



National Mall Turf and Soil Reconstruction

ENVIRONMENTAL ASSESSMENT

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October 2010

Reconstruction of the

Turf and Soil on the National Mall

Environmental Assessment

October 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



Objectives

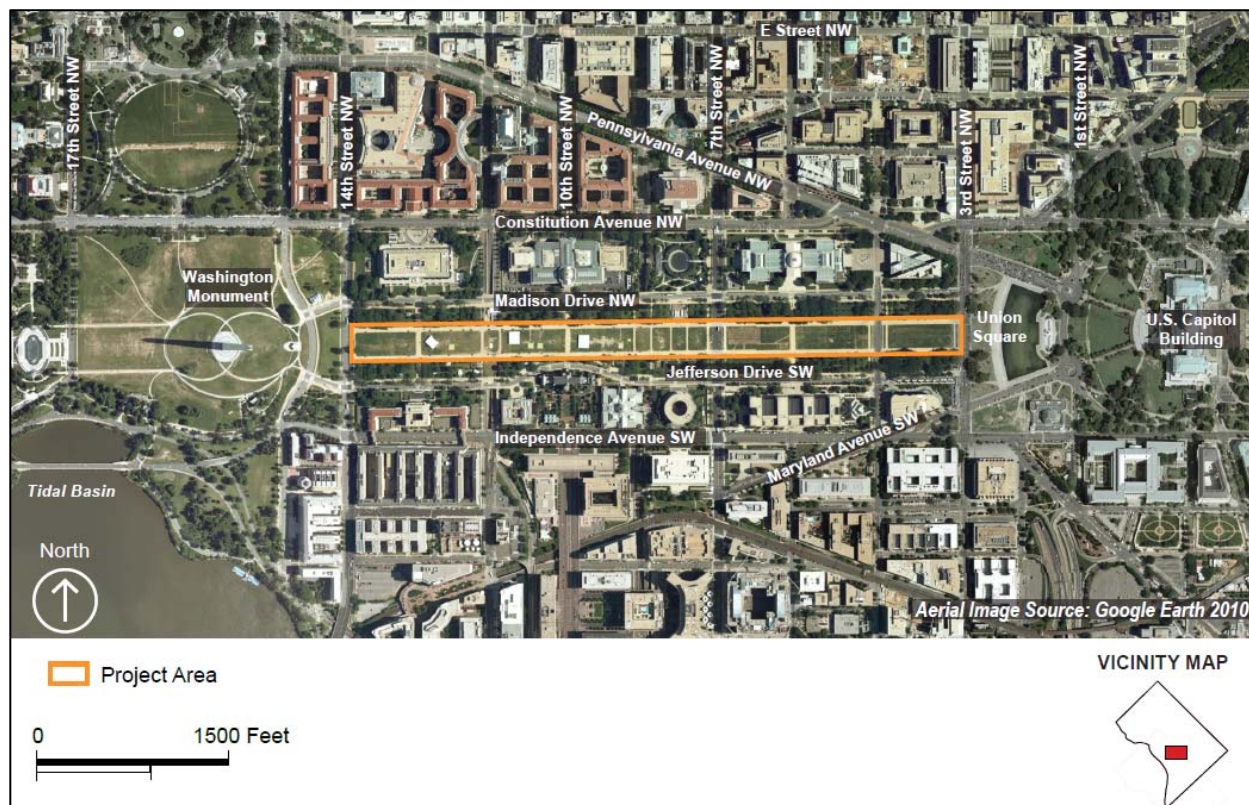
Objectives are “what must be achieved to a large degree for the action to be considered a success” (NPS Director’s Order 12 [DO-12]; NPS 2001) and represent more specific statements of purpose and need. All alternatives selected for detailed analysis must meet all objectives to a large degree and must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

