure sprinkler system would be installed at the edges of the turf
 18 panels along the east-west axis. These gear-driven rotary sprinklers would be set at grade, pop out of the
 19 ground, spray a large distance of approximately 80 to 90 feet, and then retract into the ground. These
 20 sprinklers would operate at high pressures and would operate almost exclusively at night.

21 **Option C3** – A combination of a manual and automatic irrigation system would be used that includes
 22 automatic sprinklers down the edges of the turf panels along the east-west axis and a manual arrangement
 23 of quick couplers down the center of the turf panels at grade.

24 **Option C4** – An automatic sprinkler system would be installed consisting of three rows along the east-west
 25 axis along the edges and center of the turf panels.

26 Figure 2.7 – Irrigation Systems Water Distribution Options



1 **WATER SUPPLY**

2 Two options would use water recapture sources as an alternative to potable city water. However, in both
3 options, the city potable water would be used as a supplemental source.

4 **Option D1 (On-site Drainage Capture)** – This option would introduce topographical changes at each turf
5 panel that crown the east-west centerline to achieve positive drainage and prevent ponding. The north and
6 south curbs of each turf panel would be used to drain stormwater via catchment areas along the curbs to
7 underground drainage pipes and a water storage system.

8 **Option D2 (Off-Site Capture)** – Water would be collected in buildings adjacent to the project area from
9 either runoff from the roofs of large buildings (such as the Department of Agriculture, Smithsonian
10 Institution, and the National Gallery of Art East and West Buildings) or from deep basements of certain
11 buildings or tunnels surrounding the Mall. The latter method, known as “dewatering,” is possible because
12 the Mall is located at a low level in an area originally marshland. Also, the water table is high and results
13 in a number of locations in or around the Mall where continuous pumping and discharge into District of
14 Columbia Water and Sewer Authority (DC Water) storm drainage or combined sewer system must be
15 used to provide clear areas for other purposes. In each off-site capture scenario, new stormwater drain
16 lines would be installed in the project area.

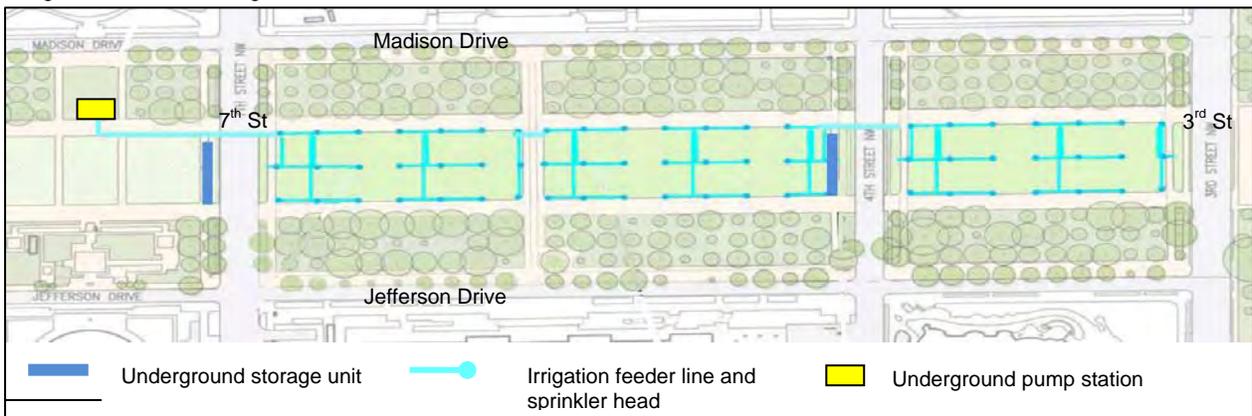
17 **WATER STORAGE**

18 Each water storage option would accommodate one million gallons (1MG), a volume that project
19 engineers have determined would adequately serve the project area. Both options would provide an
20 underground pump station and large-capacity subsurface storage placed beneath the walkways next to the
21 lawn panels at 4th Street and 7th Street¹ (see Figure 2.8).

22 **Option E1** – The subsurface water storage system would be laid out end-to-end and installed in a linear
23 configuration using pre-fabricated concrete pipes as cisterns beneath the north-south walkways.

24 **Option E2** – The subsurface water storage system would be installed in a more compact configuration
25 using either cast-in-place concrete box cisterns or pre-fabricated box culverts used as cisterns. Both
26 configurations can be customized to the site constraints and would be installed under the walkways
27 adjacent to the turf panels. The decision to use precast or cast-in-place approaches would be made during
28 the design phase of the project to best accommodate requirements.

29 **Figure 2.8 – Water Storage Locations**



¹ 1MG of storage is proposed to be installed in multiple phases with half the capacity provided in the first phase via two 0.25MG tanks. Phase II would provide another 0.25MG and the remaining 0.25MG would be provided in a future (yet to be funded) phase. By installing 1MG of water storage improvements, approximately 67.5% or 7.56MGs of the 11.2MG yearly average irrigation demand for the Mall lawn panels would be met from collected rainwater.

1 **ELEMENTS COMMON TO ALL OPTIONS**

2 **Turf Panel Maintenance**

3 The turf panels would continue to be maintained seasonally according to the current schedule for aeration,
4 fertilization, and reseeded. From mid-September to end of March, the NPS would continue to close half
5 the project area at a time (east and west of 7th Street NW) to maintain and regenerate the turf. As needed,
6 low-lying areas would be filled with topsoil to bring the grade up to the elevation specified in the design.

7 Peak-use period maintenance (April – October) would continue. However, under the action alternative,
8 additional grounds keeping would be required to maintain the health and integrity of the turf, the edges of
9 the turf panels, and the integrity of the curb and gutter systems.

10 **Turf Management Strategies**

11 The failure to maintain turf on the Mall is attributed to the combination of the high intensity and duration
12 of multiple events coupled with inadequate recovery time between events. Large tents and structures are
13 often erected during events, and can be very damaging to the turf and soil. Not only does the use of tents
14 and structures contribute to soil compaction in the areas under the tent coverings, but this activity also
15 destroys the entire turf plant by eliminating sunlight. Insufficient water, due to poor drainage at the
16 surface and within the soil profile, combined with soil compaction, all contribute to the decline in the
17 health of the turf. NPS studies have found it unlikely that design changes to the Mall will improve the
18 conditions to the point where acceptable turf can be maintained under the current use and event schedule
19 and practices.

20 Therefore, turf management strategies related to events may also be adopted that seek to minimize turf
21 damage and soil compaction by reducing the number and duration of large permitted events; lengthening
22 the rest period for the turf between the events; and significantly reducing the numbers, types, and duration
23 of temporary structures allowed during large events.

24 **Scheduling** – The number of large events may be managed to reduce damage to the turf and allow it to
25 recover between events. Limiting the number of large events during the rainy season and turf
26 recovery period of mid-September through May would increase turf resilience and reduce potential
27 turf damage. Cancellation or postponement of events in the case of severe wet conditions may also
28 prevent damage to the turf panels. Additionally, the duration of long-term events would be regulated
29 (including set up and breakdown times) to prevent compaction or other damage to the turf and soils to
30 the extent possible.

31 **Rest Periods** – To enable turf recovery after instances of heavy use, the NPS may schedule a 2- to 7-
32 day gap between events. The recommended rest period would depend on the magnitude and scale of
33 special events, as well as whether temporary structures are used, and how many of them.

34 **Structural Requirements** – Guidelines may limit the type and placement of temporary structures to
35 areas easily accessible by vehicle or on hardscape surfaces. Special event participants may be
36 required to utilize decking or covers to protect the turf from damage.

37 **Construction**

38 Construction would be phased so that half of the project area (to the east and west of 7th Street NW)
39 would be under construction while a portion of the other half would be used for staging. Public access to a
40 portion of the Mall for vista enjoyment and photography would be maintained.

1 **Mitigation Measures for the Action Alternative**

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

8 **VISITOR USE AND EXPERIENCE**

- 9 ▪ Public information will be made available on the Park website and on signs in the Park to inform
10 visitors of temporary closures within the project area.
- 11 ▪ Every attempt will be made to time construction activity so it does not coincide with special
12 events that occur on the National Mall or in the project area.
- 13 ▪ Interpretation and education information will be added onsite to notify visitors of the project and
14 the effects on natural resources and the NPS tenets of sustainability.
- 15 ▪ Construction will be phased so that approximately half of the project area will be continuously
16 available.

17 **PUBLIC SAFETY**

- 18 ▪ Construction workers and employees will follow an approved health and safety plan which
19 incorporates all applicable regulations.
- 20 ▪ Barriers and signs will be used around construction sites to divert the public from potentially
21 dangerous situations.
- 22 ▪ Announcements will be made on the Park website and in the media to alert the public to the
23 construction schedule and locations.

24 **CULTURAL RESOURCES**

- 25 ▪ Additional interpretation and education appropriate to the historic context of the project and the
26 site will be developed.
- 27 ▪ Ongoing review with regulatory agencies within the Monumental Core (DC HPO, NCPC, and
28 CFA) within the design development and Section 106 process will ensure that the proposed
29 actions blend as harmoniously as possible with the existing scale, context, and landscape in the
30 project area.

31 **VISUAL/AESTHETICS**

- 32 ▪ Every attempt will be made to time construction activity so it does not coincide with special
33 events that occur on the National Mall or in the project area, thus reducing visual impacts
34 associated with closures of portions of the project area or character-defining resources within it.
- 35 ▪ During construction, visual screening may be used to shield equipment where appropriate and
36 possible.

37 **SOILS**

- 38 ▪ During construction, exposed soils will be covered with plastic sheeting, jute matting, erosion
39 netting, straw, or other suitable cover material to prevent soil erosion and movement during rain
40 or wind events.

- 1 ▪ Erosion containment controls such as silt fencing and sediment traps (e.g., hay bales) will be used
2 to contain sediment onsite.
- 3 ▪ Best management practices for erosion and sediment control will be employed during and after
4 construction, including stabilization and revegetation after construction is completed.
- 5 ▪ Replacement soil would be brought in from outside of the Park, in accordance with NPS policy.
- 6 ▪ Existing soil would need to be removed from the National Mall site and disposed of in an
7 environmentally sympathetic fashion with the potential for reuse.

8 **Alternatives Considered but Not Carried Forward**

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

- 13 ▪ Technical or economic infeasibility
- 14 ▪ Inability to meet project objectives or resolve need
- 15 ▪ Duplication with other, less environmentally damaging or less expensive alternatives
- 16 ▪ Conflict with an up-to-date and valid Park plan, statement of purpose and significance, or other
17 policy, such that a major change in the plan or policy would be needed to implement the actions
- 18 ▪ Too great an environmental impact

19 Several alternative options in the irrigation system were considered but dismissed based on a variety of
20 technical issues.

21 **WATER SUPPLY**

22 **Wells** – The use of on-site wells was dismissed from further analysis because the capacity was not
23 found to be sufficient to support the irrigation system requirement.

24 **Potomac River Water** - The Potomac River is a technically feasible source of irrigation water, but was
25 eliminated from consideration due to the conveyance infrastructure (subsurface utility lines, pump
26 station, etc.) that would be required to support intake and distribution. In addition, the water quality of
27 the Potomac River would necessitate treatment prior to use onsite.

28 **WATER STORAGE**

29 **Above-ground storage** – Above-ground storage systems were eliminated from consideration due to the
30 potential for major visual impacts.

31 **Oversized collector pipes** – The size of the oversized collector pipes was deemed unsuitable for
32 location beneath the walkways because the pipes would need to be located remotely some distance
33 from the turf panels. This method of storage was dismissed from further analysis due to concerns
34 related to maintenance and the remote location of the storage system.

35 **Distributed storage systems** – Two types of distributed systems that would be installed beneath the turf
36 panels were analyzed. The first type of system was a natural basin formed by lining the floor and sides
37 of a shallow excavation with an impervious geotextile or natural clay to create a subsurface tray for
38 collecting water. This option was eliminated from consideration due to maintenance and cost concerns.

39 Another distributed system analyzed was a subsurface array of interconnected polyvinyl chloride
40 (PVC) pipes that would ensure full distribution of stored water. This system was eliminated from
41 further consideration because it was vulnerable to damage from tent stakes.

1 **WATER DISTRIBUTION**

2 Water distribution systems that were not located deeper than four feet below ground surface were
3 dismissed due to the likely damage by special events tent stakes.

4 **The Preferred Alternative**

5 The CEQ Section 5.4(d) requires the Park to identify a preferred alternative in the EA if one has been
6 identified. The preferred alternative is the alternative the NPS believes would best accomplish its goals,
7 objectives, and purpose and need. In selecting a preferred alternative, the NPS must consider the
8 associated impacts to natural and cultural resources. Since there is no requirement that the
9 environmentally preferable alternative and the preferred alternative be the same, the NPS chose the action
10 alternative with the following options as its preferred alternative because it best meets the objectives of
11 the project and is consistent with NPS management policies, laws, regulations, and plans. The NPS
12 selected the action alternative with options A2, B2, C4, D1, and E2 as the preferred alternative. The
13 selected options for implementation will be identified in the NEPA decision document, which is
14 anticipated to be a FONSI.

15 The process by which the NPS identified their preferred alternative involved a Choosing by Advantages
16 and Value Analysis Workshop which took place on March 9 – 11, 2010.

17 The Choosing by Advantages and Value Analysis Workshop was conducted to ensure that all viable
18 project alternatives were considered, the evaluation criteria were sound, the selected solutions were cost
19 effective, an independent opinion was provided, and all proposed project alternatives would satisfy basic
20 project objectives. These objectives include:

- 21 ■ Prevent loss, maintain, and improve the condition of the resources
 - 22 ■ Improve visitor services, education, and recreation opportunities
 - 23 ■ Protect public and employee health, safety, and welfare
 - 24 ■ Improve operational efficiency and sustainability
- 25

26 The project design team included NPS staff (from the Denver Service Center and the Park) and consultant
27 designers, landscape architects, and engineers with expertise in irrigation and turf management.

28 **CURB AND GUTTER OPTION A2**

29 This option was selected because it would provide a good solution to protect the soil, turf, and irrigation
30 system in the project area. Option A2 would provide the best spatial definition around the turf panels
31 while maintaining universal accessibility without the need for the ramps that would be required in Option
32 A1. The low profile would present less of a tripping hazard than option A1 while still providing more of a
33 deterrent to new social trails and the prevention of gravel migration than Option A3. Option A2 provided
34 the easiest option to maintain and the flexibility for implementation of the proposed National Mall Plan.

35 **SOIL PROFILE OPTION B2**

36 The soil profile with the addition of sand (Option B2) was selected because this profile would have better
37 soil compaction resistance and greater permeability of soil relative to Option B1, and would require less
38 maintenance and water consumption than Option B3. In addition, this profile would allow for the turf to
39 recover from short-term impacts and would have a high ability to accommodate tent stakes during special
40 events.

41 **IRRIGATION SYSTEM – WATER DISTRIBUTION OPTION C4**

42 The automatic sprinkler system (Option C4) installed along the east-west axis along the edges and center
43 of the turf panels is the preferred option because it provides the most efficient and adequate coverage per
44 turf panels while posing the fewest risks to public safety and Park maintenance.

1 Option C2 was dismissed because the high-pressure and large-volume spray would post a risk to public
2 safety and maintenance staff. In addition, this system is manufactured by a German company which could
3 present problems with NPS procurement because of the requirements set forth by the Buy American Act
4 of 1933, which requires the United States government to prefer U.S.-made products.

5 Options C1 and C3 were dismissed because the layouts do not effectively or efficiently cover the entire
6 turf panel.

7 **IRRIGATION SYSTEM – WATER SUPPLY OPTION D1**

8 Option D1, reserving the ability to incorporate Option D2 at a later date, was selected as the NPS
9 preferred option because it is a well-known and well-used standard practice for on-site water collection.
10 The system is compatible with turf replacement and irrigation systems and it does not require additional
11 off-site construction of pipes or other infrastructure. In addition, Option D1 would not require the
12 complex agreements with adjacent property owners or other agencies that are necessary with Option D2.

13 **IRRIGATION SYSTEM – WATER STORAGE OPTION E2**

14 A compact box cistern configuration was selected as the preferred water storage system because it is a
15 concentrated system with flexibility, easily scaled to a variety of sizes and shapes with the option of
16 increasing its size at a later date. Concrete is durable over time and is a cost-effective material. The use of
17 precast, off-the-shelf materials such as precast box culverts, will be used if possible, as it is a more cost-
18 effective approach than a custom cast-in-place method of installation.

19 **The Environmentally Preferable Alternative**

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

- 22 1. Fulfilling the responsibilities of each generation as trustee of the environment for succeeding
23 generations;
- 24 2. Assuring for all generations safe, healthful, productive, and aesthetically and culturally pleasing
25 surroundings;
- 26 3. Attaining the widest range of beneficial uses of the environment without degradation, risk of
27 health or safety, or other undesirable and unintended consequences;
- 28 4. Preserving important historic, cultural, and natural aspects of our national heritage and
29 maintaining, wherever possible, an environment that supports diversity and variety of individual
30 choice;
- 31 5. Achieving a balance between population and resource use that would permit high standards of
32 living and a wide sharing of life's amenities; and
- 33 6. Enhancing the quality of renewable resources and approaching the maximum attainable recycling
34 of depletable resources.

35 The NPS is required to identify the environmentally preferable alternative in its NEPA documents for
36 public review and comment. The NPS, in accordance with the Department of the Interior policies
37 contained in the Departmental Manual (516 DM 4.10) and the CEQ's NEPA's Forty Most Asked
38 Questions (CEQ n.d.), defines the environmentally preferable alternative (or alternatives) as the
39 alternative that best promotes the national environmental policy expressed in NEPA (Section 101[b]; 516
40 DM 4.10). In their Forty Most Asked Questions, CEQ further clarifies the identification of the
41 environmentally preferable alternative, stating "Ordinarily, this means the alternative that causes the least
42 damage to the biological and physical environment; it also means the alternative which best protects,
43 preserves, and enhances historic, cultural, and natural resources" (CEQ n.d.).

1 Based on the analysis of environmental consequences of each alternative, the NPS determined that the
2 action alternative, with Options A2, B2, C4, D1, and E2 is the environmentally preferable option.

3 Curb and gutter Option A2 would best minimize compaction of soil and degradation of turf by providing
4 an effective border around the turf panels that greatly reduces gravel migration and social trails on the turf
5 panels. This option is also the most visually compatible with the project area.

6 Soil profile Option B2 and water distribution Option C4 are the environmentally preferable options for
7 the same reasons listed in the preferred alternative.

8 Water supply Options D1 and D2 both utilize non-potable water sources which are equally sustainable.
9 However, D1 uses on-site groundwater capture which is more environmentally preferable because it
10 would not require pumping or the installation of a conveyance infrastructure from adjacent buildings.

11 Water storage Options E1 and E2 are equally preferable from an environmental perspective because both
12 require a large underground area for installation and can be adapted to a variety of sizes. Both can be
13 expanded over time and are durable and cost effective.

14 Implementation of these options is preferable over the no action alternative because the options discussed
15 here best preserve the existing natural and cultural features in the project area and enhance visitor use and
16 experience, visual resources, soils, vegetation, and stormwater management. The environmentally
17 preferable option is also the NPS preferred alternative.

18

1 How the Alternatives Meet the Objectives

2 The project objectives, enumerated in “Chapter 1: Purpose and Need,” must be achieved to a large degree
 3 for the action to be considered a success. The alternatives and options selected for detailed analysis must
 4 resolve the purpose of and need for action and meet all objectives either minimally, partially, or fully.

Table 2.2 – How the Alternatives Meet the Project Objectives

| Objective | No Action Alternative | Action Alternative |
|--|--|--|
| <p>Improve the visual quality of the National Mall</p> | <p>Does not meet this objective.</p> <p>The no action alternative would not address the lack of clear visual distinction between the walkways and turf panels, nor would it provide a long-range strategy to manage the health and appearance of the turf by employing a range of strategies to minimize the damage of public events to the turf, alleviate soil compaction, or provide a strategy for the restoration of the turf. Intensive use of the project area under current conditions would continue to degrade the visual quality of the Mall, contributing to poor growing conditions for vegetation.</p> | <p>Fully meets this objective.</p> <ul style="list-style-type: none"> ▪ Installing curbs and gutters would create a well-defined visual boundary between the walkways and turf panels and would discourage pedestrians from walking on the lawn without forbidding use of the lawn. ▪ The proposed soil profiles would allow permeability of water into the ground and allow for vegetation (turf and trees) throughout the project area to thrive and be more visually compelling than current conditions. ▪ The options for irrigation would provide an effective method to maintain the turf in the project area and ensure its health and visual quality. |
| <p>Accommodate high levels of use in the project area in a manner that sustains the character and integrity of the National Mall</p> | <p>Does not meet this objective.</p> <p>The project area hosts approximately 25 visitors annually. As a result, the turf and walkways suffer from overuse and appear worn. The resulting visual quality detracts from the character of the National Mall and the association of the project area as America’s “front yard” and prominent civic stage.</p> | <p>Fully meets this objective.</p> <p>Strategies to protect the integrity of the turf and soil by managing elements of the use of the project area for special events would allow special events to occur, while providing a mechanism for the NPS to manage the high intensity and duration of multiple events together and ensure that there is adequate recovery time between events for the turf to be restored.</p> |
| <p>Result in a more sustainable and healthier urban ecosystem that implements best management practices</p> | <p>Does not meet this objective.</p> <ul style="list-style-type: none"> ▪ The soils are currently compacted to a degree that is comparable to concrete and demonstrate characteristics of impervious surfaces. ▪ The current irrigation system has multiple deficiencies and cannot adequately support the project area. ▪ The use of potable water as the primary source is not consistent with the NPS goals of sustainability. | <p>Fully meets this objective.</p> <ul style="list-style-type: none"> ▪ The proposed soil profiles would allow permeability of water into the ground and allow for vegetation (turf and trees) throughout the project area to thrive and contribute positively to the urban ecosystem. ▪ The proposed irrigation system would utilize stormwater management practices as primary water sources, which are consistent with the NPS goals of sustainability. ▪ The proposed irrigation system would be designed to be protected from damage, easily identifiable for permitted activities, and follow best management practices. |
| <p>Maximize the site’s potential for stormwater management and minimize reliance on public water sources</p> | <p>Does not meet this objective.</p> <p>Currently, the NPS allows stormwater on the site to drain to nearby storm sewers and does not recapture the water for on-site use. In addition, the current irrigation system uses potable water as the primary source.</p> | <p>Fully meets this objective.</p> <ul style="list-style-type: none"> ▪ The proposed soil profiles would allow permeability of water into the ground and allow for vegetation (turf and trees) throughout the project area to thrive and contribute positively to the urban ecosystem. ▪ The proposed irrigation system would utilize stormwater management practices as primary water sources, methods which are consistent with the NPS goals of sustainability. |

| Objective | No Action Alternative | Action Alternative |
|---|---|--|
| <p>Address the various soil and landscape treatment conditions in a manner that is integrated and complementary to anticipated types and levels of Park use</p> | <p>Does not meet this objective.</p> <ul style="list-style-type: none"> ▪ The current lack of physical separation between the walkways and turf panels contributes to extensive wear on the turf and soil compaction along the edges. ▪ The management approach to special events that occur annually on the Mall contributes to the ongoing degradation of the turf panels, including soil compaction damage to turf plants and damage to subsurface infrastructures such as the irrigation system. ▪ Current NPS management practices do not allow adequate time for the project area to recover following special events. | <p>Fully meets this objective</p> <ul style="list-style-type: none"> ▪ New curb and gutters would be added to create a visual separation between the walkways and turf panels that would help encourage visitors to remain on the walkways while not discouraging use of the turf. ▪ The turf panels would be regraded to achieve positive drainage and eliminate ponding. ▪ A new irrigation system would be located at a depth so tent stakes and heavy vehicles would not damage the subsurface infrastructure. ▪ Strategies to protect the integrity of the turf and soil by managing elements of the use of the project area for special events would allow the NPS to manage the high intensity and duration of multiple events together and ensure that there is adequate recovery time between events for the turf to be restored. |

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Summary of Impacts

The table on the following pages provides a summary of environmental consequences for each resource area analyzed in “Chapter 4: Environmental Consequences.” There would be no impairment to any of the resources resulting from the implementation of the action alternative. Options are determined to have beneficial or adverse impacts for each area of analysis, and adverse impacts are rated as negligible, minor, moderate, or major. Impacts are also assessed as to whether they are short-term (less than a year in duration) or long-term (greater than a year in duration). Threshold definitions for each topic are in Chapter 4.

Table 2.3 – Summary of Impacts (Environmental Consequences)

| Resource Area | No Action Alternative | Action Alternative |
|--|--|--|
| <p>Visitor Use and Experience</p> | <p>The no action alternative represents a continuation of the existing conditions, operations, and maintenance of the turf and soil and of current practices regulating visitor use and special events. Under this alternative there would be long-term minor adverse impacts due to annual temporary closures of portions of the project area and the worn appearance of the turf panels caused by intense use. There would be no effect on visitor use and experience resulting from continuance of current event management policies. There would be a short-term minor to moderate adverse cumulative effect on visitor use and experience resulting from construction activity depending on the duration and extent of construction.</p> <p>Cumulative Impacts: The long-term minor adverse impacts of this alternative, in combination with the beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term beneficial cumulative effect.</p> | <p>Curb and Gutter: Curb Options A2 and A3 would enhance the overall appearance of the lawn in the project area by creating a clear visual edge between the walkways and turf panels, deterring visitors from walking on the lawn and protecting the health and visual quality of the grass. Each option would result in long-term beneficial impacts to visitor use and experience. Option A1 would require numerous ramps throughout the project area for accessibility, which would result in a long-term moderate adverse impact on visitor use and experience.</p> <p>Soil Reconstruction: Implementation of any soil profile would improve the soils in the project area, alleviating compaction and contributing to the health of the turf and resulting in long-term beneficial impacts on visitor experience.</p> <p>Irrigation System (Water distribution, supply, and storage): The proposed irrigation systems and components would contribute to healthier, more visually appealing turf panels. Since corresponding infrastructure would not be visible, implementation of any irrigation system would have long-term beneficial impacts to visitor use and experience.</p> <p>Turf Management Modifications: Modifications in management approaches for large events as they relate to turf health may reduce the number of permits issued for special events in the project area and address the number, size, and length of time temporary structures may be erected; however, these changes would not appreciably limit critical characteristics of the visitor use or experience for most visitors, so resultant impacts would be long-term minor and adverse.</p> <p>Short-term Impacts: During construction, there would be short-term moderate adverse impacts to visitor use and experience due to the closure of approximately half of the turf panels, the noticeable presence of construction equipment, and the disruption of circulation within the project area.</p> <p>Cumulative Impacts: The overall long-term beneficial impacts of this alternative, in combination with the beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term beneficial cumulative effect.</p> |
| <p>Public Safety</p> | <p>Under the no action alternative, there would be long-term negligible adverse impacts to public safety due to the current lack of separation between the turf and walkways and migration of gravel into the turf panels that creates an irregular walking surface.</p> <p>Cumulative Impacts: The long-term negligible adverse impacts of this alternative, when combined with the beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in long-term negligible adverse cumulative impact to public safety.</p> | <p>Curb and Gutter: Under the action alternative, there would be long-term minor adverse impacts on public safety resulting from the implementation of the raised curb and gutter profile in Option A1. However, implementation of Option A2 or Option A3 would result in negligible impacts to public safety.</p> <p>Soil Reconstruction: Implementation of any soil profile option (B1, B2, or B3) would have no effect on public safety following construction because none of the options would result in any above-ground modifications.</p> <p>Irrigation System (Water distribution, supply, and storage): The irrigation system components would mainly be installed underground, so there would be no effect resulting from implementation of any water supply option (D1 or D2) or water storage option (E1 or E2). Impacts resulting from the implementation of Options C1, C3, and C4 would also have no effect on public safety, but option C2 would utilize high-pressure sprinklers which would result in long-term minor adverse impacts to public safety.</p> <p>Turf Management Modifications: The proposed turf management modifications regarding how events are managed would have no effect on public safety because the operational policies would ensure that the condition of permits allows for the NPS to impose “reasonable restrictions on the use of temporary structures in the interest of protecting park areas, traffic, and public safety” (NPS 2010c).</p> <p>Short-term Impacts: Implementation of the action alternative would result in short-term moderate adverse impacts to public safety during the construction period. However, mitigation measures would reduce this impact to short-term minor adverse.</p> <p>Cumulative Impacts: Implementation of curb Options A2 or A3, water distribution Options C1, C3, and C4, and any soil profile, water source, or water supply options, would result in a long-term beneficial cumulative impact to public safety. Implementation of curb Option A1 or water distribution Option C2 would result in a long-term minor to moderate adverse cumulative impact to public safety.</p> |

| Resource Area | No Action Alternative | Action Alternative |
|--|---|---|
| <p>Park Management and Operations</p> | <p>The no action alternative represents the continuation of current maintenance efforts and operations for the project area. Frequent and intensive maintenance of the turf panels and soil conditions would continue to create a noticeable and substantial strain on Park staff and operating costs to mitigate against the effects of intense visitor use, resulting in long-term moderate adverse impacts to Park management and operations.</p> <p>Current use practices for special events would continue to create a noticeable strain on Park staff and operating costs to mitigate against the effects of the large number of visitors, delivery trucks, and staging equipment on the turf in the project area. The no action alternative would result in long-term moderate adverse impacts to Park management and operations.</p> <p>Cumulative Impacts: The long-term moderate adverse impacts resulting from the no action alternative, when combined with the long-term beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term minor adverse cumulative effect.</p> | <p>Curb and Gutter: The action alternative would introduce new curbs, resulting in increases in operating costs to maintain the new components. All three options would require additional staff to maintain the edges of the turf panels and the integrity of the curb and gutter system, with Option A2 offering a slight advantage to Park management and operations. The adverse impacts resulting from the implementation of any curb option would not create an appreciable or measurable change to Park operations and would be long-term minor and adverse.</p> <p>Soil Reconstruction: Implementation of any of the soil profile reconstruction options (B1, B2, and B3) would result in increased costs, but each varies relative to maintenance responsibilities. Options B1 and B2 would require the same operating costs and level of maintenance following construction. Impacts would not create an appreciable or measurable change to Park operations and would be long-term adverse and minor. Option B3 would require the most intensive level of maintenance because the soil profile is comparable to what is used at golf courses and professional athletic fields. The resultant effect on the Park would be noticeable and would create an appreciable and measurable change to Park operations, yielding a long-term moderate adverse effect on Park management and operations.</p> <p>Irrigation System (Water distribution, supply, and storage): The new irrigation system would result in increases in Park maintenance responsibilities and operating costs to maintain the new components. However, increases in Park maintenance responsibilities and operating costs would be offset by the reliance on groundwater instead of potable water for site irrigation. Implementation of any water supply or water storage option (D1 or D2 and E1 or E2) would have beneficial impacts on Park management and operations. Implementation of any water distribution option (C1-C4) would have long-term minor adverse impacts.</p> <p>Turf Management Modifications: Modifications in management approaches for large events as they relate to turf health may reduce the number of permits issued for special events in the project area and may result in long-term beneficial impacts to Park management and operations because new policies would reduce the costs and administrative effort involved in permitting and would reduce the intensity of Park maintenance required following special events for the restoration of the project area.</p> <p>Short-term Impacts: Implementation of any curb, soil, or irrigation option would have the same scope of construction activity and duration and the same noticeable, but slight short-term minor adverse effects to Park management and operations.</p> <p>Cumulative Impacts: The long-term adverse impacts ranging from minor to moderate resulting from implementation of the action alternative, when combined with the long-term beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term minor adverse cumulative effect. Construction activity resulting from these actions would result in a short-term minor adverse cumulative effect on Park management and operations.</p> |
| <p>Utilities and Infrastructure</p> | <p>Under the no action alternative, due to the compromised state of the irrigation system, there would continue to be substantial disruptions in irrigation service to the turf panels resulting in long-term moderate adverse impacts. The current conveyance of stormwater drainage to the combined sewer system would continue to contribute adversely to the stormwater management infrastructure system, resulting in long-term minor adverse effects.</p> <p>Cumulative Impacts: The long-term minor adverse impacts of the no action alternative, in combination with the beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term beneficial cumulative effect.</p> | <p>Curb and Gutter: Options A1, A2, and A3 would capture stormwater runoff for reuse in irrigation of the turf panels and result in similar long-term beneficial impacts.</p> <p>Soil Reconstruction: Implementation of any soil profile option (B1, B2, or B3) would introduce enhancements to the soils in the project area to alleviate and reverse the effects of compaction. Reconstruction of the soil profiles would result in more pervious turf panels, would increase stormwater filtration into the soil, and would reduce stormwater runoff from the turf panels. All options would result in a long-term beneficial effect on the city's stormwater/combined sewer system.</p> <p>Irrigation System (Water distribution, supply, and storage): The implementation of any irrigation system would result in long-term beneficial impacts to the city water supply system since the new system would not rely on the municipal system for primary service. There are subtle differences between water distribution options that affect the efficiency of water usage, but differences between options are negligible and would not affect the larger municipal system.</p> <p>Turf Management Modifications: Modifications in management approaches for large events as they relate to turf health would greatly reduce the likelihood that existing or new irrigation and drain lines would be damaged and would result in a slight, but long-term beneficial impact to the irrigation system.</p> <p>Short-term Impacts: There would be short-term adverse impacts to utilities during construction due to potential temporary disruption of service. However, ground-disturbing activity would be conducted in accordance with construction sequencing plans to be approved by the NPS to reduce impacts to utilities. Short-term impacts would be minor.</p> <p>Cumulative Impacts: When combined with the long-term beneficial impacts to utilities and infrastructure resulting from implementation of the action alternative if new construction activities utilize Leadership in Energy and Environmental Design (LEED) techniques and if stormwater from these projects is harvested for reuse, there would be a long-term beneficial cumulative effect. Construction activity resulting from past, present, and reasonably foreseeable actions would result in a short-term minor to moderate adverse cumulative effect.</p> |

| Resource Area | No Action Alternative | Action Alternative |
|------------------|--|---|
| Soils | <p>Implementation of the no action alternative would result in long-term moderate adverse impacts to soil resources due to the continued compaction of soils from intense visitor use, causing erosion and exposure.</p> <p>Cumulative Impacts: The long-term moderate adverse impacts of this alternative, in combination with the long-term negligible adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term moderate adverse cumulative effect.</p> | <p>Curb and Gutter: The curb and gutter options would not affect soil resources except for some compaction of soil underneath the gutters, which is a long-term, but negligible, impact. The right-angle configuration in Option A1 would encourage continuation of social paths, resulting in long-term negligible to minor adverse impacts. The other two options would discourage the need for the social paths and would direct stormwater to the storm drains more effectively, resulting in no long-term impacts.</p> <p>Soil Reconstruction: All the new soil profiles would ultimately result in long-term benefits to soil resources by reversing compaction, amending the soils to better support the turf grass and infiltrate stormwater, and adding products that would help the soil resist future compaction. Of the three soil profile options, the third option calls for replacement and use of clay trays and aggregate layers. It is therefore the most engineered option, yielding the fewest benefits to the soil resources, and the replacement of the soils could be considered an adverse impact to the existing soils.</p> <p>Irrigation System (Water distribution, supply, and storage): The irrigation options would all provide minor benefits to the soil by providing moisture. The water supply and storage options would result in minor short-term impacts to soil resources during construction.</p> <p>Turf Management Modifications: Modifications in management approaches for large events as they relate to turf health, which may include reducing the number of large permitted events and the size and number of structures allowed during these events, may reduce the frequency of compacting forces on turf panel soils.</p> <p>Short-term Impacts: There would be short-term minor adverse impacts to soil resources during construction as soil would be disturbed and in some instances stockpiled onsite, and the potential for erosion and soil loss would be greater.</p> <p>Cumulative Impacts: When combined with the long-term beneficial impacts of the action alternative on soil resources, the long-term negligible adverse impacts of other past, present, and reasonably foreseeable future actions would result in a long-term beneficial cumulative effect.</p> |
| Vegetation | <p>The implementation of the no action alternative would result in long-term moderate adverse impacts to vegetation in the project area because of severe turf damage caused by continued heavy visitor use.</p> <p>Cumulative Impacts: The long-term moderate adverse impacts from this alternative, in combination with the long-term beneficial impacts from other past, present, and future projects, would result in a long-term moderate adverse cumulative effect on vegetation.</p> | <p>Curb and Gutter: Option A1 would have a long-term beneficial impact on vegetation as it would restore the worn corners of the turf panels to the original 90 degrees. Options A2 and A3 would introduce new radii that would reduce the overall amount of turf, and would have long-term moderate adverse impacts to the permanently removed turf in the corners. All options would have long-term moderate adverse impacts resulting from turf removal around the edges of the turf panels where the new curbing would be placed.</p> <p>Soil Reconstruction: All three soil profile reconstruction options would have comparable long-term beneficial impacts on vegetation in the project area by reducing existing compaction, helping the turf and soil resist compaction forces, and helping retain water better.</p> <p>All options would have short-term moderate adverse impacts to vegetation because all turf in the project area would be temporarily removed during construction but replaced again after soils have been reconstructed.</p> <p>Irrigation System (Water distribution, supply, and storage): All irrigation options, including water distribution, supply, and storage would help maintain healthier, more visually appealing turf stands and would result in comparable long-term beneficial impacts to vegetation by providing an efficient and consistent method for watering the project area.</p> <p>Turf Management Modifications: Modifications in management approaches for large events as they relate to turf health, including the reduction in event frequency and duration and the incorporation of a range of rest periods based on the size of the event that preceded it, would result in decreased wear and tear on the turf panels with increased rest periods, enabling the turf a better opportunity to regenerate. Overall, the turf management modifications for events would result in long-term beneficial impacts to vegetation in the project area.</p> <p>Short-term Impacts: Short-term moderate adverse impacts to vegetation would result from construction. However, these adverse impacts would be mitigated by turf replacement after construction completion.</p> <p>Cumulative Impacts: When combined with the long-term beneficial impacts to vegetation resulting from the implementation of the action alternative, there would be a long-term beneficial cumulative effect.</p> |
| Visual Resources | <p>Under the no action alternative, there would be a long-term moderate adverse effect due to the worn and distressed appearance of the turf panels and the lack of visual distinction between the turf and gravel walkways which diminishes the overall integrity of the aesthetic environment of this cultural landscape.</p> <p>Cumulative Impacts: When combined with the long-term moderate adverse impacts associated with the no action alternative, there is a long-term minor adverse cumulative effect. Construction activity resulting from these projects would result in a short-term minor to moderate adverse cumulative effect on visual resources, depending on the duration and extent of construction.</p> | <p>Curb and Gutter: The proposed actions would more clearly differentiate the turf panels and walkways, resulting in long-term beneficial impacts on visual resources. The degree of radius would also affect the overall visual quality of the project area. Option A1 would create a net long-term moderate adverse effect due to the numerous ramps that would be required throughout. Options A2 and A3 would have long-term beneficial impacts.</p> <p>Soil Reconstruction: There would be a beneficial long-term effect on the visual resources within the project area resulting from the implementation of any soil profile reconstruction option since each option would alleviate the effects of compaction to support a healthier and more visually appealing ground surface turf.</p> <p>Irrigation System (Water distribution, supply, and storage): There would be a minor effect resulting from the installation of any of the options for the water distribution, water supply, or storage options of the irrigation system. The elements associated with the irrigation system would be installed underground and, therefore, not visible.</p> <p>Turf Management Modifications: Modifications in management approaches for large events as they relate to turf health would result in a beneficial long-term effect resulting from the implementation of event management strategies to restrict the intensity of use within the project area since a comprehensive management plan would alleviate the effects of prolonged soil compaction and would enable consistently healthier and more visually appealing turf panels.</p> <p>Short-term Impacts: For implementation of all options, there would be short-term moderate adverse effects during construction due to the visual disturbance of the project area and compromised views along the grand axis and from the Washington Monument, diminishing the overall integrity of the aesthetic environment.</p> <p>Cumulative Impacts: The impacts of past, present, and reasonably foreseeable future actions on or around the National Mall, when combined with the overall long-term beneficial impacts associated with the action alternative, would result in long-term beneficial cumulative effects on visual resources. Construction activity resulting from these projects would result in a short-term moderate adverse cumulative effect on visual resources depending on the duration and extent of construction.</p> |

| Resource Area | No Action Alternative | Action Alternative |
|--|--|---|
| <p>Cultural Resources; Historic Districts and Structures; Cultural Landscapes</p> | <p>Under the no action alternative, there would be a long-term minor to moderate adverse effect due to the worn and distressed appearance of the turf panels and the lack of visual distinction between the turf and gravel walkways which diminishes the overall integrity of the Mall and specifically the visible structure of the street pattern (L'Enfant Plan).</p> <p>Cumulative Impacts: When combined with the long-term minor to moderate adverse impacts associated with the no action alternative, the largely beneficial impacts of the cumulative projects would still not result in a minor to moderate long-term adverse cumulative impact.</p> | <p>Curb and Gutter: The curb and gutter installation would be a long-term beneficial impact to the Mall and cultural resources.</p> <p>Soil Reconstruction: There would be a beneficial long-term effect on the cultural resources within the project area resulting from the implementation of any soil profile reconstruction option. Each option would introduce enhancements to the soils in the project area to alleviate the effects of compaction, supporting a healthier and more visually appealing ground surface turf.</p> <p>Irrigation System (Water distribution, supply, and storage): All irrigation system options including water distribution, water supply, and water storage would have negligible visual impacts, but long-term beneficial impacts to cultural resources because improved drainage would contribute to the appearance of the Mall as a <i>tapis vert</i>.</p> <p>Short-term Impacts: There would be short-term minor to moderate adverse impacts during construction of all physical components of the action alternative due to the visual disturbance of the project area and compromised view along the grand axis and from the Washington Monument, diminishing the overall integrity of the aesthetic environment.</p> <p>Cumulative Impacts: In combination with the long-term beneficial impacts resulting from the action alternative, there would be largely long-term beneficial cumulative impacts from other planned projects.</p> |
| <p>Archeological Resources</p> | <p>Implementation of the no action alternative would result in no direct, indirect, beneficial, or adverse impacts to archeological resources in the study area.</p> <p>Cumulative Impacts: Although other past, present, and reasonably foreseeable future actions may affect archeological resources, the no action alternative would have no impacts on archeological resources. Consequently, there would be no cumulative impacts to archeological resources under the no action alternative.</p> | <p>Curb and Gutter: All three options would be expected to have negligible to minor impacts on archeological resources. All treatments under consideration would involve simple replacement of the existing curb and gutter features, so the expected ground disturbance required would be essentially limited to areas that have been disturbed by the installation, repair, and replacement of earlier curbs and gutters or by previous landscaping.</p> <p>Soil Reconstruction: Options B1 and B2 could result in impacts to archeological resources in surface or near-surface contexts to the extent that archeological features or deposits are present. Impacts would range from negligible to major; but it is assumed that the upper 12 inches of soil have already been disturbed by previous landscaping. The actual impacts to archeological resources are assumed to be negligible or minor.</p> <p>Option B3 could result in partial loss of archeological sites with minor to moderate adverse impacts, or the complete loss of archeological resources resulting in long-term moderate adverse impacts.</p> <p>Irrigation System (Water distribution, supply, and storage): A range of ground-disturbing activities associated with the action alternative could result in adverse impacts to archeological resources. However, as the presence of NRHP-eligible archeological resources is speculative at this time, it is not possible to characterize the intensity of these possible impacts. All impacts to archeological resources would be adverse and long term. Depending on the siting of the features associated with the action alternative, impact intensity could be negligible to minor (no adverse effect under Section 106) or moderate (adverse effect under Section 106).</p> <p>Turf Management Modifications: There would be no impacts to archeological resources as a result of modifications in management approaches for large events as they relate to turf health.</p> <p>Cumulative Impacts: There are no cumulative impacts to archeological resources associated with the action alternative, nor is the action alternative likely to result in any impacts that would constitute impairment of archeological resources.</p> |

CHAPTER 3: AFFECTED ENVIRONMENT

This chapter of the EA describes existing environmental conditions in the areas potentially affected by the proposed actions. These following resource areas are described: visitor use and experience, public safety, Park management and operations, utilities and infrastructure, soils, vegetation, visual resources, cultural resources (historic structures and districts and cultural landscapes), and archeology. Potential impacts are discussed in the same order in “Chapter 4: Environmental Consequences.”