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

Project Location

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

Figure 1.2 – Project Area



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

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

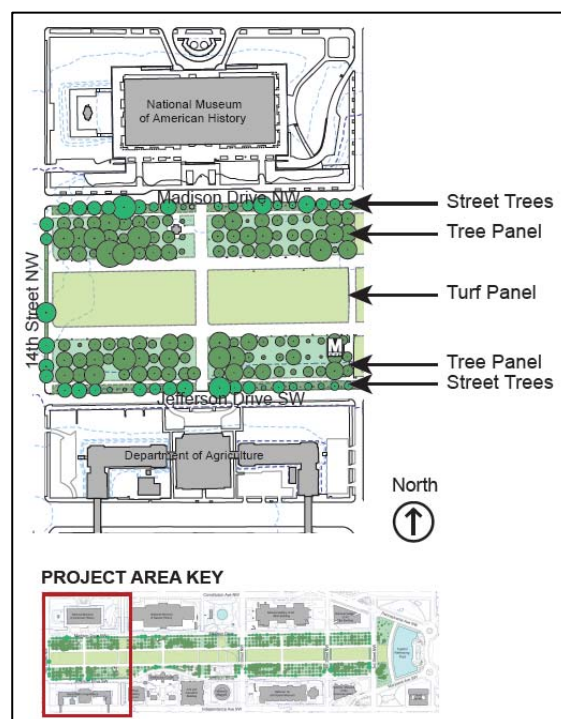
The tree panels and street trees were initially included in the scope of proposed actions, but due to funding limitations, these areas were removed and will be considered as a subsequent NPS project.

Project Background

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

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

Figure 1.3 – Example of 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.

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.

Purpose and Significance of the National Mall and Memorial Parks

ESTABLISHMENT

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

PURPOSE

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

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

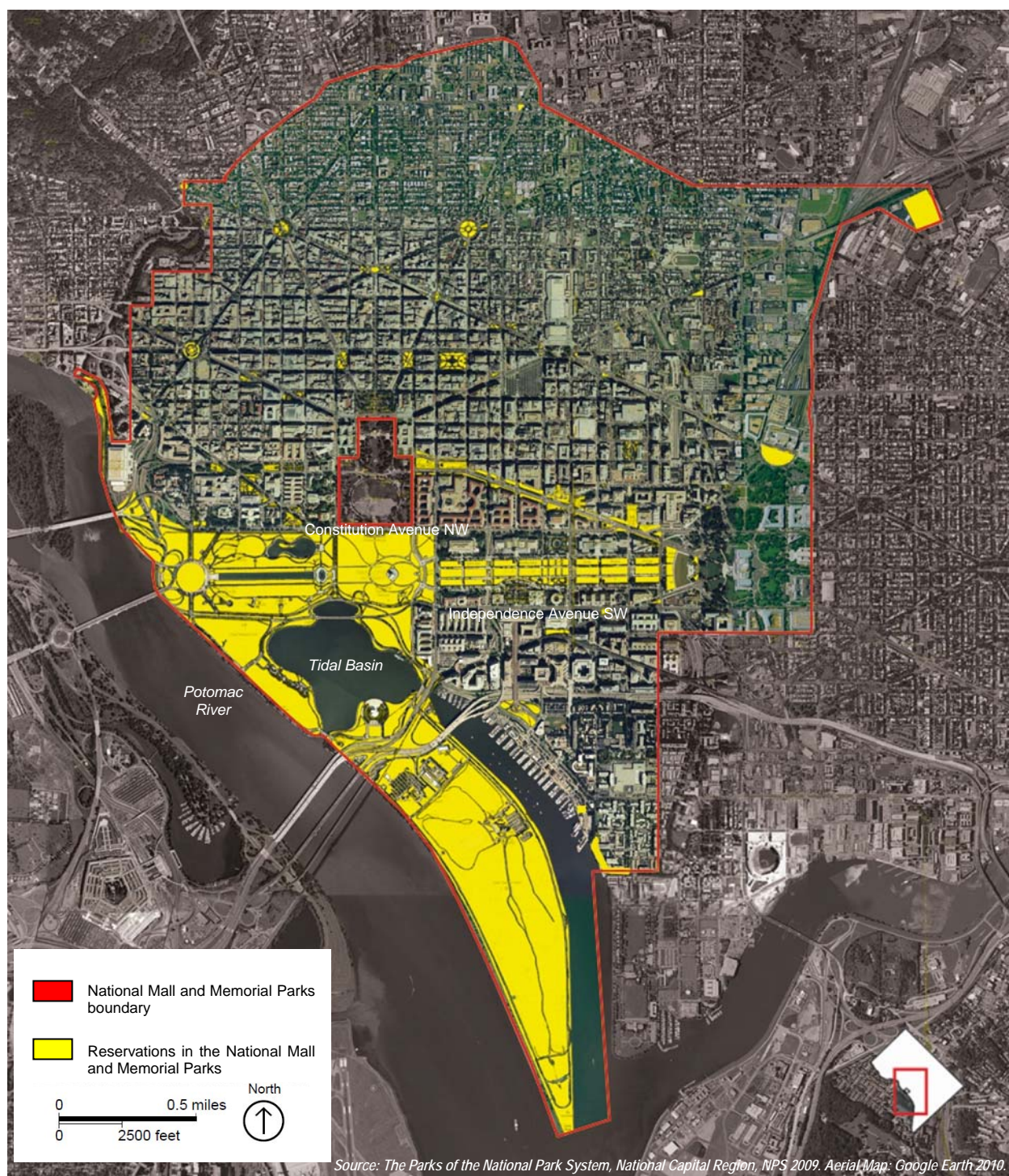
SIGNIFICANCE

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

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

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

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



Applicable Federal Laws and Regulations

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

NATIONAL ENVIRONMENTAL POLICY ACT, 1969, AS AMENDED

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

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

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

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

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

HISTORIC SITES ACT OF 1935

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

NPS ORGANIC ACT

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

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

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

NATIONAL PARKS OMNIBUS MANAGEMENT ACT OF 1998

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

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

AMERICANS WITH DISABILITIES AND ARCHITECTURAL BARRIERS ACT GUIDELINES

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

REDWOOD NATIONAL PARK ACT OF 1978, AS AMENDED

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

CODE OF FEDERAL REGULATIONS

36 CFR § 1.5

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

36 CFR § 7.96

The Code of Federal Regulations (CFR) sets forth how demonstrations and special events uses are managed within NPS units including the National Mall (CFR 2006). These regulations govern when and how permits may be issued or denied as well that permit conditions may be issued in the interest of protecting park resources. Such permits go into the details of 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 the public. 36 CFR § 7.96 also specifies the location, timing, and size of designated national celebration events in the NCR NPS units.

COMMEMORATIVE WORKS ACT (1986)

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

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

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

Executive Orders and Director’s Orders

EXECUTIVE ORDER 13514: FEDERAL LEADERSHIP IN ENVIRONMENTAL, ENERGY, AND ECONOMIC PERFORMANCE

Issued on October 5, 2009, Executive Order 13514 seeks to make improvements in the overall sustainability of the federal government. This order requires all federal agencies to develop a plan to meet a wide range of goals for improving sustainability, such as sustainable community planning, water efficiency, environmental management, high performance buildings and systems, and reduced greenhouse gas emissions (Exec. Order No. 13514 74 FR 52117 2009).

DIRECTOR'S ORDER 28: CULTURAL RESOURCE MANAGEMENT

DO-28 calls for the NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the NPS Management Policies (NPS 1998b). This order also directs the NPS to comply with the substantive and procedural requirements described in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, the *Secretary of the Interior's Standards for the Treatment of Historic Properties* with Guidelines for Treatment of Cultural Landscapes; and the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Building (NPS 1992). Additionally, the NPS will comply with the 2008 Service-wide Programmatic Agreement with the ACHP and the National Conference of State Historic Preservation Officers. The accompanying handbook to this order addressed standards and requirements for research, planning, and stewardship of cultural resources including archeological resources, cultural landscapes, historic and prehistoric structures, museum objects, and ethnographic resources.