Visitor Use and Experience

The project area is located within the NAMA unit of the NPS, which encompasses portions of the Monumental Core in downtown Washington, D.C., and includes the National Mall, one of the most popular tourist destinations in the country. Many elements contribute to the project area’s popularity and inform visitor experience and visitor use, both of which are considered separately within this analysis. Visitor experience is the overall perception of a place and is, in this context, informed by things such as adjacent attractions (i.e., museums and memorials), public access, and visual quality. Visitor use describes the multiple ways in which a site is used. In this context, the project area is used as a circulation thoroughfare, a recreational destination, and a civic stage for special events.

Visitor Experience

The project area includes some of the oldest and most prominent parkland in the NPS. In addition to being one of the largest public parks in Washington, D.C., the project area is bounded on all sides by some of the nation’s most noteworthy museums, monuments, memorials, and buildings, making it one of the most-visited destinations in the country. The project area is open 24 hours a day for public visitation, and NPS rangers are onsite from 9:30 a.m. to 11:30 p.m. daily.

ATTRACTIONS

The majority of attractions adjacent to the project area are museums, but monuments and noteworthy buildings beyond the project area also contribute to the overall visitor experience. Figure 3.1 shows the attractions in the project area.

Museums - Museums immediately surrounding the project area include the National Gallery of Art and the Smithsonian Institution’s National Museum of American History, National Museum of Natural History, National Museum of the American Indian, National Air and Space Museum, African Art Museum, International Gallery (Ripley Center), Freer Gallery of Art / Sackler Gallery, Arts and Industries Building, Hirshhorn Museum and Sculpture Gallery, and the Smithsonian Castle. Table 3.1 shows the hours of operation for these museums.

Monuments - The project area falls along the prominent axis of national monuments in downtown Washington, D.C., that includes the Washington Monument, World War II Memorial, and Lincoln Memorial. The Vietnam War Memorial and Korean War Veterans Memorial are located to the north and south of the Lincoln Memorial, respectively.

Other Buildings - The east end of the project area terminates at the U.S. Capitol Building. Congress is in session January through the end of July and resumes September through mid-October. To the east of the U.S. Capitol are the U.S. Supreme Court, Library of Congress, and Senate and House Office Buildings which also attract a similar number of visitors. To the southwest of the U.S. Capitol Building are the U.S. Botanical Gardens.

Table 3.1 details the hours of availability of the attractions in and around the project area.

Figure 3.1 – Attractions in the Project Area



Table 3.1 – Attractions in the Project Area

| Attraction | Hours of Operation | | Closures |
|---|---|-----------------------------|--|
| African Art Museum | 10:00 a.m. – 5:30 p.m. | 7 days/week | December 25 |
| Arts and Industries Building | Closed in preparation for renovation. | | |
| Freer Gallery of Art / Sackler Gallery | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| Hirshhorn Museum and Sculpture Gallery | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| Library of Congress | 8:30 a.m. – 9:30 p.m. 8:30 a.m. – 5:00 p.m. | Monday – Friday Saturday | Thanksgiving Day, December 24, January 1 |
| National Air and Space Museum | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| National Archives | 9:00 a.m. – 9:00 p.m. | Varies depending on the day | All Federal Holidays |
| National Building Museum | 10:00 a.m. – 5:00 p.m. 11:00 a.m. – 5:00 p.m. | Monday – Saturday Sunday | Thanksgiving Day, December 25, and January 1 |
| National Gallery of Art (East and West Buildings) | 9:30 a.m. – 5:00 p.m. 11:00 a.m. – 6:00 p.m. | Monday – Saturday Sunday | December 25 and January 1 |
| National Gallery of Art Sculpture Garden | 10:00 a.m. – 9:30 p.m. | Varies depending on the day | None |
| National Museum of African Art | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| National Museum of American History | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| National Museum of the American Indian | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| National Museum of Natural History | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| Newseum | 9:00 a.m. – 5:00 p.m. | 7 days/week | Thanksgiving Day, December 25, and January 1 |
| Ripley Center | 10:00 a.m. - 5:30 p.m. | 7 days/week | December 25 |
| Smithsonian Castle | 8:30 a.m. – 5:30 p.m. | 7 days/week | December 25 |
| U.S. Botanical Gardens | 10:00 a.m. – 5:00 p.m. | 7 days/week | None |
| U.S. Capitol Building | 8:30 a.m. – 4:30 p.m. | Monday – Saturday | Thanksgiving, December 25, January 1, Inauguration Day |
| U.S. Holocaust Memorial Museum | 10:00 a.m. – 5:20 p.m. | 7 days/week | Yom Kippur and December 25 |
| Washington Monument | 9:00 a.m. – 5:00 p.m. (10:00 p.m. between Memorial and Labor Day) | 7 days/week | December 25 and July 4 |
| World War II Memorial | 9:30 a.m. – Midnight | 7 days/week | July 4 |

VISITOR COMFORT

The National Mall has numerous visitor amenities including information and refreshment kiosks, site furnishings, and museum stores. There are no public restrooms in the project area, but there are rest rooms in each of the surrounding museums. In the project area, site furnishings (benches, trash receptacles, and lighting fixtures) flank both the central turf panel and the adjacent walkways.

PUBLIC ACCESS

The project area is well served by multiple modes of transportation, and visitors have access to and from the project area on the Mall via Metrorail, Metrobus, NPS Tourmobile, DC Circulator, or by car. Limited off-street parking can be found along Madison Drive and Jefferson Drive as can paid parking lots within a half-mile radius of the project area.

Once within the project area, a network of gravel and concrete paths traverse the area, enabling easy access to all destinations along its borders. The walking paths are generous in width and range from 20 to 40 feet. Since the overall project area is relatively flat, with only a minor topographical change occurring at the west end, the paths are mostly even but vary in quality and condition due to prevailing patterns of movement and circulation. Some parts of the gravel paths have been worn by constant visitor use and are more eroded than others, yielding a more inconsistent and irregular walking surface than the concrete walking paths.

VISUAL QUALITY

The visual quality of the Mall is an integral part of the visitor experience. The project area is defined by prominent vistas and a strong visual axis that connects many of the most recognizable national landmarks including the U.S. Capitol Building to the east and the Washington Monument, World War II Memorial, Lincoln Memorial Reflecting Pool, and Lincoln Memorial to the west. The overall visual quality, or bird's eye view, of this public place is exceptional. The surrounding buildings provide strong visual anchors, and the grass and turf panels are well-defined landscape elements. However, in its details, the project area suffers from worn turf, uneven and deteriorating walking surfaces, and trees that do not appear to be thriving. Additional analysis on the visual character and views and vistas is contained in the Visual Resources section of this chapter.

Visitor Use

CIRCULATION

As much as the project area is a destination, it is also a point of connection between the adjacent attractions. The network of paths that traverses the project area provides easy access to the north and south between the Smithsonian Institution and the National Gallery Museums as well as east to west between the U.S. Capitol Building and the Washington Monument. The paths are wide enough to accommodate a variety of uses including walking, jogging, cycling, and most recently, segway use. Due to the relative irregularity of the gravel paths, many joggers and cyclists elect to use the wider concrete paths to the periphery of the project area.

RECREATION

The project area is one of the largest public parks in Washington, D.C., used for both passive and active recreational purposes. The peripheral paths are lined with benches and trash receptacles to accommodate public use. The turf panels between the paths are used for passive recreational activities such as picnics and small gatherings, as well as for more intensive uses such as Frisbee playing, kite flying, and ball games. Formal use of the turf panels for organized games and sports is only allowed with a permit. When the grounds are wet or otherwise unsuitable for play without damage to the turf, all recreational activity is prohibited regardless of the issuance of a permit (NPS 2006a). However, although fences and signage can be used to limit recreational activity in areas of the Park, the NPS has no control over pick-up games on the Mall. Nevertheless, recreational use is part of the Park's mission and there has always been a tradition of informal recreational use on the Mall.

SPECIAL EVENTS

The project area is heavily used for special events which include: national celebrations such as the Fourth of July, presidential inaugurations, and the Smithsonian Folklife Festival; First Amendment demonstrations and gatherings; and special events. The number and frequency of these activities and the related temporary facilities such as stages, tents, trailers, storage and staging areas, and portable toilets affect the quality and condition of turf and tress, the experiences of tourists, and the overall visual quality of the Mall. In 2009 there were 115 permitted activities on the Mall resulting in 821 permit days and 750 event days (NPS 2009b). Special events may be held in the project area pursuant to the regulations set forth in the 36 CFR 1.5 and 7.96, the NPS National Capital Region Requirements for Special Events Held on Parkland, and the NAMA 2006 Superintendent's Compendium (NPS 2006a; NPS 2007). All special uses and special events are regulated by permits. These regulations and related guidelines control site access, staging, risk management, comfort facilities, first aid, security, transportation, and cost recovery for the special events to minimize impacts to Park resources and to the public. The majority of special events on the National Mall have 5,000 or fewer participants with only one percent of events exceeding this attendance (NPS 2009c). Most events last approximately 10 days, including set up and take down, with the exception of the Smithsonian Institution Folklife Festival lasting 59 days, and the Solar Decathlon lasting 21 days (HOK 2009).

Figure 3.2 –Folklife Festival Aerial View



FIRST AMENDMENT ACTIVITIES

First Amendment demonstrations are part of the essential democratic right of citizens on the National Mall. These activities include prayer vigils, peace vigils, anti-war demonstrations, rallies, religious activities, and many others. There are approximately 1,000 First Amendment demonstrations annually on the National Mall (NPS 2009b). The project area is often a popular civic stage for these activities given the historic and symbolic backdrop. Attendance ranges from dozens of participants to hundreds of thousands for the larger historic demonstrations such as the 1963 “I Have a Dream” speech by Dr. Martin Luther King Jr. (Lincoln Memorial), and the 1995 Million Man March (NPS 2009b).

NATIONAL CELEBRATIONS

Presidential Inaugurations - Every four years, the U.S. Presidential Inauguration and related events are held on the National Mall and in front of the U.S. Capitol Building. Events include the procession to the Capitol, the Vice President's and President's Swearing-in Ceremony, the Inaugural Address, the Departure of the Outgoing President, and the Inaugural Parade. The 56th Presidential Inauguration took place on January 20, 2009, for the inauguration of President Barack Obama (see aerial photo, Figure 3.2). This event had an unprecedented attendance exceeding 1.8 million people, concentrated from the Washington Monument grounds east toward the Capitol (NPS 2009c). The turf in the project was killed as a result of the large number of visitors and lack of turf cover for this event. The 55th Presidential

Inauguration of President George W. Bush took place on January 20, 2005, with an estimated 300,000 people in attendance (Levine 2005).

Independence Day – Festivities occur throughout the Mall on July 4th, culminating in the pyrotechnics display staged in the area immediately around the Reflecting Pool and the World War II Memorial. Throughout the day and towards the timing of the pyrotechnics display in the evening, crowds gather in the project area. Independence Day visitation on the National Mall reached approximately 700,000 people in 2008 and 500,000 people each year in 2007, 2006, and 2005 (NPS 2008). Portions of the National Mall are closed during July 4th, including the Reflecting Pool and surrounding areas, Madison and Jefferson Drives, and 14th, 15th, and 17th Streets to accommodate the pyrotechnics display and increased traffic (NPS 2009b).

Smithsonian Institution Folklife Festival – Each summer, the Smithsonian Institution sponsors an outdoor festival on the National Mall including international and American exhibitions of living cultural heritage.

The festival takes place in the project area between 7th and 14th Streets and spans a two-week period in late June and early July. However, set up and take down of equipment lasts approximately eight weeks (NPS 2009b). The festival has an estimated one million visitors each year (Smithsonian 2009).

Figure 3.3- Aerial View of People on the Mall during the 2009 Inauguration



LARGE RECURRING SPECIAL EVENTS

Special events of a great variety and size take place on the Mall. Large recurring events include the Black Family Reunion, the Library of Congress Book Festival, and the Solar Decathlon.

Black Family Reunion – Sponsored by the National Council of Negro Women, the Black Family Reunion is a multi-day celebration of culture and family that typically occurs mid-September on the National Mall. This event features themed pavilions that showcase African American businesses and organizations (NCNW 2010).

National Book Festival – The National Book Festival is held by the Library of Congress annually in early autumn on the National Mall. The Festival features many well renowned

Figure 3.4 – Solar Decathlon Aerial View



authors, scholars, illustrators, and poets for readings, lectures, book signings, interviews, and children's activities. In 2009, the Festival attracted well over 130,000 people (Library of Congress 2010).

Solar Decathlon - The Solar Decathlon is a bi-annual competition sponsored by the U.S. Department of Energy that challenges 20 national and international college and university teams to design, build, and operate the most attractive and energy-efficient solar-powered house.

The contest takes place in the project area for three weeks every other October, most recently between October 8 – 21, 2009 (DOE 2010). During the contest, the project area is covered by walkways, tents, and the solar houses. Figure 3.4 shows an aerial view of the project area during this event.

1 **Public Safety**

2 The NPS is committed to providing high-quality opportunities for visitors and employees to enjoy Parks
3 in a safe and healthy environment. Furthermore, the NPS strives to protect human life and provide for
4 injury-free visits. Safety applies to both Park visitors and Park employees.

5 **VISITOR SAFETY**

6 A visitor incident is defined as an unintentional event or mishap affecting any person, other than an NPS
7 employee, that results in serious injury or illness requiring medical treatment. In this project area, visitor
8 incidents have statistically been related to trips and falls along the circulation paths, fatigue, exposure to
9 the elements, and injuries related to permitted sports activities.

10 The NAMA Division of Interpretation and Education helps provide visitor safety as well as first-line
11 response for medical emergencies. The U.S. Park Police have primary law enforcement jurisdiction on the
12 National Mall, but also work with the U.S. Capitol Police, the U.S. Secret Service, the D.C. Metropolitan
13 Police Department, and others to provide safety and security within the area (NPS 2009b).

14 According to the safety statistics collected by NAMA, a total of 12 visitor incidents caused by tripping
15 and falling have occurred within the project area between 2006 and 2008 (Ashdown 2010). These
16 incidents occurred in various locations of the project area with no significant repeating locations except
17 that four of these incidents occurred during annual 4th of July celebrations (Ashdown 2010).

18 **EMPLOYEE HEALTH AND SAFETY**

19 NAMA Park staff members are subject to the same tripping hazards that pertain to the general public.
20 However, most employee injuries or incidents are usually sustained by maintenance staff members who
21 perform manual work and heavy material handling (e.g., construction and gardening). The most common
22 type of injuries was maintenance activity related, such as low back, shoulder, and knee injuries; however,
23 periodic NPS ergonomics training is offered to reduce repetitive motion disorders.

24 **ACCESSIBILITY**

25 The NPS is committed to enabling universal accessibility in all NPS facilities to ensure compliance with
26 various legislation including the ABA of 1968, the ABAAS, the Rehabilitation Act of 1973, the Equal
27 Employment Opportunity Act of 1972, and the ADA of 1990. NPS policy actively promotes equal access
28 to all Park resources for people with disabilities.

29 Accordingly, the circulation paths and transitions between changes in grade within the project area have
30 been designed to ensure compliance with requisite legislation. Access to the project area from adjacent
31 roadways is provided by accessible curb cuts located at various intervals throughout. Within the project
32 area is a combination of concrete and loose gravel walking paths. Due to the intense visitor use, some
33 portions of the paths have been worn down, yielding irregular walking surfaces. However, the paths are
34 flat and despite irregularities, remain generally accessible. Currently no curb or steel edging exists
35 between the walkways and turf and tree panels, so accessibility between these elements remains universal.

1 **Park Management and Operations**

2 **Park Management**

3 The NAMA is an administrative unit of the national park system. Park management structure is divided
4 into the Office of the Superintendent and several divisions including Administration, Maintenance,
5 Interpretation and Education, Park Programs, and Resource Management.

6 Overall management decisions concerning NAMA and the resources within it are the responsibility of the
7 superintendent, while maintenance crew leaders coordinate the daily operations and staff.

8 **PERMITTING FOR PUBLIC USE**

9 One feature unique to this Park is the frequency of special events within the project area such as the 4th of
10 July celebration, the Smithsonian Institution Folklife Festival, the National Cherry Blossom Festival, and
11 presidential inaugural activities. These special events introduce large numbers of visitors, delivery trucks,
12 and staging equipment to the project area, all of which strain Park resources and infrastructure and
13 contribute to natural resource damage such as soil compaction and turf destruction.

14 Currently, these activities are permitted through the Division of Park Programs, which is located at the
15 NCR Headquarters, pursuant to 36 CFR § 7.96. Permits are required for events of 25 people or more and
16 can be obtained at the Office of Public Affairs, NCR Headquarters, at 1100 Ohio Drive SW, Washington,
17 D.C., 20242. All permits must be received at this office at least 48 hours prior to the proposed event. All
18 applications, unless determined to be a First Amendment activity, require a \$50.00 processing fee. The
19 permitting process seeks to ensure no conflict between special events and general visitor activities (NPS
20 2010b; CFR 2006). However, the volume of special events and national celebrations, and their related
21 temporary facilities, affects visitor and visual experiences.

22 NPS has a set of terms for these permits that regulate site access, staging, risk management, comfort
23 facilities, first aid, security, transportation, and cost recovery for the events to minimize impacts to Park
24 resources and to the public. The following resource protection strategies specifically relate to the
25 resources found in the project area:

- 26 ▪ Stakes for tents, staging, towers, signs, or other structures cannot be driven more than 18 inches
27 into the ground, and must avoid all underground pipes and fixtures. Water-filled ballast tanks may
28 be used on hardscapes in lieu of stakes.
- 29 ▪ Digging and trenching is not permitted.
- 30 ▪ No attachments may be made to existing landscape features, nor may they pass through or be
31 affixed to existing trees or other vegetation.
- 32 ▪ No set-up of structures or parking or operation of equipment is permitted within any tree canopy
33 (root zone) area, and the permittee may be required to install tree-protection fencing.
- 34 ▪ In the project area, set-up is only permitted within the center turf panels, with a few exceptions
35 (Smithsonian Folklife Festival and Black Family Reunion). Some events are also allowed in the
36 tree panels.
- 37 ▪ In order to reduce impact to turf area, the permittee may be required to provide and install
38 temporary equipment roadways, pedestrian walkways, and/or tent flooring fabricated from
39 commercially available interlocking plastic composite materials, or other protective material if
40 approved in advance by the NPS (NPS 2007).

41
42 In addition, if the event requires structures, a complete site plan must be submitted to the superintendent
43 at least 30 days prior to the opening day and 45 days prior for large-scale events. All deliveries,

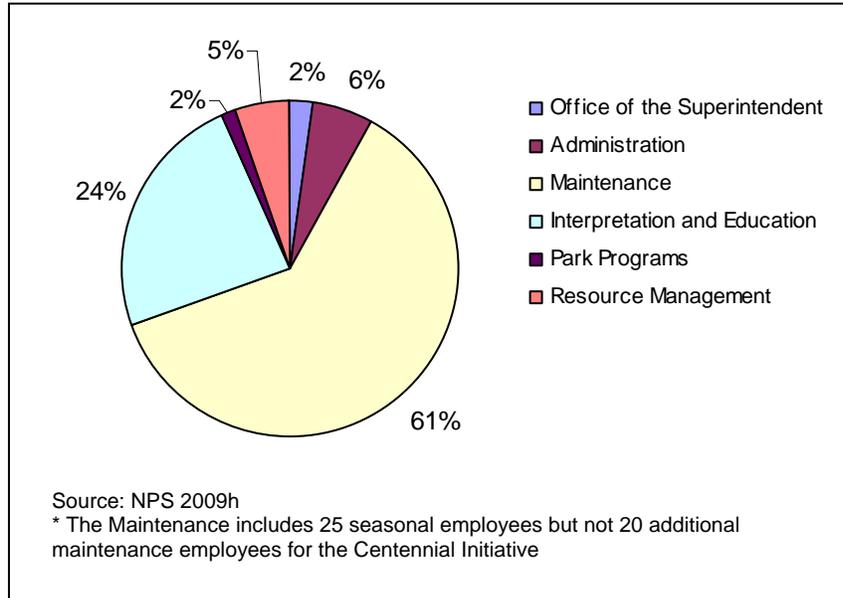
1 unloading, and loading must take place on hardscapes, and vehicles are only allowed on turf with the
 2 permission of an authorized NPS official. NPS regulations specify that all costs—including utilities, event
 3 equipment and structures, and damage costs—must be borne by the permittee and paid in full to the NPS
 4 prior to the event (NPS 2007).

5
 6 Events of a certain size must prepare a risk management plan to ensure the safety and comfort of
 7 attendees including providing additional first aid stations, portable restrooms, site security, and
 8 coordination with the Washington Metropolitan Area Transit Authority for transportation (NPS 2007).
 9

10 **STAFFING**

11 The NAMA has a staff of
 12 approximately 330, who have
 13 responsibility for the National
 14 Mall’s historic landscape and
 15 commemorative works, as well
 16 as the additional 156
 17 reservations, parks, circles, and
 18 triangles within the NAMA.
 19 These areas include the Law
 20 Enforcement Officers Memorial,
 21 Dupont Circle, McPherson
 22 Square, and Columbus Circle, as
 23 well as Pennsylvania Avenue
 24 National Historic Site and East
 25 Potomac Park. Ford’s Theatre
 26 National Historic Site and
 27 President’s Park are two
 28 adjacent NPS units within
 29 Washington, D.C., that rely on
 30 NAMA staff for some tasks and during special events. The NAMA staffing distribution per Park structure
 31 is shown in Figure 3.5.

Figure 3.5 – NAMA Staff Distribution



32 **DIVISION OF FACILITY MANAGEMENT**

33 The maintenance division is responsible for Park maintenance of facilities, grounds and trees, roads and
 34 trails, and transportation. The maintenance division staff has expertise in trades and specialties such as
 35 carpentry, electrical, masonry, metal craft, painting and signs, plumbing, and special events and provides
 36 this expertise to other NPS units (NPS 2009b).

37 **PROJECT AREA MAINTENANCE**

38 In addition, project-wide litter pickup occurs regularly; trash is removed twice daily and three times daily
 39 during special events (NPS 2009c). The irrigation system, benches, trash receptacles, and street lights are
 40 regularly repaired and parts replaced as needed (NPS 2009c).

41 **TURF PANEL MAINTENANCE**

42 Under the current turf management program for the Mall, the turf panels are closed in two sections, from
 43 the Capitol Reflecting Pool to 7th Street NW and from 7th to 14th Streets NW, alternating every other
 44 year from mid-September to the end of March (NPS 2009c). The rest period end date is planned to
 45 coincide with the start of increased spring tourism. This rest period results in visibly healthy turf stands in
 46 the spring. However, after the first large special event, the turf continues to decline until the winter rest

1 period. During the closure, the areas are fenced off and the NPS conducts soil aeration, grading, soil
2 replacement and amendment (filling areas with uneven grade), fertilization, reseeding, and irrigation. Turf
3 maintenance consists of complete restoration when more than 50% of the turf is either destroyed or
4 displaced by weeds or turf recovery when damage is below this threshold.

5 Maintenance during peak use periods (April – October) only involves cutting the grass to a 3-inch height
6 every five to seven days, performed by NPS staff (HOK 2010). Edging along all curbs is performed
7 concurrently with mowing. Core aeration is typically conducted on two to six panels, depending on the
8 severity of soil compaction (HOK 2010). Slice aeration is performed, but is not a typical practice. Power
9 slit seeding is performed in the fall and in mid-March (HOK 2010).

1 **Utilities and Infrastructure**

2 Several subsurface utility and infrastructure systems occur within the project area and could potentially be
3 affected by the proposed actions.

4 **POTABLE WATER**

5 The project area is serviced by DC Water for its potable water. DC Water is a multi-jurisdictional regional
6 utility that provides drinking water and wastewater treatment to residential, commercial, and
7 governmental customers (NPS 2009a). DC Water purchases treated water from the U.S. Army Corps of
8 Engineers' (USACE) Washington Aqueduct. Several major water utility lines serve the National Mall
9 area and are depicted in Figure 3.6. For all special events except the Smithsonian Institution Folklife
10 Festival, the NPS stipulates that all water used must be brought in from offsite (HOK 2010).

11 **SEWER**

12 DC Water provides sanitary and stormwater service for the project area. There are two types of sewer
13 systems in Washington, D.C.: a system with separate pipes for sanitary wastewater and stormwater, and a
14 combined sewer system that conveys both wastewater and stormwater. The project area is served mostly
15 by combined service lines except for a short extension of separate lines at 13th Street and Madison Drive
16 (NPS 2009a). Figure 3.6 illustrates the sewer lines serving the project area.

17 **IRRIGATION**

18 Average rainfall in the project area is approximately 38.6 inches annually with monthly averages ranging
19 from 2.7 to 3.9 inches per month, the lowest amounts occurring in the summer months (NPS 2009c).
20 Estimates of the water quantity required to maintain the turf in the project area are approximately 12 MG
21 per month or approximately 1.5 inches of water per week (NPS 2009c).

22 The current system consists of gear-driven sprinklers that draw water from potable water sources located
23 at 3rd, 4th, 7th, and 14th Streets (NPS 2009c) via subsurface water supply lines buried at a depth between
24 12 – 18 inches for lateral pipes and 36 – 48 inches for the mainlines. Despite their depth, many of the
25 pipes have been compromised by the weight of vehicles and equipment and puncturing by tent stakes
26 used during special events. As a result of this damage, the irrigation system cannot be pressurized and the
27 system remains relatively ineffectual. To supplement the irrigation system, the NPS uses automated
28 sprinklers with a quick-coupler system using potable water.

29 **STORMWATER MANAGEMENT**

30 Currently, the NPS allows a site's stormwater to drain directly into nearby storm sewers without
31 treatment and does not recapture the water for on-site use. The project area is largely within the combined
32 service area in which stormwater and wastewater are conveyed together to the Blue Plains Plant for
33 treatment. Because of the volume of stormwater generated during large rain events, the District's
34 collection system can become overwhelmed, and overflow events can occur, discharging a mixture of
35 stormwater and wastewater into the Potomac and the Anacostia Rivers. To reduce and even eliminate the
36 number of overflow events, the District has a plan in place to better capture stormwater before it enters
37 the combined system, and also to construct large underground storage facilities (DC Water 2002).

38 Options for capturing the stormwater before it can enter the combined system include capturing water
39 from large federal buildings, and increasing the amount of pervious surface within the combined sewer
40 system so more water is recharged (DC Water 2002).

41 The project area includes several large buildings and associated hardscaping, including the Department of
42 Agriculture Building, the National Gallery of Art East Building and West Building, and Smithsonian
43 Institution museums, as well as roads and sidewalks, all of which can be considered as impervious

1 surfaces. Combining the buildings, roads, and hardscaping, an estimated 1,000,000 square feet of
 2 impervious surface are in and around the study area (HOK 2010). In addition, the existing turf panels are
 3 so compacted as to also be considered impervious, increasing the impacts and volume of stormwater
 4 runoff during storm events.

5 **COMMUNICATION**

6 Mass communication and fiber optic lines run near the National Mall boundaries, but none occur within
 7 the project area. Temporary telephones and communications are provided as needed for events.

8 **ELECTRICITY**

9 The Potomac Electric Power Company supplies energy to the project area. Two power plants within the
 10 District generate high-voltage electricity which is released along transmission lines to substations located
 11 throughout the city and then eventually to transformers and ground poles that reduce the voltage to safe
 12 levels for consumer use (Smithsonian 2008). Within the project area, electrical power service is available
 13 at a number of locations including along 3rd Street, 4th Street, and 9th Street (NPS 2009c). Several of the
 14 service lines in the project area are capable of meeting the demands of multiple events (NPS 2009c), but
 15 the NPS does not typically provide power for special events. Organizers of special events are required to
 16 utilize proprietary generators (HOK 2010a).

17 **NATURAL GAS**

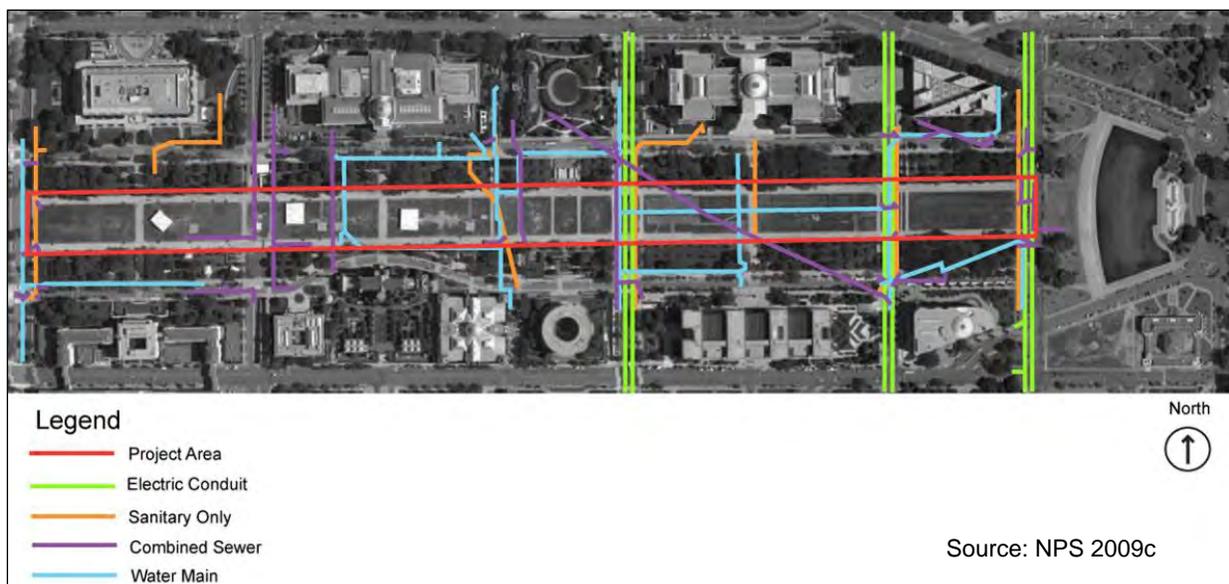
18 Washington Gas Company delivers natural gas service in the project area at numerous points along
 19 Constitution and Independence Avenues. A gas main crosses the project area from the north at 7th Street,
 20 runs parallel to Jefferson Drive to 4th Street, and exits the project area toward Independence Avenue
 21 (NPS 2009c).

22 **GENERAL SERVICES ADMINISTRATION UTILITIES**

23 The main General Services Administration (GSA) water line serves most of the United States federal
 24 government buildings near the National Mall. Several steam and chilled water lines traverse the project
 25 area and serve Smithsonian Institution facilities on the south side of the Mall (Smithsonian 2008).

26

Figure 3.6 – Existing Utilities in the Project Area

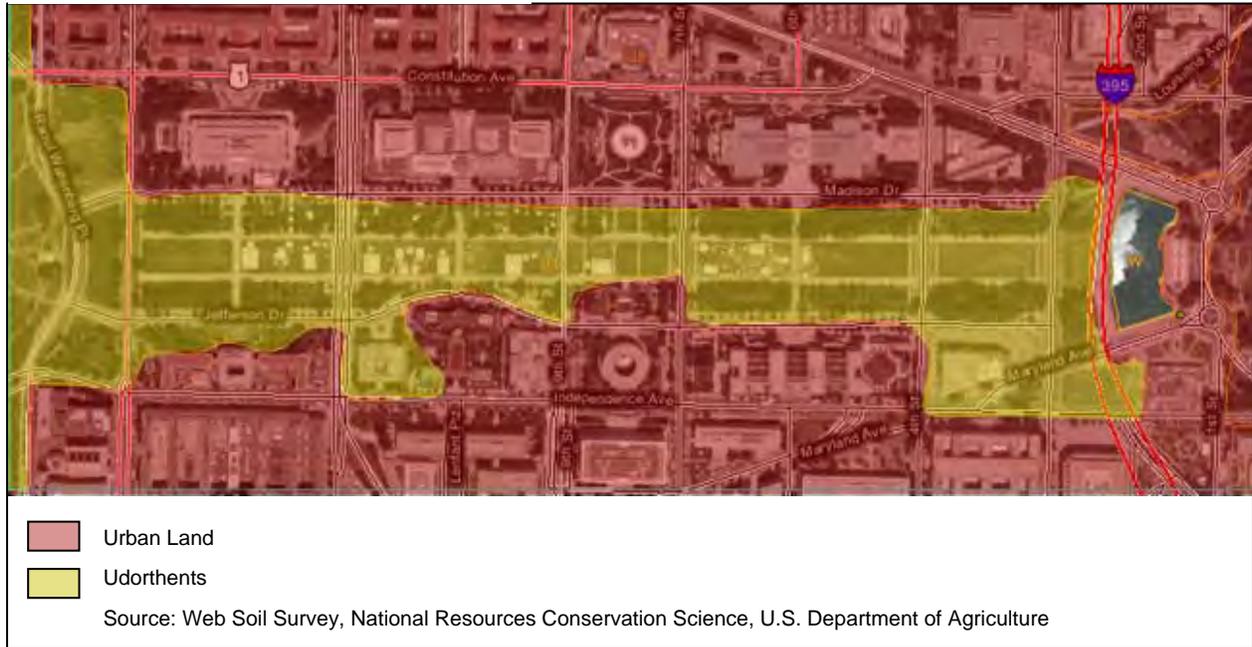


1 **Soils**

2 **SOILS**

3 Sections of the National Mall were originally open water at the mouth of Tiber Creek. However, in 1882,
 4 dredged material from the river channel was used to fill over 600 acres of marshes and tidal flats where
 5 the National Mall is now located (USDA 1976). Figure 3.7 shows the soil map of the project area (USDA
 6 2010).

Figure 3.7 – Soil Map of the Project Area



7 The soils in the project area are udorthents with surrounding urban land. Udorthents are characterized by
 8 nearly level to steep soils that have been heavily influenced by man (USDA 1976). Urban land soils
 9 consist of nearly level to moderately sloping areas that are more than 80% covered by impervious
 10 surfaces such as asphalt, concrete, and structures (USDA 1976). Soils on the Mall are composed of an
 11 assortment of fill materials causing a wide variety of physical and chemical soil properties. In the project
 12 area, the topsoil ranges from sandy loam, loam, and silt loam (NPS 2009c). However, subsoils in the
 13 project area are much more variable. Soil permeability and runoff appear to be somewhat varied within
 14 the project area. However, soil drainage occurs at a rate that is often markedly lower than what is
 15 considered acceptable for turf use, especially after rain events (NPS 2009c). Intensive visitor use,
 16 particularly where tents or structures are used for extended lengths of time, has resulted in soils that are
 17 highly compacted and that function as impervious surfaces. This compaction prevents water from
 18 infiltrating into the soils, particularly after heavy rain events, diverting water off the turf panels onto the
 19 walkways and streets or causing ponding in depressions.

1 **Vegetation**

2 The analysis of vegetation within this EA is separated into a description of the broader context of the
3 National Mall and the more specific characteristics of the project area.

4 **VEGETATION ON THE NATIONAL MALL**

5 The general vegetative character of the National Mall is that of designed historic landscapes planned to
6 create specific settings such as commemorative spaces, historic vistas, event spaces, recreational areas,
7 and gardens (NPS 2009b). The National Mall is composed of mostly lawns, ornamental and shade trees
8 typical to the NCR, shrubs, hedges, and other types of ground cover. The National Mall includes more
9 than 2,700 elm trees, predominately American elm (*Ulmus americana*), that line the streets and
10 approximately 3,000 Yoshino cherry trees (*Prunus x yedoensis*) that ring the Tidal Basin.

11 Open lawns are an integral part of the National Mall as they are part of the historic plans for the city and
12 they provide spaces and setting for civic and cultural activities (national celebrations, First Amendment
13 activities and special events), recreation, tourism, and general enjoyment. Lawns are sometimes
14 embedded or bordered by trees that create a diversity of settings and help define important historic
15 viewsheds (NPS 2009b). Many of these lawns, tree groves, and rows are historic character-defining
16 features, fundamental to the aesthetics and visitor experience of the Mall.

17 Turf panels and grassy areas are a fundamental component of the aesthetics, historic character, visitor
18 experience, and urban ecosystem functioning on the National Mall. Although most turfgrass is not native
19 to the region, NPS has been able to consistently maintain approximately 112 acres of turf designated for
20 general public use and 50 acres of turf and grass area designated specifically for athletics within the
21 National Mall (NPS 2009b). Only the most cold-tolerant warm-season turfgrasses and the most heat-
22 resistant/drought-resistant cool-season turfgrasses are able to survive in the region due to hot, humid
23 summers and cold winters (NPS 2009b). The NPS uses a variety of seed blends on the National Mall in
24 order to best account for the area's variable weather. The seed blend is chosen based on the time of year
25 the seeding occurs, the soil, available sunlight, and other environmental factors (NPS 2009b). Table 3.2
26 lists the current turfgrass seed blends used by the NPS on the National Mall.

27 **VEGETATION WITHIN THE PROJECT AREA**

28 The turf panels in the project area are defined as the open turf areas in the center of the Mall that extend
29 from 1st Street SW to 14th Street NW. These panels are 180 feet wide (from north to south), vary in
30 length (from east to west), and are bound on the north and south by existing gravel walkways. The turf is
31 planted using varying perennial grass blends of a mixture of species as described in Table 3.2. The
32 condition of the turf varies across the Mall, but generally has been and continues to be worn and damaged
33 by public uses such as special events, recreational activities, demonstrations, and the development of
34 social trails¹ (NPS 2009b). The characterization of the turf panels is described by their current condition
35 and by the physical and natural conditions (stressors) that contribute to their condition.

36 **Current Conditions** – The 180-foot-wide central panels are in particularly poor condition and are
37 characterized by large areas of bare earth, minimal turf coverage, and large quantities of non-
38 grass species (NPS 2009c). Variable seeding, resodding, and repairs create a collage of lawn
39 types. Typically, the turf is in the best condition after the winter and spring rests and maintenance
40 period (NPS 2009c). However, this period is short lived as visitor use intensifies with warmer

¹ The NPS defines a social trail as an unofficial trail created by prevailing patterns of human use that diverges from an existing trail as a shortcut to a destination.

1 weather, resulting in turf wear and decline. Slow drainage and a lack of an operational irrigation
 2 system lead to either long periods of oversaturation or severe drought for the turf, often during
 3 peak visitor use, resulting in compacted soils. Poor turf conditions and compacted soils often lead
 4 to an invasion of undesirable non-turf species (including but not limited to exotic weeds), which
 5 outcompetes traditional grasses and leads to even more turf decline (NPS 2009c).

6 **Stressors** – The poor turf quality is a result of various factors including maintenance, types and
 7 volume of visitor use (including recreation), and drainage. The central turf panels endure the
 8 heaviest use from events, demonstrations, passive recreation, and sports use and are traversed by
 9 crossing streets and sidewalks. Intense and frequent use has resulted in areas of bare earth, soil
 10 compaction, and broken irrigation systems throughout the project area. Constant pedestrian traffic
 11 punctuated by frequent special events requiring tents and other structures that cover the lawn for
 12 long periods of time diminish turf quality through soil compaction, shading, heat buildup, and
 13 physical wear and abrasion (NPS 2009c) and result in large areas of dead turf or areas devoid of
 14 turf (NPS 2009c). After these large events, the areas of dead turf are reseeded, usually with little
 15 success due to heavy soil compaction, heavy use, and poor irrigation (NPS 2009b).

16 None of the plant species are identified as threatened or endangered within the areas affected by the
 17 proposed National Mall turf and soil reconstruction.

Table 3.2 - Turfgrass Seed Blends used by the NPS on the National Mall

| Seed Blend | Mixture | Recommended Seeding Dates |
|---|---|--|
| Turf-type Tall Fescue Mixture | <ul style="list-style-type: none"> ▪ 90% mixture of turf-type tall fescue (<i>Festuca arundinacea</i>) consisting of three varieties of which no variety exceeds 40% or less than 20% ▪ 10% Kentucky bluegrass (<i>Poa pratensis</i>) | April 1 to May 15, September 1 to November 1 |
| Bermuda Grass Blend | <ul style="list-style-type: none"> ▪ Blend of three hybrid Bermuda grasses (<i>Cynodon dactylon</i>), of which no variety exceeds 40% or is less than 20% | March 15 to August 15 |
| Perennial Ryegrass Blend | <ul style="list-style-type: none"> ▪ Blend of perennial ryegrass (<i>Lolium perenne</i>), consisting of three varieties, of which no one variety exceeds 40% or is less than 20% | April 1 to December 15 |
| Perennial Ryegrass/Kentucky Bluegrass Mixture | <ul style="list-style-type: none"> ▪ Mixture containing 60% Kentucky bluegrass, which consists of three varieties with no one variety exceeding 25% of the total mixture ▪ 40% perennial ryegrass, which consists of two varieties with no one variety exceeding 25% of the total mixture | April 1 through 30, August 16 to October 15 |

18

19

1 **Visual Resources**

2 Impacts to visual resources would be project-wide; therefore the affected environment would encompass
3 the conditions of the entire project area.

4 The visual and aesthetic quality of a certain place is affected by its overall visual character as well as the
5 associated views and vistas within and around the area. The visual character of a site embodies the
6 defining and memorable site features such as salient landscape elements and built features that contribute
7 to overall perception and visitor experience. Views and vistas capture the range of the eye and frame the
8 visual character of the site. Views and vistas are composed of foreground and background elements and
9 are taken from a certain point of view. For this analysis, the term “vista” defines views of primary
10 importance that were specifically planned, designed, and implemented. The term “view” describes those
11 unplanned views that resulted from the construction of other features.

12 **VISUAL CHARACTER**

13 The visual character of the site is defined by an open lawn flanked by formal rows of trees and buildings,
14 aligned along an axis that terminates at the U.S. Capitol Building to the east and the Washington
15 Monument to the west. The open lawn is composed of broad central turf panels bordered by formal rows
16 of American elms in tree panels that extend from 3rd to 14th Streets NW. The turf and tree panels are
17 separated by a network of four parallel walkways that run east to west along the project area and shorter
18 walkways and two roadways that run north to south across the project area.

19 As the “Nation’s Front Yard,” it is generally agreed that the visual quality of the National Mall must
20 achieve higher standards. This is not a new concern, but one that has been ongoing for decades as the
21 pressures of use continue to overwhelm the capacity of the site and compromise the best efforts to
22 maintain a high standard of visual quality.

23 Several of the events that take place on the Mall occur over extended periods of time. These events—
24 coupled with their tents, structures, and vehicles—contribute to soil compaction and the mechanical wear
25 and damage of the turf. The issue has long been discussed for the detrimental effect these events have on
26 the visual quality of the Mall and the challenges they present to maintaining high standards of care.

27 **Turf panels** – Seven large turf panels and five smaller turf panels are centered along the east-west axis of
28 the project area. The large panels are approximately 475 feet by 180 feet, and the small panels are
29 approximately 120 feet by 180 feet. Turf
30 panels also flank the north and south of
31 the project area and border Madison and
32 Jefferson Drives. As a result of intense
33 visitor use and soil compaction, the turf
34 panels are worn and distressed. At the
35 edges, there is no formal transition
36 between the turf and gravel walkways, so
37 much of the gravel has been dispersed
38 into the turf panels, creating an unclear
39 visual edge between these two disparate
40 elements (see Figure 3.8).

Figure 3.8 – Typical Edge Between Turf Panel and Walkway



41 **Tree panels** – Between 3rd and 14th
42 Streets NW, along the north and south
43 edges of the project area, nearly 600
44 American elms stand on either side of

1 center turf panels. These trees are planted in four rows within tree panels in turf lawn. The trees in the
 2 project area also suffer from the effects of intense visitor use and the resultant soil compaction and show
 3 visible signs of stress.

4 **Street trees** – The American elm trees located along the curb lines of Madison and Jefferson Drives define
 5 the street tree panel. The trees are located between the back of the curb and an existing walkway
 6 approximately 12 feet wide. These lines of trees adjacent to Madison and Jefferson Drives were originally
 7 a continuation of the tree panels; however, changes in use have resulted in changes in the character of this
 8 tree zone. The pathways within the zone are constructed of exposed aggregate concrete with the surface
 9 between the sidewalk and curb covered with compacted gravel. Some of the poorest tree conditions on the
 10 Mall can be found here because of heavy pedestrian use, inadequate drainage, and compacted gravel and
 11 soil, and the trees are noticeably smaller and less robust than those within the tree panels.

12 **Walkways** – The turf panels in the center of the site are separated by a network of gravel and concrete
 13 walkways. There is no visible differentiation between the two types of walkways since the concrete
 14 contains a large proportion of gravel aggregate that was selected to match the existing gravel onsite. The
 15 walkways vary between 20 feet and 40 feet wide, and the peripheral east-to-west walkways that flank the
 16 tree panels are lined with benches and trash receptacles. Due to intense visitor use, some portions of the
 17 gravel walkways have been disproportionately worn, resulting in some irregular and uneven spots.

18 **VIEWS AND VISTAS**

19 Vistas in the project area have been present since the earliest plans for Washington, D.C., and have been
 20 maintained throughout the city’s development. In the project area, the patterns of circulation, walkways,
 21 and open spaces enable views to and from key cultural resources, such as between the U.S. Capitol
 22 Building, Washington Monument, and the Smithsonian Institution Castle. The project area also fits into a
 23 larger visual axis that extends west and includes the World War II Memorial, Lincoln Memorial
 24 Reflecting Pool, and Lincoln Memorial.

25 The Mall is defined by its primary grand vista between the U.S. Capitol Building and the Washington
 26 Monument. This vista was integral to L’Enfant’s plan for a Grand Avenue or promenade extending west
 27 from the U.S. Capitol Building to the proposed equestrian monument to George Washington, which
 28 would have been placed near the Potomac River, at the point where the east-west Capitol axis intersected
 29 the north-south White House axis (NPS
 30 2009b).

31 There is a secondary planned north-to-
 32 south vista adjacent to the project area
 33 between the Washington Monument, the
 34 White House, and the Thomas Jefferson
 35 Memorial.

36 There are multiple views from the project
 37 area that are highly symbolic and
 38 sentimental.

39 **The View from the Top of the Washington
 40 Monument** – This is perhaps the best
 41 publicly accessible vantage point from
 42 which to view the primary grand vista as
 43 described above. The project area is an
 44 integral part of this view as a formal
 45 landscape element within the vista.

Figure 3.9 – View of the Project Area from the Top of the Washington Monument



Source: Berger, June 2010

- 1
- 2 **Views to and from Museums** - There are numerous oblique views that focus on formal elements to the
- 3 north and south of the project area such as the Smithsonian Institution Castle and museums. The turf and
- 4 tree panels provide strong background elements to these views.

1 **Cultural Resources**

2 Cultural resources for federal agency planning and environmental review purposes are primarily those
3 resources that qualify for the NRHP as well as those addressed by certain other laws protecting
4 archeological sites and Native American properties. The NHPA of 1966, as amended, is the principal
5 legislative authority for managing cultural resources associated with NPS projects. Generally, Section 106
6 of the NHPA requires all federal agencies to consider the effects of their actions on cultural resources
7 listed and/or determined eligible for listing in the NRHP. Such resources are also termed “historic
8 properties.”

9 Moreover, the federal agency must afford the ACHP the opportunity to comment in the event that an
10 undertaking will have an adverse effect on a cultural resource that is eligible for or listed in the NRHP,
11 and must consult with the State Historic Preservation Officer (SHPO) and other interested parties in an
12 effort to avoid, minimize, or mitigate adverse effects.

13 Eligibility for the NRHP is established according to the official Criteria of Evaluation (36 CFR 60.4)
14 issued by the Department of the Interior (CFR 2005a). The criteria relate to the following:

15 The quality of significance in American history, architecture, archeology, engineering, and culture present
16 in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting,
17 materials, workmanship, feeling, and association and:

- 18 A. that are associated with events that have made a significant contribution to the broad patterns of
19 our history; or
- 20 B. that are associated with the lives of persons significant in our past; or
- 21 C. that embody the distinctive characteristics of a type, period, or method of construction, or that
22 represent the work of a master, or that possess high artistic values, or that represent a significant
23 and distinguishable entity whose components may lack individual distinction; or
- 24 D. that have yielded, or may be likely to yield, information important in prehistory or history.

25

26 Other important laws and regulations designed to protect cultural resources are:

- 27 ▪ Native American Graves Protection and Repatriation Act, 1990
- 28 ▪ American Indian Religious Freedom Act, 1978
- 29 ▪ NEPA, 1969
- 30 ▪ Archeological Resources Protection Act, 1979
- 31 ▪ Executive Order 11593: Protection and Enhancement of the Cultural Environment, 1971

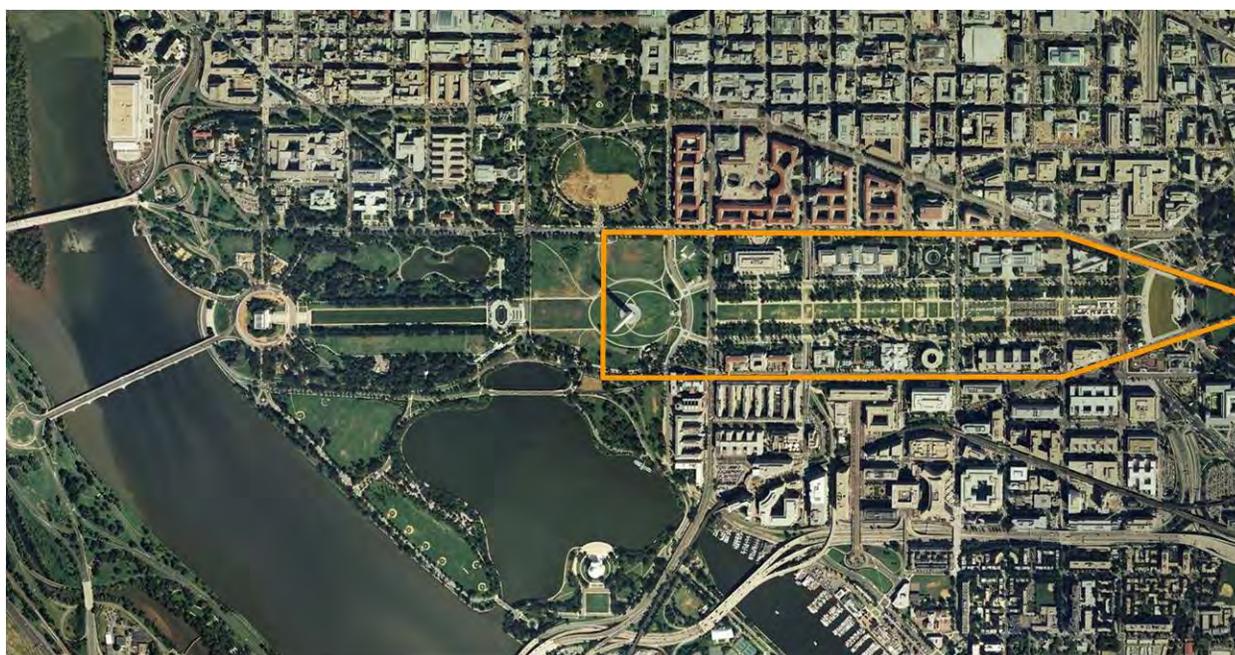
32 Lastly, the NPS has a unique stewardship role in the management of its cultural properties, reflected in its
33 own regulations and policies. In these policies, the NPS categorizes cultural resources this way:
34 archeological resources, cultural landscapes, historic districts and structures, museum objects, and
35 ethnographic resources.

36 As indicated in “Chapter 1: Purpose and Need,” the project to reconstruct the turf and soil on the National
37 Mall has been evaluated as having no potential impact upon museum objects or ethnographic resources.
38 Therefore, these impact topics have been dismissed leaving only archeological resources, historic districts
39 and structures, and cultural landscapes to be evaluated. Although not all memorials on the National Mall
40 have been listed in the National Register either individually or as contributing resources to historic

1 districts, the NPS treats them as eligible. The consideration of cultural resources by the NPS meets
2 pertinent requirements of the NHPA and related legislation and implementing requirements.

3 Under the regulations implementing Section 106 of the NHPA, the NPS first determined that the soil and
4 turf reconstruction would constitute an “undertaking” having a potential effect on National Register
5 resources, and then the NPS assessed its area of potential effect (APE). The APE that has been proposed
6 is larger than the limits of construction, i.e. the turf panels of the Mall. It corresponds to the Mall, which
7 is defined as an open space surrounded and defined by adjacent buildings and associated views and vistas.
8 The boundaries have been drawn at the line of 16th Street NW across the Washington Monument grounds
9 on the west, the western terrace of the U.S. Capitol on the east, Independence Avenue SW and Maryland
10 Avenue SW plus the line of its continuation northeast toward the Capitol on the south, and Constitution
11 Avenue NW and Pennsylvania Avenue NW plus the line of its continuation to the southeast toward the
12 Capitol on the north. Figure 3.10 shows the APE.

Figure 3.10 – Area of Potential Effect



13 A vertical dimension of the APE would include the depth of any areas of ground disturbance undertaken
14 to alter the soils and surf as well as subsurface water management features (archeology). The vertical
15 dimension also includes the envelope of space above the Mall that includes the trees, street furniture, and
16 memorials as well as the reciprocal views and vistas, particularly between the Capitol and the Washington
17 Monument.

18 The APE includes resources listed in or determined eligible for the National Register as a historic site, a
19 contributing feature of a historic structure, and as cultural landscapes. However, the archeological
20 potential of the turf and soil reconstruction project site must be regarded as speculative, i.e. based upon
21 the documentary record. There are no recognized NRHP-eligible or NRHP-listed archeological sites in
22 the project area.

23

1 **Historic Structures and Districts**

2 This section addresses historic properties present that have been included in or have been determined
3 eligible for the NRHP as buildings, structures, sites, objects, or historic districts. Because the Monumental
4 Core of Washington, D.C., has been the focus of preservation activity from the initial passage of the
5 NHPA in 1966 and earlier, the official documentation of its historic resources has been accomplished in a
6 series of surveys that sometimes overlap and vary in approach with changing technical standards. There
7 have been two successive official listings of the Mall in the National Register under the category of
8 Historic Structures and Districts.

9
10 The National Mall was first listed in 1966, the year the NHPA was enacted, but the documentation
11 accompanying the nomination was not completed until 1981. This nomination, focused on architecture
12 and planning, defined the Mall as “Constitution and Pennsylvania Avenues on the north, 1st Street NW
13 on the east, Independence and Maryland Avenues on the south, and 14th Street NW on the west” but
14 excluded the section between 12th and 14th Streets and Jefferson Drive and Constitution Avenue housing
15 the Department of Agriculture.

16
17 The Mall was also identified as a contributing feature in the detailed nomination of the “L’Enfant Plan of
18 the City of Washington,” which was listed on the NRHP in 1997. In this nomination the L’Enfant Plan
19 was listed as a “structure,” the designated property type that was deemed most appropriate for the novelty
20 of listing an actual city plan, as it was (partially) realized over history. The exclusion of the Department
21 of Agriculture does not appear to have been maintained in this documentation.

22
23 Though of obvious national importance and high integrity, the Mall is not yet an official National Historic
24 Landmark (NHL) or part of one. An NHL nomination has been prepared but is still under review.

25
26 A “National Mall Plan Area” has also been recently defined as an area stretching from and including
27 Union Square on the east, the Mall proper, the Washington Monument Grounds, West Potomac Park all
28 the way to the Lincoln Memorial and the Potomac shoreline on the west including other adjacent planning
29 areas such as the Capitol Complex, the White House and President’s Park, and the Monumental Core.
30 This is primarily to facilitate the National Mall Plan now under development.

31
32 Much has been written about the Mall as an iconic civic space of the American government; nonetheless,
33 this section of the EA is only concerned with identifying the qualities and attributes that have been
34 accorded significance in the official National Register documentation.

35 **THE NATIONAL MALL, 1981 NRHP NOMINATION AS A SITE**

36
37 The 1981 nomination of the National Mall indicated that “the Mall is significant as the central axis of the
38 District’s Monumental Core as designed by Pierre Charles L’Enfant in 1791” (NPS 1981). It classified
39 the Mall as a site, but one that had undergone alteration. The nomination form indicated that the Mall was
40 under public ownership, with unrestricted access, and its current use is that of a museum and Park. Dates
41 for the site’s significance were given as 1791 – 1976, and the architect/builder indicated as Pierre Charles
42 L’Enfant and the McMillan Commission. Only the category of Landscape Architecture was checked to
43 indicate the Area of Significance. As noted above, the boundaries were described as Constitution
44 Avenue/Pennsylvania Avenue on the north; Independence Avenue/Maryland Avenue on the south; 14th
45 Street on the west; and 1st Street on the east, with the Department of Agriculture property up to Jefferson
46 Drive carved out. The extension to 1st Street, beyond the rectangle of the inner open Mall ending at 3rd
47 Street, included Union Square.

48

1 The 1981 NRHP nomination’s “Description” (Section 7) indicated that “the Mall is a large greensward
2 slightly over one mile in length with a standard width of 1500 feet, but narrowing to approximately 500
3 feet at its eastern terminus.” It then described the Mall’s internal streets, noting that of the four aligned
4 east and west, Madison and Jefferson Drives are open to motorized traffic while the two innermost ones,
5 Washington and Adams Drives, were converted to gravel pedestrian walkways in the 1970s. The
6 “Description” notes the presence of all the existing major structures within the boundaries including the
7 various museums, five statues, two sculpture gardens, an ice skating rink, and even the Smithsonian
8 Metro station. However, no classification of any feature as “contributing” or “non-contributing” was
9 given other than to note that the Smithsonian Castle, the Arts and Industries Building, the Peace
10 Monument, and the Grant Memorial were listed on the NRHP.

11 The “Statement of Significance” of the nomination (Section 8) emphasized its role as the central axis of
12 L’Enfant’s Monumental Core, stating the “ ‘Grand Avenue’...run(ing) west from the Capitol to a point
13 directly south of the President’s House where its terminus would be crowned by an equestrian statue of
14 General George Washington. According to L’Enfant’s Plan, the Mall was to be ‘four hundred feet in
15 breadth, about a mile in length, bordered by gardens, ending in a slope from the houses on each side’ ”
16 (NPS 1981b).

17 However, the Mall—as a planned open space linking one of the most important buildings and the most
18 towering monument of the American government—has greatly evolved from its conception by Pierre
19 L’Enfant up to the present day. The 185 years of development on the grounds of L’Enfant’s concept until
20 the Bicentennial year referenced by the nomination saw many periods in which the plan was ignored,
21 contradicted by incompatible construction, and superseded by planning initiatives that were either at odds
22 with L’Enfant’s French-inspired Baroque principles (e.g. the looping carriage roads of Alexander Jackson
23 Downing emanating from the Smithsonian) or somewhat consistent in a later idiom (the Beaux Arts
24 sweep of the McMillan Plan with a late assist from the formal modernism of Skidmore, Owings, &
25 Merrill).

26 The practical implementation of the plan began in 1797, when President George Washington requested
27 that the lots, streets, squares, and parcels shown on surveyor Andrew Ellicott’s map be transferred to the
28 three city commissioners for federal use. Despite later violations, this action was a major initial legal step
29 to implement the concept and reserved the outlines of the Mall as well as other plan features for the
30 future. However, for most of the 19th century and afterwards, the Mall was characterized by the intrusion
31 of buildings meeting the practical needs of the day, such as an armory complex, a train station, a power
32 plant, and, later, the “tempo” (temporary buildings) for the office space needs of two world wars. Land
33 was disposed of or leased by the federal government with no consideration for the implementation of
34 L’Enfant’s Plan.

35 Much of the historic development of the Mall territory during the 19th and early 20th century has had to
36 be effaced to realize the concept of dignity and spaciousness first formulated by L’Enfant. Nonetheless,
37 two 19th century developments were to have major impacts on the Mall. In 1846, Congress donated a
38 portion of the Mall above B Street SW (Independence Avenue) between 9th and 12th Streets to the
39 Smithsonian Institution, allowing James Renwick’s “Castle” to be built within 300 feet of the Mall’s
40 center line. The subsequent English-style landscape plan for the Smithsonian grounds, developed by
41 Andrew Jackson Downing, was intended to be a model for the entire Mall, but its implementation was
42 limited to the Smithsonian campus and proved to be a dead end for the overall concept of the Mall.
43 However, the attention to landscape design, the need for public gardens, and the precedent of a museum
44 as a characteristic land use on the Mall all had lasting consequences. Another land donation by Congress,
45 this time of a 37-acre site to the Washington Monument Society in 1846, led to the construction of an
46 obelisk honoring George Washington rather than L’Enfant’s intended equestrian statue at a point on the
47 (off center) crossing of axes south from the White House and west from the Capitol.

1 The 1901 McMillan Plan, popularly named after Senator James McMillan, has had the greatest influence
2 after that of L’Enfant’s, although its effective implementation did not occur until the New Deal of the
3 1930s. Section 8 (Significance) of the 1981 NRHP nomination describes the Mall at the turn of the 20th
4 century as “a hodgepodge of public, private, and commercial structures connected by a patchwork of
5 naturalistic landscaping...” The McMillan Commission, established under the aegis of Senator McMillan
6 as chairman of the Senate Committee on the District of Columbia, brought together the talents of architect
7 Daniel H. Burnham; landscape architect Frederick Law Olmstead, Jr.; architect Charles McKim; and
8 sculptor Augustus Saint-Gaudens. Its writ included not only the Mall but also a comprehensive plan for a
9 now-enlarged City of Washington, a city also being physically enlarged by landfill into the Potomac
10 River to the west. The nomination continues “their plan called for the restoration, development, and
11 supplementation of the ‘Grand Avenue’ ideal proposed by L’Enfant in 1791. The core of the Mall was to
12 be a broad grass carpet, typical of those in Europe, 300 feet in breadth and running the entire length of the
13 Mall grounds, bordered on each side by four rows of American elm trees. Public buildings were to border
14 the whole, separated from the elms by narrow roadways.” The McMillan planners produced a parti—a
15 basic concept of an architectural design—which owed a greater degree of detail and specificity to the
16 more than one hundred years of the city’s actual development. Its rows of flanking elms and other
17 landscape and hardscape features were heavily influenced by the Ecole de Beaux Arts style of the period.
18 Also, the growth of Washington now dictated that the buildings bordering the Mall would be public
19 edifices, not private houses.

20 The 20th century saw a back-and-forth series of actions to either implement or thwart the plan. On the
21 positive side were the relocation of the Botanical Gardens and railroad infrastructure, the demolition of
22 many inappropriate buildings, and the construction of an American History Museum and a new
23 Department of Agriculture Building in a location which did not violate desired setbacks. On the negative
24 side were the World War I and II tempos that proved far from temporary and certain highway
25 improvements, although none violated the Mall itself at the surface level. Demolition of the non-
26 conforming Smithsonian Castle and realignment of the Mall axis to its “correct” location proved
27 impractical. Improvements to the Mall—including regrading, planting, and constructing memorials—
28 continued throughout the century but picked up pace during the relief projects of the 1930s, the
29 Bicentennial of the 1970s, and, most recently, with the construction of new museums in nearly all the
30 remaining enframing parcels. The two inner east-west drives, Washington and Adams, were closed to
31 vehicular traffic and made into gravel walkways in the 1970s.

32 Although the 1981 nomination of the Mall to the National Register gave its property type as a site, it drew
33 boundaries similar to those typical of a historic district. The exclusion of the Department of Agriculture
34 Building appears to have been due to its jurisdictional status as the only land not controlled by the NPS
35 rather than its nonconformity with the plan concept. Again, no list of contributing features was given;
36 however, the period of significance of 1791 – 1976 and the narratives for both Sections 7 and 8 imply that
37 the Mall has been a historic property of evolving significance, not bound to the “original intent” of Pierre
38 L’Enfant.

39 **OTHER STRUCTURES ON THE MALL INDIVIDUALLY LISTED ON THE NRHP**

40 Due to being less than 50 years old, many—though not all—of the monumental buildings and structures
41 at the edge of or enframing the Mall have been individually listed on the National Register. Not to be
42 confused with NRHP qualifying buildings or structures on the Mall proper (of which there are none), they
43 are:

- 44 • The Department of Agriculture Building
- 45 • The Freer Gallery of Art
- 46 • The Smithsonian Castle
- 47 • The National Gallery of Art West Building
- 48 • The National Museum of Natural History

1 THE L'ENFANT PLAN OF THE CITY OF WASHINGTON, 1997 NRHP NOMINATION AS A STRUCTURE

2 The L'Enfant Plan of the City of Washington was nominated and listed on the National Register in 1997.
3 Its Areas of Significance (Section 8) were given as community planning and development, landscape
4 architecture, politics and government, and transportation. This unusual type of historic resource, a city
5 plan nominated as a "structure", was not defined as the plan of L'Enfant and Ellicott, mapped and frozen
6 in time in 1791. The Section 7 (Description) summary indicates that "for nearly a century, the realization
7 of physical changes to the original plan were gradual, until the second important benchmark in the
8 development of Washington's urban plan: the McMillan Commission and its 1901 – 1902
9 recommendations" (Leach and Barthold 1997). The period of significance is designated as 1790 – 1942.
10 The actual items that were considered to constitute the "structure" listed on the NRHP were listed in the
11 Boundary Justification of Section 10 (Geographical Data): "The nominated area includes all parks and
12 reservations; streets and avenues; buildings, structures, and objects; and corridor of open space that
13 extends from original building line to building line and forms the right-of-way; though they may not be
14 nominated, specific scenic vistas along major axes and among major monuments are important features to
15 the character of the plan." Essentially, the L'Enfant Plan NRHP nomination recognizes the urban spaces
16 and vistas within the original boundaries of the City of Washington (below Florida Avenue) that were
17 created over a century and half that generally conformed with L'Enfant's monumental Baroque-inspired
18 vision. In addition to the McMillan Plan, recognition is given to another latter-day measure, the Height of
19 Buildings Act of 1910, which ensured that the parks, wide boulevards, and vistas envisioned would not be
20 overwhelmed by tall buildings, a possibility of 20th century technology that L'Enfant could not have
21 anticipated.

22 The significance of the National Mall to the L'Enfant Plan is noted primarily in the inclusion of
23 "Reservations 2-6: National Mall and Monument Grounds" in the Inventory of Contributing Features and
24 secondarily in the inclusion and exclusion of certain avenues and streets framing the Mall in the Inventory
25 of Contributing Features. (It should be noted that the "origin" of many features deemed contributing is
26 often given as one or more of the "L'Enfant Plan, Ellicott Map, and McMillan Plan," thus confirming that
27 the 1901 McMillan Plan is also seen as a source of historic significance.)

28 RESERVATION NOS. 2-6: NATIONAL MALL AND MONUMENT GROUNDS (NW AND SW, 189 ACRES)

29 Origin: L'Enfant Plan (no.3), Ellicott Map, McMillan Plan. These five contiguous reservations comprise
30 more than half the National Mall, from 17th Street to 3rd Street, and between Independence Avenue/Tidal
31 Basin. 3rd, 4th, 7th, and 14th Streets cut through it; 9th, 10th, and 12th Streets tunnel below, and it blocks
32 6th Street. Two vehicular routes, Madison Drive (on the north) and Jefferson Drive (on the south), allow
33 parking and access to the Mall. Reservation No.2 comprises the area from 17th Street to 14th Street;
34 Reservation No. 3 comprises 14th to 7th Streets; Reservation No. 4-5 comprises 7th to 4th Streets;
35 Reservation No. 6 comprises 4th to 3rd Streets; and Reservation 6A comprises 3rd to 1st Streets (Union
36 Square).

37 More than a dozen museums flank the Mall. On the north side are the National Museum of American
38 History (1964), National Museum of Natural History (1911), National Sculpture Garden [planned], and
39 Ice Rink (ca. 1986), National Gallery of Art – West Building (1941), National Gallery of Art – East
40 Building (1978); on the south side are the Freer Gallery of Art (1923), Smithsonian Castle (1855, NHL),
41 National Museum of African Art/Arthur M. Sackler Gallery (1987), Enid A. Haupt Garden (1987), Arts
42 and Industries Building (1881, NHL), Hirshhorn Museum and Sculpture Garden (1974), and National Air
43 and Space Museum (1976).

44 Gravel walks, double rows of elm trees, and occasional sculptures are found on the Mall including the
45 Andrew Jackson Downing Statue (1856), Joseph Henry Statue (1882), and National Grange Marker
46 (1951). At the eastern terminus are the Ulysses S. Grant Memorial (1922) and Capitol Reflecting Pool
47 (1971). At the western terminus is the Lincoln Memorial (1922).

1 The Monument Grounds contain the Washington Monument (1848 – 84; located slightly off axis of the
2 Capitol and White House), Sylvan Theater (1917 – 61), Boiler Room/Survey Lodge (1886), Memorial
3 Lodge (1888), Jefferson Pier Marker (1889), and German-American Friendship Garden (1988).

4 The vistas along this greensward are some of the oldest, most symbolic, and most majestic in the city.

5 The following features associated with the Mall are listed under the subheadings of “Contributing to the
6 Structure”: for “Avenues”—Maryland and Pennsylvania Avenues; for “Major Streets”—Constitution
7 Avenue (City Canal, B Street North) and Independence Avenue (B Street South); for “North-South
8 Streets”—3rd Street SW, 4th Street SW, 7th Street NW and SW, 9th Street SW, 12th Street NW and SW,
9 and 14th Street NW and SW. There are no “East-West Streets,” “Bridges,” or “Other Streets” associated
10 with the Mall that are identified as “Contributing to the Structure”. It should be noted that this omits
11 Madison and Jefferson Drives as well as the former Adams and Washington Drives.

12 Under the subheading “Contributing Associated Vistas,” the U. S. Capitol along the Mall to the Lincoln
13 Memorial and the western horizon is identified as one of the two “Primary Vistas.”

14 The nomination of the L’Enfant Plan of the City of Washington also contains a list of specific non-
15 contributing features including “Buildings,” “Parks (Reservations),” “Roadways,” “Bridges,” and
16 “Interruptions and Obstructions of Associated Vistas.” None are directly associated with the Mall. It also
17 notes that “incidental components of the public space such as street and sidewalk paving, manholes,
18 utilities, and other like elements are considered non-contributing.”

19 **Cultural Landscapes**

20 Cultural landscapes, as defined in the NPS’s Preservation Brief 36—Protecting Cultural Landscapes:
21 Planning, Treatment, and Management of Historic Landscapes (Birnbaum 1996) consist of “a geographic
22 area (including both cultural and natural resources and the wildlife or domestic animals therein)
23 associated with a historic event, activity, or person exhibiting other cultural or aesthetic values.” The
24 proposed alternatives have the potential to directly affect one cultural landscape: the Mall proper or
25 central portion as defined in the NPS’s Cultural Landscape Inventory (CLI). Adjacent to the territory
26 covered by the Mall CLI are the Union Square cultural landscape to the east, as defined in its separate
27 CLI, and the Washington Monument Grounds cultural landscape, for which the NPS has also prepared an
28 individual CLI. Due to the limitation of the alternatives evaluated in this EA to turf and soil renovation in
29 the turf panels which occupy the interior of the landscape, it has been determined that the potential effect
30 upon the Union Square and Washington Monument Grounds landscapes is negligible. Therefore, these
31 adjacent CLI landscapes will not be summarized for the affected environment.

32

33 **THE MALL CULTURAL RESOURCES LANDSCAPE INVENTORY**

34 In 2006, the Cultural Resources Landscape Inventory was completed by the NPS for the Mall,
35 jurisdictionally a component of the National Mall and Memorial Parks. The Mall CLI embraces the 135
36 acres bounded by the outer curbs of Madison Drive on the north, Jefferson Drive on the south, 14th Street
37 on the west, and 3rd Street on the east. It is a rectangle except for the section of Jefferson Drive that
38 curves northward into the Mall in front of the Smithsonian Castle. The enframing buildings, ice rink,
39 sculpture garden, and other structures that occupy the space between Madison Drive and Constitution and
40 Pennsylvania Avenues on the north and the space between Independence and Maryland Avenues on the
41 south as well as Union Square are considered an important part of the physical context of the Mall CLI;
42 however, only the internal 135-acre rectangle of open space is directly analyzed.

43 The CLI, in its Park Information and Inventory Summary, recognizes the previous documentation work
44 accomplished, particularly in the 1981 NRHP nomination of the Mall and the 1997 NRHP nomination of
45 the L’Enfant Plan (NPS 2006c). However, it notes that “neither provides sufficient information on the
46 development, integrity, or current condition of the landscape.” The CLI is also able to provide, due to its

1 more recent date, a description and narrative history of the Mall in its presumably “built-out” state. (The
 2 National Museum of the American Indian now occupies the last major site within the semi-rectangle
 3 formed by Constitution and Pennsylvania Avenues, 3rd Street, Independence and Maryland Avenues, and
 4 14th Street.) The CLI contains an expanded and more detailed Statement of Significance, Chronology
 5 (including all land transfers), and Physical History of the Mall than the preceding documents. The initial
 6 paragraph of the CLI Statement of Significance indicates:

7 The national significance of the Mall cannot be overstated. The central landscape itself, as defined for
 8 this inventory, constitutes the fundamental feature of the Mall, clarifying the vista and thus the
 9 symbolic relation between the Capitol and the Washington Monument, representing the legislative
 10 and executive branches of Government (since the Washington Monument stands on axis with the
 11 White House) – the primary design intent of both the L’Enfant and McMillan Plans....The Period of
 12 Significance for the Mall includes two separate periods: 171 – 1792, encompassing the year the
 13 L’Enfant Plan was created, and the subsequent year, when changes to the plan were made by
 14 L’Enfant’s successor, Andrew Ellicott; and 1902 – 1975, extending from the publication of the
 15 McMillan Plan, encompassing the years 1932 – 1936 when the plan was revised and largely
 16 implemented, to the year when the final tree panel with elm trees following the removal of the last of
 17 the temporary war building a few years earlier (NPS 2006c).
 18

19 The CLI contains a further review of the prior National Register documentation of the Mall which it notes
 20 as “Entered – Inadequately Documented.” Table 3.3 summarizes the CLI significance data according to
 21 current NRHP technical standards. A more contemporary emphasis is placed upon landscape:
 22

Table 3.3- CLI Significance Data

| Significance Criteria | (Cites NRHP Criteria A, B, and C.) |
|------------------------------|------------------------------------|
| Time Period: | 1791 – 1792 |
| Historic Context Theme | Expressing Cultural Values |
| Historic Context Subtheme | Landscape Architecture |
| Historic Context Facet | The Early National Period |
| Time Period: | 1901 – 1936 |
| Historic Context Theme | Expressing Cultural Values |
| Historic Context Subtheme | Landscape Architecture |
| Historic Context Facet | The City Beautiful Movement |
| Time Period: | 1933 – 1936 |
| Historic Context Theme | Expressing Cultural Values |
| Historic Context Subtheme | Landscape Architecture |
| Historic Context Facet | The 1930s: Era of Public Works |
| Time Period: | 1901 – 1975 |
| Historic Context Theme | Expressing Cultural Values |
| Historic Context Subtheme | Landscape Architecture |
| Historic Context Facet | Urban Planning in the 20th Century |
| Areas of Significance | |
| Category: | Community Planning and Development |
| Priority: | 1 |
| Category: | Landscape Architecture |
| Priority: | 2 |

23 The “Analysis and Evaluation” section of the CLI presents a general summary of the features and values
 24 of the Mall as a cultural landscape. It evaluates the Mall as retaining its integrity according to the
 25 characteristics used by the National Register: Location, Setting, Design, Materials, Workmanship
 26 (deemed non-applicable), Feeling, and Association. Of note is the recognition under Materials that “the

1 original concrete paving of the walks has been replaced with a combination of gravel and exposed
2 aggregate concrete, and certain modifications have been made to the mix of elm varieties.”
3

4 **CONTRIBUTING AND NON-CONTRIBUTING FEATURES** are identified in the CLI for Vegetation, Views and
5 Vistas, Circulation, Buildings and Structures, and Small-scale Features while Topography, Archeology,
6 Land Use, and Spatial Organization receive only a general discussion.
7

8 **TOPOGRAPHY** -The basic perception is that the Mall is generally level, although some significant regrading
9 was done at its western end to achieve this appearance.
10

11 **ARCHEOLOGICAL SITES** - No archeological surveys have been done for the CLI territory, but there is
12 potential for archeological resources.
13

14 **LAND USE** - The Mall is intensively used for recreation, demonstrations, tourism, museum access,
15 concerts, and public ceremonies. Pedestrians do not limit themselves to the walkways; they walk or run
16 over the turf panels as well.
17

18 **VEGETATION** - Most of the discussion regarding vegetation concerns the elm trees. However, the CLI notes
19 that the central turf panels are planted with tall fescue while areas under the elms are seeded in a
20 bluegrass mixture.

21 **Contributing** features include: turf panels; tree panels; American elm trees planted in 1920s –
22 1975, and American elm tree cultivars such as ‘Jefferson’ and ‘Princeton,’ planted to replace the
23 original elms

24 **Non-contributing** include: American elm tree ‘Augustine Ascending’ cultivar; European elms
25 along 12th Street axis; bald cypresses (*Taxodium distichum*); two oak trees (*Quercus rubra*) along
26 14th Street; other street trees under D.C. jurisdiction; and landscaping of the Hirshhorn Sculpture
27 Garden
28

29 **SPATIAL ORGANIZATION** - A distinction is drawn between the unfiltered aspect of the great channel of space
30 from the Capitol to the Washington Monument along the central axis of the Mall and the filtered view
31 trough and under the elm canopy from the center of the Mall to the enframing buildings.
32

33 **VIEWS AND VISTAS** - The 1930’s interpretation of the McMillan Plan emphasized the turf panels or *tapis*
34 *vert*, the eight rows of elms, and the orthogonal walks as devices to reinforce the main reciprocal vista of
35 the Capitol to Washington Monument.
36

37 **Contributing** features include: vista, Capitol to Washington Monument; views to elms from walks
38 and turf panels; views to building façades from the Mall; views up cross streets; views from the
39 Mall to Union Square
40

41 **CIRCULATION** - Under a subheading “Contribution of the Mall Walk System” in the CLI is the following
42 statement:

43 The pattern of the Mall circulation is contributing. The materials of roads and walks are not
44 contributing; this includes the gravel and concrete of the walkways and sidewalks, which replaced
45 the original concrete walks in 1975 and later. Little information has been found about the historic
46 width of roads and walks. Since the gravel was laid directly on top of the asphalt of the Inner
47 Drives when they were converted into walks, it seems likely that the width did not change
48 substantially.

49 **Contributing** features include: Roads and sidewalks – Jefferson Drive, Madison Drive, 3rd Street,
50 4th Street, 7th Street, 14th Street; east-west walks – North Vista Walk (formerly Washington
51 Drive); South Vista Walk (formerly Adams Drive); sidewalks along Madison and Jefferson

1 Drives (Mall sides of drives – south side of Madison and north side of Jefferson); cross axial
2 walks – 5th, 6th, 8th, 9th, 10th 12th, and 13th Streets axes

3 **Non-contributing** features include: social trails; curving walks in front of the Smithsonian Castle;
4 polychrome paving and steps, the Joseph Henry Statue

5
6 **BUILDINGS AND STRUCTURES** - None of the few buildings or structures on the Mall proper are contributing.

7
8 **Contributing** features include: None

9 **Non-contributing** features include: the Metro entrance; four food service buildings; Tourmobile
10 kiosks; the Smithsonian carousel and its ticket booth; the Hirshhorn Sculpture Garden

11
12 **SMALL-SCALE FEATURES** - All of the small-scale features found on the Mall—except the benches and
13 streetlights of 1930’s design—are non-contributing. It should be noted that the text of the CLI mentions
14 small-scale features such as tan-colored brick edging around some elms and black steel edging around
15 turf panels in a way that suggests they are non-contributing.

16 **Contributing** features include: benches (1930’s design); street lights (1930’s design)

17 **Non-contributing** features include: trash receptacles; signs; utility boxes; post-and-chain barriers;
18 chain-link fence around Metro entrance; grates and manholes; parking meters; traffic lights;
19 bicycle racks; National Grange plaque; pay phones; fire hydrants

20
21 **CONCLUSION**

22 The history of the Mall’s documentation as a historic property, and particularly its recordation on the
23 NRHP, indicates that the official recognition given this premier national urban space with multiple urban
24 design, architectural, landscape architectural, and symbolic aspects has evolved since 1966 as the Mall
25 itself has since the late 18th century. Vistas and views, the structure of the street pattern whether
26 represented by pavement or gravel, the framework of monumental buildings and structures at its edges,
27 and the overall impression of a greensward have been the universally accepted primary attributes of the
28 National Mall. Few other more detailed features have been accepted as significant to its historic integrity.

1 **Archeology**

2 Efforts to identify archeological resources included a review of existing databases maintained by the NPS,
3 the DC HPO, a literature review, and research into primary historical documents. A formal Archeological
4 Overview and Assessment Study has not been completed for NAMA, so information concerning
5 archeological resources in the APE must be extrapolated from previous studies in the surrounding area
6 and other sources. The Archeological Overview and Survey Plan for the National Capital Area (Little
7 1995) established priorities for the system-wide archeological inventory project. In that document, one of
8 the Priority 1 projects was a shoreline study of the Potomac and Anacostia Rivers, which would be
9 relevant to four Parks, including NAMA. To date, the recommended shoreline study has not been
10 completed. Lacking detailed information on archeological resources for the APE, it is possible only to
11 develop speculative statements regarding existing archeological resources.

12 The recommendation for a shoreline study as an element of the system-wide archeological inventory
13 project stems from the fact that much of the downtown Monumental Core area, including the National
14 Mall, was originally situated on the shoreline of Tiber Creek, one of the District's natural inland
15 waterways. Before the City of Washington was laid out in 1791, the south bank of Tiber Creek cut across
16 what is now the National Mall (Figure 3.11). As a natural shoreline area, areas immediately adjacent to
17 Tiber Creek are of archeological interest primarily because such areas were attractive to Native American
18 groups and because the city's early development was concentrated along its waterfront areas. The modern
19 landscape associated with the APE reflects the filling of Tiber Creek and the creation of formal
20 landscapes of the National Mall. Because most of the land in the APE consists of fill deposits and formal
21 landscapes, the potential for archeological sites is limited, but not non-existent. Archeological resources
22 associated with earlier, historical landscapes, if present, may be found in buried contexts.

23 It is important to emphasize that the existence of archeological resources within the study area is
24 speculative at this time, as comprehensive archival studies and field surveys have not been completed. It
25 is assumed that any archeological resources within the study area are buried beneath varying amounts of
26 fill, but the depths of modern fill deposits across the study area have not been systematically determined
27 by geoaicheological investigation.

28 Some information on the depths of fill and disturbed areas is available that is broadly useful for the
29 assessment of possible impacts on archeological resources; these studies include a soil survey (Short et al.
30 1986) of the Mall and a disturbance study (Heritage Landscapes, LLC 2010). These studies provide
31 general information on the character of the landscape as it pertains to potential archeological resources,
32 but they cannot support a rigorous impact analysis for archeological resources, as the presence of
33 archeological resources and their depths below current grade is unknown.

34 A series of soil cores sampled the near-surface soils in the Mall in the 1980s (Short et al. 1986). These
35 cores were distributed along five east-west transects, with 20 core samples on each transect. The goal of
36 this study was to characterize the physical and chemical properties of the Mall soils, and the cores were
37 limited to the upper 0.7 meter (2.46 feet) of soil. The study noted some of the land use patterns that have
38 influenced the Mall landscape including filling, construction of temporary buildings, and formal
39 landscaping. Overall, 95% of the cores showed evidence of filling – some with multiple discontinuities
40 that reflected multiple filling or grading episodes. More than four in ten (42%) of the soil cores showed
41 evidence of a buried surface soil (A-horizon). It is assumed that archeological resources may be present in
42 surface soils; these surfaces could represent the natural landscape of the city as it existed before the city
43 was laid out in 1790 or intermediate surfaces formed by the addition of fill soils onto the underlying
44 landscape surface. But the fact that 42% of the soil cores identified a buried surface within 2.46 feet of the
45 current surface does suggest that relatively shallow ground-disturbing activities might have an effect on
46 archeological resources. However, the investigators note that some areas of the Mall may have fills that
47 reach a depth of 20 feet (Short et al. 1986).