DIRECTOR'S ORDER 28A: ARCHEOLOGY

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

DIRECTOR'S ORDER 53: SPECIAL PARK USES

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

DIRECTOR'S ORDER 77-2: FLOODPLAIN MANAGEMENT

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

NATURAL RESOURCES MANAGEMENT GUIDELINE, NPS-77

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

Local Plans and Policies

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

L'ENFANT PLAN (1791)

The original comprehensive plan of Washington, D.C., was designed by Peter (Pierre) Charles L'Enfant in 1791 as the site of the federal city. L'Enfant developed a plan that featured ceremonial spaces and

grand radial avenues while respecting the natural contours of land. The resulting plan was a system of orthogonal streets with intersecting diagonal avenues that connected the most significant and important landmarks in the city.

THE McMILLAN PLAN (1901)

The ambitious McMillan Plan, created by the Senate Park Commission in 1901, sought to reestablish elements of the L'Enfant Plan, which included the restoration of the east end of the Mall, the correction of the awkward off-axis placement of the Washington Monument, the inclusion of the new "Potomac Park" (i.e., East and West Potomac Parks), and the removal of railroad tracks from the Monumental Core (Robinson & Associates 1999). The Commission envisioned the Mall as a formal tree-lined walk flanked by classical buildings, creating an unbroken vista between the Capitol and the Washington Monument. The visual focal point of the McMillan Plan was the Mall, which the Commission proposed to extend westward and enhance as a formal, axial greensward. The McMillan Commission members interpreted the L'Enfant Plan as calling for treating the entire Mall, now referred to as the National Mall, as a continuous space to be set aside entirely for public use. A specific landscape treatment plan for the Mall consisted of a greensward flanked on either side by four rows of elm trees (Moore 1902).

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

NPS MASTER PLAN FOR THE WASHINGTON MALL (1976)

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

EXTENDING THE LEGACY PLAN (1997)

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

THE NATIONAL MALL PLAN (RECORD OF DECISION EXPECTED IN FALL 2010)

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

During planning, the NPS evaluated a range of alternatives against how well they resolved known issues, addressed planning needs and objectives, fulfilled law and NPS policies, met NEPA goals, and what advantages each set of alternative ideas offered. The preferred or proposed action combined ideas from all

the alternatives and was continually updated based on public comment. The plan addresses natural and cultural resource protection, respects the history of development, and builds on the intent and extant features of historic plans. It also addresses the civic space venues and management (including First Amendment rights, national celebrations and special events/other permitted activities); multi-modal access and circulation; multiple types of visitor experiences and enjoyment such as tourism, recreation, visitor education/interpretation, visitor facilities and services; Park operations including revised approaches to turf recovery; and socio-economic impacts.

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

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

THE MEMORIALS AND MUSEUMS MASTER PLAN (2001)

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

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

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

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.

PROPOSED FEDERAL CAPITAL IMPROVEMENTS PROGRAM (2004)

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

- Stormwater management system throughout Washington, D.C.
- Improved pedestrian linkages between the National Mall attractions and the Anacostia/Potomac River waterfronts
- National Mall road improvements, resurfacing, streetscaping, etc.

NATIONAL CAPITAL FRAMEWORK PLAN (2010)

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

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

The NPS NCR Requirements for Special Events Held on Parkland establishes specific regulations to ensure that special events do not conflict with general Park uses or degrade Park resources. These regulations manage for 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 the public (NPS 2007).

NPS Management Policies

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

SECTION 4.1.3 - EVALUATING IMPACTS ON NATURAL RESOURCES

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

SECTION 4.8.2.4 - SOIL RESOURCE MANAGEMENT

The NPS will actively seek to understand and preserve the soil resources of Parks and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of soils. Management actions

will be taken to prevent or at least minimize adverse impacts to soils. These actions include obtaining adequate soil survey information, soil conservation, and to every extent possible, avoiding soil excavation (NPS 2006b).