1 In conjunction with the present EA, a mapping project was completed that illustrates the sequence of land
2 use changes that have occurred on the Mall since the city was laid out in 1791 (Heritage Landscapes, LLC
3 2010). This mapping study focuses on the changing appearance of the Mall and outlines some of the
4 historical processes and events that might be considered as disturbances to the archeological record. Some
5 of the major disturbances that were noted in this study include the complex of World War I temporary
6 buildings at the eastern end of the Mall and the tunnels for 9th Street, 12th Street, and the Metro rail
7 system.

8 Native American occupation in the downtown area around Tiber Creek has been well established despite
9 the urban character of the modern environment. There are many artifact collections from sites in the
10 District of Columbia that were amassed prior to the advent of modern archeology, and as such they
11 typically lack specific information about their origin. Among the prehistoric artifact collections from the
12 District of Columbia is an assemblage of 147 specimens from the Washington Monument grounds as
13 recently described by Krakker (2005). This collection is apparently from a site on the south bank of Tiber
14 Creek, although the exact origin is unknown. The collection was obtained in the 1880s and includes
15 artifacts that indicate episodic use of the area for at least 7,000 years. The collection has been cataloged as
16 archeological site 51NW35-Monument Grounds. It was widely assumed that the Washington Monument
17 Grounds have been so severely disturbed that no possibility existed for archeological resources to have
18 survived. However, recent archeological investigations for the National Museum of African American
19 History and Culture (NMAAHC) have demonstrated that some remnants of the natural landscape along
20 Tiber Creek may be preserved beneath deep fill deposits (LeeDecker , Fiedel, and Bedell 2007;
21 LeeDecker , Kraus, and Kuhn 2008).

22

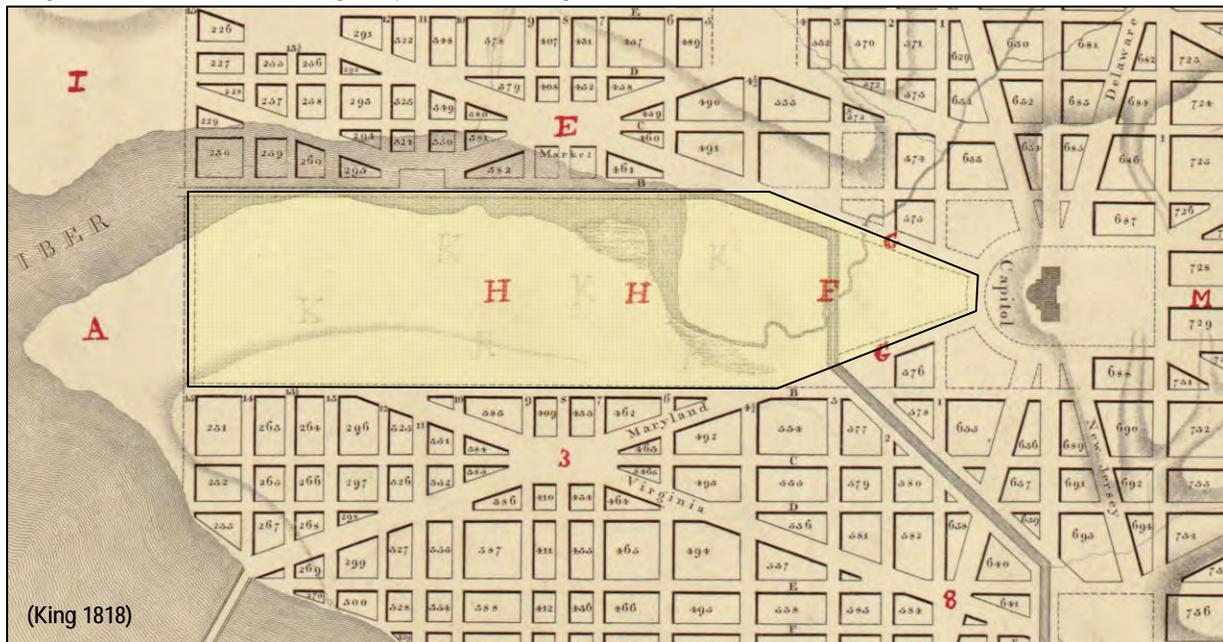
Figure 3.11 – Detail of Pierre L'Enfant's "Dotted Line Map," Showing Area around Tiber Creek



1 Ever since the City of Washington was laid out in 1791, the National Mall area has been reserved for
 2 public use, so its history is closely linked to the development of the city's Monumental Core area. As the
 3 city developed in the 19th century, Tiber Creek was transformed first into the Washington City Canal,
 4 then into the B Street Sewer. In the 1870s, the sewer was paved over and B Street became Constitution
 5 Avenue. The Washington City Canal was an important part of Pierre L'Enfant's Plan for the City of
 6 Washington. L'Enfant envisioned a canal that would allow goods to easily reach the interior of the city
 7 and connect the Potomac and Anacostia Rivers via Tiber and James Creeks, thereby facilitating traffic
 8 between Georgetown and the deepwater ports on the Anacostia. The Washington Canal was the first
 9 public works project that had a significant impact on the physical geography of the territory south of the
 10 White House. Advocates and promoters of the canal hoped it would also alter the political and economic
 11 landscape, easing the path of commerce in the city. Intended to enhance the newly established capital city
 12 both in commerce and in beauty, the canal was plagued with obstacles from its beginnings in the 1790s
 13 and continued to be plagued by difficulties until its final demise in the 1870s.

14 The first phase of canal construction, completed by 1815, did not fully realize L'Enfant's plan; at that
 15 time the canal route simply followed the existing channel of Tiber Creek as far upstream as 6th Street,
 16 where a lock raised the water level. By 1822 the canal channel had been extended across the northern
 17 margin of the National Mall, which required a major effort to reshape the stream channel and build a
 18 towpath (Figure 3.12). The canal channel, or prism, was simply a flat-bottomed ditch with sloping banks.
 19 Typical canals of that period were only 22 feet wide, but the Washington City Canal was much larger. In
 20 the downtown area, the canal was 80 feet wide and was flanked on both sides by two 80-foot-wide streets.
 21 Instead of digging a ditch across dry land, building the canal through lower Tiber Creek would have
 22 involved filling the broad stream channel and forming an appropriately sloped bank to support a towpath.
 23 By the 1850s, the canal channel extended as far as 17th Street. The towpath would have been on the
 24 inland side of the canal channel, so much of the landfilling would have been on the northern bank of Tiber
 25 Creek, which was documented by a previous archeological investigation of the Ellipse (LeeDecker 2006).
 26 Part of the section of the canal between the White House and the Capitol, the canal was wharfed with
 27 stone walls. The Boschke map of 1861 (Figure 3.14) shows the status of land development at the
 28 beginning of the Civil War.

Figure 3.12 – Detail of Robert King's Map of 1818, Showing First Phase of Canal Construction



1 During Washington's brief period of local government in the early 1870s, the Board of Public Works,
2 under Alexander "Boss" Shepherd, completely transformed the city's landscape. During Shepherd's
3 tenure (1871 – 1873), water and sewer service was extended, streets and sidewalks were improved, trees
4 were planted, street lights were installed, and a trolley system was built. Where others had advocated
5 dredging or covering the canal, Shepherd, a plumber by trade, converted it to a sewer so it could be paved
6 over and reborn as Constitution Avenue. The location of the Washington City Canal is well known and
7 some parts of the canal have been documented in previous archeological studies at the Southeast Federal
8 Center as site 51SE47 (Parsons Engineering-Science, Inc. 1996; Patton and Boyd 2004). Elements of the
9 canal at the Southeast Federal Center have been determined as eligible for the NRHP.

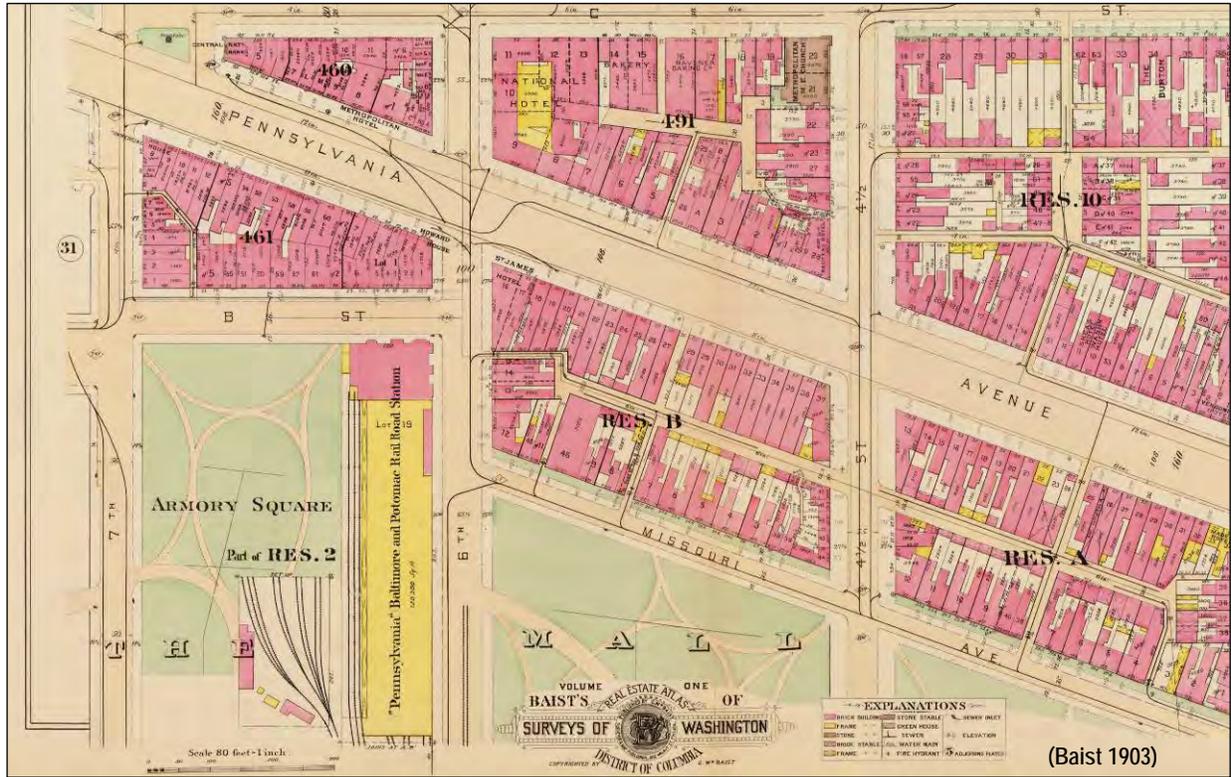
10 Previous archeological studies within the National Mall have demonstrated that the archeological record
11 associated with the National Mall can be quite complex, with physical remains of a great variety of events
12 that vary widely in their historical and archeological significance.

13 At the Smithsonian Castle, a documentary study was completed for the South Quadrangle (or South
14 Yard), a 4.2-acre area that was planned for a 460,000-square-foot underground building complex (Smith
15 1981). That research found documentary evidence that some 22 archeological features may have existed
16 in the study area; for the most part these were architectural remains associated with the Smithsonian
17 Castle building and its associated dependencies along with temporary structures such as window wells,
18 grading deposits, and utility lines. Some of the more notable and unique resources were large cisterns,
19 sess-pools [sic], and scientific buildings, the latter of which included a subterranean magnetic observatory
20 and an astrophysical observatory. This study concluded that evidence of Native American occupation
21 would have been obliterated, but that there was some chance for "survival of four historic features: the
22 Inground Cisterns, the Castle Well, the Astrophysical Observatory, and Subsurface Linear Disturbance
23 Features" (utility lines). The report concluded that construction of the new building would have no
24 adverse effect on archeological resources, with the stipulation that construction would be monitored on a
25 daily basis by an archeologist who would document exposed archeological features. Whether these
26 features had actually survived in archeological context is unknown, as there is no known report of
27 monitoring during construction (Smith 2010).

28 The Smithsonian Institution sponsored a series of archeological studies prior to construction of the
29 National Museum of the American Indian, located on Reservation C, a parcel bounded by 3rd Street, 4th
30 Street, Maine Avenue, and Maryland Avenue. Reservations A, B, C, and D were originally set aside as
31 public land under the L'Enfant Plan, but they were given over to private interests for development in the
32 1820s. Development of these parcels began in the 1840s, and these areas were characterized by a mixture
33 of low-income housing and industrial uses. Archeological investigations for the museum site ultimately
34 focused on deposits associated with an upper-class brothel owned by Mary Ann Hall, which was
35 designated as Site 51SW14 (Smithsonian 1997). Based on the archival research for the National Museum
36 of the American Indian, the archeological record in Reservations A, B, C, and D may contain evidence of
37 many other residential and industrial properties. Subsequent construction of the museum presumably
38 destroyed many of these archeological properties.

39 Other potential archeological resources in the study area can be identified on the basis of archival sources,
40 most notably the Washington Armory which stood at the site now occupied by the National Air and Space
41 Museum. The area between 6th and 7th Streets SW was then locally known as Armory Square. During
42 the Civil War, the Armory (also known as the Columbian Armory) was surrounded by barracks and
43 hospitals, extending across the width of the Mall, with a morgue, a church, quarters for nurses and a
44 chaplain, and 50 barracks (NPS 2006c). Another potential complex of archeological features on Armory
45 Square is represented by the "Pennsylvania" Baltimore and Potomac Railroad station along the east side
46 of 6th Street. As shown on the 1903 Baist atlas, the railroad complex includes a large station, track
47 sidings, and a group of smaller structures (Figure 3.13).

Figure 3.13 – Detail of Baist Atlas of 1903, Showing Development of Armory Square

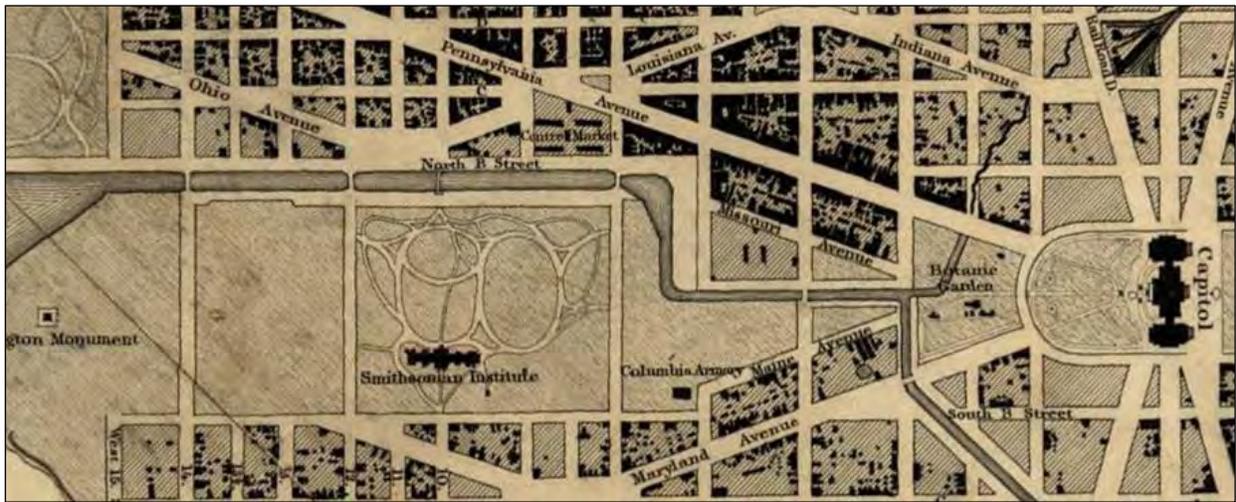


1 Table 3.4 summarizes the potential archeological resources that can be identified on the basis of available
 2 sources. The presence of archeological resources within the study area can be specified only on the basis
 3 of speculative or predictive statements, as field surveys have not been completed. Formal identification
 4 and evaluation of such resources would require detailed study, including field surveys that involve
 5 subsurface investigations. With the filling of Tiber Creek, the conversion of B Street into Constitution
 6 Avenue and the subsequent development of the Mall following the MacMillan Plan, it should be expected
 7 that archeological sites in the study area would be buried beneath fill deposits, given the complex land use
 8 history of this urban area.

9 Table 3.4 – Potential Archeological Resources

| Resource Type | Location and Description |
|--|---|
| Native American Sites | Short-term camp sites or resource extraction areas along the (former) shoreline of Tiber Creek; most likely locations would be elevated, well-drained areas of the original landscape; sites may be buried beneath deep fill deposits |
| Washington City Canal (circa 1815 to 1870s) | Features such as canal prism, wharfing, towpath and western tidelock; most likely locations for survival of the canal is between 7th and 3rd Streets |
| Washington Armory | Remains of Civil War era barracks, hospitals, a morgue, a church, and quarters for nurses and a chaplain; between 6th and 7th Streets |
| Baltimore and Potomac Railroad station/terminal (circa 1900 to 1910) | Remains of train station, rail yard and support buildings along east side of 6th Street |
| Residential and industrial sites (circa 1840s to 1930s) | Mixed neighborhood of working-class residences, brothels, and industrial sites; Reservations A and B (3rd to 6th Streets between Pennsylvania and Missouri Avenues); Reservations C and D (3rd to 6th Streets between Maine and Maryland Avenues) |

Figure 3.14 – Detail of Boschke's Map of 1861, Showing the Mall Area at the Beginning of the Civil War



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1 CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

2 This “Environmental Consequences” chapter analyzes both beneficial and adverse impacts that would
3 result from implementing any of the alternatives considered in this EA. This chapter also includes
4 definitions of impact thresholds (e.g., negligible, minor, moderate, and major), methods used to analyze
5 impacts, and the analysis methods used for determining cumulative impacts. As required by the CEQ
6 regulations implementing NEPA, a summary of the environmental consequences for each alternative is
7 provided in Table 2.3 which can be found in “Chapter 2: Alternatives.” The resource topics presented in
8 this chapter and the organization of the topics correspond to the resource discussions contained in
9 “Chapter 3: Affected Environment.”

10 **General Methodology for Establishing Impact Thresholds and Measuring** 11 **Effects by Resource**

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

- 14 ▪ general analysis methods as described in guiding regulations, including the context and duration
15 of environmental effects
- 16 ▪ basic assumptions used to formulate the specific methods used in this analysis
- 17 ▪ thresholds used to define the level of impact resulting from each alternative
- 18 ▪ methods used to evaluate the cumulative impacts of each alternative in combination with
19 unrelated factors or actions affecting Park resources

20 These elements are described in the following sections.

21 **General Analysis Methods**

22 The analysis of impacts follows CEQ guidelines and DO-12 procedures (NPS 2001) and incorporates the
23 best available information applicable to the setting and the actions being considered in the alternatives.
24 For each resource topic addressed in this chapter, the applicable analysis methods are discussed, including
25 assumptions and impact intensity thresholds.

26 **Impact Thresholds**

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

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

- 38 **Beneficial:** A positive change in the condition or appearance of the resource or a change that
39 moves the resource toward a desired condition.

1 **Adverse:** A change that declines, degrades, and/or moves the resource away from a desired
2 condition or detracts from its appearance or condition.

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

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

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

12 **Cumulative Impacts Analysis Method**

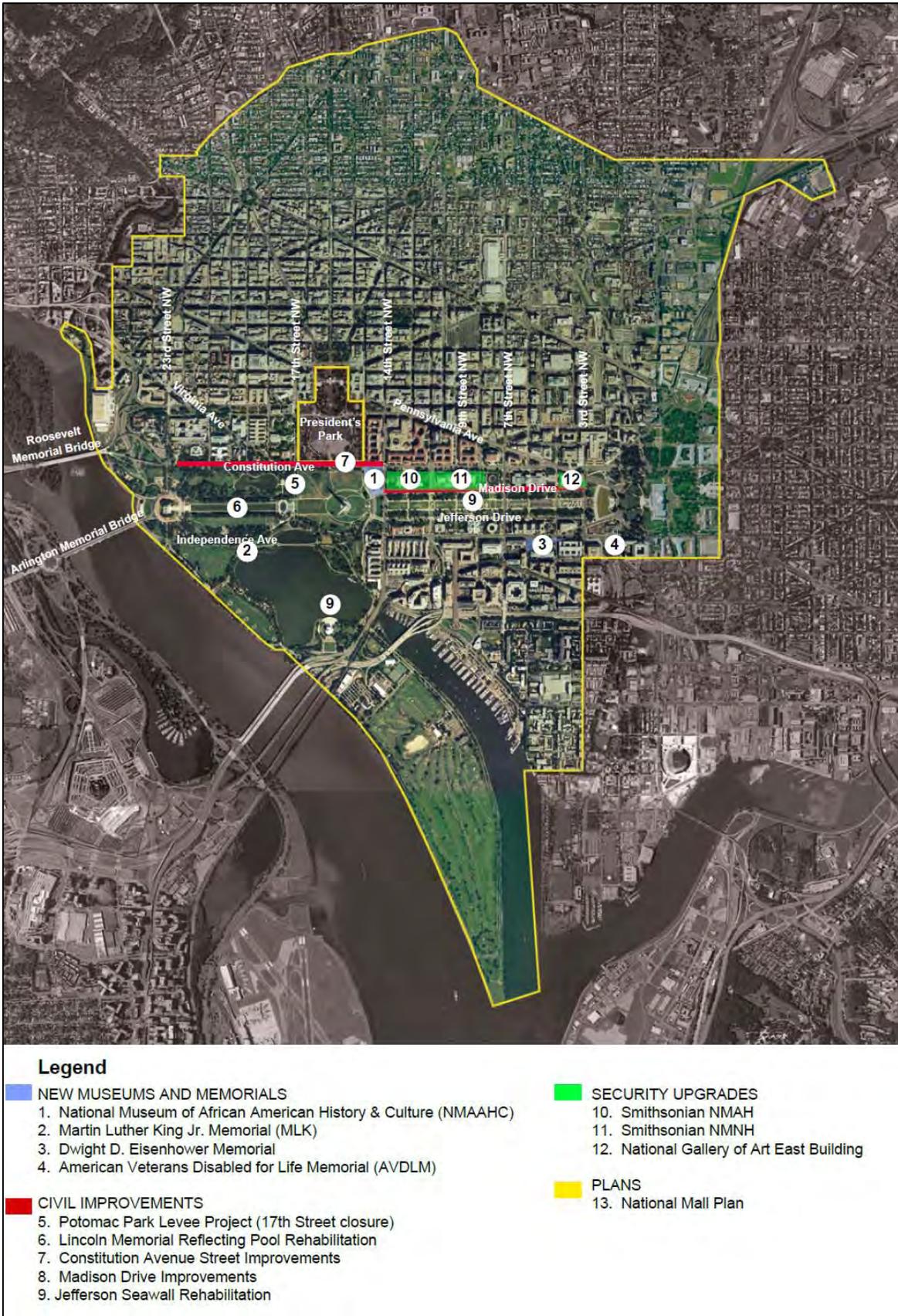
13 NEPA regulations require an assessment of cumulative effects in the decision-making process for federal
14 projects. Cumulative effects are defined as “the impact on the environment that results from the
15 incremental impact of the action when added to other past, present, and reasonably foreseeable future
16 actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (CFR
17 2005b). Cumulative effects are considered for all alternatives, including the no action alternative.

18 The methodology for determining cumulative effects is derived from using an “X+Y=Z” analysis where
19 “X” represents the impacts of the alternative and “Y” is other past, present, and reasonably foreseeable
20 future actions. When considered relative to each other, their combined contribution to the overall
21 cumulative effect is “Z.” It is important to note that due to the disparate scale and location of the proposed
22 actions, effects from certain proposed actions could be moderate, but when considered in the overall
23 context, could constitute a relatively small incremental portion of the project area and contribute to a
24 collective minor effect.

25 Table 4.1 summarizes the cumulative impacts projects and describes the various resource areas that could
26 be affected by these projects. In addition to those actions identified below, other current and future plans,
27 including the National Mall Plan, are described in “Chapter 1: Purpose and Need.” Figure 4.1 delineates
28 the location of the cumulative impacts projects. The analysis of cumulative effects was accomplished
29 using four steps:

- 30 1. Identify Resources Affected - Fully identify resources affected by any of the alternatives. These
31 include the resources addressed as impact topics in “Chapter 3: Affected Environment” and
32 “Chapter 4: Environmental Consequences” of the document.
- 33 2. Set Boundaries - Identify an appropriate spatial boundary for each resource. The spatial boundary
34 for each resource topic is listed under each topic.
- 35 3. Identify Cumulative Action Scenario - Determine which past, present, and reasonably foreseeable
36 future actions to include with each resource. These are listed in Table 4.1 and are described
37 below.
- 38 4. Cumulative Impact Analysis - Summarize impacts of these other actions (X) plus impacts of the
39 proposed action (Y), to arrive at the total cumulative impact (Z). This analysis is included for
40 each resource in “Chapter 4: Environmental Consequences.”
41

Figure 4.1 – Cumulative Impacts Projects or Actions



1 Table 4.1 – Cumulative Impacts Projects or Actions

| Type of Action | Cumulative Impacts Project | Description | Status |
|---------------------------|---|---|---------------------|
| Perimeter Security | N/A | <p>Since the 1995 Oklahoma City federal building bombing and 9/11, security improvements have been implemented or would likely be implemented in the future throughout the Washington, D.C., area, including the project area. The Smithsonian Institution and National Gallery of Art have recently completed perimeter security projects.</p> <p>Affected Resources Areas: The security measures, although important for public safety, have resulted in impacts on the visual and cultural resources of the area. The presence of law enforcement has also been increased, causing impacts on Park management and operations.</p> | PAST/ PRESENT |
| Plans | National Mall Plan | <p>The goal of the National Mall Plan is to establish a sense of place and an overall identity for the National Mall, creating a coherent pedestrian environment that would complement and balance the natural environment, formal and informal features, and national commemorative works.</p> | PRESENT/ ongoing |
| New Museums and Memorials | National Museum for African American History and Culture (NMAAHC) | <p>This building would be constructed on a 5-acre parcel on the Washington Monument Grounds between 14th and 15th Streets and Constitution Avenue NW.</p> <p>Affected Resources Areas: This new museum would affect visitor use and transportation since it would be a highly visible draw for tourists upon completion of construction. It would affect visual and cultural resources since it would be the first new structure to be built on the National Mall in the 21st century.</p> | FUTURE 2012-2016 |
| | Martin Luther King, Jr., Memorial (MLK) | <p>This project would establish a memorial to Dr. King on a 3-acre site within the triangular area bounded by Independence Avenue, relocated West Basin Drive, and the western edge of the Tidal Basin walkway. The memorial would conceptually be a landscape experience, using stone, water, and trees to convey the main themes of Dr. King's legacy: justice, democracy, and hope.</p> <p>Affected Resources Areas: This new memorial would affect visitor use since it would be a highly visible draw for tourists upon completion of construction.</p> | PRESENT 2010 |
| | Dwight D. Eisenhower Memorial | <p>This new memorial is proposed to be built across Independence Avenue from the National Air and Space Museum and north of the Department of Education. The design concept includes a cohesive and important civic space and urban monument in the heart of the capital region that provides a quiet and contemplative space.</p> <p>Affected Resources Areas: This new memorial would affect visitor use and Park management and operations since it would be a highly visible draw for tourists upon completion of construction.</p> | FUTURE 2011/2012 |
| | American Veterans Disabled for Life Memorial (AVDLM) | <p>The AVDLM will occupy a 2-acre site south of Independence Avenue SW at 2nd Street SW and Canal Street SW. The Memorial will honor all those veterans who were permanently disabled while serving in the United States Armed Forces.</p> <p>Affected Resources Areas: This new memorial would affect visitor use and Park management and operations since it would be a highly visible draw for tourists upon completion of construction.</p> | FUTURE 2011/2012 |

2

3

1 Table 4.1 – Cumulative Impact Projects or Actions (continued)

| | | | |
|----------------------|---|---|----------------------------------|
| Civil Works Projects | Potomac Park Levee Project | <p>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.</p> <p>Affected Resource Areas: The new structures and landscape modifications would potentially impact Park management and operations and cultural and visual resources. During construction, it would potentially impact public safety, visitor use, soils, and vegetation.</p> | PRESENT/ ongoing 2008-2010 |
| | Lincoln Memorial Reflecting Pool Rehabilitation | <p>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.</p> <p>Affected Resource Areas: During construction, these improvements would potentially impact visitor use due to the disruption to the Reflecting Pool for approximately 18 months. Following completion, there would be potential impacts to Park management and operations due to the new water system and visitor use.</p> | FUTURE 2011/2012 |
| | Constitution Avenue Street Improvements | <p>Constitution Avenue NW between 23rd Street NW and 16th Street NW would be rehabilitated; streetscape improvements would introduce new street lighting and storm sewer upgrades.</p> <p>Affected Resource Areas: During construction, these improvements would potentially impact visitor use and public safety.</p> | FUTURE 2011 |
| | Madison Drive Streetscape Improvements | <p>Madison Drive would be rehabilitated with enhancements to streetscape elements.</p> <p>Affected Resource Areas: During construction, these improvements would potentially impact visitor use and visual resources in the project area.</p> | FUTURE 2011 |
| | Jefferson Seawall Rehabilitation | <p>This project would rehabilitate the Thomas Jefferson Memorial plaza, seawall, and staircases in a manner that improves pedestrian circulation and visitor safety.</p> <p>Affected Resources Areas: These improvements would potentially impact Park management and operations and cultural and visual resources. During construction, it would potentially impact public safety and visitor use.</p> | ongoing 2009-2010 |

1 **Visitor Use and Experience**

2 **METHODOLOGY AND ASSUMPTIONS**

3 The purpose of this impact analysis is to assess the effects of the alternatives on the visitor use and
4 experience in the areas that would be affected by the turf and soil reconstruction in and around the project
5 area. To determine impacts, the current uses of the area were considered and the potential effects of the
6 construction and implementation of the rehabilitation on visitor experience and use were analyzed.
7 Activities and the type of visitor experience and use/visitation that occur in the Park and which might be
8 affected by the proposed actions, as well as the visual character of the area and noises experienced by the
9 visitors, were considered.

10 **STUDY AREA**

11 The proposed actions would be located on the Mall between 3rd and 14th Streets NW and Madison and
12 Jefferson Drives. For the impact analysis, the study area for visitor use and experience includes the larger
13 area of the National Mall as well as the attractions and museums in the surrounding areas. Projects and
14 plans in the immediate vicinity of the National Mall, particularly those that result in new visitor use
15 opportunities or temporary closures, are considered in the cumulative impact analysis.

16 **IMPACT THRESHOLDS**

17 Negligible: The impact would not be detectable or would be barely detectable to most visitors and
18 would not affect their experiences or opportunities in a perceptible manner.

19 Minor: The impact would be detectable to some visitors and might result in some effect on their
20 experiences or opportunities.

21 Moderate: The impact would be readily apparent to many visitors and would likely affect the
22 experiences or opportunities of many visitors.

23 Major: The impact would be obvious to most visitors and would affect the experiences or
24 opportunities of most or all visitors.

25 Duration: Short-term impacts would occur throughout the course of a year. Long-term impacts
26 would last more than one year.

27 **Impacts of Alternative 1: the No Action Alternative**

28 The no action alternative represents a continuation of the existing conditions, operations, and maintenance
29 of the turf and soil and of current practices regulating visitor use and special events within the project
30 area. Visitation in the project area, including recreation and special events, would continue to degrade and
31 compact the turf and soil resources on the National Mall.

32 **TURF AND SOIL MAINTENANCE**

33 Along the edges of the turf panels, there would continue to be no separation between the turf and
34 walkways. An unclear visual distinction between the walkways and turf panels would persist resulting
35 from the large amount of gravel that migrates onto the turf panels. The corners of the turf panels would
36 continue to be subject to substantial wear from intense visitor use.

37 Seasonal maintenance would continue including a winter rest period from mid-September to the end of
38 March, during which half of the project area each year would be closed to visitor use. Smaller rest periods
39 would continue to occur throughout the year following large-scale special events.

40 Under the no action alternative, visitors would continue to enjoy the same level and intensity of use in the
41 project area. However, there would continue to be temporary closures of portions of the project area for

1 scheduled winter rest periods; noticeable wear on the turf panels, particularly along the edges of the
2 walkways, would persist. These impacts would be detectable to many visitors because of slight
3 limitations to access during seasonal closures and the visual impact of the worn turf panels on visitor
4 experience; therefore, there would be long-term moderate adverse effects to visitor use and experience.

5 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

6 There would be no changes to strategies to protect the integrity of the turf and soil by managing elements
7 of the use of the project area for special events. The special events within the project area would continue
8 to be permitted through the Division of Park Programs at the NCR Headquarters and would be subject to
9 current regulations for site access, staging, risk management, comfort facilities, first aid, security,
10 transportation, and cost recovery for the events in a manner that minimizes impacts to Park resources and
11 the public. Under the no action alternative, there would be no changes to the issuance or conditions of
12 permits for special events, including duration or use and siting of temporary structures, so there would be
13 no effect on visitor use and experience.

14 **CUMULATIVE IMPACTS**

15 Present and future construction on the National Mall and surrounding areas, including the MLK
16 Memorial, Dwight D. Eisenhower Memorial, AVDLM, Potomac Park Levee Project, Jefferson Seawall
17 Rehabilitation, Lincoln Memorial Reflecting Pool Rehabilitation, and NMAAHC would contribute
18 cumulatively to visitor experience by enhancing existing Park resources and adding new visitor
19 destinations. However, additional visitation to the project area would result in more intensive use within
20 the project area.

21 Roadway enhancements along Constitution Avenue and Madison Drive would introduce uniform street
22 furnishings (such as lighting fixtures and trash receptacles) and visual enhancement to streetscapes around
23 the project area.

24 The implementation of the National Mall Plan would result in a more sustainable National Mall with
25 improved visitor experiences (education, venues for civic and recreational activities, visitor facilities,
26 improved visual quality); and improved access for pedestrians, people with disabilities, bicycles, and
27 multi-modal transportation; and more sustainable approaches to resource management, stormwater
28 management, Park management/event management, and utilities. Smaller turf areas would be renovated
29 or restored more frequently improving visitor access and more equitably scheduling multiple uses.

30 Construction activity resulting from these projects would result in temporary disruptions to certain areas
31 of the Park which could inconvenience visitors and detract from visitor experience. Depending on the
32 duration and extent of construction, the number of affected visitors would vary.

33 These past, present, and reasonably foreseeable future actions would enhance the condition and visual
34 quality of existing Park features and create new attractions and destinations for visitors. Despite the
35 increased visitation and more intensive use of the Park resources resulting from these projects, there
36 would be beneficial impacts to visitor use and experience.

37 As described above, the implementation of the no action alternative would result in long-term minor
38 adverse impacts to visitor use and experience. The long-term minor adverse impacts of this alternative, in
39 combination with the beneficial impacts of other past, present, and reasonably foreseeable future actions,
40 would result in a long-term beneficial cumulative effect. Construction activity resulting from these
41 projects would result in a short-term minor to moderate adverse cumulative effect on visitor use and
42 experience depending on the duration and extent of construction.

43

1 CONCLUSION

2 Under the no action alternative, long-term minor adverse impacts to visitor use and experience would
3 result from annual temporary closures of portions of the project area and the worn appearance of the turf
4 panels caused by intense visitor use. There would be no effect on visitor use and experience resulting
5 from continuance of current turf management policies related to special events. The long-term minor
6 adverse impacts of this alternative, in combination with the beneficial impacts of other past, present, and
7 reasonably foreseeable future actions, would result in a long-term beneficial cumulative effect. There
8 would be a short-term minor to moderate adverse cumulative effect on visitor use and experience
9 resulting from construction activity depending on the duration and extent of construction.

10 Impacts of Alternative 2: the Action Alternative

11 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
12 and provide a comprehensive irrigation system in the project area. The action alternative explores
13 different options for new curb and gutter profiles around the turf panels, new soil profiles, and a new
14 irrigation system.

15 CURB AND GUTTER OPTIONS

16 Options A1, A2, and A3 present three curb and gutter options that would serve as a separation elements
17 between the walkways and turf.

18 **Option A1:** This option would introduce a 90-degree corner to the turf panels and a new “block”
19 profile granite curb and gutter system. The turf panels would be raised by 6 inches. The new
20 corner and curb profile would deter visitors from walking on the turf panels, thereby helping to
21 reestablish and maintain the quality of the lawn. The curb system would also enhance the visual
22 distinction between turf and walkway. Several 6-foot-long ramps would be required around the
23 turf panels at 50 to 100 foot intervals to accommodate accessibility and maintenance access
24 throughout the project area. Option A1 would restrict visitor use of the turf panels relative to
25 current conditions, but ramps would ensure ADA/ABAAS compliance. However, the presence of
26 numerous ramps throughout the project area would have adverse effects on visual resources by
27 compromising views and vistas within the project area. The addition of numerous ramps at each
28 turf panel throughout the Mall would result in noticeable changes to the visual character of the
29 project area to most visitors, resulting in a long-term moderate adverse impact on visitor use and
30 experience.

31 **Option A2 (Preferred):** This option would introduce 15-foot-radius corners at each turf panel and
32 a new 18-inch-wide sloped granite curb and gutter. The turf panels would be raised by 2 to 3
33 inches. Similar to Option A1, the new corner condition and curb profile would enhance the
34 overall appearance of the lawn in the project area and would create a clear visual edge around the
35 turf panels resulting in long-term beneficial impacts to visitor experience. Flush granite curb cuts
36 at regular intervals would ensure compliance with ADA accessibility standards. In contrast to
37 Option A1, the corner radius would reduce the likelihood of visitors cutting the corners across the
38 panels and the 15-foot radius would reduce the tendency of visitors to cut across the corners of
39 the panels and form new social trails, resulting in long-term beneficial impacts to visitor use.

40 **Options A3:** This option would introduce 25-foot-radius corners at each turf panel corner and a
41 new “V”-shaped granite curb and gutter. Similar to Options A1 and A2, the new corner condition
42 and curb profile would enhance the overall appearance of the lawn in the project area and create a
43 clear visual edge at the turf panels, resulting in long-term beneficial impacts to visitor experience.
44 Since this option does not raise the turf panels and maintains relatively flush around the curb
45 system, universal accessibility in the project area would be maintained.

1 **SOIL RECONSTRUCTION PROFILES**

2 All three soil reconstruction profiles (Options B1, B2, and B3) would improve the soils in the project
3 area, alleviating compaction and contributing to the health of the turf. Implementation of any option
4 would result in long-term beneficial impacts on visitor experience because of the enhanced visual quality
5 of the turf panels.

6 **IRRIGATION OPTIONS**

7 The proposed irrigation systems and components (including water distribution Options C1 – C4, water
8 supply Options D1 and D2, and water storage Options E1 and E2) would contribute to healthier, more
9 visually appealing turf panels. All corresponding infrastructure and equipment would either be located
10 underground or would not be visually conspicuous, and all watering activity would occur at night. Due to
11 the overall enhancement of the visual character of the project area, the implementation of any irrigation
12 system would have long-term beneficial impacts to visitor use and experience.

13 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

14 Strategies to protect the integrity of the turf and soil by managing elements of the use of the project area
15 for special events would allow special events to occur, while providing a mechanism for the NPS to
16 manage the high intensity and duration of multiple events together and ensure that there is adequate
17 recovery time between events for the turf to be restored. Event management modifications may reduce the
18 number of large permitted events and the size and number of structures allowed during these events.
19 Potential new management policies to protect the turf during special events would inherently restrict use
20 of the project area, in terms of timing and duration of special events, and would require applicants to plan
21 accordingly. In addition, due to the ubiquity of open space within the National Mall and in areas
22 immediately adjacent to the project area, there would not be a noticeable effect on visitor use or the
23 ability to use the project area for First Amendment rights. Event management modifications would reduce
24 the number of permits issued for special events in the project area, but these changes would not
25 appreciably limit critical characteristics of the visitor use or experience for most visitors, so resultant
26 impacts would be long-term minor and adverse.

27 **SHORT-TERM IMPACTS**

28 Implementation of any curb, soil, or irrigation option would have the same scope of construction activity
29 and duration. During construction, most visitors would be affected by the closure of approximately half of
30 the turf panels, the noticeable presence of construction equipment, and the disruption of circulation within
31 the project area. As a result, there would be short-term moderate adverse impacts to visitor use and
32 experience.

33 **CUMULATIVE IMPACTS**

34 Impacts to visitor use and experience from past, present, and reasonably foreseeable future actions would
35 be similar to those under the no action alternative. When combined with the long-term beneficial impacts
36 to visitor use and experience resulting from implementation of the action alternative, there would be a
37 long-term beneficial cumulative effect.

38 Short-term impacts would vary based on the location and duration of construction. The streetscape
39 improvements along Constitution Avenue and Madison Drive would result in the presence of construction
40 equipment and the disruption of access and circulation around the project area. The construction of the
41 Potomac Park Levee and the rehabilitation of the Lincoln Memorial Reflecting Pool and surrounding area
42 could coincide with the reconstruction of the turf and soil in the project area which would adversely affect
43 visitor use and experience within the Park. Any adverse impacts would be mitigated by the relatively
44 short construction period for the turf and soil reconstruction (approximately 18 months) and extensive
45 NPS notification of Park area closures. When combined with the short-term moderate adverse impacts to

1 visitor use and experience resulting from construction activity of the action alternative, there would be a
2 short-term moderate adverse cumulative effect.

3 **CONCLUSION**

4 Curb Options A2 and A3 would all enhance the overall appearance of the lawn in the project area by
5 creating a clear visual edge between the walkways and turf panels, deterring visitors from walking on the
6 lawn, and protecting the health and visual quality of the grass. Each option would result in long-term
7 beneficial impacts to visitor use and experience. Option A1 would require numerous ramps throughout
8 the project area for accessibility, which would result in a long-term moderate adverse impact on visitor
9 use and experience primarily due to the change in visual character of the Mall.

10 Implementation of any soil profile would improve the soils in the project area, alleviating compaction and
11 contributing to the health of the turf, resulting in long-term beneficial impacts on visitor experience. The
12 proposed irrigation systems and components also would contribute to healthier, more visually appealing
13 turf panels. Since corresponding infrastructure would not be visible, implementation of any irrigation
14 system would have long-term beneficial impacts to visitor use and experience.

15 Implementation of any curb, soil, or irrigation option would have the same scope of construction activity
16 and duration. During construction, there would be short-term moderate adverse impacts to visitor use and
17 experience due to the closure of approximately half of the turf panels, the noticeable presence of
18 construction equipment, and the disruption of circulation within the project area.

19 The overall long-term beneficial impacts of this alternative, in combination with the beneficial impacts of
20 other past, present, and reasonably foreseeable future actions, would result in a long-term beneficial
21 cumulative effect. The short-term moderate adverse impacts to visitor use and experience resulting from
22 construction activity of the action alternative, in combination with the short-term moderate adverse of
23 other past, present, and reasonably foreseeable future actions, would result in a short-term moderate
24 adverse cumulative effect.

1 **Public Safety**

2 **METHODOLOGY AND ASSUMPTIONS**

3 The analysis of public safety considers risks to Park employees and the general public that are associated
4 with hazards in the project area as well as the proposed reconstruction of turf and soils on the National
5 Mall and surrounding area. Impacts for this resource area were analyzed qualitatively, using information
6 provided by the project engineers and Park service staff familiar with the current operations and
7 maintenance within the project area.

8 **STUDY AREA**

9 The proposed actions would be located on the Mall between 3rd and 14th Streets NW and Madison and
10 Jefferson Drives. The study area for the public safety impact analysis includes the project area as well as
11 the surrounding pathways and attractions. Projects and plans in the immediate vicinity of the project area,
12 particularly those that would introduce construction equipment and temporary closures, are considered in
13 the cumulative impact analysis.

14 **IMPACT THRESHOLDS**

15 The impact intensities for the assessment of impacts on public safety follow. Where impacts on public
16 safety become moderate, it is assumed that current visitor satisfaction and safety levels would begin to
17 decline, and some of the Park's long-term visitor goals would not be achieved.

18 Negligible: The impact on public safety would not be measurable or perceptible.

19 Minor: The impact on public safety would be measurable or perceptible, but it would be limited to
20 a relatively small number of visitors or employees at localized areas.

21 Moderate: The impact on public safety would be sufficient to cause a change in accident rates at
22 existing low-accident locations or in areas that currently do not exhibit noticeable accident trends.

23 Major: The impact on public safety would be substantial. Accident rates in areas usually limited to
24 low-accident potential are expected to substantially increase in the short term and long term.

25 Duration: Short-term impacts are those lasting less than one year; long-term impacts are those
26 lasting longer than one year.

27 **Impacts of Alternative 1: the No Action Alternative**

28 The no action alternative represents a continuation of the existing management, operations, and
29 maintenance of the National Mall turf panels and surrounding walkways.

30 **TURF AND SOIL MAINTENANCE**

31 Under the no action alternative, there would be no changes to the turf panels or soil and there would be no
32 impacts to public safety relative to current conditions. The existing lack of separation between the turf
33 and walkways represents an adverse, but negligible long-term impact to public safety due to the irregular
34 walking surface and migration of gravel into the turf panels. The reported number of incidents in the
35 project area due to tripping would remain low. The project area would continue to be mostly accessible,
36 with no barriers between the turf panels and walkways except in the areas where the existing steel edging
37 has been exposed and height exceeds accessibility standards.

38 The continued use of the current irrigation and water distribution system would continue to have no effect
39 on public safety.

40

1 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

2 Under the no action alternative, current policies related to intensity and duration of use of the turf panels
3 would continue and staff and visitors would be subject to the current regulations for site access, staging,
4 risk management, comfort facilities, first aid, security, transportation, and cost recovery. There would be
5 no effect on public safety relative to current conditions.

6 **CUMULATIVE IMPACTS**

7 Construction activity resulting from present and future construction (including the MLK Memorial,
8 Dwight D. Eisenhower Memorial, AVDLM, Potomac Park Levee Project, Jefferson Seawall
9 Rehabilitation, Lincoln Memorial Reflecting Pool Rehabilitation, NMAAHC, and roadway projects)
10 would result in temporary disruptions to certain areas of the Park with potential for injury and risk to Park
11 staff and the public. However, construction contractors would follow approved NPS health and safety
12 plans, so risks to Park staff and members of the public would be minimized. Following construction, the
13 operations and maintenance of these projects would not pose any risk to public safety.

14 Perimeter security projects would enhance public safety at attractions on the National Mall that are
15 adjacent to the project area.

16 The implementation of the National Mall Plan would enhance pedestrian movement, lighting, and
17 accessibility across the National Mall, minimizing risks to public safety.

18 These past, present, and reasonably foreseeable future actions would enhance pedestrian movement,
19 lighting, and accessibility and would result in beneficial impacts to public safety.

20 As described above, the implementation of the no action alternative would result in long-term negligible
21 adverse impacts to public safety. The long-term negligible adverse impacts of this alternative, when
22 combined with the beneficial impacts of other past, present, and reasonably foreseeable future actions,
23 would result in long-term negligible adverse cumulative impacts to public safety.

24 **CONCLUSION**

25 Under the no action alternative, there would be long-term negligible adverse impacts to public safety due
26 to the current lack of separation between the turf and walkways and migration of gravel into the turf
27 panels that creates an irregular walking surface. The long-term negligible adverse impacts of this
28 alternative, when combined with the beneficial impacts of other past, present, and reasonably foreseeable
29 future actions, would result in long-term negligible adverse cumulative impacts to public safety.

30 **Impacts of Alternative 2: the Action Alternative**

31 The action alternative proposes several improvements to rehabilitate the turf, alleviate soil compaction,
32 and provide a comprehensive irrigation system for the turf panels in the project area.

33 **CURB AND GUTTER OPTIONS**

34 Options A1, A2, and A3 present different edge conditions around the turf panels and vary in their
35 respective overall effect to public safety within the project area.

36 **Options A1:** Option A1 would introduce a raised profile curb and gutter system and would
37 elevate the turf panels by several inches. Option A1 would reduce accessibility into the turf
38 panels, but regularly spaced ramps would ensure compliance with ADA/ABAAS. The raised
39 curbs would present a potential tripping hazard to visitors in the project area. The change to
40 public safety would be noticeable, but slight, and would not present a hazard greater than a
41 standard curb condition on any public street. As a result, long-term adverse impacts would be
42 minor.

1 **Option A2 (preferred) and A3:** Options A2 and A3 would introduce a new curb and gutter
2 system that would be universally accessible around the entire perimeter of the turf panels with a
3 small beveled grade change. As a result these options would have negligible to minor impacts on
4 public safety.

5 **SOIL RECONSTRUCTION PROFILES**

6 Option B1 (Preferred), B2, and B3 would have no effect on public safety following construction because
7 none of the options would result in any above-ground modifications.

8 **IRRIGATION OPTIONS**

9 The irrigation system components would be installed primarily underground, so there would be no effect
10 on public safety resulting from implementation of any water source (Option D1 or D2) or water storage
11 option (E1 or E2).

12 The water distribution system options (C1 – C4) vary in the number and type of sprinkler or quick-
13 coupler valves required. In all options, the sprinklers and valves would be recessed and activated mainly
14 at night during the watering of the turf panels. While the project area is open to the public 24 hours a day,
15 and the sprinklers and valves could potentially pose a tripping hazard, it is unlikely that their presence
16 would result in a measurable risk to public safety because relatively few people occupy the turf panels at
17 night, and even fewer would be present while they are being watered. Impacts resulting from the
18 implementation of options C1 and C3 and option C4 (preferred) would be comparable with negligible
19 effects to public safety. Option C2 poses an additional risk to the public and Park staff because the system
20 utilizes high-pressure sprinklers which could cause injury to people who come in contact with the water
21 streams. Therefore, implementation of option C2 would result in long-term minor adverse impacts to
22 public safety.

23 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

24 The proposed modifications to turf management related to special events would have no effect on public
25 safety because the operational policies would ensure that the condition of permits allow for the NPS to
26 impose “reasonable restrictions on the use of temporary structures in the interest of protecting Park areas,
27 traffic, and public safety” (NPS 2010c). In addition, NPS NCR requirements for special events would
28 have a provision for on-site supervision and security to enhance public safety utilizing NPS and U.S. Park
29 Police staff, as needed (NPS 2010c).

30 **SHORT-TERM IMPACTS**

31 Implementation of the action alternative would result in short-term moderate adverse impacts to public
32 safety during the construction period. However, construction workers and employees would follow an
33 approved health and safety plan which would incorporate all applicable regulations. Barriers and signs
34 would be used around the construction sites to divert the public from potentially dangerous situations. In
35 addition, public announcements would be made on the Park website and in the media to alert the public to
36 the construction schedule and locations. Therefore, short-term impacts would be mitigated to minor
37 adverse.

38 **CUMULATIVE IMPACTS**

39 Impacts to public safety resulting from past, present, and reasonably foreseeable future actions would be
40 similar to those under the no action alternative and would have beneficial impacts. When combined with
41 the negligible impacts resulting from the implementation of curb Options A2 or A3, water distribution
42 Options C1, C3, and C4, and any soil profile, water source, or water supply options, there would be a
43 long-term beneficial cumulative impact to public safety.

1 When combined with the long-term minor adverse impacts resulting from the implementation of curb
2 Option A1 or water distribution Option C2, there would be a long-term minor adverse cumulative impact
3 to public safety.

4 Construction activity resulting from present and future construction would result in temporary disruptions
5 to certain areas of the Park, but risks to Park staff and members of the public would be negligible. When
6 combined with the short-term negligible impacts to public health and safety resulting from construction
7 activity of the action alternative, there would be a short-term negligible cumulative effect.

8 **CONCLUSION**

9 Under the action alternative, there would be long-term minor adverse impacts on public safety resulting
10 from the implementation of the raised curb and gutter profile in Option A1. However, implementation of
11 Option A2 or A3 or any of the soil profile or irrigation options would result in negligible impacts to
12 public safety. Since soil profile options and irrigation system components are located mainly
13 underground, implementation of any soil profile option (Options B1 – B3), water source (Option D1 or
14 D2) or water storage option (E1 or E2) would have no effect on public safety. Impacts resulting from the
15 implementation of Options C1, C3, and C4 would also have no effect on public safety, but Option C2
16 would utilize high-pressure sprinklers which would result in long-term minor adverse impacts to public
17 safety.

18 Implementation of any of the soil reconstruction options (B1, B2, or B3), water source options (D1 or
19 D2), and water storage options (E1 or E2) would have no effect on public safety because none of these
20 proposed actions would have any above-ground components that would pose a threat to public safety.
21 Curb Options A2 or A3, water distribution Options C1, C3, and C4, would result in long-term negligible
22 adverse impacts to public safety. Implementation of curb Option A1 would result in a long-term minor
23 adverse impact to public safety due to the raised curbs, which would present a potential tripping hazard to
24 visitors in the project area. Implementation of Option C2 would result in a long-term minor adverse
25 impact to public safety due to the high pressure of the components that could injure staff or visitors.
26 Short-term impacts during construction of any of the proposed actions would be mitigated to minor
27 adverse.

28 Cumulative impacts resulting from past, present, and reasonably foreseeable future actions analyzed
29 under the no action alternative would have beneficial impacts. When combined with the negligible
30 impacts resulting from the implementation of curb Options A2 or A3, water distribution Options C1, C3,
31 and C4, and any soil profile, water source, or water supply options, there would be a long-term beneficial
32 cumulative impact to public safety. When combined with the long-term minor to moderate adverse
33 impacts resulting from the implementation of curb Option A1 or water distribution Option C2, there
34 would be a long-term minor adverse cumulative impact to public safety. There would be a short-term
35 negligible cumulative effect on public health and safety resulting from construction activity.

1 Park Management and Operations

2 METHODOLOGY AND ASSUMPTIONS

3 Park management and operations, for the purpose of this analysis, refers to the quality and effectiveness
4 of the Park staff to maintain and administer Park resources and facilities and to provide for an effective
5 visitor experience. This includes an analysis of the condition and maintenance of the facilities and
6 concessioners used to support the operations of the Park. Facilities included in this project include the
7 Park itself and the sites within the study area. Park staff who are knowledgeable of these issues were
8 members of the planning team that evaluated the impacts of each alternative. The impact analysis is based
9 on the current description of Park operations presented in “Chapter 3: Affected Environment” of this
10 document.

11 STUDY AREA

12 The proposed actions would be located on the Mall between 3rd and 14th Streets NW and Madison and
13 Jefferson Drives. The study area for the Park operations and maintenance impact analysis includes the
14 larger area of the National Mall and other lands managed by the National Mall and Memorial Parks. Park
15 management and operations encompasses staffing, facilities, and budget.

16 IMPACT THRESHOLDS

17 Impact thresholds are as follows.

18 Negligible: Park operations would not be impacted or the impact would not have a noticeable or
19 appreciable impact on Park operations.

20 Minor: Impacts would be noticeable, but would be of a magnitude that would not result in an
21 appreciable or measurable change to Park operations.

22 Moderate: Impacts would be readily apparent and would result in a substantial change in Park
23 operations that would be noticeable to staff and the public. Mitigation could be required and may be
24 effective.

25 Major: Impacts would be readily apparent and would result in a substantial change in Park
26 operations that would be noticeable to staff and the public and would require the Park to readdress
27 its ability to sustain current Park operations.

28 Duration: Short-term impacts are those lasting less than one year; long-term impacts are those
29 lasting longer than one year.

30 Impacts of Alternative 1: the No Action Alternative

31 The no action alternative represents a continuation of the existing management, operations, and
32 maintenance of the National Mall turf panels and surrounding walkways.

33 TURF AND SOIL MAINTENANCE

34 Under the no action alternative, the turf panels would continue to be maintained seasonally according to
35 the current schedule for aeration, fertilization, and reseeding. The Park would continue to alternate
36 maintenance of the turf panels by closing the project area in two sections (to the east and west of 7th
37 Street NW) every other year from mid-September to the end of March to allow the turf to rest. During this
38 rest period, NPS would continue to conduct winter maintenance including soil aeration, grading, soil
39 replacement, fertilization, reseeding, and irrigation. Maintenance during peak use periods (April –
40 October), including weekly mowing and edging, would continue. The current irrigation system would

1 continue to serve the project area, although the deficiencies would persist and the system would continue
 2 to function at a low and ineffectual, inadequate level. Potable water would continue to be the primary
 3 water source.

4 Frequent and intensive maintenance of the turf panels would continue to create a noticeable and
 5 substantial strain on Park staff and operating costs to mitigate against the effects of intense visitor use,
 6 resulting in long-term moderate adverse impacts to Park management and operations.

7 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

8 Under the no action alternative, turf management related to special events would continue as is. Special
 9 events would continue to be permitted through the Division of Park Programs at the NCR Headquarters
 10 and would be subject to the current regulations for site access, staging, risk management, comfort
 11 facilities, first aid, security, transportation, and cost recovery. There would continue to be no long-term
 12 management plan for regulating the timing and corresponding rest periods between events. Current use
 13 practices for special events would continue to create a noticeable strain on Park staff and operating costs
 14 to repair irrigation system components¹ and to mitigate against the effects of the large number of visitors,
 15 delivery trucks, and staging equipment on the turf in the project area.

16 The no action alternative would result in long-term moderate adverse impacts to Park management and
 17 operations.

18 Policies and rules concerning special events and the use and placement of equipment and structures would
 19 likely continue to be inconsistently enforced, exacerbating the stress on the project area, and requiring
 20 more attention by staff. Although permit holders frequently use tent stakes greater than 18 inches, they are
 21 often required to install tree protection fencing to protect the tree root zone area; however, this permit
 22 requirement is not uniformly enforced.

23 **CUMULATIVE IMPACTS**

24 Implementation of the National Mall Plan and new projects (including the MLK Memorial, Dwight D.
 25 Eisenhower Memorial, AVDLM, Potomac Park Levee Project, Jefferson Seawall Rehabilitation, Lincoln
 26 Memorial Reflecting Pool Rehabilitation, and NMAAHC) would result in increases in Park staff and
 27 operating costs to support new structures and facilities, but the impacts would be offset by the
 28 implementation of energy-efficient components and sustainable systems.

29 Constitution Avenue and Madison Drive street improvements would enhance roadway conditions and
 30 introduce energy efficient features, which would reduce Park maintenance and operating costs.

31 Construction activity resulting from these projects would result in a short-term increase in responsibilities
 32 for NPS staff for supervision and oversight of contractors and construction crews.

33 These past, present, and reasonably foreseeable future projects would result in short-term increases in
 34 Park staff responsibilities and operating costs. However, in the long term, the Park systems and facilities
 35 would be improved with greater efficiency, sustainability, and reliability.

36 As described above, the implementation of the no action alternative would result in long-term moderate
 37 adverse impacts to Park management and operations. When combined with the long-term beneficial
 38 impacts of other past, present, and reasonably foreseeable future actions, the no action alternative would
 39 result in a long-term minor adverse cumulative effect. Construction activity resulting from these actions
 40 would result in a short-term minor adverse cumulative effect on Park management and operations.

41

¹ While event management guidelines stipulate that stakes are only permitted to a depth of 18 inches, stakes up to 48 inches are used regularly and have damaged underground irrigation system pipes.

1 **CONCLUSION**

2 The no action alternative represents the continuation of current maintenance efforts and operations for the
3 project area. Frequent and intensive maintenance of the turf panels and soil conditions would continue to
4 create a noticeable and substantial strain on Park staff and operating costs to mitigate against the effects
5 of intense visitor use, resulting in long-term moderate adverse impacts to Park management and
6 operations.

7 Current use practices for special events would continue to create a noticeable strain on Park staff and
8 operating costs to mitigate against the effects of the large number of visitors, delivery trucks, and staging
9 equipment on the turf in the project area. The no action alternative would result in long-term moderate
10 adverse impacts to Park management and operations.

11 The long-term moderate adverse impacts resulting from the no action alternative, when combined with
12 the long-term beneficial impacts of other past, present, and reasonably foreseeable future actions, would
13 result in a long-term minor adverse cumulative effect. Construction activity resulting from these actions
14 would result in a short-term minor adverse cumulative effect on Park management and operations.

15 **Impacts of Alternative 2: the Action Alternative**

16 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
17 and provide a comprehensive irrigation system in the project area. The action alternative explores
18 different options for new curb and gutter profiles around the turf panels, new soil profiles, a new
19 irrigation system, and special events management modifications.

20 Under the action alternative, the turf panels would continue to be maintained seasonally according to the
21 current schedule for aeration, fertilization, and reseeded. Peak use period maintenance (April – October)
22 would continue including cutting the grass to a 3-inch height every five to seven days. However, under
23 the action alternative, additional grounds keeping would be required to maintain the edges of the turf
24 panels and the integrity of the curb and gutter systems.

25 **CURB AND GUTTER OPTIONS**

26 Options A1, A2, and A3 present three curb and gutter options, each serving as a separation element
27 between the walkways and turf to mitigate against soil compaction and worn turf. All three options would
28 require additional staff to maintain the edges of the turf panels and the integrity of the curb and gutter
29 system. Options A1, A2, and A3 have minor differences relative to each other.

30 **Option A1:** This curb option would prevent the liberal migration of gravel into the turf panels and
31 would reestablish and maintain the quality of the lawn. However, this option would require
32 numerous ramps to be installed around the turf panels for accessibility which would have a
33 noticeable effect on Park maintenance, but not of a magnitude that would not result in an
34 appreciable or measurable change to Park operations. Implementation of this option would result
35 in a long-term minor adverse impact to Park management and operations.

36 **Option A2 (preferred):** Similar to Option A1, this curb option would prevent the liberal
37 migration of gravel into the turf panels resulting in long-term beneficial impacts to Park
38 management and operations by eliminating the need for Park staff to constantly tend to migrating
39 gravel. This option would also reestablish and maintain the quality of the lawn, reduce the overall
40 amount of turf, and soften the corners to reduce the formation of social trails.

41 **Options A3:** As with Option A2, this option would also reduce the overall amount of turf and
42 would soften the corners to reduce the formation of social trails. However, this curb option would
43 be the least effective of the three options in preventing gravel migration from the adjacent
44 pathways.

1 All three options would require additional staff to maintain the edges of the turf panels and the integrity of
2 the curb and gutter system, with Option A2 offering a slight advantage to Park management and
3 operations. The adverse impacts resulting from the implementation of any curb option would not create an
4 appreciable or measurable change to Park operations and would be long-term minor and adverse.

5 **SOIL RECONSTRUCTION PROFILES**

6 Implementation of any of the soil profile reconstruction options (B1, B2, and B3) would result in
7 increased costs, but each varies relative to maintenance responsibilities. Option B1 (preferred) and B2
8 would require the same operating costs and level of maintenance following construction. Impacts would
9 not create an appreciable or measurable change to Park operations and would be long-term adverse and
10 minor. Option B3 would require the most intensive level of maintenance because the soil profile is
11 comparable to what is used at golf courses and professional athletic fields. The resultant effect on the Park
12 would be noticeable and would create an appreciable and measurable change to Park operations, yielding
13 a long-term moderate adverse effect on Park management and operations.

14 **IRRIGATION SYSTEM OPTIONS**

15 Each option would require the installation and operation of one or two pump stations (either a single
16 pump station in the center of the project area or two pump stations, one at each end of the project area),
17 which would result in long-term minor adverse impacts due to the associated maintenance, inspection,
18 and repair required for the equipment.

19 **WATER DISTRIBUTION**

20 All four water distribution options (C1 – C4) would vary slightly in their effects.

21 **Option C1:** Option C1 would utilize a manual irrigation system with a single row of quick
22 couplers installed down the center of the turf panels. This option would provide maintenance staff
23 more flexibility and efficiency in controlling where they water. This distribution system would
24 require the least amount of piping and lowest amount of long-term maintenance and repair.
25 However, Option C1 is a manual system and would have the largest Park maintenance
26 requirement.

27 **Option C2:** This option would utilize an automatic high-pressure sprinkler system installed at the
28 edges of the turf panels. Option C2 would not require staff for manual application and the
29 automatic system would allow for more efficient watering and coverage of the turf panels. The
30 valves would require inspection to maintain their operability.

31 **Option C3:** This option would combine a manual and automatic irrigation system that would
32 include automatic sprinklers down the edges of the turf panels and a manual arrangement of quick
33 couplers down the center. This option would combine the benefits and costs of both Options C1
34 and C2. However, this option would require the greatest amount of piping and higher costs for
35 maintenance and repairs.

36 **Option C4 (preferred):** This option would utilize an automatic sprinkler system installed in three
37 rows along the turf panels. This option would not require staff for manual application and the
38 automatic system would allow for more efficient watering and coverage of the turf panels. The
39 valves would require inspection to maintain their operability.

40 Each option varies in its impact to Park staff and maintenance. However, none of the water distribution
41 options would result in an appreciable or measurable change to Park maintenance or operations so the
42 resultant effect of implementing Options C1 – C4 would be long-term minor and adverse.

43

1 WATER SUPPLY

2 Options D1 and D2 provide alternative water supply options to potable city water, which would create a
3 long-term beneficial impact to Park management and operations. Both options would provide further
4 beneficial impacts by removing water from the stormwater system during times of excess runoff.
5 However, to channel stormwater drainage into the project area from adjacent properties, the NPS would
6 need to negotiate administrative agreements with other property owners, creating short-term adverse
7 impacts to Park management.

8 WATER STORAGE

9 The addition of an on-site water storage system would result in increased costs and maintenance
10 responsibilities. However, all water storage options would result in increased irrigation system efficiency
11 and would reduce the reliance on potable city water. Any adverse impacts to Park maintenance and
12 operations would be offset by long-term beneficial impacts resulting from increased system efficiency.
13 Both concrete box culverts (Option E1) and concrete cisterns (Option E2, preferred) would provide
14 flexibility for maintenance and expansion in the future. Neither option would be deep enough to avoid
15 damage from tent stakes during special events so the NPS would need to implement no-stake areas to
16 protect the system.

17 TURF MANAGEMENT RELATED TO SPECIAL EVENTS

18 Turf management modifications related to special events, including the reduction of large permitted
19 events and the size and number of structures allowed during these events, as well as a carefully
20 considered range of recovery times for the turf between events, would result in long-term beneficial
21 impacts to Park management and operations. A reduction of large permitted events would reduce the costs
22 and administrative effort involved in permitting and would reduce the intensity of Park maintenance
23 required following special events for the restoration of the project area.

24 SHORT-TERM IMPACTS

25 Implementation of any curb, soil, or irrigation option would have the same scope of construction activity
26 and duration and the same noticeable, but slight short-term minor adverse effects to Park management and
27 operations due to disruption of the Park and requirements for construction activity coordination and
28 supervision.

29 CUMULATIVE IMPACTS

30 Impacts to Park management and operations from past, present, and reasonably foreseeable future actions
31 would be similar to those under the no action alternative and would be beneficial in the long-term but
32 would have short-term minor adverse impacts to Park management and operations. When combined with
33 the long-term minor adverse impacts of implementing any curb option (A1 – A3), soil profile Option B1
34 or B2, any water distribution option (C1 – C4), and the long-term beneficial impacts of implementing any
35 water supply or water storage option (D1 or D2, E1 or E2), there would be a long-term minor adverse
36 cumulative effect on Park management and operations.

37 The beneficial impacts of past, present, and reasonably foreseeable future actions, when combined with
38 the implementation of soil Option B3 and any of the other options, would result in a long-term moderate
39 adverse cumulative effect on Park management and operations.

40 Construction activity resulting from these actions would result in a short-term minor adverse cumulative
41 effect on Park management and operations.

42 CONCLUSION

43 The action alternative would introduce new curbs, soil profiles, and a new irrigation system resulting in
44 increases in Park maintenance responsibilities and operating costs to maintain the new components.

1 However, increases in Park maintenance responsibilities and operating costs would be offset by the
2 reliance on captured water instead of potable water for site irrigation. Implementation of any water supply
3 or water storage option (D1 or D2, E1 or E2) would have beneficial impacts on Park management and
4 operations. Implementation of any curb option (A1 – A3), soil profile Option B1 or B2, or any water
5 distribution option (C1 – C4) would have a long-term minor adverse impact. Implementation of Option
6 B3 would have a long-term moderate adverse impact. Modifications to turf management related to special
7 events would result in long-term beneficial impacts to Park management and operations because new
8 policies would reduce the costs and administrative effort involved in permitting and would reduce the
9 intensity of Park maintenance required following special events for the restoration of the project area.

10 Implementation of any curb, soil, or irrigation option would have the same scope of construction activity
11 and duration and the same noticeable, but slight short-term minor adverse effects to Park management and
12 operations.

13 The long-term adverse impacts ranging from minor to moderate resulting from implementation of the
14 action alternative, when combined with the long-term beneficial impacts of other past, present, and
15 reasonably foreseeable future actions, would result in a long-term minor adverse cumulative effect.
16 Construction activity resulting from these actions would result in a short-term minor adverse cumulative
17 effect on Park management and operations.

18

1 Utilities and Infrastructure

2 METHODOLOGY AND ASSUMPTIONS

3 STUDY AREA

4 The proposed actions would be located on the Mall between 3rd and 14th Streets NW and Madison and
5 Jefferson Drives. The study area for the utilities and infrastructure impact analysis includes the larger
6 utility network that services the project area as well as the B Street and New Jersey Avenue drainage area
7 for the combined sewer system, which is the receiving area for the turf panel stormwater runoff. Projects
8 in the immediate vicinity of the turf panels, particularly those that lie within this drainage area, are
9 considered in the cumulative impact analysis.

10 IMPACT THRESHOLDS

11 Impact thresholds are as follows.

12 Negligible: There would be no noticeable temporary or permanent disruption to utilities and the
13 serviced community.

14 Minor: The impact on the utility lines and the serviced community would not be substantial; utility
15 lines would be relocated or there would be increased loads on the utility (such as increased
16 stormwater runoff or demand of utility service), but there would be no noticeable disruption to the
17 serviced community during construction.

18 Moderate: The impact on the utility lines and the serviced community would be substantial; utility
19 lines would be relocated, or there would be noticeable increased loads on the utility and there would
20 be a noticeable disruption to the serviced community during construction. However, following the
21 construction phase, service to the community would be restored to its former state.

22 Major: The impact on the utility lines and the serviced community would be substantial, resulting
23 in permanent changes and diminished service experienced by the system and the community, and
24 markedly noticeable increased loads on the utility.

25 Duration: Short-term impacts are those lasting less than one year; long-term impacts are those
26 lasting longer than one year.

27 Impacts of Alternative 1: the No Action Alternative

28 The no action alternative represents a continuation of the existing utilities within the National Mall turf
29 panels and surrounding areas.

30 Under the no action alternative, all utilities within the project area would continue to function at adequate
31 levels except for the irrigation system. The irrigation system would continue to provide relatively
32 ineffectual water service to the turf panels due to the poor condition of the existing subsurface water
33 supply lines which cannot support adequate pressurization and which have been damaged by the weight
34 of vehicles and by special events tent stakes. The city potable water supply would continue to be used as
35 the primary water supply for the irrigation system.

36 In addition, due to compacted soils, the project area would continue to function as an impervious surface
37 and would continue to drain stormwater to the combined sewer system in amounts similar to what would
38 run off the site if it were completely paved, contributing to the potential for overflow events. However,
39 the volume of water the surface of the project area contributes to the combined sewer overflow during
40 storm events would be relatively small when compared to the context of impervious surface in the entire
41 District of Columbia. Therefore, the effects of the current conveyance of stormwater drainage to the
42 combined sewer system would continue to have a long-term minor adverse impact.

1 Due to the compromised state of the irrigation system, there would continue to be substantial disruptions
2 to the condition and capacity of the components which prevent the system from effectively watering the
3 turf panels, resulting in long-term moderate adverse impact to the irrigation system.

4 **CUMULATIVE IMPACTS**

5 Present and future construction on the National Mall and surrounding areas would introduce new facilities
6 and systems that would contribute cumulatively to utilities and infrastructure by creating additional
7 demand on the power, water, and sewer systems. However, none of the projects would introduce a
8 demand that would diminish the overall system capacity or service.

9 New construction and the addition of new paved surfaces would contribute cumulatively by adding
10 additional volume to the stormwater management system, although if new construction activities utilize
11 LEED techniques (i.e., green roofs) and if stormwater is harvested for reuse, there could be compounded
12 long-term beneficial impacts on both the stormwater and combined sewer systems by reducing the
13 amount of stormwater delivered to the combined sewer system.

14 These past, present, and reasonably foreseeable future actions would have no effect on water and power
15 systems and a minor adverse effect on stormwater and the combined sewer system.

16 As described above, the no action alternative would result in long-term minor adverse impacts to all
17 utilities and infrastructure in the project area except the irrigation system, which would result in a long-
18 term moderate adverse impact. The long-term minor to moderate adverse impacts of this alternative, in
19 combination with the beneficial impacts of other past, present, and reasonably foreseeable future actions,
20 would result in a long-term beneficial cumulative effect. Construction activity resulting from these
21 projects would result in a short-term minor to moderate adverse cumulative effect on utilities and
22 infrastructure depending on the duration and extent of construction and level of disruption to utility
23 service.

24 **CONCLUSION**

25 Under the no action alternative, due to the compromised state of the irrigation system, there would
26 continue to be substantial disruptions in irrigation service to the turf panels resulting in long-term
27 moderate adverse impacts. The current conveyance of stormwater drainage to the combined sewer system
28 would continue to contribute adversely to the stormwater management infrastructure system, resulting in
29 long-term minor adverse effects. New construction projects within the project area and surrounding area
30 would introduce new facilities and systems that have a cumulative negligible long-term adverse effect on
31 most utilities and infrastructure in the project area. The long-term minor to moderate adverse impacts of
32 the no action alternative, in combination with the beneficial impacts of other past, present, and reasonably
33 foreseeable future actions, would result in a long-term beneficial cumulative effect. Construction activity
34 resulting from these projects would result in a short-term minor to moderate adverse cumulative effect.

35 **Impacts of Alternative 2: the Action Alternative**

36 The action alternative proposes multiple options for a new system that would reduce overall wear on the
37 turf and increase permeability of the soil, with a comprehensive drainage system to harvest stormwater for
38 reuse onsite. Due to increased soil permeability and groundwater capture, implementation of the action
39 alternative would result in a reduction of stormwater runoff to the combined sewer system.

40 Implementation of the action alternative would have no effect on the power or telecommunication
41 infrastructure in and around the project area.

42

1 **CURB AND GUTTER OPTIONS**

2 Options A1, A2 (preferred), and A3 would capture stormwater runoff for reuse in irrigation of the turf
3 panels and result in similar long-term beneficial impacts.

4 **SOIL RECONSTRUCTION PROFILES**

5 Implementation of any soil profile option (B1, B2, or B3) would introduce enhancements to the soils in
6 the project area to alleviate and reverse the effects of compaction. Reconstruction of the soil profiles
7 would result in more pervious turf panels, would increase stormwater filtration into the soil, and would
8 reduce stormwater runoff from the turf panels. All options would result in a long-term beneficial effect on
9 the city's stormwater/combined sewer system.

10 Although any of the proposed soil profile options would percolate water more quickly and would have
11 increased storage capacity, any water collected into cisterns would have a second opportunity to be
12 "filtered" by plants.

13 There are minor differences in the soil profile options resulting from the depth and spacing of the
14 drainage and irrigation pipes, with Option B1 having drainage and irrigation lines spaced at 5-foot
15 intervals and 2.5 feet deep; B2 having drainage and irrigation lines at a 4-foot depth, but spaced at 10-foot
16 intervals; and Option B3 having very shallow drainage lines that could easily be damaged by tent stakes,
17 even if they are widely spaced. Given that allowable tents stakes can be up to 18 inches long, the
18 possibility exists for the drainage system to be compromised if the system were punctured by these stakes.
19 Event management policies would regulate usage of the site, site structures, and equipment, however, so
20 effects to the irrigation system would be negligible.

21 **IRRIGATION SYSTEM OPTIONS**

22 The implementation of any irrigation system would result in long-term beneficial impacts to the city
23 water supply system since the new system would not rely on the municipal system for primary service. In
24 addition, the recapture of stormwater and infiltration water in drain pipes below the turf would greatly
25 reduce/prevent water from being directed to DC Water's Blue Plains Water Treatment Plant and reduce
26 the contribution of stormwater to the combined sewer system. All options would result in a long-term
27 beneficial effect on the city's stormwater/combined sewer system and would be sympathetic with the
28 long-term control plan for reducing overflows of the combined sewer system. Each option would require
29 the installation and operation of one or two new subsurface pump houses, but the equipment would create
30 a negligible demand on the power supply. There are subtle differences between water distribution options
31 (manual versus automatic) that affect the efficiency of the water usage, but differences between options
32 are negligible and would not affect the larger municipal system.

33 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

34 Modifications to turf management related to special events, which includes the reduction of the number of
35 large permitted events and the size and number of structures allowed during these events, would greatly
36 reduce the likelihood that existing or new irrigation and drain lines would be damaged. These
37 modifications would also help prevent soil compaction and maintain soil permeability, which is a critical
38 element of managing stormwater quantity and implementing an effective irrigation system and which
39 would result in a slight but long-term beneficial impact to the irrigation system and to the District of
40 Columbia's stormwater and combined sewer systems. There would be no impacts to other utilities.

41 **SHORT-TERM IMPACTS**

42 There would be short-term adverse impacts to utilities during construction due to potential temporary
43 disruption of service. However, ground-disturbing activity would be conducted in accordance with

1 construction sequencing plans to be approved by the NPS to reduce impacts to utilities. Short-term
2 impacts would be minor.

3 **CUMULATIVE IMPACTS**

4 Cumulative impacts projects are the same as described for the no action alternative with new construction
5 projects having negligible effect on the capacity and service of utilities and infrastructure in the project
6 area and a long-term minor adverse impacts on the both the stormwater and combined sewer systems.
7 When combined with the long-term beneficial impacts to utilities and infrastructure resulting from
8 implementation of the action alternative if new construction activities utilize LEED techniques and if
9 stormwater from these projects is harvested for reuse, there would be a long-term beneficial cumulative
10 effect. Construction activity resulting from past, present, and reasonably foreseeable actions would result
11 in a short-term minor to moderate adverse cumulative effect.

12 **CONCLUSION**

13 Implementation of the action alternative would introduce new curbs and gutters, a reconstructed soil
14 profile, and an irrigation system that would enhance the turf and soils in the project area to alleviate and
15 reverse the effects of compaction and reduce stormwater runoff. All options would result in a long-term
16 beneficial impact on the city's stormwater/combined sewer system and would be sympathetic with the
17 long-term control plan for reducing overflows of the combined sewer system.

18 The implementation of any irrigation system would result in long-term beneficial impacts to the city
19 water supply system since the new system would not rely on the municipal system for primary service.
20 There are subtle differences between water distribution options (manual versus automatic) that affect the
21 efficiency of water usage, but differences between options are negligible and would not affect the larger
22 municipal system. Modification to turf management related to special events would greatly reduce the
23 likelihood that existing or new irrigation and drain lines would be damaged and would result in a slight,
24 but long-term beneficial impact to the irrigation system and to the city's stormwater and combined sewer
25 system.

26 There would be short-term adverse impacts to utilities during construction due to potential temporary
27 disruption of service. However, ground-disturbing activity would be conducted in accordance with
28 construction sequencing plans to be approved by the NPS to reduce impacts to utilities. Short-term
29 impacts would be minor.

30 When combined with the long-term beneficial impacts to utilities and infrastructure resulting from
31 implementation of the action alternative if new construction activities utilize LEED techniques and if
32 stormwater from these projects is harvested for reuse, there would be a long-term beneficial cumulative
33 effect. Construction activity resulting from past, present, and reasonably foreseeable actions would result
34 in a short-term minor to moderate adverse cumulative effect.

1 Soils

2 METHODOLOGY AND ASSUMPTIONS

3 For soil resources, potential impacts were assessed based on limitations associated with the soils and the
4 extent of possible disturbance. Impact analysis and the conclusions for possible impacts to the resources
5 were based on a geotechnical analysis of the project area, review of existing literature and soil and
6 topography maps, and information provided by the NPS and other agencies. This section assesses the
7 potential effects of the turf and soil reconstruction in the project area.

8 STUDY AREA

9 The proposed actions would be located on the Mall between 3rd and 14th Streets NW and Madison and
10 Jefferson Drives and represents the area of analysis. Cumulative projects for this topic include those
11 projects immediately adjacent to the Mall.

12 IMPACT THRESHOLDS

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

14 Negligible: Impacts on soils would be slight and largely unnoticeable compared to healthy native
15 soils typical of the soil type and profile. Any effects on productivity, compaction, infiltration,
16 subsidence, or erosion potential would not be measurable.

17 Minor: Impacts on soils would be noticeable compared to healthy native soils typical for the soil
18 type and profile. Any effects on productivity, compaction, infiltration, subsidence, or erosion
19 potential would be measurable but localized to a small area.

20 Moderate: Impacts on soils would be readily apparent compared to healthy native soils typical for
21 the soil type and profile. Any effects on productivity, compaction, infiltration, subsidence, or
22 erosion potential would be measurable and would cover several acres.

23 Major: Impacts on soils would substantially alter healthy native soils typical for the soil type and
24 profile. Any effects on productivity, compaction, infiltration, subsidence, or erosion potential would
25 be measurable and would affect a relatively large area (more than 5 acres).

26 Duration: Short-term impact to soils would occur during the construction activities. Long-term
27 impacts to soils would extend after completion of the project.

28 Impacts of Alternative 1: the No Action Alternative

29 The no action alternative represents a continuation of the existing operations and maintenance of the turf
30 panels on the National Mall.

31 As a result of the no action alternative, intense visitor use on the National Mall, including recreational
32 activities, special events, demonstrations, and general visitor use, would continue to degrade the turf and
33 compact the soil on the turf panels in the project area. The lack of curbs and gutters would allow existing
34 social trails to continue to be used by visitors. Soil under these social trails is compacted and exposed to
35 erosion from stormwater and result in long-term moderate adverse impacts.

36 Soil permeability and runoff would continue to be varied, but generally poor within the project area. Soil
37 drainage would continue to occur at a low rate throughout the project area, resulting in flooding of
38 portions of the turf panels during rain events, and areas that would remain extremely dry during droughts.
39 There would be long-term minor to moderate adverse impacts to soils resulting from the variable soil
40 permeability and runoff and from poor soil drainage in the project area. Lack of permeability in the soil
41 would continue to make it difficult to attain desired turf conditions. Winter maintenance would continue,

1 including soil aeration, grading, soil replacement, and irrigation. However, the beneficial impacts
2 resulting from winter maintenance would continue only until the start of peak visitor season. Continuing
3 to rely on the poorly functioning irrigation systems would also result in long-term minor to moderate
4 adverse effects, since the soil would not receive adequate moisture and would be further prone to
5 compaction.

6 Turf management strategies related to special events, during which tents and structures are constructed on
7 the turf panels, would continue to occur with long durations and high visitation causing severe soil
8 compaction. Special events permitting would continue to allow the use of tents and other structures that
9 cause physical wear and abrasion of the turf and soil and soil compaction, often resulting in areas of bare
10 earth, minimal turf coverage, and impermeable soil.

11 Continuation of the no action alternative would result in the further degradation of soils and compaction
12 in the project area of measurable consequence; there would be long-term moderate adverse impacts
13 resulting from intense visitor use in the project area.

14 **CUMULATIVE IMPACTS**

15 Past, present, and reasonably foreseeable future actions, such as construction of the NMAAHC, would
16 remove soil from the project areas and could increase the number of visitors using the turf panels.
17 However, the soil removal does not impact the turf panel soil resources, and the number of additional
18 visitors congregating on the turf panels would not be noticeable. Impact to soil resources from cumulative
19 projects would be long-term negligible to minor and adverse due to the permanent removal of soils to
20 allow for construction.

21 As described above, the implementation of the no action alternative would result in long-term moderate
22 adverse impacts to soils. The long-term moderate adverse impacts of this alternative, in combination with
23 the long-term negligible to minor adverse impacts of other past, present, and reasonably foreseeable
24 future actions, would result in a long-term moderate adverse cumulative effect.

25 **CONCLUSION**

26 Implementation of the no action alternative would result in long-term moderate adverse impacts to soil
27 resources due to continued compaction and erosion of soils from intense visitor use, causing further
28 erosion and exposure.

29 The long-term moderate adverse impacts of this alternative, in combination with the long-term negligible
30 adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a long-
31 term moderate adverse cumulative effect.

32 **Impacts of Alternative 2: the Action Alternative**

33 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
34 and provide a comprehensive irrigation system for the turf panels in the project area. Options within the
35 action alternative explore different edge conditions (curb and gutters) at the turf panels, soil profiles, and
36 irrigation systems.

37 The turf panels would continue to be maintained seasonally according to the current schedule for aeration,
38 fertilization, and reseeding. Peak use period maintenance (April – October) would continue including
39 cutting the grass to a 3-inch height every five to seven days. However, under the action alternative,
40 additional grounds keeping would be required to maintain the edges of the turf panels and the integrity of
41 the curb and gutter systems.

42 Although the project involves disturbance to soil resources and either removal or amendments to soil
43 resources and some fine grading of topography, the final outcome of the project would result in long-term

1 beneficial impacts to soils since compaction would be reduced, social trails that exacerbate erosion and
2 compaction would be minimized or eliminated, and the soil under the turf panels would be better able to
3 resist compaction forces resulting from high amounts of visitor use and large public events and attendant
4 processes.

5 **CURB AND GUTTER OPTIONS**

6 All three curb and gutter options would result in some degree of overall long-term beneficial impacts,
7 although there would be negligible adverse impacts on soil immediately under the curbs and gutters, as
8 that soil would be permanently disturbed in those areas and the placement of the granite would require
9 compaction of the soil to install it.

10 Option A1 would maintain the right angles at the corners of the turf panels, making it more likely that
11 visitors would continue to wear social paths across the turf panels at these locations, even with the
12 introduced difference in elevation between the turf panels and the walks. Social paths tend to wear away
13 vegetation and expose and compact the soil underneath. The long-term impacts would be negligible to
14 minor and adverse.

15 The other curb configurations use gentler angles in the cross section and introduce arcs at the corners of
16 the turf panels. These angles and arcs would mimic those of the existing social paths, pulling the curb
17 back even further. The configurations would discourage the formation of social paths at the corners of the
18 panels and would create a long-term beneficial impact.

19 **SOIL RECONSTRUCTION PROFILES**

20 All of the soil reconstruction profiles would significantly alter the existing soils by reducing existing
21 compaction and by adding amendments and products to resist compacting forces and to aid in holding
22 moisture. Since the area was originally wetlands and was filled to create the land that is now the National
23 Mall, the existing soil is not original to the area. All options would remove soil from the panels, at least
24 temporarily, and artificially alter the soil profiles to create soils in which heavily used areas of turf grass
25 can be sustained. The impacts to soil resources would ultimately be long-term and beneficial for all of the
26 options, with improved perviousness, resistance to compaction, soil amendments to better support the
27 turf, and grading improvements to create positive drainage to capture and reuse stormwater. There are
28 minor differences in the soil profile options, however, and corresponding variations to the impacts.

29 **Option B1 (preferred):** This option would create the least alteration to the existing (mostly
30 anthropic) soil resources overall, making use of deep fractioning of the existing soil and
31 amending the top layer of soil in such a way that would result in improvements and long-term
32 beneficial impacts. The existing soil would be stockpiled and reused after amendment with
33 compost; deeper soil would be fractured in place to improve soil perviousness and to decrease
34 compaction. The final result would be a less-compacted soil that most closely resembles the
35 original soil, with a plastic mesh soil stabilizing product or expanded shale providing resistance to
36 future compaction. However, of the three soil reconstruction options, Option B1 would be the
37 most susceptible to recompaction.

38 **Option B2:** This option also includes reuse and stockpiling of existing soil, which would be
39 amended with sand to improve growing conditions for the turf grass. A layer of crushed aggregate
40 stone would also be added, in which the drainage lines would be placed. As with Option B1, the
41 top layers of soil would be reinforced by a plastic mesh soil stabilizing product or expanded shale
42 to improved resistance to compaction forces. The end result would be long-term beneficial
43 impacts to the soil resources, preserving much of the existing soils, although with an introduced
44 layer of aggregate.

1 **Option B3:** This option is the most engineered option for soil profile reconstruction and would
2 completely alter the existing soil profile beneath the turf panels. As with Options B1 and B2,
3 Option B3 would also use a plastic mesh soil stabilizing product or expanded shale to reinforce
4 the soil. In addition, however, Option B3 also calls for replacing 20 to 26 inches of existing soil
5 below the turf panels with the same sand soil used for professional sports fields. An impervious
6 tray of bentonite clay topped with aggregate that houses the drain lines would facilitate moisture
7 retention, distribute water storage, and create soil that would support turf panels most similar to
8 professional sports fields or golf course greens. The end result would be a long-term and
9 beneficial impact to the soil, as it would create a pervious soil profile that resists compaction, is
10 most appropriate for supporting turf growth, and stores harvested stormwater. With this option,
11 however, the level of engineering required and the complete replacement of the soil would
12 permanently and adversely alter the existing soils in a way the other options would not.

13 **IRRIGATION OPTIONS**

14 Each of the four irrigation options would use either two or three parallel rows of sprinkler heads or
15 couplers and associated piping down the lengths of the turf panels and also drainage pipes to capture
16 stormwater once it has filtrated through the upper layers of turf and soil. These drainage and irrigation
17 pipes would require installation. If they were installed independently of other project components such as
18 the soil profile reconstruction, they would cause significant disturbance to the soil resources and result in
19 short-term moderate adverse impacts that would be mitigated to negligible with soil and erosion control
20 measures. All irrigation options would help maintain moisture in the soil and would result in minor long-
21 term benefits to soils throughout the project area.

22 **WATER SUPPLY**

23 The options would impact soil resources only in the short term as the systems are put in place and roof
24 drainage rerouted or storm drains installed along with the curb and gutter systems. These construction
25 impacts would be short-term minor and adverse, and could be mitigated to negligible short-term impacts
26 by following sediment and erosion control guidelines consistent with those required by the District of
27 Columbia and by creating a sediment and erosion control plan. This plan would use sediment traps and
28 silt fencing to prevent soil erosion and sediment runoff caused by rain events during construction.

29 **WATER STORAGE**

30 There are two options for storing harvested stormwater—the use of pipes or cisterns. Both would result in
31 the disturbance and excavation of large amounts of soil to make room for the storage systems.

32 Beyond the excavation required to fine grade the walkways for positive drainage and to install curbs and
33 drains, installation of the storage pipes and cisterns would also require excavation of the walkways. Soil
34 would either need to be reused in the project or removed from the site. As a result of the need to excavate
35 and likely remove soil for both options, the impacts to soils would be long-term minor and adverse
36 immediately around the pipes and cisterns. Because of the need for the cisterns and the benefits they
37 would provide, however, their installation would result in overall benefits to the project area and its soil
38 resources by providing an efficient source for water and irrigation.

39 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

40 Modifications to turf management strategies—which include reducing the number of large permitted
41 events (particularly those events requiring erection of structures on the turf panels) and reducing the size
42 and number of the structures allowed during these events—would reduce the frequency of compacting
43 forces on turf panel soils and encourage continued soil permeability.

44

1 **SHORT-TERM IMPACTS**

2 All activities that comprise the action alternative would result in short-term minor adverse impacts to soil
3 resources during construction as soil would be disturbed and in some instances stockpiled onsite, and the
4 potential for erosion and soil loss would be greater. Impacts from construction would be mitigated to
5 negligible adverse, however, by following a sediment and erosion control plan. Such a plan includes
6 measures such as using silt fencing around the construction zone and hay bale sediment traps to prevent
7 sediment runoff during storm events.

8 **CUMULATIVE IMPACTS**

9 Cumulative project impacts would be the same as for the no action alternative. When combined with the
10 long-term beneficial impacts of the action alternative on soil resources, the long-term negligible adverse
11 impacts of other past, present, and reasonably foreseeable future actions would result in a long-term
12 beneficial cumulative effect.

13 **CONCLUSION**

14 The action alternative and its options would have a range of impacts on soil resources. All options require
15 construction and excavation of soil, which would cause a short-term minor adverse impact that can be
16 mitigated to negligible with appropriate site management and monitoring.

17 The curb and gutter options would not affect soil resources except for some compaction of soil
18 underneath the gutters, which is a long-term, but negligible, impact. The other two options would
19 discourage the need for the social paths, resulting in a long-term beneficial impact on soils.

20 All the new soil profiles would ultimately result in long-term benefits to soil resources by reversing
21 compaction, amending the soils to better support the turf grass and infiltrate stormwater, and adding
22 products that would help the soil resist future compaction. Of the three soil profile options, the third
23 option calls for replacement and use of clay trays and aggregate layers. It is therefore the most engineered
24 option, yielding the fewest benefits to the soil resources, and the replacement of the soils could be
25 considered an adverse impact to the existing soils.

26 The irrigation options would all provide minor benefits to the soil by providing moisture.

27 The water supply and storage options would result in minor short-term adverse impacts to soil resources
28 during construction. Changes in turf management related to special events would have a long-term
29 beneficial impact on soil resources, as the changes would result in fewer compacting forces on the soil.

30 All activities that comprise the action alternative would result in short-term minor adverse impacts to soil
31 resources during construction as soil would be disturbed and in some instances stockpiled onsite, and the
32 potential for erosion and soil loss would be greater. However, impacts from construction would be
33 mitigated to short-term negligible adverse.

34 When combined with the long-term beneficial impacts of the action alternative on soil resources, the
35 long-term negligible adverse impacts of other past, present, and reasonably foreseeable future actions
36 would result in a long-term beneficial cumulative effect.

1 **Vegetation**

2 **METHODOLOGY AND ASSUMPTIONS**

3 Available information on the vegetation, especially mature trees and landscape, was compiled and
4 reviewed. Impacts on vegetation were based on general characteristics of the site and vicinity, available
5 aerial photos, site observations, and proposed encroachment into vegetated areas associated with the
6 reconstruction of turf and soils.

7 **STUDY AREA**

8 The proposed actions would be located on the Mall between 3rd and 14th Streets NW and Madison and
9 Jefferson Drives. The study area for vegetation includes the aforementioned project area. Cumulative
10 projects for this topic include those projects immediately adjacent to the Mall.

11 **IMPACT THRESHOLDS**

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

13 *Negligible:* Impact on vegetation would not be measurable. The abundance or distribution of
14 individual trees, mature landscape plantings, or turf would be only slightly affected. Ecological
15 processes, biological productivity, or sustainability would not be affected.

16 *Minor:* Impacts on vegetation would be measurable. The abundance or distribution of individual
17 trees, mature landscape plantings, or turf would affect small areas. Ecological processes, biological
18 productivity, or sustainability would be affected slightly.

19 *Moderate:* Impacts on vegetation would be measurable. The abundance or distribution of individual
20 trees, mature landscape plantings, or turf would be affected. Ecological processes, biological
21 productivity, or sustainability would be affected.

22 *Major:* Impacts on vegetation would be measurable and clearly evident in areas that are prominent
23 and highly visible. The abundance or distribution of individual trees, mature landscape plantings, or
24 turf would be greatly affected. Ecological processes, biological productivity, or sustainability would
25 be affected.

26 *Duration:* Short-term impacts last less than one year; long-term impacts last longer than one year.

27 **Impacts of Alternative 1: the No Action Alternative**

28 The no action alternative represents a continuation of the existing operations and maintenance of the turf
29 panels on the National Mall.

30 Under the no action alternative, intense visitor use on the National Mall, including recreational activities,
31 special events, demonstrations, and general visitor use, would continue to degrade the turf and compact
32 the soil beneath the turf panels in the project area. The existing social trails throughout the project area,
33 and especially near the corners of the turf panels, would continue to be used by visitors; their continued
34 use would further compact the soils and prevent turf growth in those area. Special events, particularly
35 those making use of tents and other structures on top of the turf panels, and those with long durations and
36 high volumes of visitors, would continue to occur, causing severe turf damage. Management and
37 regulation of special events would remain the same and would continue to allow the same intensive use of
38 tents and other structures that cause soil compaction, shading, heat buildup, and physical wear and
39 abrasion of the turf. Consequently, there would be long-term moderate adverse impacts to vegetation in
40 the project area because of the continued wear on the turf that has resulted in large areas of bare earth,
41 minimal turf coverage, and areas of weeds and undesirable non-turf species.

1 Although winter maintenance practices and rest periods would continue, their mitigating beneficial effects
2 on the turf panels would only last until the start of the next peak visitor season. Soil aeration, grading, soil
3 replacement, fertilization, reseeding, and irrigation performed during the winter rest periods would
4 continue to result in short-term annual improvements to soil conditions and turf health. However, turf
5 conditions would continue to deteriorate rapidly with increased visitor use during spring and summer. As
6 a result, there would continue to be recurring long-term moderate adverse impacts on turf condition
7 during peak visitor periods.

8 **CUMULATIVE IMPACTS**

9 Present and future construction on the National Mall and surrounding areas, including the MLK
10 Memorial, Dwight D. Eisenhower Memorial, AVDLM, Potomac Park Levee Project, Jefferson Seawall
11 Rehabilitation, and the NMAAHC, would contribute cumulatively to impacts on vegetation in the project
12 area. Construction activity from these projects would potentially result in the removal of some vegetation
13 in the project area. However, each project would be subject to mitigation requirements which would result
14 in no overall net change in the number of trees on the National Mall.

15 Implementation of the Lincoln Memorial Reflecting Pool Rehabilitation and National Mall Plan would
16 introduce new walkways and features which would discourage visitors from forming social trails, thereby
17 reducing overall soil compaction and improving vegetation.

18 These past, present, and reasonably foreseeable future actions would result in the removal of some
19 vegetation in the project area. However, mitigation measures would result in no net change in the number
20 of trees within the project area. In addition, proposed projects would reduce the formation of new social
21 trails and would alleviate soil compaction and enhance vegetation within portions of the National Mall.
22 Although there would be short-term moderate adverse impacts to vegetation during construction due to
23 the disruption of turf, there would be beneficial long-term impacts to vegetation.

24 As described above, the implementation of the no action alternative would result in long-term moderate
25 adverse impacts to vegetation in the project area. The long-term moderate adverse impacts from this
26 alternative, in combination with the long-term beneficial impacts from other past, present, and future
27 projects, would result in a long-term moderate adverse cumulative effect on vegetation.

28 **CONCLUSION**

29 The implementation of the no action alternative would result in long-term moderate adverse impacts to
30 vegetation in the project area because of severe turf damage caused by continued heavy visitor use. The
31 long-term moderate adverse impacts from this alternative, in combination with the long-term beneficial
32 impacts from other past, present, and future projects, would result in a long-term moderate adverse
33 cumulative effect on vegetation.

34 **Impacts of Alternative 2: the Action Alternative**

35 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
36 and provide a comprehensive irrigation system for the turf panels in the project area. Options within the
37 action alternative explore different edge conditions (curb and gutters) at the turf panels, soil profiles, and
38 irrigation systems.

39 The turf panels would continue to be maintained seasonally according to the current schedule for aeration,
40 fertilization, and reseeding. Peak use period maintenance (April – October), including cutting the grass to
41 a 3-inch height every five to seven days, would continue. Under the action alternative, the grass at the
42 outside of the turf panels would be edged regularly to maintain the integrity of the curb and gutter
43 systems.

44

1 **CURB AND GUTTER OPTIONS**

2 Three curb and gutter options are presented that explore the edge conditions of the turf panels and the
3 transition between the walkways and turf. Option A1 would have a long-term beneficial impact on
4 vegetation as it would restore the worn corners of the turf panels to the original 90 degrees, and provide
5 an elevation difference that would help deter the continuation of social path shortcuts to some extent in
6 the future. Options A2 (preferred) and A3 would introduce 15-foot and 25-foot radius corners,
7 respectively, on each of the turf panel corners. These new radii would reduce the potential overall amount
8 of turf, and would therefore result in long-term negligible to minor adverse impacts, although the turf is
9 currently worn away or in poor condition in these areas. There would be a long-term beneficial impact to
10 the vegetation by defining the edges of the panels and discouraging the continuation of the social paths.
11 All three options would have long-term minor adverse impacts resulting from turf removal around the
12 edges of the turf panels where the new curbing would be placed.

13 **SOIL RECONSTRUCTION PROFILES**

14 All three soil profile reconstruction options would have comparable long-term beneficial impacts on
15 vegetation in the project area by reducing existing compaction, helping the turf and soil resist compaction
16 forces, and more effectively retaining water. All options would have short-term moderate adverse impacts
17 to vegetation because all turf in the project area would be temporarily removed during construction. After
18 soils construction, however, the turf would be replaced.

19 **IRRIGATION OPTIONS**

20 All irrigation options, including water distribution, supply, and storage would help maintain healthier,
21 more visually appealing turf stands and would result in comparable long-term beneficial impacts to
22 vegetation by providing an efficient and consistent method for watering the project area.

23 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

24 Modifications of turf management related to special events would decrease the frequency and duration of
25 compacting forces on the soil panels by reducing the frequency and duration of large permitted events as
26 well as the placement, size, and number of structures allowed on the turf panels during these events. This
27 reduction in event frequency and duration would result in decreased wear and tear on the turf panels and
28 would provide increased rest periods, ranging in duration based on event size, enabling turf to better
29 regenerate. Overall, the turf management modifications would result in long-term beneficial impacts to
30 vegetation in the project area.

31 **SHORT-TERM IMPACTS**

32 All proposed actions under the action alternative would result in short-term moderate adverse impacts to
33 vegetation during construction, as the turf would be completely removed. However, the final outcome of
34 the proposed actions would result in long-term beneficial impacts to vegetation since soil compaction
35 would be reduced, irrigation would be improved, and special events practices would be altered to provide
36 increased rest periods from the high amounts of visitor use.

37 **CUMULATIVE IMPACTS**

38 Impacts to vegetation from past, present, and reasonably foreseeable future actions would be similar to
39 those under the no action alternative. When combined with the long-term beneficial impacts to vegetation
40 resulting from the implementation of the action alternative, there would be a long-term beneficial
41 cumulative effect.

42

1 **CONCLUSION**

2 Throughout the project area, long-term beneficial impacts to vegetation would be expected as a result of
3 the improved soil conditions and irrigation system. Short-term moderate adverse impacts to vegetation
4 would result from construction. However, these adverse impacts would be mitigated by turf replacement
5 after construction completion. When combined with the long-term beneficial impacts to vegetation
6 resulting from the implementation of the action alternative, there would be a long-term beneficial
7 cumulative effect.

1 **Visual Resources**

2 **METHODOLOGY AND ASSUMPTIONS**

3 This visual impact assessment addresses potential changes to the project area's visual character, views,
4 and vistas that would result from implementation of the proposed actions.

5 **STUDY AREA**

6 The proposed actions would be located on the National Mall between 3rd and 14th Streets NW and
7 between Madison and Jefferson Drives.

8 **IMPACT THRESHOLDS**

9 The following thresholds were used to determine the degree of impacts on visual resources in the project
10 area:

11 *Negligible:* The proposed action would not impact the aesthetics or visual viewshed of the proposed
12 project area during construction or operations.

13 *Minor:* The proposed action would not substantially change the scenic vista, would not
14 substantially change scenic resources, and would not substantially change the existing visual
15 character or quality of the site and its surroundings. The effect would be detectable, but slight, and
16 would minimally diminish overall integrity or affect the character-defining feature(s) of the visual
17 resources and aesthetic environment.

18 *Moderate:* The proposed action would result in a noticeable effect on a scenic vista; alter scenic
19 resources including, but not limited to, trees and historic buildings; or alter the existing visual
20 character or quality of the site and its surroundings. The effect would diminish overall integrity or
21 would alter a character-defining feature(s) of the visual resources and aesthetic environment.

22 *Major:* The proposed action would result in a substantial effect on a scenic vista; substantially alter
23 scenic resources including, but not limited to, trees and historic buildings; or substantially alter the
24 existing visual character or quality of the site and its surroundings. The effect would significantly
25 diminish overall integrity or would significantly alter a character-defining feature(s) of the visual
26 resources and aesthetic environment.

27 *Duration:* In the short term, the most negative visual impacts would be related to the activity and
28 disruption associated with construction. The long-term impacts would be related to compromised,
29 obscured, or disrupted views in the areas where the proposed actions would occur.

30 **Impacts of Alternative 1: the No Action Alternative**

31 The no action alternative represents a continuation of the existing operations and maintenance of the turf
32 panels and irrigation system. There would be no changes to the turf panels or the separation between the
33 lawn and walkways.

34 **Visual Character:** As a result of intense visitor use and soil compaction, the turf panels would continue
35 to appear worn and distressed. There would continue to be no formal separation at the edges between the
36 turf and gravel walkways, and the gravel would continue to migrate into the turf panels, creating an
37 unclear visual distinction between these two disparate elements. The worn appearance of the turf and lack
38 of visual distinction between the turf and walkways would continue to have a long-term moderate adverse
39 effect since the visual appearance of the turf panels diminishes the overall integrity of the aesthetic
40 environment of this cultural landscape.

1 **Views and Vistas:** The visual quality of the turf panels creates a negligible visual effect on the primary
2 grand vista between the U.S. Capitol and the Washington Monument since the two landmark structures
3 serve as the visual anchors and the turf panels form the backdrop to the vista.

4 The visual quality of the turf panels creates a long-term moderate adverse effect on the view from the top
5 of the Washington Monument. This effect is due to the deteriorating patches of turf and worn edges and
6 corners of the turf panels which diminish overall integrity of the central elements along the primary axis
7 of the view.

8 **CUMULATIVE IMPACTS**

9 Present and future construction on the National Mall along the larger visual east-west axis (Lincoln
10 Memorial Reflecting Pool Rehabilitation, Potomac Park Levee, and NMAAHC) and the secondary
11 planned north-south axis adjacent to the project area (Jefferson Seawall Rehabilitation) would contribute
12 cumulatively to visual resources by creating new visual elements that affect key views in the project area.

13 The NMAAHC would affect the grand vista between the U.S. Capitol Building and Washington
14 Monument. The degree of impact on visual resources will depend on the design (which is currently in
15 progress with the Smithsonian Institution).

16 Construction of improvements to the Lincoln Memorial Reflecting Pool and surrounding area would
17 introduce enhancements to the visual character of the National Mall and the vista between the U.S.
18 Capitol Building, Washington Monument, World War II Memorial, and the Lincoln Memorial.

19 Roadway enhancements along Constitution Avenue and Madison Drive would introduce uniform street
20 furnishings (such as lighting fixtures and trash receptacles) and would enhance the overall visual
21 character of these streets.

22 The implementation of the National Mall Plan would improve overall visual resources by establishing a
23 sense of place and an overall identity for the National Mall, creating a coherent pedestrian environment
24 that would complement and balance the natural environment, formal and informal features, and national
25 commemorative works.

26 These past, present, and reasonably foreseeable future actions would enhance the condition and visual
27 quality of the National Mall, but would also introduce new visual elements that affect key views in the
28 project area.

29 As described above, the implementation of the no action alternative would result in long-term moderate
30 adverse impacts to visual resources in the project area. The long-term moderate adverse impacts of this
31 alternative, in combination with the beneficial impacts of other past, present, and reasonably foreseeable
32 future actions (except the NMAAHC), would result in a long-term minor adverse cumulative effect.
33 Construction activity resulting from these projects would result in a short-term minor to moderate adverse
34 cumulative effect on visual resources depending on the duration, extent of construction, and whether or
35 not construction from other projects was occurring simultaneously.

36 **CONCLUSION**

37 Under the no action alternative, there would be long-term moderate adverse impacts on visual resources
38 due to the worn and distressed appearance of the turf panels and the lack of visual distinction between the
39 turf and gravel walkways, which diminishes the overall integrity of the aesthetic environment of this
40 cultural landscape.

41 The past, present, and reasonably foreseeable future actions on or around the National Mall generate
42 visual impacts that are primarily long-term and beneficial, with the exception of the NMAAHC, which
43 would introduce a long-term adverse impact on visual resources ranging from minor to moderate,

1 depending on the design. When combined with the long-term moderate adverse impacts associated with
2 the no action alternative, there is a long-term minor adverse cumulative effect. Construction activity
3 resulting from these projects would result in a short-term minor to moderate adverse cumulative effect on
4 visual resources depending on the duration and extent of construction.

5 **Impacts of Alternative 2: the Action Alternative**

6 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
7 and provide a comprehensive irrigation system for the turf panels in the project area. Options within the
8 action alternative explore different edge conditions (curb and gutters) at the turf panels, soil profiles,
9 irrigation systems, and turf management modifications related to special events.

10 **CURB AND GUTTER OPTIONS**

11 Three curb and gutter options are presented that explore the edge conditions of the turf panels and the
12 separation between the walkways and turf. Each of the three options (Options A1, A2, and A3) would
13 improve the quality of the separation between the turf and walkways and would enhance the visual
14 character and views in the project area.

15 **Option A1** - This option would restore the current condition of a 90-degree corner to the turf
16 panels which was first introduced in the 1970 Skidmore, Owings, & Merrill Plan for the National
17 Mall. A “block” profile granite curb and gutter system would be installed around each turf panel
18 and they would be raised 6 inches. Granite is proposed because it would most optimally channel
19 water with a minimal slope and is consistent with the existing materials on the Mall. Accessibility
20 and maintenance points would be provided with new 6-foot-long ramps spaced every 50 to 100
21 feet. The visual appearance of the block curb and gutter system would introduce a long-term
22 beneficial impact in the project area by creating a clear visual distinction between the turf and
23 walkways. However, the numerous ramps required throughout the project area would diminish
24 the project area’s overall integrity of the aesthetic environment and would compromise the views
25 and vistas in the project area, resulting in a long-term moderate adverse impact to visual
26 resources.

27 **Option A2 (preferred)** - This option would introduce 15-foot-radius corners on each of the turf
28 panel corners to reduce the heavily worn edges. An 18-inch-wide sloped granite curb and gutter
29 system would be installed around each turf panel, and they would be raised by 5 inches. The curb
30 and gutter system would be sloped away from the walkway to control the flow of water. The
31 radius introduced by this option would help reduce the heavily worn edges present at nearly every
32 corner of the turf panels. The curb and gutter system would be a unified and angled piece of
33 granite that would have a visually strong presence and would most clearly define the edge of the
34 turf panels, resulting in a long-term beneficial impact on view and visual resources in the project
35 area.

36 **Option A3** - This option would introduce 25-foot-radius corners on each of the turf panel corners
37 to reduce the wear and protect the edges of the panels. A “V”-shaped granite curb and gutter
38 system would be installed around each turf panel, but they would not be raised. The “V”-shaped
39 curb would function more like a gutter system (collecting and conducting water to drain inlets)
40 than a traditional curb. Since the curb does not incorporate a grade change, accessibility and
41 maintenance access would be continual around the turf panels. The relatively larger radius would
42 introduce a more noticeable, but still beneficial, visual effect. The “V” curb and gutter system
43 would have a visually strong presence and would define the edge of the turf panels, although not
44 as prominently as the sloped granite curb in Option A2. Nevertheless, implementation of Option
45 A3 would still result in a long-term beneficial impact on the views and visual resources in the
46 project area.

1 **SOIL RECONSTRUCTION PROFILES**

2 There would be a beneficial long-term effect on the visual resources within the project area resulting from
3 the implementation of any of the soil profile reconstruction options. Each option would introduce
4 enhancements to the soils in the project area to alleviate the effects of compaction and to support a
5 healthier and more visually appealing turf.

6 **IRRIGATION OPTIONS**

7 There would be a negligible effect resulting from the installation of water irrigation valves at numerous
8 points along the turf panels because they would not substantially contribute to the overall aesthetic
9 environment of the area. They would be recessed into the turf and would only be activated at night. From
10 any views or vistas within the project area, the irrigation valves would be too small to be visually
11 detected.

12 The negligible long-term effects would result from the implementation of any of the options for water
13 supply for the irrigation system. The design of the on-site drainage collection system would be integrated
14 into the comprehensive curb and gutter system for each turf panel and would not be visually conspicuous.
15 Options for stormwater runoff would have no visual effect since the conveyance infrastructure would be
16 located underground.

17 Each option would require the installation and operation of one or two pump stations (either a single
18 pump station in the center of the project area or two pump stations, one at each end of the project area)
19 which would require an access hatch that would be visible from points within the project area. Ongoing
20 review and design refinement within the design phase and Section 106 process will ensure that the
21 proposed actions blend as harmoniously as possible with the existing scale, context, and landscape in the
22 project area. The one or two access hatches would not substantially change the scenic vistas, nor would
23 they substantially change the existing visual character or quality of the site and its surroundings. The
24 effect would be detectable, but slight, and would result in a long-term minor adverse impact to visual
25 resources.

26 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

27 There would be a beneficial long-term effect on the visual resources within the project area resulting from
28 the implementation of turf management strategies related to special events that address the number of
29 events, the duration of events, and the intensity of use within the project area. Such management changes
30 would allow for turf recovery, alleviate the effects of prolonged soil compaction, and would enable
31 consistently healthier and more visually appealing turf panels.

32 **SHORT-TERM IMPACTS**

33 Implementation of each option would cause short-term moderate adverse effects during construction due
34 to the visual disturbance of the project area and compromised views along the grand axis of the Mall,
35 diminishing the overall integrity of the aesthetic environment.

36 **CUMULATIVE IMPACTS**

37 Impacts to visual resources from cumulative actions would be similar to those under the no action
38 alternative, resulting in primarily long-term beneficial impacts, with the exception of the NMAAHC,
39 which would introduce an adverse long-term impact, ranging from minor to moderate, depending on the
40 design. When combined with the overall long-term beneficial impacts associated with the action
41 alternative, there would be a beneficial cumulative effect on visual resources. Construction activity
42 resulting from these projects would result in a short-term moderate adverse cumulative effect on visual
43 resources depending on the duration and extent of construction.

44

1 **CONCLUSION**

2 The proposed actions would introduce curb and gutter profiles that would more clearly differentiate the
3 turf panels and walkways. This visual distinction in Options A2 and A3 would create a long-term
4 beneficial impact on visual resources in the project area since they would improve the overall visual
5 quality of the project area. Option A1 would result in a long-term moderate adverse effect due to the
6 numerous ramps that would be required throughout.

7 There would be a beneficial long-term effect on the visual resources within the project area resulting from
8 the implementation of any soil profile reconstruction option since each option would alleviate the effects
9 of compaction to support healthier and more visually appealing turf panels.

10 The installation of any of the options for the water distribution, water supply, and storage options of the
11 irrigation system would result in long-term minor adverse impacts resulting from the presence of an
12 access hatch for the subsurface pump house. The remaining elements associated with the irrigation system
13 would be installed underground and would not be visible. There would be a beneficial long-term effect
14 resulting from the implementation of turf management strategies to restrict the intensity of use of the turf
15 panels within the project area since a comprehensive management plan would alleviate the effects of
16 prolonged soil compaction and would enable consistently healthier and more visually appealing turf
17 panels.

18 Implementation of each option would result in short-term moderate adverse effects during construction
19 due to the visual disturbance of the project area and compromised views along the grand axis and from
20 the Washington Monument, diminishing the overall integrity of the aesthetic environment.

21 The impacts of past, present, and reasonably foreseeable future actions on or around the National Mall,
22 when combined with the overall long-term beneficial impacts associated with the action alternative,
23 would result in long-term beneficial cumulative effects on visual resources. Construction activity
24 resulting from these projects would result in a short-term moderate adverse cumulative effect on visual
25 resources depending on the duration and extent of construction.

1 Cultural Resources

2 METHODOLOGY AND ASSUMPTIONS

3 The NPS categorizes cultural resources by the following categories: archeological resources, cultural
4 landscapes, historic districts and structures, museum objects, and ethnographic resources. As noted in the
5 “Issues and Impact Topics” section of “Chapter 1: Purpose and Need,” impacts to cultural landscapes,
6 historic districts and structures, and archeological resources are of potential concern for this project. There
7 would be no impacts to ethnographic resources or museum objects, so these topics were dismissed from
8 consideration.

9 The analyses of effects on cultural resources that are presented in this section respond to the requirements
10 of both NEPA and Section 106 of the NHPA. In accordance with the ACHP’s regulations implementing
11 Section 106 (36 CFR Part 800, *Protection of Historic Properties*; CFR 2004), impacts on cultural
12 resources were identified and evaluated by (1) determining the APE; (2) identifying cultural resources
13 present in the APE that are either listed in or eligible to be listed in the NRHP (i.e., historic properties);
14 (3) applying the criteria of adverse effect to affected historic properties; and (4) considering ways to
15 avoid, minimize, or mitigate adverse effects.

16 Under the implementing regulations for Section 106, a determination of either adverse effect or no
17 adverse effect must also be made for affected historic properties. An adverse effect occurs whenever an
18 impact alters any characteristic of a cultural resource that qualifies it for inclusion in the NRHP (for
19 example, diminishing the integrity of the resource’s location, design, setting, materials, workmanship,
20 feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the
21 proposal that would occur later in time, be farther removed in distance, or be cumulative (CFR 2004). A
22 determination of no adverse effect means there is either no effect or that the effect would not diminish in
23 any way the characteristics of the cultural resource that qualify it for inclusion in the NRHP.

24 CEQ regulations DO-12: *Conservation Planning, Environmental Impact Analysis and Decision-making*
25 (NPS 2001) also call for a discussion of the appropriateness of mitigation as well as an analysis of how
26 effective the mitigation would be in reducing the intensity of a potential impact (e.g., reducing the
27 intensity of an impact from major to moderate or minor). Any resultant reduction in intensity of impact
28 due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. Cultural
29 resources are non-renewable resources and adverse effects generally consume, diminish, or destroy the
30 original historic materials or form, resulting in a loss in the integrity of the resource that can never be
31 recovered. Therefore, although actions determined to have an adverse effect under Section 106 may be
32 mitigated, the effect remains adverse.

33 The NPS guidance for evaluating impacts (DO-12: *Conservation Planning, Environmental Impact*
34 *Analysis, and Decision Making*; NPS 2001) requires that impact assessment be scientific, accurate, and
35 quantified to the extent possible. For cultural resources, it is seldom possible to measure impacts in
36 quantifiable terms; therefore, impact thresholds must rely heavily on the professional judgment of
37 resource experts.

38

1 Historic Districts and Structures

2 STUDY AREA

3 The study area for cultural resources is the APE as defined by the NPS under Section 106 regulations (see
4 the “Cultural Resources” section in “Chapter 3: Affected Environment”). It is not the same as that used to
5 evaluate visual and aesthetic resources even though some of the topics such as views and vistas appear the
6 same. Of the many types of historic properties, the project has the potential to directly or indirectly impact
7 numerous historic resources within the APE that are individually listed in the National Register: the
8 National Mall², the L’Enfant Plan of the City of Washington, the Washington Monument and Grounds,
9 the Smithsonian Castle, the Freer Gallery of Art, the Arts and Industries Building, the National Gallery of
10 Art – West Building, and the National Museum of Natural History. It should be noted that although the
11 National Mall has many of the characteristics of a historic district, including defined boundaries enclosing
12 multiple resources, it was nominated as a “site,” as was the Washington Monument and Grounds. The
13 L’Enfant Plan of the City of Washington was nominated as a “structure.” There are no historic districts
14 per se within the APE. However, both the National Mall and the Washington Monument and Grounds
15 have also been documented as cultural landscapes (discussed further below).

16 For a historic district or structure to be listed on the NRHP, it must possess significance (the meaning or
17 value ascribed to the historic district or structure), and the features necessary to convey its significance
18 must have integrity. For purposes of analyzing potential impacts on historic districts and structures, the
19 thresholds of change for the intensity of an impact are defined as follows:

20 Negligible: The impact is at the lowest level of detection with neither adverse nor beneficial
21 consequences. For purposes of Section 106, the determination of effect would be no
22 adverse effect.

23 Minor: Adverse impact—Alteration of a pattern(s) or feature(s) of a historic district or
24 structure listed on or eligible for the NRHP would not diminish the integrity of a
25 character-defining feature(s) or the overall integrity of the historic property. For
26 purposes of Section 106, the determination of effect would be no adverse effect.

27 Beneficial impact—The character-defining features of the historic district or structure
28 would be stabilized/preserved in accordance with the *Secretary of the Interior’s*
29 *Standards for the Treatment of Historic Properties* (NPS 1992) to maintain its
30 existing integrity. For purposes of Section 106, the determination of effect would be
31 no adverse effect.

32 Moderate: Adverse impact—The impact would alter a character-defining feature(s) of a historic
33 district or structure and diminish the integrity of that feature(s) of the historic
34 property. For purposes of Section 106, the determination of effect would be *adverse*
35 *effect* but one which could be fairly easily avoided, minimized, or mitigated through
36 an Agreement Document.

37 Beneficial impact—The historic district or structure would be rehabilitated in
38 accordance with the *Secretary of the Interior’s Standards for the Treatment of*
39 *Historic Properties* (NPS 1992) to make possible a compatible use of the property
40 while preserving its character-defining features. For purposes of Section 106, the
41 determination of effect would be no adverse effect.

² The “National Mall” that is documented for the NRHP in 1981 refers to the traditional Mall, not the far larger National Mall Area which is the subject of the current National Mall Plan.

1 Construction of the MLK Memorial, Lincoln Memorial Reflecting Pool Rehabilitation, Potomac Park
 2 Levee Project, and Jefferson Seawall Rehabilitation would result in a negligible cumulative impact on
 3 relevant historic districts and structures due to their distance from the project area.

4 The Dwight D. Eisenhower Memorial would be constructed by 2015 between 4th and 6th Streets SW and
 5 between Independence Avenue SW and the Department of Education Building. The presence of the
 6 memorial in this location could affect the L’Enfant Plan vista along Maryland Avenue toward the U.S.
 7 Capitol. Its effect upon cultural resources is currently being evaluated under NEPA and Section 106 by
 8 the NPS, particularly its relation to Maryland Avenue as a component of the L’Enfant Plan. Construction
 9 of the Eisenhower Memorial could create long-term minor to moderate adverse effects to the relevant
 10 historic districts and structures but is likely to be mitigated by the design review process.

11 The NMAAHC would be constructed by 2016 on the National Mall at the southwest corner of 14th Street
 12 NW and Constitution Avenue NW, on the Washington Monument Grounds. The presence of a new
 13 building in this location would affect the vista between the U.S. Capitol, Washington Monument, World
 14 War II Memorial, and the Lincoln Memorial, creating a long-term adverse impact on historic districts and
 15 structures such as the National Mall and Washington Monument historic sites that would range from
 16 minor to moderate, depending on the design (which is currently in progress with the Smithsonian
 17 Institution). Security improvements to Smithsonian museums and the National Gallery of Art would have
 18 long-term minor adverse effects to historic districts and structures due to the visual intrusiveness of these
 19 measures.

20 Roadway enhancements along Constitution Avenue and Madison Drive are also planned and would have
 21 a beneficial impact on historic districts and structures since the project would utilize uniform street
 22 furnishings (such as lighting fixtures and trash receptacles) and would enhance the overall aesthetic
 23 character of these streets. The implementation of the National Mall Plan would yield beneficial impacts
 24 on historic districts and structures by establishing a sense of place and an overall identity for the National
 25 Mall, creating a coherent pedestrian environment that would complement and balance the natural
 26 environment, formal and informal features, and national commemorative works.

27 The recent, planned, and reasonably foreseeable projects on or around the National Mall generate
 28 aesthetic impacts that, with the exception of the NMAAHC and possibly the Eisenhower Memorial, are
 29 primarily long-term and beneficial to historic districts and structures. The cumulative impact of these
 30 projects, when combined with the long-term minor to moderate adverse impact of the no action
 31 alternative would still be minor to moderate long-term adverse.

32 **CONCLUSION**

33 Under the no action alternative, there would be a long-term minor to moderate adverse effect due to the
 34 worn and distressed appearance of the turf panels and the lack of visual distinction between the turf and
 35 gravel walkways, diminishing the overall integrity of the Mall and specifically the visible structure of the
 36 street pattern (L’Enfant Plan.) and the planned *tapis vert*. The effects from the projects on or around the
 37 National Mall generate aesthetic impacts that are primarily long-term and beneficial, but the overall
 38 cumulative long-term impact would be minor to moderate adverse.

39 **Impacts of Alternative 2: the Action Alternative**

40 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
 41 and provide a comprehensive irrigation system for the turf panels in the project area. Options within the
 42 action alternative explore different edge conditions (curb and gutters) at the turf panels, soil profiles, and
 43 irrigation systems.

44 **CURB AND GUTTER OPTIONS**

1 Three curb and gutter options under consideration explore the edge conditions of the turf panels and the
2 separation between the walkways and turf. Nothing in the documentation of the Mall as a site on the
3 National Register or as a major feature of the L'Enfant Plan of the City of Washington, itself a structure
4 on the National Register, indicates that any of the three options are more in keeping with the historic
5 context than any other, as all maintain the spatial organization and dimensional relationships of the 1930's
6 landscape design.

7 Certain north-south streets that cross or border the Mall—3rd Street SW, 4th Street SW, 7th Street NW
8 and SW, 9th Street SW, 12th Street NW and SW, and 14th Street NW and SW—are contributing features
9 to the L'Enfant Plan. The visibility and definition of the L'Enfant Plan's street pattern is significant,
10 although the details and paving materials have often changed and are not significant. 9th and 12th Streets
11 cross the mall in the form of blocked or interrupted gravel paths. Although not the same dimensions as an
12 actual street, they form a visual indicator of the alignment of the street. Improving the visitor's ability to
13 "read" the lines of these pathways by maintaining the separation of turf and gravel path is a long-term
14 beneficial impact to the L'Enfant Plan.

15 Other gravel pathways that cross the Mall in an east-west direction and are bordered by turf panels are not
16 officially considered significant features of the L'Enfant Plan. However, the separation of gravel and turf
17 along these pathways, such as the former Adams and Washington Drives, contributes to the visitor
18 perception of the great axis along the Mall between the Capitol and the Lincoln Memorial and the overall
19 integrity of the Mall. Therefore, the curb and gutter installation would be a long-term beneficial impact to
20 the Mall and the setting of the NRHP-listed buildings within the APE.

21 **SOIL RECONSTRUCTION PROFILES**

22 Effects to the historic districts and structures within the project area, resulting from the implementation of
23 any soil profile reconstruction option, would be beneficial and long-term on the cultural resources within
24 the project area. Each option would introduce enhancements to the soils in the project area, alleviating the
25 effects of compaction to support healthier and more visually appealing turf panels. There is no
26 significance in the National Register documentation of the Mall or the L'Enfant Plan given to the use of
27 any particular soil or grass variety.

28 **IRRIGATION OPTIONS**

29 There would be a long-term beneficial effect on the Mall as a historic site, the L'Enfant Plan, or any of
30 the historic buildings within the APE resulting from the installation of water irrigation valves at numerous
31 points along the turf panels. The valves would be too small to be visually detected and the impact on
32 maintaining the historic impression of a *tapis vert* would be positive.

33 There would be beneficial long-term effects resulting from the implementation of any of the options for
34 water supply for the irrigation system on the Mall as a historic site, the L'Enfant Plan, or any of the
35 historic buildings within the APE. The design of the on-site drainage collection system would be
36 integrated into the comprehensive curb and gutter system for each turf panel and would not be visually
37 conspicuous. Options for stormwater from areas adjacent to the project area would have no visual effect
38 since the conveyance infrastructure would be located underground. Again, the impact on maintaining the
39 historic impression of a greensward would be positive.

40 There would be no long-term effect resulting from the implementation of any of the options for
41 subsurface storage structures for the irrigation system since neither the concentrated nor distributed
42 systems would be visible.

43

44

1 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

2 There would be a beneficial long-term effect on historic districts and structures within the project area
3 resulting from the implementation of turf management strategies related to special events that would
4 regulate the intensity of use within the project area. A comprehensive management plan would alleviate
5 the effects of prolonged soil compaction and would enable consistently healthier and more visually
6 appealing turf panels.

7 **SHORT-TERM IMPACTS**

8 There would be short-term minor to moderate adverse effects during construction due to the visual
9 disturbance of the project area and compromised views along the grand axis and from the Washington
10 Monument, diminishing the overall integrity of the aesthetic environment.

11 **CUMULATIVE IMPACTS**

12 Impacts to historic districts and structures from cumulative actions would be similar to those under the no
13 action alternative, resulting in primarily long-term beneficial impacts. An exception to this would be the
14 construction of the NMAAHC and possibly the Eisenhower Memorial, which would introduce an adverse
15 long-term impact ranging from minor to moderate, depending on the design. When combined with the
16 overall long-term beneficial impacts associated with the action alternative, there would be a beneficial
17 cumulative effect on these resources. Construction activity resulting from these projects would result in a
18 short-term moderate adverse cumulative effect on historic districts and structures depending on the
19 duration and extent of construction.

20 **CONCLUSION**

21 Under the action alternative, there would be a long-term beneficial effect due to the improvement of the
22 worn and distressed appearance of the turf panels and the lack of visual distinction between the turf and
23 gravel walkways, which diminishes the overall integrity of the Mall and specifically the visible structure
24 of the street pattern (L'Enfant Plan.). These long-term beneficial effects are created by all curb and gutter
25 options, all soil reconstruction profiles, and changes in turf management strategies for special events. The
26 effects of the irrigation options are negligible in their visual impact but long-term beneficial in that
27 improved water distribution and drainage contributes to the appearance of the Mall as a *tapis vert*.

28 There would be short-term minor to moderate adverse effects during construction of all physical
29 components of the action alternative due to the visual disturbance of the project area and compromised
30 views along the grand axis and from the Washington Monument, diminishing the overall integrity of the
31 aesthetic environment.

32 The projects on or around the National Mall generate impacts on historic districts and structures that are
33 primarily long-term and beneficial, with the exception of the NMAAHC and possibly the Eisenhower
34 Memorial, which would introduce a long-term adverse impact on historic districts and structures. The
35 overall cumulative impact is long-term beneficial.

36

1 Cultural Landscapes

2 STUDY AREA

3 The proposed alternatives have the potential to impact character-defining features of one cultural
 4 landscape: the Mall as defined in the NPS's 2006 CLI (e.g., the inner Mall or open space between 14th
 5 and 3rd Streets and Jefferson and Madison Drives). It should be noted that the CLI discusses and
 6 evaluates many of the same features as the earlier NRHP documentation, but places a greater emphasis
 7 upon the Mall as a designed landscape, the condition of its natural components such as trees and grass,
 8 and the physical development of the plan in the 20th century after the major impetus of the McMillan
 9 Commission revisions and Depression-era and Bicentennial-year implementation. (See "Chapter 3:
 10 Affected Environment.")

11 Consideration was given to including the Washington Monument and Grounds cultural landscape on the
 12 west and the Union Square cultural landscape on the east, but the nature and small-scale of the
 13 alternatives being evaluated in this EA made that unnecessary.

14 IMPACT THRESHOLDS

15 In order for a cultural landscape to be listed in the NRHP, it must possess significance (the meaning or
 16 value ascribed to the landscape), and the features that convey its significance must have integrity.
 17 Character-defining features of a cultural landscape may include spatial organization and land patterns,
 18 topography, vegetation, circulation patterns, water features, structures/buildings, and small-scale objects
 19 (see *The Secretary of the Interior's Standards for the Treatment of Historic Properties and the Guidelines*
 20 *for the Treatment of Cultural Landscapes*; NPS 1992). For purposes of analyzing potential impacts on
 21 cultural landscapes, the thresholds of change for the intensity of an impact are defined in much the same
 22 manner as those for historic districts and structures:

23 Negligible: The impact is at the lowest level of detection with neither adverse nor beneficial
 24 consequences. For purposes of Section 106, the determination of effect would be no
 25 adverse effect.

26 Minor: Adverse impact—Alteration of a pattern(s) or feature(s) of the cultural landscape
 27 listed on or eligible for the NRHP would not diminish the integrity of a character-
 28 defining feature(s) or the overall integrity of the landscape. For purposes of Section
 29 106, the determination of effect would be no adverse effect.

30 Beneficial impact—Preservation of landscape patterns and features would be in
 31 accordance with the *Secretary of the Interior's Standards for the Treatment of*
 32 *Historic Properties with Guidelines for the Treatment of Cultural Landscapes*,
 33 thereby maintaining the integrity of the cultural landscape. For purposes of Section
 34 106, the determination of effect would be no adverse effect.

35 Moderate: Adverse impact—The impact would alter a character-defining feature(s) of the
 36 cultural landscape and diminish the integrity of that feature(s) of the landscape. For
 37 purposes of Section 106, the determination of effect would be adverse effect but one
 38 which could be fairly easily avoided, minimized, or mitigated through an Agreement
 39 Document.

40 Beneficial impact—The landscape or its features would be rehabilitated in
 41 accordance with the *Secretary of the Interior's Standards for the Treatment of*
 42 *Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, to
 43 make possible a compatible use of the landscape while preserving its character-

1 defining features. For purposes of Section 106, the determination of effect would be
2 no adverse effect.

3 Major: Adverse impact—The impact would alter a character-defining feature(s) of the
4 cultural landscape and severely diminish the integrity of that feature(s) and the
5 overall integrity of the historic property. For purposes of Section 106, the
6 determination of effect would be adverse effect and would present serious difficulty
7 in avoiding, minimizing, or mitigating through an Agreement Document.

8 Beneficial impact—The cultural landscape would be restored in accordance with the
9 *Secretary of the Interior’s Standards for the Treatment of Historic Properties with*
10 *Guidelines for the Treatment of Cultural Landscapes* to accurately depict the features
11 and character of a landscape as it appeared during its period of significance. For
12 purposes of Section 106, the determination of effect would be no adverse effect.

13 Duration: Short-term impacts are those lasting less than one year; long-term impacts are those
14 lasting longer than one year.

15 **Impacts of Alternative 1: the No Action Alternative**

16 The no action alternative represents a continuation of the existing condition, operation, and maintenance
17 of the turf within the project area. The turf panels would continue to have no separation between the turf
18 and walkways and would continue to be subject to substantial wear at the corners from visitor use. Loose
19 gravel would continue to migrate into the turf as would the impact of many footsteps that even a slight
20 barrier between turf and walkway would partially prevent. The current procedures with their inherent
21 difficulties in regenerating turf after major Mall events and adverse weather conditions would continue.
22 The visual blurring of the lines between the inner gravel walkways and the turf panels would persist,
23 thereby degrading the visibility of the street and walkway pattern through the Mall, which is an important
24 feature of the Mall cultural landscape.

25 The project area would continue to host numerous special events throughout the year with no special
26 management strategies to direct the recovery time for the turf, and the soils would continue to be highly
27 compacted, exacerbating the poor appearance of the turf panels. The periods in which the turf suffers
28 from a patchy, beaten down, or bald appearance in numerous locations would continue and worsen if the
29 high public use and assembly demands upon the Mall of recent years continue without recovery
30 strategies. Large patchy or damaged areas of turf would be periodically visible from the Washington
31 Monument base of the Capitol terrace, degrading the major axial vista of the Mall. As stated earlier, the
32 regulations for Section 106 of the NHPA indicate that an adverse effect occurs whenever an impact alters,
33 directly or indirectly, any characteristic that qualifies the resource for inclusion in the National Register
34 (e.g., diminishing the integrity of the resource’s location, design, setting, materials, workmanship, feeling,
35 or association). The existing condition constitutes degradation over time of the overall impression the
36 visitor receives passing through the “vast greensward” of the Mall and blurs the internal circulation
37 structure of crisscrossing gravel paths. Despite the scale of the Mall cultural landscape, its location,
38 design, settings, materials, workmanship, and association would suffer from a moderate long-term
39 adverse impact due to the no action alternative.

40 **CUMULATIVE IMPACTS**

41 Construction of the new memorials, civil works projects, and security upgrades described at the beginning
42 of this chapter and in Table 4.1 has the potential to impact the cultural landscapes within the project area.

43 Construction of the MLK Memorial, Lincoln Memorial Reflecting Pool Rehabilitation, Dwight D.
44 Eisenhower Memorial, Potomac Park Levee Project, and Jefferson Seawall Rehabilitation would result in
45 a negligible cumulative impact on relevant cultural landscapes due to their distance from the project area.

1 The NMAAHC would be constructed by 2016 on the National Mall at the southwest corner of 14th Street
 2 NW and Constitution Avenue NW, on the Washington Monument Grounds. The presence of a new
 3 building in this location would affect the vista between the U.S. Capitol, Washington Monument, World
 4 War II Memorial, and the Lincoln Memorial, creating a long-term adverse impact on cultural landscapes
 5 that would range from minor to moderate, depending on the design (which is currently in progress with
 6 the Smithsonian Institution).

7 Security improvements to Smithsonian museums and the National Gallery of Art would have long-term
 8 minor adverse effects to cultural landscapes due to the visual intrusiveness of these measures.

9 Roadway enhancements along Constitution Avenue and Madison Drive are also planned and would have
 10 a beneficial impact on cultural landscapes since the project would utilize uniform street furnishings (such
 11 as lighting fixtures and trash receptacles) and would enhance the overall aesthetic character of these
 12 streets. The implementation of the National Mall Plan would yield beneficial impacts to cultural
 13 landscapes by establishing a sense of place and an overall identity for the National Mall, creating a
 14 coherent pedestrian environment that would complement and balance the natural environment, formal and
 15 informal features, and national commemorative works.

16 The recent, planned, and reasonably foreseeable projects on or around the National Mall generate
 17 aesthetic impacts to cultural landscapes that, with the exception of the NMAAHC, are primarily long-term
 18 and beneficial. The cumulative impact of these projects, when combined with the long-term minor to
 19 moderate adverse impact of the no action alternative would still be minor to moderate long-term adverse.

20 **CONCLUSION**

21 Under the no action alternative, there would be a long-term minor to moderate adverse effect due to the
 22 worn and distressed appearance of the turf panels and the lack of visual distinction between the turf and
 23 gravel walkways, diminishing the overall integrity of the Mall and specifically the visible structure of the
 24 street pattern. The effects from the projects on or around the National Mall generate aesthetic cumulative
 25 impacts that are primarily long-term and beneficial, with the exception of the NMAAHC, which would
 26 introduce a long-term adverse impact on cultural landscapes that would range from minor to moderate.
 27 The overall cumulative impact on cultural landscapes is long-term minor to moderate adverse.

28 **Impacts of Alternative 2: the Action Alternative**

29 The action alternative describes proposed improvements to rehabilitate the turf, alleviate soil compaction,
 30 and provide a comprehensive irrigation system for the turf panels in the project area and modifications of
 31 turf management strategies related to special events. Options within the action alternative explore
 32 different edge conditions (curb and gutters) at the turf panels, soil profiles, and irrigation systems.

33 As the CLI provides more specific information as to what is considered contributing and non-contributing
 34 to the Mall cultural landscape, a short summary is provided of those designations which appear relevant
 35 to the action alternative:

36 Topography: The basic perception is that the Mall is generally level, although some significant
 37 regrading was done at its western end to achieve this appearance.

38
 39 Archeological Sites: No archeological surveys have been conducted for the inner Mall, but the
 40 potential exists for archeological resources.

41
 42 Land Use: The Mall is intensively used for recreation, demonstrations, tourism, museum access,
 43 concerts, and public ceremonies. Pedestrians do not limit themselves to the walkways; they walk
 44 or run over the turf panels as well.

1
2 Vegetation: The central turf panels are planted with tall fescue while areas under the elms are
3 seeded in a bluegrass mixture. However, unlike the elm trees, the CLI makes **no designation** of
4 grass types as contributing.

5
6 Views and Vistas: It was the 1930’s interpretation of the McMillan Plan that emphasized the turf
7 panels or *tapis vert*, the eight rows of elms, and the orthogonal walks as devices to reinforce the
8 main reciprocal vista of the U.S. Capitol Building to the Washington Monument.

- 9
10 ▪ **Contributing** features include the U.S. Capitol Building to the Washington Monument vista;
11 views to elms from walks and turf panels; views to building façades from the Mall; views up
12 cross streets; and views from the Mall to Union Square.

13
14 Circulation: Under a subheading “Contribution of the Mall Walk System” in the CLI is the
15 following statement: “The pattern of the Mall circulation **is** contributing. The materials of roads
16 and walks **are not** contributing; this includes the gravel and concrete of the walkways and
17 sidewalks, which replaced the original concrete walks in 1975 and later. Little information has
18 been found about the historic width of roads and walks. Since the gravel was laid directly on top
19 of the asphalt of the Inner Drives when they were converted into walks, it seems likely that the
20 width did not change substantially (NPS 2006c).”

- 21
22 ▪ **Contributing** features include: Roads and sidewalks – Jefferson Drive, Madison Drive, 3rd
23 Street, 4th Street, 7th Street, and 14th Street; East-west walks – North Vista Walk (formerly
24 Washington Drive); South Vista Walk (formerly Adams Drive); sidewalks along Madison
25 and Jefferson Drives (Mall sides of drives – south side of Madison and north side of
26 Jefferson); and Cross axial walks – 5th, 6th, 8th, 9th, 10th 12th, and 13th Streets axes.

27
28 Buildings and Structures: There are few buildings or structures on the Mall proper, and **none** are
29 contributing.

30
31 Small-scale Features: All of the small-scale features found on the Mall—except the benches and
32 streetlights of 1930’s design—are non-contributing. It should be noted that the text of the CLI
33 mentions small-scale features such as tan-colored brick edging around some elms and black steel
34 edging around turf panels in a way that suggests they are non-contributing.

35 **CURB AND GUTTER OPTIONS**

36 Three curb and gutter options under consideration deal with the edge conditions of the turf panels and the
37 separation between the walkways and turf. Nothing in the documentation of the Mall as a cultural
38 landscape indicates that any of the three options is more in keeping with the historic context than any
39 other. In fact, there is clear indication that the details of the curb and gutter options are not historically
40 sensitive. All curb and gutter options support the spatial organization and dimensional relationships of the
41 1930’s landscape design which is important for views and vistas. (See above excerpt from the CLI).

42 The CLI designates all of the historic circulation system from the 1930s as contributing roads and
43 sidewalks, east-west walks, and cross axial walks. Therefore, the separation of gravel and turf along all
44 non-social pathways contributes to the visitor perception of the great axis along the Mall between the U.S.
45 Capitol Building and the Lincoln Memorial and the overall integrity of the Mall. Therefore, the curb and
46 gutter installation would be a long-term beneficial impact to the Mall as a cultural landscape.

1 **SOIL RECONSTRUCTION PROFILES**

2 There would be a beneficial long-term effect on the cultural resources within the project area resulting
 3 from the implementation of any soil profile reconstruction option. Each option would introduce
 4 enhancements to the soils in the project area, alleviating the effects of compaction to support healthier and
 5 more visually appealing turf panels. The CLI notes the past use of tall fescue on the turf panels but does
 6 not designate it as contributing. The CLI's General Management Information contains a section of
 7 "Condition Assessment and Impacts" which recognizes the Mall's soil compaction, erosion, and drainage
 8 issues and provides justification for the action alternative.

9 **IRRIGATION OPTIONS**

10 There would be a beneficial long-term effect on the Mall as a cultural landscape resulting from the
 11 installation of water irrigation valves at numerous points along the turf panels. The valves are too small to
 12 be visually detected; however, the contribution to maintaining the appropriate appearance of a greensward
 13 would be positive.

14 For similar reasons, there would be beneficial long-term effects on the Mall as a cultural landscape,
 15 resulting from the implementation of any of the options for water supply for the irrigation system. The
 16 design of the on-site drainage collection system would be integrated into the comprehensive curb and
 17 gutter system for each turf panel and would not be visually conspicuous. Options for stormwater runoff
 18 from areas adjacent to the project area would have no visual effect since the conveyance infrastructure
 19 would be located underground.

20 There would be no long-term effect resulting from the implementation of any of the options for
 21 subsurface storage structures for the irrigation system since neither the concentrated nor distributed
 22 systems would be visible.

23 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

24 There would be a beneficial long-term effect on cultural landscapes within the project area resulting from
 25 the implementation of turf management strategies related to special events that would address the
 26 intensity of use within the project area and and that would incorporate turf recovery periods. A
 27 comprehensive management plan would alleviate the effects of prolonged soil compaction and would
 28 enable consistently healthier and more visually appealing turf panels.

29 **SHORT-TERM IMPACTS**

30 There would be short-term minor to moderate adverse effects during construction due to the visual
 31 disturbance of the project area and compromised views along the grand axis and from the Washington
 32 Monument, which would diminish overall integrity of the aesthetic environment.

33 **CUMULATIVE IMPACTS**

34 As indicated above, projects in Table 4.1 have the potential to combine with the alternatives addressed in
 35 this EA to create cumulative impacts.

36 Impacts to cultural landscapes from cumulative actions would be similar to those under the no action
 37 alternative, resulting in primarily long-term beneficial impacts, with the exception of the NMAAHC
 38 which would introduce an adverse long-term impact, ranging from minor to moderate, depending on the
 39 design. When combined with the overall long-term beneficial impacts associated with the action
 40 alternative, there would be a beneficial cumulative effect on these resources. Construction activity
 41 resulting from these projects would result in a short-term moderate adverse cumulative effect on historic
 42 districts and structures depending on the duration and extent of construction.

1 **CONCLUSION**

2 Under the action alternative, there would be a long-term beneficial effect to cultural landscapes due to the
3 improvement of the worn and distressed appearance of the turf panels and the lack of visual distinction
4 between the turf and gravel walkways, which diminishes the overall integrity of the Mall and specifically
5 the visible structure of the street pattern. These long-term beneficial effects are created by all curb and
6 gutter options, all soil reconstruction profiles, and the turf management modifications related to special
7 events. The effects of the irrigation options are negligible in their visual impact but moderate long-term
8 beneficial in that improved drainage contributes to the appearance of the Mall as a *tapis vert*.

9 There would be short-term minor to moderate adverse effects during construction of all physical
10 components of the action alternative due to the visual disturbance of the project area and compromised
11 views along the grand axis and from the Washington Monument, diminishing the overall integrity of the
12 aesthetic environment.

13 The projects on or around the National Mall generate cumulative cultural resource impacts that are
14 primarily long term and beneficial, with the exception of the NMAAHC, which would introduce a long-
15 term adverse impact on cultural landscapes.

1 Archeological Resources

2 METHODOLOGY AND ASSUMPTIONS

3 As archeological resources exist essentially in subsurface contexts, potential impacts to archeological
4 resources are assessed according to the extent to which the proposed alternatives would involve ground-
5 disturbing activities such as excavation or grading. Analysis of possible impacts to archeological
6 resources was based on a review of previous archeological studies, consideration of the proposed design
7 concepts, and other information provided by the NPS.

8 STUDY AREA

9 The APE for archeological resources is broadly defined to extend between 14th and 3rd Streets NW and
10 bounded on the north and south by Constitution and Independence Avenues. While much of the proposed
11 work would focus on the turf panels bounded by Madison and Jefferson Drives, some elements of the
12 project – particularly elements of the irrigation system such as water lines, electrical lines, and water
13 storage features – may involve ground-disturbing activities beyond the turf panels.

14 IMPACT THRESHOLDS

15 Impacts to archeological resources occur when the proposed alternative results in whole or partial
16 destruction of the resource, which is termed a loss of integrity in the context of Section 106. Impact
17 thresholds for archeological resources consider both the extent to which the proposed alternative results in
18 a loss of integrity and the degree to which these losses can be compensated by mitigating activities, such
19 as preservation or archeological data recovery. The process begins with assessment of a resource
20 according to its eligibility for the NRHP, as only sites considered significant enough for listing on the
21 NRHP are protected by federal regulations.

22 Under federal guidelines, resources are eligible for the NRHP if they possess integrity and if they meet
23 one or more of the criteria of eligibility for inclusion in the NRHP. Most archeological resources found
24 eligible for the NRHP are significant under criterion D because they have the potential to provide
25 important information about the history or prehistory of a location. However, in some circumstances,
26 archeological resources might be found significant because (1) they are associated with events that have
27 made a significant contribution to the broad patterns of our history (NRHP criterion A), or (2) because
28 they are associated with the lives of persons significant in our past (NRHP criterion B), or (3) because
29 they define the distinctive characteristics of a type, period, or method of construction (NRHP criterion C).
30 In some cases, archeological resources should be considered not only in terms of criterion D, but also
31 with respect to criteria A and B (see *National Register Bulletin #15, How to Apply the National Register*
32 *Criteria for Evaluation*).

33 For purposes of analyzing impacts to archeological resources, thresholds of change for the intensity of an
34 impact are based on the foreseeable loss of integrity. All of these discussions consider only the direct
35 impacts of construction because operation of the facilities should have no ground-disturbance activities
36 and no additional effect on archeological resources under any of the alternatives under consideration. All
37 impacts are considered long term (i.e., lasting longer than the period of construction).

38 IMPACT THRESHOLDS

39 Negligible: Impact is at the lowest levels of detection with neither adverse nor beneficial
40 consequences. The determination of effect for Section 106 would be no adverse effect.

41 Minor: Disturbance of a site(s) results in little, if any, loss of integrity. For purposes of Section 106,
42 the determination of effect would be no adverse effect.

43 Moderate: Disturbance of a site(s) results in loss of integrity to the extent that there is a partial loss
44 of the character-defining features and information potential that form the basis of the site's NRHP

1 eligibility. Mitigation is accomplished by a combination of archeological data recovery and in-place
 2 preservation. The determination of effect for Section 106 would be adverse effect.

3 Major: Disturbance of a site(s) results in loss of integrity to the extent that it is no longer eligible
 4 for the NRHP. Its character-defining features and information potential are lost to the extent that
 5 archeological data recovery is the primary form of mitigation. The determination of effect for
 6 Section 106 would be adverse effect.

7 Beneficial: No levels of intensity for beneficial impacts are defined. Beneficial impacts can occur
 8 under the following scenarios: when an archeological site is stabilized in its current condition to
 9 maintain its existing level of integrity or when an archeological site is preserved in accordance with
 10 the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1992), to
 11 accurately depict its form, features, and character as it appeared during its period of significance.
 12 For purposes of Section 106, a beneficial effect is equivalent to no adverse effect.

13 Duration: Short-term impacts would last for the duration of construction activities associated with
 14 the proposed alternative; long-term impacts would last beyond the construction activities. All
 15 impacts to archeological resources are considered long term.

16 **Impacts of Alternative 1: the No Action Alternative**

17 Under the no action alternative, there would be no impacts to archeological resources, as the current
 18 practices regarding visitor use and operations and maintenance would continue. The current irrigation
 19 system would remain, and the seasonal schedule for aeration, fertilization, and overseeding would
 20 continue. New topsoil would be added to low-lying areas as needed to improve drainage. As none of these
 21 activities would involve significant ground-disturbing activities, existing archeological resources would
 22 remain undisturbed.

23 **CUMULATIVE IMPACTS**

24 Although other past, present, and reasonably foreseeable future actions may affect archeological
 25 resources, the no action alternative would have no impacts on archeological resources. Consequently,
 26 there would be no cumulative impacts to archeological resources under the no action alternative.

27 **CONCLUSION**

28 Implementation of the no action alternative would result in no direct, indirect, beneficial or adverse
 29 impacts to archeological resources in the study area. Cumulative effects of the no action alternative on
 30 archeological resources would not occur. Based on this impact analysis, there would be no impairment of
 31 Park resources or values under this alternative.

32 **Impacts of Alternative 2: the Action Alternative**

33 The action alternative includes a variety of options under consideration for turf rehabilitation, alleviation
 34 of soil compaction, and comprehensive irrigation of the turf panels. The various options for curbing, soil
 35 profile amendment, and irrigation differ in the degree to which they might result in impacts to
 36 archeological resources, so their effects are evaluated individually.

37

1 CURB AND GUTTER

2 The various treatments under consideration for curbs and gutters (radii versus 90-degree corners; sloped,
3 block, or check-marked profile) would all be expected to have negligible to minor impacts on
4 archeological resources. All treatments under consideration would involve simple replacement of the
5 existing curb and gutter features, so the expected ground disturbance required would be essentially
6 limited to areas that have been disturbed by the installation, repair, and replacement of earlier curbs and
7 gutters or by previous landscaping. Ground disturbance associated with construction of the new curb and
8 gutter features would be relatively narrow and shallow (less than 3 feet below current grade), so no
9 appreciable loss of integrity to archeological resources that might be present in surface or near-surface
10 contexts is assumed. Therefore, all of the curb and gutter options would result in negligible to minor
11 impacts to archeological resources.

12 SOIL PROFILE AND RECONSTRUCTION

13 The options under consideration involve varying degrees of soil removal/replacement or the addition of
14 new material (primarily sand) that would alleviate compaction and improve drainage. Option B1
15 (preferred) would involve the removal of the uppermost one foot (12 inches) of existing soil and the
16 fracturing of the soil profile to a depth of 18 to 24 inches below the current grade. Impacts to
17 archeological resources in surface or near-surface contexts could result from this process, especially the
18 outright removal of soil. To the extent that archeological features or deposits are present in the upper 12
19 inches of soil, the impacts could vary widely, ranging from negligible to major. It is assumed that the
20 upper 12 inches of soil has already been disturbed by previous landscaping, so actual impacts to
21 archeological resources are assumed to be negligible or minor since most archeological resources are
22 likely buried beneath at least one foot of fill soil. Option B2 would involve the addition and mixing of
23 sand into the upper 18 inches of the existing profile. This process could result in impacts to archeological
24 features or deposits that are present in the surface or near-surface contexts, but the impacts would be less
25 harmful than outright removal of soil. The mixing of sand would result in relatively minor displacement
26 of features and artifacts associated with archeological resources in the study area; therefore, the impacts
27 might range from negligible to minor. Option B3 would require the removal of the uppermost 20 to 26
28 inches of existing soil, followed by its replacement by new material. Archeological resources in surface or
29 near-surface contexts might be completely lost, depending on the degree to which their associated
30 features or deposits existing above or below the depth of soil removal. Partial loss of archeological sites
31 under this scenario would range from minor to moderate, and the complete loss of archeological resources
32 would be a moderate impact.

33 IRRIGATION SYSTEM DISTRIBUTION

34 Each component of the irrigation system (water distribution, water supply, and water storage) would
35 require some degree of ground disturbance that could result in possible impacts to archeological
36 resources.

37 The water distribution options would all require a network of water supply lines across the turf panels.
38 Option C1 would require installation of a single row of quick couplers along the central axis of the turf
39 panels; Option C2 would require two rows of automatic high-pressure sprinklers along the edges of the
40 turf panels; and Option C3 and Option C4 (preferred) require three rows of sprinklers or quick couplers,
41 arrayed along the central axis and edges of the turf panel. For all options, the supply lines would be
42 placed at a depth of at least 4 feet below existing grade, the depth necessary to prevent damage from tent
43 spikes. Archeological resources within 4 feet of the ground surface could be impacted by installation of
44 the water supply lines. The largest supply pipes – those nearest the pump station – would be 16 inches in
45 diameter, and smaller pipes would be used in the areas of the network near the sprinkler heads or
46 couplers. The installation trenches necessary to install the supply lines would require excavations on the
47 order of 2 feet wide near the pump station, while the smallest pipes might require a trench of 1 foot wide

1 or smaller. Among the various options, Option C1, with a single row of quick couplers would require
2 relatively less trenching in comparison to Options C2, C3 and C4, which would require two or three rows
3 of sprinklers or quick couplers. The level of impact from installation of the supply lines might range from
4 negligible to minor, given the narrow width of the trenches necessary to install the water lines.

5 One or two pump stations would be installed, either a single pump station in the center of the project area
6 or two pump stations, one at each end of the project area. If the single pump station option is chosen, one
7 or more lift pump stations might also be needed to convey water through the distribution system. A pump
8 station would require an excavation on the order of 500 cubic yards of soil to install an underground vault
9 approximately 18 by 20 feet wide by 10 feet high, along with electrical supply lines, which would require
10 excavation of a narrow utility trench. Depending on its location, installation of the pump station vault
11 could have an adverse impact on archeological resources, which could range from negligible to moderate.

12 The water supply options vary according to the primary water source. All of the options for use of
13 rainwater or stormwater would be supplemented by potable water from the existing city distribution
14 system, so a tie-in to existing water mains would be required. New supply lines from existing water mains
15 would require an excavation trench, which could potentially result in an impact to archeological
16 resources; these impacts could range from negligible to minor, as it is assumed that impacts would be
17 confined to relatively narrow trenches, approximately 8 to 12 feet wide.

18 Option D1 would require grading of the turf panels to direct rainwater and stormwater toward the curb
19 where it would be conveyed to catchment areas, using a network of underground pipes that would feed
20 the water storage system. Option D2 would capture runoff rainwater from the roofs of adjacent buildings
21 or would capture water from deep basements and tunnels to direct stormwater into new drain lines that
22 would feed the storage system. Each of these systems would require a network of drainage or supply
23 pipes and possibly a lift pump station, which in turn would require electrical power. Archeological
24 resources might be negatively impacted by excavations necessary to install the supply pipes and
25 associated facilities. The impacts could range from negligible to minor, depending on the location of the
26 facilities and based on the assumption that supply line trenches would be no larger than 8 to 12 feet wide
27 and any lift stations would not require excavations larger than 500 cubic yards of soil.

28 For water storage, each of the options would require a system with a capacity of 1MG. This would be
29 achieved by a concentrated storage system (cisterns) in Options E1 and E2 (preferred). The concentrated
30 storage systems would use either prefabricated concrete pipe culverts (Option E1) or concrete boxes
31 (Option E2) that would be installed beneath the north-south walkways and the turf panels. The distributed
32 storage system would use a system of basins beneath the turf panels that would be lined with impervious
33 geotextile material or clay. Among the various components of the irrigation system, the water storage
34 options have the greatest risk of adverse impacts to archeological resources, based on the large size of the
35 excavations necessary for their installation. Excavations necessary to install the water storage structures
36 would require approximately 15,000 to 20,000 cubic yards of soil, depending on the option chosen. With
37 regard to archeological resources, excavations on this scale could result in impacts that range from
38 negligible to moderate, depending on the siting of the storage structure.

39 As the presence of NRHP-eligible archeological resources is not known, and because final designs are not
40 yet available, only general plans or strategies for mitigation of adverse effects on archeological resources
41 can be identified at this time. NPS' preferred mitigation strategy is to avoid any disturbance to
42 archeological sites by the siting of the project components – especially water storage features – in areas
43 that are known to have been previously disturbed to the extent that precludes preservation of NRHP-
44 eligible archeological resources. While there is some degree of latitude in the placement of the water
45 storage features, there is less design latitude in the routing of the various supply lines, drainage lines, and
46 pump stations.

1 Mitigation of potential adverse effects from these features would be accomplished by future studies to
2 identify and document NRHP-eligible resources in the APE. These studies would be developed in
3 consultation with the DC HPO and would include a geoarcheological study and an archeological
4 identification and evaluation study – possibly followed by an archeological data recovery program – that
5 would be completed prior to construction. Alternatively, NPS would consult with the DC HPO to develop
6 a program of construction monitoring and archeological documentation that would be implemented
7 during the construction phase of the project.

8 **TURF MANAGEMENT RELATED TO SPECIAL EVENTS**

9 There would be no impacts to archeological resources as a result of modification of turf management
10 related to special events.

11 **CUMULATIVE IMPACTS**

12 Few, if any, past, present and future projects in the project area would have any cumulative effect on
13 archeological resources. Several of these projects involve ground-disturbing activities that would be
14 confined to surface and near-surface contexts where there is negligible likelihood that archeological
15 resources exist: Reflecting Pool Rehabilitation, Constitution Avenue street improvements; and Madison
16 Drive street improvements.

17 The security upgrades to the National Museum of American History, the National Museum of Natural
18 History, and the National Gallery of Art required ground-disturbing activities in areas adjacent to existing
19 buildings, and as these past and present projects have not resulted in any unanticipated archeological
20 discoveries, it is assumed that they were limited to areas that have been previously disturbed to the extent
21 that would preclude preservation of significant archeological resources.

22 Two of the projects will occur entirely within areas of made land that consist of redeposited river silts
23 from the Potomac River bottom: Jefferson Memorial Seawall Rehabilitation and the MLK Memorial. The
24 NMAAHC site has been studied for possible impacts to archeological resources (LeeDecker, Fiedel, and
25 Bedell 2007; LeeDecker, Kraus, and Kuhn 2008), but these studies concluded that no NRHP-eligible sites
26 are present in that site. Future construction of the Potomac Park Levee could have an adverse effect on
27 archeological remains of the 17th Street Wharf (LeeDecker and Baynard 2009); however, since that
28 potential archeological resource is not present in the APE associated with the action alternative no
29 cumulative impacts are anticipated. Construction of the Dwight D. Eisenhower Memorial will occur in an
30 area that could contain domestic archeological deposits comparable to those expected in the APE for the
31 action alternative; however, the presence of specific archeological resources is speculative at this time, so
32 it is not possible to identify any cumulative impacts on archeological resources.

33 The National Mall Plan itself would not require any ground-disturbing activities, so it would not have any
34 effect on archeological resources.

35 These past, present, and reasonably foreseeable future projects would have no cumulative effect on
36 archeological resources within the project area.

37 **CONCLUSION**

38 A range of ground-disturbing activities associated with the action alternative could result in adverse
39 impacts to archeological resources. However, as the presence of NRHP-eligible archeological resources is
40 speculative at this time, it is not possible to characterize the intensity of these possible impacts. All
41 impacts to archeological resources would be adverse and long term. Depending on the siting of the
42 features associated with the action alternative, impact intensity could be negligible to minor (no adverse
43 effect under Section 106) or moderate (adverse effect under Section 106). These impacts would be
44 mitigated by a program of archeological documentation that would be completed prior to construction or

- 1 during construction by means of a construction monitoring program. There are no cumulative impacts to
- 2 archeological resources associated with the action alternative, nor is the action alternative likely to result
- 3 in any impacts that would constitute impairment of archeological resources.

1 CHAPTER 5: CONSULTATION AND COORDINATION

2 The NPS places a high priority on public involvement in the NEPA process and on giving the public an
3 opportunity to comment on proposed actions. As part of the NPS NEPA process, issues associated with
4 the proposed action were identified during the internal scoping meeting held with NPS and have been
5 communicated to other affected agencies and stakeholders.

6 **Consultation**

7 Coordination with local and federal agencies and various interest groups was conducted during the NEPA
8 process to identify issues and/or concerns related to the proposed turf and soil reconstruction on the
9 National Mall. In accordance with Section 7 of the Endangered Species Act, consultation letters were sent
10 from the NPS to the USFWS; the District of Columbia Department of the Environment (DDOE),
11 Fisheries and Wildlife Division; and the District Department of Health, Environmental Health
12 Administration, on June 2, 2010. Letters to the DC HPO and ACHP were sent on June 2, 2010. No
13 responses were received, but based on similar projects recently undertaken on the National Mall, no rare,
14 threatened, or endangered species or habitat known or expected to occur in the project area.

15 Throughout the Section 106 review process the NPS will consult with the ACHP, the DC HPO, and
16 representatives of state and local governments, agencies, organizations, and the general public. Due to the
17 potential for adverse effects on archeological resources, a possible outcome of the Section 106
18 consultation could be a Memorandum of Agreement that would stipulate measures for mitigation of these
19 potential adverse effects. Results of the consultations will be documented in the NEPA decision document
20 deemed appropriate for this project.

21 Correspondence from the U.S. Commission of Fine Arts (CFA) was received on May 28, 2010 stating the
22 concept submission for this project was reviewed and approved at its meeting on May 20, 2010. The
23 CFA had several comments regarding the proposed actions including a preference for granite curbs over
24 pre-cast concrete, minimizing the width of the curbs, reducing the radius of the corners, only using center
25 and edge waterlines, and considering biodiversity when selecting plant materials for the project.

26 Correspondence from the National Capital Planning Commission (NCPC) was received on May 27, 2010.
27 In this letter, the NCPC commented favorably on the concept design for the project with the
28 recommendation that the curbs be constructed of granite and that the NPS should continue consultation
29 regarding the dimensions of the curb radius as the design develops further.

30 **Comment Period**

31 To comment on this EA, you may mail comments or submit them online within 30 days of the publication
32 of this EA. Please be aware that your comments and personal identifying information may be made
33 publicly available at any time. While you may request that NPS withhold your personal information, we
34 cannot guarantee that we will be able to do so. Preferred method: Online at
35 <http://parkplanning.nps.gov/NAMA> and follow the appropriate links. Comments may also be submitted
36 via mail addressed to:

37 Patrick MacDonald
38 Attn: Reconstruction of the Turf and Soil on the National Mall
39 National Park Service - DSC

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1 **Acronyms**

| | | |
|----|---|------------|
| 2 | Advisory Council on Historic Preservation | (ACHP) |
| 3 | Americans with Disabilities Act | (ADA) |
| 4 | American Veterans Disabled for Life Memorial | (AVDLM) |
| 5 | Architectural Barriers Act | (ABA) |
| 6 | Architectural Barriers Act Accessibility Standard | (ABAAS) |
| 7 | Area of Potential Effect | (APE) |
| 8 | U. S. Commission of Fine Arts | (CFA) |
| 9 | Code of Federal Regulations | (CFR) |
| 10 | Council on Environmental Quality | (CEQ) |
| 11 | Cultural Landscape Inventory | (CLI) |
| 12 | Director's Order | (DO) |
| 13 | District of Columbia Department of the Environment | (DDOE) |
| 14 | District of Columbia Historic Preservation Office | (DC HPO) |
| 15 | District of Columbia Water and Sewer Authority | (DC Water) |
| 16 | Environmental Assessment | (EA) |
| 17 | Federal Capital Improvements Program | (FCIP) |
| 18 | Finding of No Significant Impact | (FONSI) |
| 19 | General Services Administration | (GSA) |
| 20 | Leadership in Energy and Environmental Design | (LEED) |
| 21 | Martin Luther King, Jr. | (MLK) |
| 22 | Million gallons | (MG) |
| 23 | National Capital Region | (NCR) |
| 24 | National Capital Planning Commission | (NCPC) |
| 25 | National Environmental Policy Act | (NEPA) |
| 26 | National Historic Landmark | (NHL) |
| 27 | National Historic Preservation Act | (NHPA) |
| 28 | National Mall and Memorial Parks | (NAMA) |
| 29 | National Museum of African American History and Culture | (NMAAHC) |
| 30 | National Park Service | (NPS) |
| 31 | National Parks Omnibus Management Act | (NPOMA) |
| 32 | National Register of Historic Places | (NRHP) |
| 33 | Northwest | (NW) |
| 34 | Polyvinyl Chloride | (PVC) |
| 35 | Planning, Environment, and Public Comment website | (PEPC) |
| 36 | Southwest | (SW) |
| 37 | State Historic Preservation Officer | (SHPO) |
| 38 | Traditional Cultural Property | (TCP) |
| 39 | United States Army Corps of Engineers | (USACE) |
| 40 | United States Fish and Wildlife Service | (USFWS) |

1 **Key Word Glossary**

2 **Affected Environment** — The existing environment to be affected by a proposed action and alternatives.

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

5 **Anthropic** — Of or relating to humans and the era of human life.

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

8 **Cistern** – A waterproof receptacle that holds water and is built to catch and store rainwater.

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

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

15 **Core Aeration** — Method by which air is circulated through soil. Core aeration involves the removal of
16 approximately 1-inch to 2-inch cores of soil from the ground to reduce turf compaction and to improve
17 water and nutrient infiltration.

18 **Cultural Landscape** – Environments that include natural and cultural resources associated with a
19 historical context.

20 **Cultural Resources** — Prehistoric and historic districts, sites, buildings, objects, or any other physical
21 evidence of human activity considered important to a culture, subculture, or community for scientific,
22 traditional, religious, or other reason.

23 **Culvert** – A device used to channel water.

24 **Cumulative Impacts** — Under NEPA regulations, the incremental environmental impact or effect of an
25 action together with the effects of past, present, and reasonably foreseeable future actions, regardless of
26 what agency or person undertakes such other actions (40 CFR Part 1508.7).

27 **Dewatering** — A term used to describe the process of removing water from a location where it is not
28 wanted or needed.

29 **Enabling Legislation** — Legislation that gives appropriate officials the authority to implement or enforce
30 the law.

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

- 1 **Environmental Assessment** — An environmental analysis prepared pursuant to NEPA to determine
2 whether a federal action would significantly affect the environment and thus require a more detailed
3 environmental impact statement (EIS).
- 4 **Executive Order** — Official proclamation issued by the President that may set forth policy or direction
5 or establish specific duties in connection with the execution of federal laws and programs.
- 6 **Fescue** – Grass with wide flat leaves cultivated in Europe and America for permanent pasture, hay, and
7 for lawns.
- 8 **Floodplain** — The flat or nearly flat land along a river or stream or in a tidal area that is covered by water
9 during a flood.
- 10 **Impairment** — Within this document, the term impairment has two separate definitions. The NPS
11 requires an analysis of potential effects to determine whether actions would impact or impair Park
12 resources. NPS is empowered with the management discretion to allow impacts on Park resources and
13 values (when necessary and appropriate) to fulfill the purposes of a Park, as long as the impact does not
14 constitute impairment of the affected resources and values. Impairment is also a classification of poor
15 water quality for a surface water body under the U.S. Clean Water Act.
- 16 **Mall** — The area west of the United States Capitol between Madison and Jefferson Drives from 1st to
17 14th Streets NW/SW. The east end of the Mall from 1st to 3rd Streets NW/SW between Pennsylvania
18 Avenue and Maryland Avenue is also known as Union Square. The Mall is characterized by the east-west
19 stretch of lawn bordered by rows of American elm trees.
- 20 **Monumental Core** — The Monumental Core currently includes the National Mall and the areas
21 immediately beyond it, including the United States Capitol, the White House and President’s Park,
22 Pennsylvania Avenue and the Federal Triangle area, East and West Potomac Parks, the Southwest Federal
23 Center, the Northwest Rectangle, Arlington Cemetery, and the Pentagon.
- 24 **National Environmental Policy Act (NEPA)** — The act as amended, articulates the federal law that
25 mandates protecting the quality of the human environment. It requires federal agencies to systematically
26 assess the environmental impacts of their proposed activities, programs, and projects including the “no
27 action” alternative of not pursuing the proposed action. NEPA requires agencies to consider alternative
28 ways of accomplishing their missions in ways which are less damaging to the environment.
- 29 **National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.)** — An Act to establish a program
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31 15, 1966 [Public Law 89-665; 80 STAT. 915; 16 U.S.C. 470 as amended by Public Law 91-243, Public
32 Law 93-54, Public Law 94-422, Public Law 94-458, Public Law 96-199, Public Law 96-244, Public Law
33 96-515, Public Law 98-483, Public Law 99-514, Public Law 100-127, and Public Law 102-575].
- 34 **National Mall** — The area comprised of the Mall, the Washington Monument, and West Potomac Park.
35 It is managed by the NPS’ National Mall and Memorials Parks.
- 36 **National Register of Historic Places (NRHP)** — A register of districts, sites, buildings, structures, and
37 objects important in American history, architecture, archeology, and culture, maintained by the Secretary
38 of the Interior under authority of Section 2(b) of the Historic Sites Act of 1935 and Section 101(a)(1) of
39 the National Historic Preservation Act of 1966, as amended.
- 40 **Power Slit Seeding** — Method of seeding that slits the ground and drops seeds into the slit giving them
41 better soil-to-seed contact and protecting them from animals and the elements.

- 1 **Quick Coupler System** — Fittings on the irrigation system heads that allow for easy and fast manual
2 attachment of hoses or sprinklers.
- 3 **Sand Soil** — Soil that has been modified with processed sand that has very limited particle size. This soil
4 is commonly used to support turf on professional sports fields and golf courses.
- 5 **Scoping** — Scoping, as part of NEPA, requires examining a proposed action and its possible effects;
6 establishing the depth of environmental analysis needed; and determining analysis procedures, data
7 needed, and task assignments. The public is encouraged to participate and submit comments on proposed
8 projects during the scoping period.
- 9 **Slice Aeration** — Method by which air is circulated through the soil. Slice aeration punctures the soil
10 with spikes, up to a foot or more in length, and helps address drainage issues and reduce soil compaction.
- 11 **Social Trail** — An unofficial trail that diverges from an existing trail, as a shortcut to a destination. A
12 social trail usually cuts through a vegetative or natural barrier, such as woods, scrubs, grass fields, or
13 berms.
- 14 **Threatened Species** — Any species that is likely to become an endangered species within the foreseeable
15 future throughout all or a significant portion of its range.
- 16 **Turf Panels** — For this project, the turf panels are the rectangular areas of lawn on the National Mall that
17 lay on the centerline of the east-west axis of the Mall.
- 18 **Viewshed** — A viewshed includes a total visible area from a particular fixed vantage point.
- 19 **Vista**— A distant or long view, especially one seen through some opening such as an avenue or trees that
20 form an avenue; a site offering such a view.

APPENDIX **A**: DRAFT IMPAIRMENT DETERMINATION

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The Prohibition on Impairment of Park Resources and Values

NPS Management Policies 2006, Section 1.4.4, explains the prohibition on impairment of park resources and values:

While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the Nation Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

What is Impairment?

NPS *Management Policies 2006*, Section 1.4.5, *What Constitutes Impairment of Park Resources and Values*, and Section 1.4.6, *What Constitutes Park Resources and Values*, provide an explanation of impairment.

Impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.

Section 1.4.5 of *Management Policies 2006* states:

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

Per Section 1.4.6 of *Management Policies 2006*, park resources and values that may be impaired include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and condition that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;

- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park, but this would not be a violation of the Organic Act unless the NPS was in some way responsible for the action.

How is an Impairment Determination Made?

Section 1.4.7 of *Management Policies 2006* states, "[i]n making a determination of whether there would be an impairment, an NPS decision maker must use his or her professional judgement. This means that the decision-maker must consider any environmental assessments or environmental impact statements required by the National Environmental Policy Act of 1969 (NEPA); consultations required under Section 106 of the National Historic Preservation Act (NHPA); relevant scientific and scholarly studies; advice or insights offered by subject matter experts and others who have relevant knowledge or experience; and the results of civic engagement and public involvement activities relating to the decision.

NPS Management Policies 2006 further define "professional judgment" as "a decision or opinion that is shaped by study and analysis and full consideration of all the relevant facts, and that takes into account the decision-maker's education, training, and experience; advice or insights offered by subject matter experts and others who have relevant knowledge and experience; good science and scholarship; and, whenever appropriate, the results of civic engagement and public involvement activities relation to the decision

Impairment Determination for the Preferred Alternative

This determination on impairment has been prepared for the preferred alternative described in Chapter 2 of this EA. An impairment determination is made for all resource impact topics analyzed for the preferred alternative. An impairment determination is not made for visitor use and experience, public safety, or Park management and operations because impairment findings relate back to park resources and values, and these impact areas are not generally considered to be park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values.

The NPS has determined that implementation of the preferred alternative will not result in impairment of park resources and values of the National Mall and Memorial Parks. In reaching this determination, the reconstruction of the turf and soil on the National Mall EA was reviewed to reaffirm the Park's purpose and significance, resource values, and resource management goals and desired future conditions. Based on a thorough analysis of the environmental impacts described in this EA, the public comments received, and the application of the provisions of the NPS Management Policies 2006, the NPS concluded that the implementation of the preferred alternative will not result in impairment of any of the resources and values of the National Mall and Memorial Parks. Although the action alternative entails physical changes to the National Mall and Memorial Parks, the preferred alternative would have beneficial impacts to the

project area's natural resources, would not alter historic fabric, and would be in keeping with NPS management policies and goals.

Findings on Impairment for the Reconstruction of the Turf and Soil on the National Mall

PREFERRED ALTERNATIVE

Utilities and Infrastructure - The preferred alternative would not result in impairment of utilities and infrastructure because all curb and gutter, soil profile, and irrigation system options would result in long-term beneficial impacts to the District of Columbia's stormwater and combined sewer system. Improved drainage and reduced soil compaction would decrease stormwater runoff and reuse of captured water would eliminate the reliance on the municipal system for primary service.

Soils – The preferred options under the action alternative would temporarily removed soil from the project area, it would not result in impairment of soils. The preferred alternative would create the least alteration of the existing soil resources and would result in less-compacted soil that would most closely resemble the original soil. Furthermore, this alternative would add amendments and products to resist compacting forces and to aid in holding moisture resulting in long-term beneficial impacts to the soil resources in the project area. Although the proposed irrigation option, water supply option, and water storage option would result in soil disturbance and excavation, these results would only occur during construction, would be short-term, and would not harm the long-term integrity of the soils resources in the project area.

Vegetation –The preferred alternative would not result in impairment to vegetation in the project area because the curb and gutter, soil reconstruction, and irrigation system options would have long-term beneficial impacts to the turf. Implementation of the preferred alternative would reduce soil compaction, help the turf and soil resist compaction forces, provide consistent watering, and ensure effective water absorption, all of which would help to maintain a healthier and more visually appealing turf stand.

Visual Resources - The preferred alternative would not result in impairment of visual resources because the proposed curb and gutter profile, soil profile, and irrigation system this alternative would result in more clearly defined turf panels with healthier, more visually appealing turf stands. Although there would be some disruptions to visual resources during construction, these impacts would be short-term and would not impair the long-term integrity of the visual resources.

Cultural Resources - The preferred alternative would not result in impairment of cultural resources because the preferred alternative would improve the overall integrity of the Mall and specifically the visible structure of the street pattern (L'Enfant Plan) and the appearance of the Mall as a *tapis vert*. Construction would diminish the overall integrity of the aesthetic environment in the short term, but there would be no long impairment to the historic structures and districts or cultural landscapes in the project area.

APPENDIX **B**: CONSULTATION AND CORRESPONDENCE

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United States Department of the Interior

NATIONAL PARK SERVICE
National Mall & Memorial Parks
900 Ohio Drive, S.W.
Washington, D.C. 20024-2000

JUN 2 2010



D66 (NCR-NAMA)

Mr. John Wolflin
U.S. Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, Maryland 21401

Dear Mr. Wolflin:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as amended, on the National Mall Turf and Soil Reconstruction Project. The project area is within the National Mall in Washington, D.C., specifically the center grass panels of the Mall, which are bounded by pedestrian walkways north and south, 14th Street NW on the west and 3rd Street, NW on the east. Immediately adjacent are the Smithsonian Institution museums, the National Gallery of Art, the Washington Monument grounds, and the U.S. Capitol Building.

As one of the most popular national tourist destinations, the project area is one of the most used public areas in the District of Columbia for national celebrations, First Amendment demonstrations, special events, and recreation with an annual visitorship of nearly 25 million. However, due to intense use, the turf panels on the Mall have deteriorated. Action is needed to address the management of this civic space to alleviate the intense soil compaction and enable proper air, water and nutrient infiltration. Reducing soil compaction will also improve site drainage, stormwater management, and the condition of turf. To support the new turf system, the current irrigation system needs to be replaced because it has been compromised by the intense use and does not adequately service the project area.

The EA presents a range of alternatives to improve the vegetation and soils on the Mall by removing and replacing the existing soil on the center grass panels, better defining the edges of the grass panels, and replacing the irrigation system.

We are writing you to request a list of federally listed species that may be impacted by this proposed project, and to initiate informal Section 7 consultation. Because of its location in a highly urbanized environment in downtown Washington, DC, it is unlikely that the proposed improvements will affect any federally listed or locally sensitive species. However, we would appreciate written confirmation from your office. A letter is also being sent to the D.C. Department of the Environment to solicit their input.



If you have any questions or require additional information, please contact me or Mark Isaksen, Chief of Resource Management, National Mall and Memorial Parks at (202) 245-4711 or by e-mail at mark_isaksen@nps.gov. Thank you in advance for your assistance.

Sincerely,



John Piltzecker
Superintendent
National Mall and Memorial Parks

Enclosure

cc. Jill Cavanaugh, The Louis Berger Group, Inc.



D66 (NCR-NAMA)

United States Department of the Interior

NATIONAL PARK SERVICE
National Mall & Memorial Parks
900 Ohio Drive, S.W.
Washington, D.C. 20024-2000



JUN 2 2010

Mr. Brian D. King
Associate Director
Wildlife Management Branch
Fisheries & Wildlife Division
DC Department of the Environment
51 N Street NE
Washington, DC 20002

Dear Mr. King:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as amended, on the National Mall Turf and Soil Reconstruction Project. The project area is within the National Mall in Washington, D.C., specifically the center grass panels of the Mall, which are bounded by pedestrian walkways north and south, 14th Street NW on the west and 3rd Street, NW on the east. Immediately adjacent are the Smithsonian Institution museums, the National Gallery of Art, the Washington Monument grounds, and the U.S. Capitol Building.

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The EA presents a range of alternatives to improve the vegetation and soils on the Mall by removing and replacing the existing soil on the center grass panels, better defining the edges of the grass panels, and replacing the irrigation system.

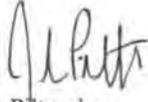
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CONSULTATION AND COORDINATION

If you have any questions or require additional information, please contact me or Mark Isaksen, Chief of Resource Management, National Mall and Memorial Parks at (202) 245-4711 or by e-mail at mark_isaksen@nps.gov. Thank you in advance for your assistance.

Sincerely,



John Piltzecker
Superintendent
National Mall and Memorial Parks

Enclosure

cc. Jill Cavanaugh, The Louis Berger Group, Inc.

Correspondence Enclosure





United States Department of the Interior

NATIONAL PARK SERVICE
National Mall & Memorial Parks
900 Ohio Drive, S.W.
Washington, D.C. 20024-2000



D66 (NCR-NAMA)

JUN 2 2010

Mr. Reid Nelson
Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue, N.W., Suite 803
Washington, D.C. 20004

Dear Mr. Nelson:

The National Park Service (NPS) has initiated consultation with the District of Columbia Historic Preservation Office (DC SHPO) under Section 106 of the National Historic Preservation Act on the National Mall Turf and Soil Reconstruction, an undertaking, in accordance with 36 CFR 800.3 of the regulations of the Advisory Council on Historic Preservation (ACHP).

The Mall is a historic landscape that occupies some of the oldest parkland in the National Park System and hosts some of the most prominent buildings, museums, and monuments in the country. As one of the most popular national tourist destinations, the Mall is one of the most used public areas in the District of Columbia for national celebrations, first amendment demonstrations, special events, and recreation with an annual visitorship of nearly 25 million.

However, due to intense use, the turf panels on the Mall have deteriorated. Action is needed to address the management of this civic space to alleviate the intense soil compaction and enable proper air, water and nutrient infiltration. Reducing soil compaction will also improve site drainage, stormwater management, and the condition of turf. To support the new turf system, the current irrigation system needs to be replaced because it has been compromised by the intense use and does not adequately service the project area.

The Area of Potential Effect (APE) that has been proposed is more inclusive than the turf panels, and corresponds to the Mall defined as open space surrounded and defined by adjacent buildings and the associated views and vistas. The APE consists of the Mall, including the Contributing Reservations 3B, 3, 4, 5, 6, and 6A. The boundaries have been drawn at the line of 16th St. N.W. across the Washington Monument grounds on the west, the western terrace of the U.S. Capitol on the east, Independence Ave. S.W. and Maryland Ave. S.W. plus the line of its continuation northeast toward the Capitol on the south, and Constitution Ave. N.W. and Pennsylvania Ave. N.W. plus the line of its continuation to the southeast toward the Capitol on the north. The enclosed attachment shows the APE.

TAKE PRIDE[®]
IN AMERICA 

Given the potential scope of the Mall Turf project and the ground disturbing activities associated with it, the NPS has determined the need to conduct a phase 1a archeological review, and if necessary, phase 1b archeological testing. The NPS also plans to propose a phased approach for the implementation and construction of this project. We anticipate that phase 1 construction will entail the installation of below grade infrastructure, such as cisterns, water lines, and an pump station along with visible above ground work focused on the installation of curbs and soil and turf in the three most eastern lawn panels in the center of the Mall.

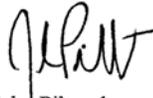
We have enclosed a draft Mall mapping study prepared by Heritage Landscapes, LLC for your consideration and review. This study expands upon the narrative description of the changes in the Mall landscape over time that can be found in the recently completed Cultural Landscape Inventory of the area.

The NPS has also begun an Environmental Assessment (EA) to analyze impacts specific to the Mall Turf project. The NPS intends to coordinate Section 106 process with the National Environmental Policy Act per the ACHP's regulations (36 CFR 800.8).(NEPA). The first meeting open to the public was a public scoping/Section 106 meeting held at the National Capital Region headquarters building on March 9, 2010. The NPS intends to continue consulting with the public per 800.3(e) in public meetings and through our Planning, Environment, and Public Comment (PEPC) website – www.parkplanning/nps.gov. It is anticipated that these outreach efforts will accommodate both NEPA and the 106 process. We will continue to post presentation materials to PEPC that can assist the public and consulting parties in their review of the project.

At this stage in the design process, the NPS is not prepared to make a formal determination of effect for the National Mall Turf and Soil Reconstruction, but looks forward to consultation with the DC SHPO on this and other steps in the process.

Because of the sensitive nature of the project site, and the potential for adverse effects, we are happy to invite the active participation of ACHP in the Section 106 process. Please indicate whether you wish to do so or have any other questions about the undertaking by contacting me or Mark Isaksen, Chief, Resource Management, National Mall and Memorial Parks at (202) 245-4711.

Sincerely,



John Piltzecker
Superintendent
National Mall and Memorial Parks

Enclosure

cc: Mr. Reid Nelson, Advisory Council on Historic Preservation
Ms. Nancy Witherell, National Capital Planning Commission



United States Department of the Interior

NATIONAL PARK SERVICE
National Mall & Memorial Parks
900 Ohio Drive, S.W.
Washington, D.C. 20024-2000



D66 (NCR-NAMA)

JUN 2 2010

Mr. David Maloney
District of Columbia Historic Preservation Officer
1100 4th Street, SW E650
Washington, DC 20024

Dear Mr. Maloney,

Subject: National Mall Turf and Soil Reconstruction

The National Park Service (NPS) wishes to formally initiate consultation with the District of Columbia Historic Preservation Office under Section 106 of the National Historic Preservation Act on the National Mall Turf and Soil Reconstruction, an undertaking, in accordance with 36 CFR 800.3 of the regulations of the Advisory Council on Historic Preservation (ACHP).

The Mall is a historic landscape that occupies some of the oldest parkland in the National Park System and hosts some of the most prominent buildings, museums, and monuments in the country. As one of the most popular national tourist destinations, the Mall is one of the most used public areas in the District of Columbia for national celebrations, first amendment demonstrations, special events, and recreation with an annual visitorship of nearly 25 million.

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Given the potential scope of the Mall Turf project and the ground disturbing activities associated with it, the NPS has determined the need to conduct a phase 1a archeological review, and if necessary, phase 1b archeological testing. Dr. Stephen Potter of the NPS will continue to communicate directly with Dr. Ruth Troccoli of your office on all pertinent archeological issues. The NPS also plans to propose a phased approach for the implementation and construction of this project. We anticipate that phase 1 construction will entail the installation of below grade infrastructure, such as cisterns, water lines, and an pump station along with visible above ground work focused on the installation of curbs and soil and turf in the three most eastern lawn panels in the center of the Mall.

We have enclosed a draft Mall mapping study prepared by Heritage Landscapes, LLC for your consideration and review. This study expands upon the narrative description of the changes in the Mall landscape over time that can be found in the recently completed (2006) Cultural Landscape Inventory of the area.

The NPS has also begun an Environmental Assessment (EA) to analyze impacts specific to the Mall Turf project. The NPS intends to coordinate Section 106 process with the National Environmental Policy Act per the ACHP's regulations (36 CFR 800.8).(NEPA). The first meeting open to the public was a public scoping/Section 106 meeting held at the National Capital Region headquarters building on March 9, 2010. The NPS intends to continue consulting with the public per 800.3(e) in public meetings and through our Planning, Environment, and Public Comment (PEPC) website – www.parkplanning/nps.gov. It is anticipated that these outreach efforts will accommodate both NEPA and the 106 process. We will continue to post presentation materials to PEPC that can assist the public and consulting parties in their review of the project.

At this stage in the design process, the NPS is not prepared to make a formal determination of effect for the National Mall Turf and Soil Reconstruction, but looks forward to consultation with the District of Columbia Historic Preservation Office on this and other steps in the process.

Thank you for your help. If you have any questions, please do not hesitate to call me or Mark Isaksen, Chief of Resource Management, National Mall and Memorial Parks at (202) 245-4711.

Sincerely,



John Piltzecker
Superintendent
National Mall and Memorial Parks

cc. Mr. Reid Nelson, Advisory Council on Historic Preservation
Ms. Nancy Witherell, National Capital Planning Commission
Mr. Thomas Luebke, U.S. Commission of Fine Arts

U. S. COMMISSION OF FINE ARTS

ESTABLISHED BY CONGRESS 17 MAY 1910

401 F STREET NW SUITE 312 WASHINGTON DC 20001-2728 202-504-2200 FAX 202-504-2195 WWW.CFA.GOV

28 May 2010

Dear Ms. O'Dell:

In its meeting of 20 May, the Commission of Fine Arts reviewed the concept submission for turf and soil reconstruction, a new irrigation system, and new granite curbs and gutters for three center lawn panels on the National Mall. The Commission expressed its appreciation for the concept and approved it with the following comments.

The Commission members supported the proposal to edge the lawn panels with masonry curbs and gutters incorporating a drain, which will provide a clean edge for the panels; they unanimously expressed a strong preference for the use of granite instead of precast concrete. They recommended minimizing the width of this border and reducing the radius of the corners to clearly distinguish the design from typical street curb details and noted the importance of carefully integrating the drains into the design.

The Commission members expressed their support for the effort to create a sustainable design that will withstand conditions of heavy use. Regarding the proposed irrigation system, they suggested using only center and edge water supply lines—which should be sufficient and easier to protect from damage—and eliminating the lateral lines. They advised considering biodiversity when selecting plant materials for the lawn panels. Finally, the Commission encouraged the National Park Service to strengthen the policies and procedures governing maintenance and events on the Mall to further protect the lawn panels.

As always, the staff is available to assist you with the next submission.

Sincerely,



Thomas E. Luebke, AIA
Secretary

Margaret O'Dell, Regional Director
National Park Service, National Capital Region
1100 Ohio Drive, SW
Washington, DC 20242

cc: Peter May, National Park Service
Suzette Goldstein, HOK



N. Witherell

NCPC File No. 7110

THE NATIONAL MALL
TURF RECONSTRUCTION ON THREE EASTERMOST CENTER PANELS

The National Mall
Washington, DC

Submitted by the National Park Service

May 27, 2010

Abstract

The National Park Service (NPS) has submitted a concept design for the reconstruction of the turf and soil on the National Mall. The scope of the current project is the three easternmost center lawn panels (Panels 29, 30, and 33), bounded by 3rd Street, NW on the east and 7th Street, NW on the west. NPS intends to reconstruct all the center lawn panels in three phases. The scope of the current project includes reengineering the subsurface soil, planting new turf, constructing shallow, mountable curbs and gutters around the panels to harvest rainwater and contain the engineered soil, grading the panels with a slight crown on the center line, and constructing a below-grade irrigation and water storage system for the turf. In concert with these physical improvements, NPS will develop and implement new guidelines for managing events on the National Mall. The proposed work is consistent with the goals of the draft National Mall Plan.

Commission Action Requested by Applicant

Approval of comments on the concept design, pursuant to 40 U.S.C. § 8722(b)(1) and (d).

Executive Director's Recommendation

The Commission:

Comments favorably on the concept design for the reconstruction of the turf and soil and the construction of a curb and gutter around the three easternmost center lawn panels of the National Mall, as shown on NCPC Map File No. 1.41(70.00)43062.

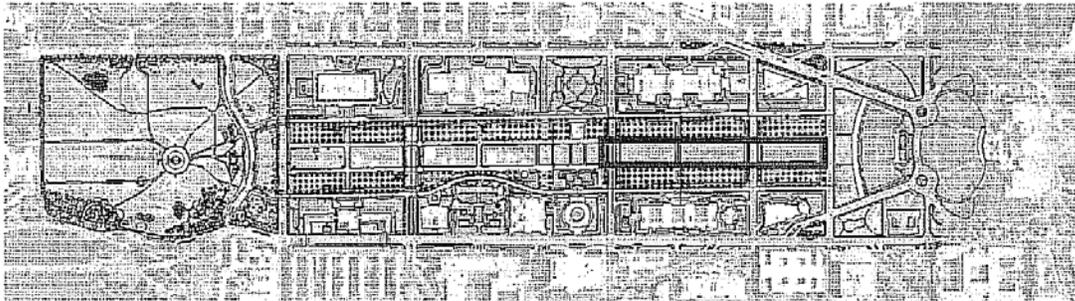
Recommends that the curb be constructed of granite and **notes** that NPS will continue consultation on the dimension of the curb radius as the design is developed further.

* * *

PROJECT DESCRIPTION

Site

The National Park Service (NPS) proposes the first phase of an anticipated three-phase project to reengineer the turf and soil on the center lawn panels of the National Mall. The proposed first phase will extend from 3rd Street to 7th Street, NW. The turf and gutter construction for the first phase is solely for three center lawn panels, and does not include tree panels.



Background

One of the highest priorities in the National Mall Plan, approved in draft by the Commission at its March 4, 2010 meeting, is the improvement of the health, appearance, durability, sustainability, and recoverability of the Mall turf. The soil is heavily compacted and doesn't drain well, the turf is often worn away and presents an irregular and uneven appearance, and the irrigation system doesn't function. The impact of heavy and sustained use creates a strain on the soil and turf, and also on the elm trees. There has been no major reconstruction on the Mall since the Bicentennial. Since that time, demands on the National Mall have increased with more frequent and longer events and higher visitation. The proposed project is the first phase in addressing these conditions. NPS anticipates funding the turf and soil reconstruction of the center panels from 3rd to 14th Street, NW in three phases.

Proposal

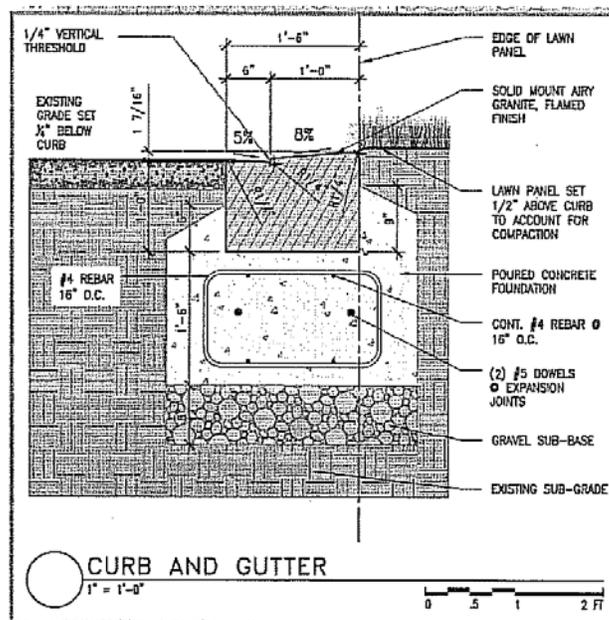
The goals for the turf and soil reconstruction project, as defined by NPS, are:

- Develop and establish a healthy and sustainable natural resources baseline for soils, turf and trees so that the Mall can host anticipated types and levels of use.

- Accommodate the high levels of use in a manner that sustains the character and integrity of the Mall.
- Maximize the site's potential for stormwater absorption and minimize reliance on public water use.
- Preserve existing trees and other vegetation to reinforce the historic landscape and emphasize native species.
- Improve the visual quality of the Mall.

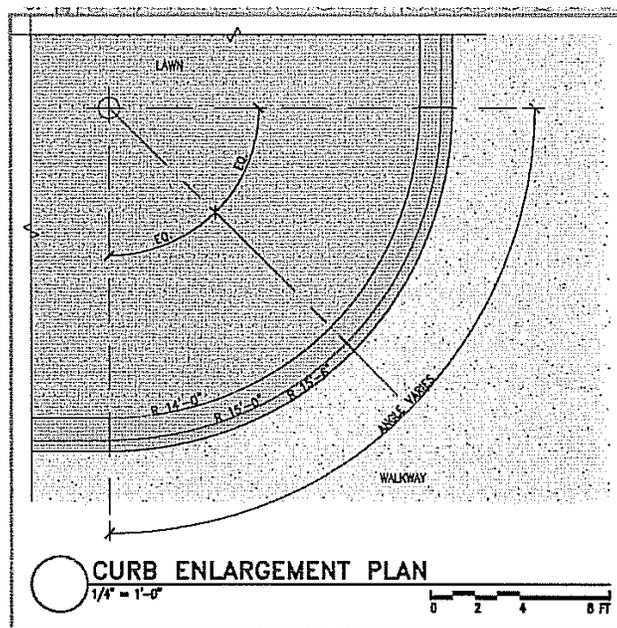
Most of the improvements associated with the current proposal are below grade and not visible to the public. The proposed visible feature would be a shallow, mountable curb and gutter 18 inches in width and 1/4 inch in height around the perimeter of the three easternmost center lawn panels. The purpose of the curb is to provide structural support and containment for the engineered soil and to direct the run-off to the below-grade water management system.

The curb and gutter would be barely perceptible in height, and fully accessible to those using wheelchairs and strollers. The curb, comprising 12 inches in width of the total 18-inch width, will have an 8% slope with a 1/4-inch vertical threshold. The gutter, comprising the outermost 6 inches of the 18-inch width, will have integrated grating-covered catch basins every 36 feet (and possibly farther apart) that will direct runoff into a stormwater drainage line under the lawn panels. The drainage lines will convey the collected runoff to below-grade storage cisterns.



NPS proposes White Mount Airy granite with a flame finish for the curb and gutter. A second choice is precast concrete. Staff strongly recommends the use of granite. Fifteen-foot curb radii are proposed for the corners of the lawn panels, which would return the curb radii to the dimension in use on the Mall from the 1930s--when Frederick Law Olmsted, Jr. implemented the McMillan Plan--until the 1970s, when Skidmore, Owens, and Merrill redesigned the roads and paths on the National Mall by, in part, filling the east-west street beds with gravel.

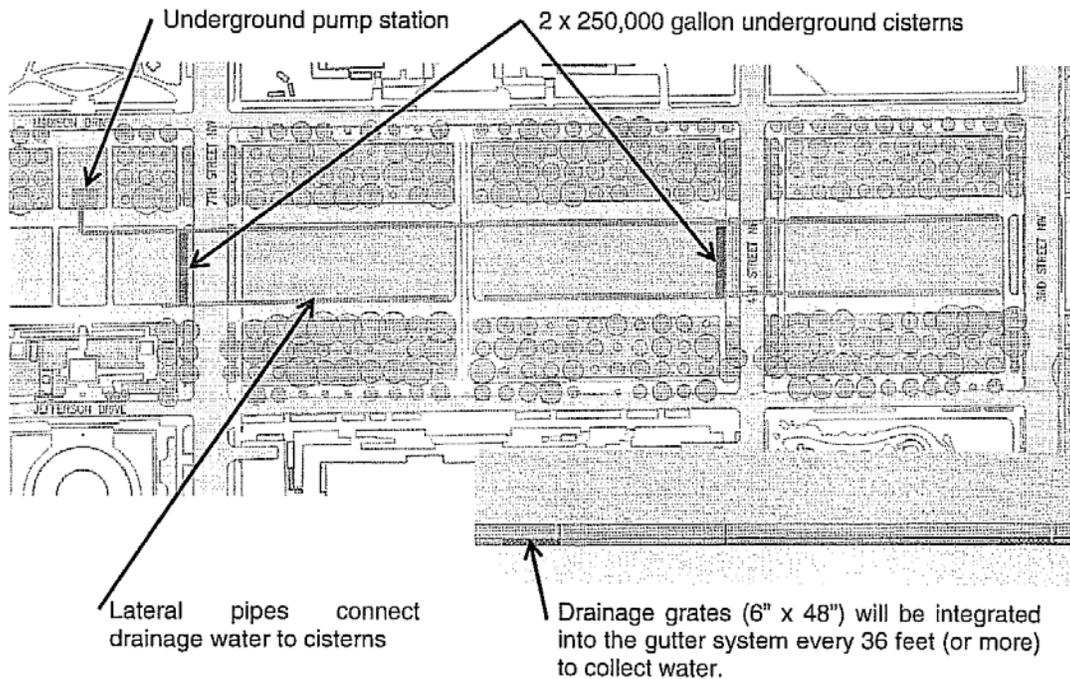
NPS recommends the 15-foot curb radii in part to restore the earlier appearance of the lawn panels, but also as a method of minimizing the compaction of the soil in the lawn panels and the deterioration and loss of turf at the corners, a typical and unsightly condition with the current gravel paths. In addition, gravel migrates to the lawn panels and soil migrates to the paths. Rainwater ponds at the edges of the gravel paths because it does not drain adequately.



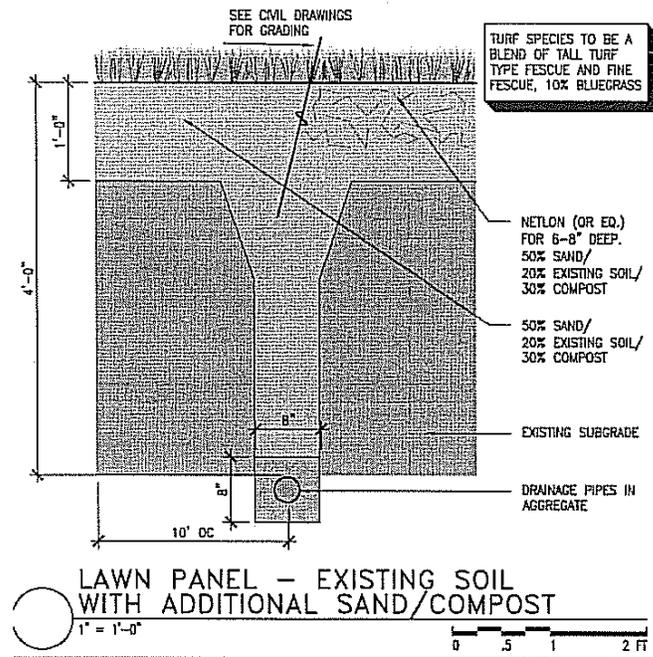
Rapid drainage of soil water is critical if the Mall is to continue to be scheduled for use for events, regardless of rain. The center panels will be re-graded with a slight crown in the center line to facilitate capture of stormwater runoff in the gutters and drains. The slight rise in the grade will also have the benefit of visually connecting the lawn panels as they are seen in long views. In addition, the gravel pedestrian paths will be re-graded slightly to drain toward the lawn panels and the gutters. Low points conducive to ponding will be eliminated, especially in the area west of 4th Street, NW.

Rainwater will be harvested through the new system of gutters. A reliable and durable drip irrigation system will be installed beneath the turf, deep enough to avoid puncture by tent stakes. Two 250,000-gallon cisterns to be installed below the north and south walkways west of 7th

Street, NW and west of 4th Street, NW, connected to the network of lateral pipes and a below-grade pump station. The irrigation pump station will be constructed below the treeless, open panel on the 8th Street cross-axis south of Madison Drive.

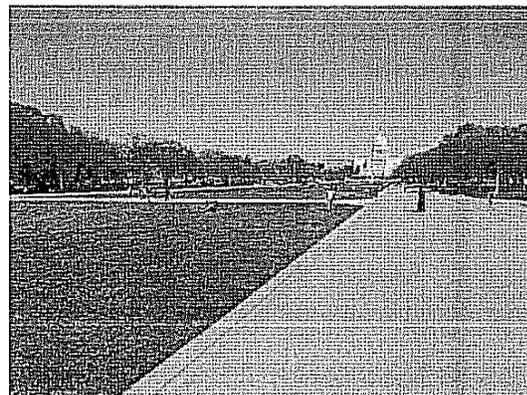
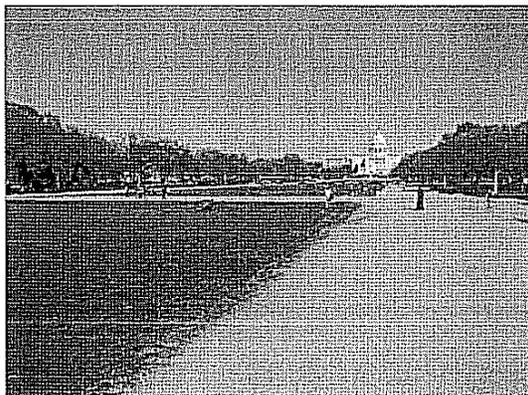


Accompanying the proposed water management system is the full reengineering of the soil under the turf. The top six inches of existing soil will be removed and stockpiled at the site. Up to an additional 12 inches of soil will be removed from the site. The subgrade will be fine-graded to contours parallel to the proposed finish grades and with a 2% cross slope on the lawn panels. An aggregate drainage layer will be laid. Coarse concrete sand will be added to the topsoil. The soil mix will then be added and compacted to the optimum density. The addition of Netlon (a soil mesh reinforcement product) or a similar product will be laid to a depth of six to eight inches below the finished grade to improve compaction resistance. The mesh is a benign, extruded plastic with a strong memory that is resilient to compaction. Finally, the turf (at present, proposed to be a blend of tall, turf-type fescue and fine fescue, mixed with 10% bluegrass) will be grown. The turf blend must accommodate short-term repairs and replacement after events, but also long-term health and viability.



NPS anticipates an appropriation for this phase of the work in Fiscal Year 2011, awarding a construction contract in March 2011, and completing construction work by June 2013.

Below are a current photograph of the edge of a center lawn panel showing an irregular turf edge and ponding of rain water ("before") and a rendering of the panel with the curb and gutter ("after").



PROJECT ANALYSIS

Staff comments favorably on the proposed concept design for the reconstruction of the turf and soil on the National Mall, including the construction of a curb and gutter around the center lawn panels. The scope of the current proposal is the three easternmost center lawn panels, between 3rd and 7th Streets, NW.

Staff supports the goals of the National Park Service, as stated in the draft National Mall Plan, of improving the health and appearance of the Mall turf and trees, improving the level of sustainable management of the Mall and its resources, improving the durability and recoverability of the turf for events and recreational activities, and providing accessibility throughout the Mall.

At the design concept stage, the project is still in design development and will require further analysis and consultation. The environmental assessment, when it is completed, will provide additional information and analysis, as will the Section 106 consultation.

An initial public scoping meeting for the project was held on March 9, 2010, and several consultation and technical meetings have been held with review agency staffs, consulting parties, and experts, including members of the project team. The team includes HOK, Jim Urban, and Patricia O'Donnell, experts in the design and maintenance of turf fields, tree protection, and historic landscape preservation.

The subject of most discussion, and the visible alteration in this project, is the installation of a low curb and gutter around the perimeter of the center lawn panels. Staff recommends that granite be used. The vertical height of the "curb" will be imperceptible to the eye, but the 18-inch width of the curb and gutter will be a change from the current condition. The SOM scheme, as planned, had 90-degree corners where the lawn panels met the gravel paths. The corners soon deteriorated, however, due to visitors and vehicles crossing them, and it has become difficult if not impossible for NPS to re-sod and maintain the corners. The gravel has migrated into the grass panels not only at the corners but along the edges, so that it is difficult to discern the true edges of the panels.

NPS has proposed, therefore, to return to the radii of the previous era of the Mall, where street curbs implemented to the designs of Frederick Law Olmsted, Jr. in the 1930s were dimensioned with a 15-foot radius curve. NPS hopes that the curbs will provide a visual clue to visitors to stay on the gravel paths when reaching a path intersection, rather than cutting across the panel corners. On the other hand, the curb and gutter are shallow and easily mountable by wheelchair and stroller users who wish to use the center lawn panels. More important, the curb and gutter will mark where vehicles should not drive more emphatically than the current irregular edges can do.

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

March 15, 2010

Ms. Susan Spain, Project Executive
The National Mall Plan
National Mall & Memorial Parks
900 Ohio Drive, S.W.
Washington, D.C. 20024

Re: National Mall Plan, To Prepare a Long-Term Plan that will Restore National Mall, Implementation, Draft Environmental Impact Statement, Washington, D.C. (CEQ #20090432)

Dear Ms. Spain:

In accordance with the National Environmental Policy Act (NEPA) of 1969, Section 309 of the Clean Air Act and the Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1509), the U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the National Mall Plan in Washington, D.C.

The National Mall covers approximately 684 acres and each year the National Park Service (NPS) receives over 6,000 applications for public gathering permits, resulting in around 3,000 events. In one year (2008), for instance, the National Mall received approximately 22.3 million visits. The purpose and need for the proposed action is to develop a long-term plan that will restore the National Mall so that it may continue to symbolize the ideals and greatness envisioned for the United States of America. The approved plan will be followed by site-specific implementation plans including additional compliance with the NEPA and National Historic Preservation Act (NHPA), as needed.

The DEIS examines five alternatives for the management of the National Mall in Washington, D.C. They are: the No-Action Alternative which would continue current conditions; Alternative A would focus on the historic landscape with its memorials and planned vistas; Alternative B would focus on creating a welcoming national civic space for public gatherings, events, and high-use levels; Alternative C would focus on urban recreation and use plus a sustainable urban ecology; and the Preferred Alternative which combines ideas from all of the other alternatives considered. It would establish a sense of place and an overall identity for the National Mall, creating a coherent pedestrian environment that would complement and balance the natural environment, formal and informal features, and national commemorative works.

In general, the Preferred Alternative would involve refurbishing the premier civic space so that very high levels of use could be perpetuated and the needs of visitors met in an energy-efficient and sustainable manner. Its memorials and landscapes would be protected, with large areas of open space as defining features of the historic landscape. Lawns and elm trees would be improved and protected. Compacted soils would be removed and replaced with engineered soils capable of better withstanding intensive use. Visitor amenities would be added throughout the Mall including the addition of a multipurpose facility to include food service, restrooms, education exhibits, information, a book store, retail, recreation equipment rentals (model boats, portable lawn chairs). Pedestrian circulation would be improved including constructing separate bicycle and pedestrian trails and redesigning the tour bus drop-off area, widening walkways, and paving gravel walkways. The Preferred Alternative would incorporate additional recreational opportunities and improved playing fields, more shaded seating, additional pedestrian lighting, and an emergency notification system. In addition, the Tidal Basin seawalls would be rebuilt; a vegetated shoreline would be established along the Potomac River. The lake at Constitution Gardens would be rebuilt to be self-sustainable, with potentially a nonpotable, sustainable water source. A small reflecting pool is considered at Union Square which may be constructed for various uses.

EPA supports the purpose and need for the proposed action and the Preferred Alternative. However, as a result of our review of the DEIS, EPA developed comments and questions (presented in the attached Technical Comments). Specific concerns are expressed regarding water resources, fish and wildlife, and soils; in particular impacts to habitat in the Tidal Basin. EPA rated the DEIS an EC-2 (Environmental Concerns/Insufficient Information), which indicates that we have environmental concerns regarding the proposal and that there is insufficient information in the document to fully assess the environmental impacts of this project. A copy of the EPA's rating system is enclosed for your information.

Thank you for providing EPA with the opportunity to review this project. If you have questions regarding these comments, the staff contact for this project is Karen DelGrosso; she can be reached at 215-814-2765.

Sincerely,



Barbara Rudnick
NEPA Team Leader
Office of Environmental Programs

Enclosures (4)

Note: Only the comments relative to Turf and Soil are included in this Appendix as part of the EPA correspondence.

Soils/Vegetation

The NPS is proposing to improve soil conditions in heavily used areas in the center of the Mall by replacing or augmenting soils or implementing other sustainable technologies. In doing so, the hope would be to decrease soil compaction, increase soil quality and productivity by increasing the soils capacity to hold water and air. There is no mention of the kinds of sustainable technologies that may be used to improve soils. However, the NPS is planning to prepare an EA to address the alternatives for improving the growing conditions for turf and trees and an evaluation of options will be addressed. EPA is interested in receiving the proposed EA to assess the NPS alternatives. In the meantime, EPA poses the following questions:

With replacing or augmenting soils or implementing sustainable technologies, can it be projected how long the improved soil conditions are expected to last and a plan developed to incorporate a timetable for scheduled monitoring or maintenance? Has the NPS considered implementing soil stabilization (seeding or covering areas that have been disturbed, tilled, etc) during construction? It is suggested that the NPS consider infiltration trenching (adding a sub-layer of permeable material such as gravel, to increase infiltration) as well as consider directing run off from paved areas to the permeable ones.

In an effort to protect the hundreds of American elm trees and many acres of turf affecting the historic tapis verte (grass panels) which is the essential feature of the 1930 version of McMillan Plan, it would seem prudent to implement a monitoring plan to ensure permeability of soils and overall health of turf and trees. EPA commends the NPS for its discussion and commitment (page 66, Monitoring and Adaptive Management) to propose undertaking implementation plans to lay out how to achieve desired resource conditions as well as monitor progress. EPA suggests that an in depth discussion of the monitoring plans for the proposed alternatives to improve soils, turf and trees be outlined and compared in the proposed EA.



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.