SECTION 5.3.1 - PROTECTION AND PRESERVATION OF CULTURAL RESOURCES

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

SECTION 8.2.1 - VISITOR CARRYING CAPACITY

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

SECTION 8.2.2 - RECREATIONAL ACTIVITIES

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

SECTION 8.2.2.1 - MANAGEMENT OF RECREATIONAL USE

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

SECTION 8.2.4 - ACCESSIBILITY FOR PERSONS WITH DISABILITIES

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

SECTION 9.1.3.2 - REVEGETATION AND LANDSCAPING

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

SECTION 9.1.4 - MAINTENANCE

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

SECTION 9.1.5.1 - WATER SUPPLY SYSTEMS

The NPS will use water efficiently and sustainably and will only build new water systems or extensions to existing water systems if reasonable conservation measures will not be sufficient to cover Park needs or protect Park values. Outdoor use of water will be limited to those applications deemed essential to Park

operations. The NPS will use efficient methods for irrigation and whenever possible, and rainwater will be collected for maintenance and landscape uses (NPS 2006b).

Scoping Process and Public Participation

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

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

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

Agency Consultation

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

Throughout the Section 106 review process the NPS has consulted with the ACHP, the District of Columbia Historic Preservation Officer (DC HPO), and representatives of state and local governments, agencies, organizations, and the general public. Initial geoarcheological testing has been completed and the preliminary results have been shared in consultation with the DC SHPO. As the data is evaluated, potential mitigations, if necessary will be documented through the Section 106 process and the final NEPA decision document.

Issues and Impact Topics

Issues describe problems or concerns associated with current impacts from environmental conditions or current operations as well as problems that may arise from the implementation of any of the alternatives. Park staff identified potential issues associated with the reconstruction of turf panels on the National Mall

during internal scoping. The NPS' primary concern is to ensure that any alternative considered will allow for minimal disturbance of the existing Park uses and the cultural landscape. The issues and concerns identified during scoping were grouped into impact topics that are discussed in "Chapter 3: Affected Environment" and are analyzed in "Chapter 4: Environmental Consequences".

Impact Topics Analyzed in this EA

VISITOR USE AND EXPERIENCE

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

PUBLIC SAFETY

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

PARK MANAGEMENT AND OPERATIONS

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

UTILITIES AND INFRASTRUCTURE

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

SOILS

As a result of intensive use by visitors to the nearby monuments, museums, other attractions, special events, and recreational areas, the project area is currently subject to continued soil compaction. The proposed actions would reduce soil compaction in the short term, although long-term reduction in compaction would vary based on the selected soil profile option, other actions, and events practices. As a result of prospective impacts to soils that would occur from both the no action and action alternatives, this resource area is addressed as an impact topic in this EA.

VEGETATION

Similar to soils, heavy use by visitors to the project area impacts the vegetation, wearing down the turf and exposing the tree roots. The proposed actions would affect the turf and trees in the project area,

potentially reducing the negative impacts that have resulted from heavy use. As a result of potential impacts to vegetation that would occur from both the no action and action alternatives, vegetation is addressed as an impact topic in this EA.

VISUAL RESOURCES

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

CULTURAL RESOURCES

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

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

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

HISTORIC STRUCTURES AND DISTRICTS

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

CULTURAL LANDSCAPES

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

ARCHEOLOGY

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

Impact Topics Dismissed from Further Analysis

AIR QUALITY

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

CULTURAL RESOURCES (OTHER)

MUSEUM COLLECTIONS

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

ETHNOGRAPHIC RESOURCES

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

ENVIRONMENTAL JUSTICE

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

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

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

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

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

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

INDIAN TRUST RESOURCES

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

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

LAND USE

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

FLOODPLAINS

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

PRIME FARMLAND

Prime farmland is defined as land with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and which is also available for these uses. Prime farmland is protected under the Farmland Protection Policy Act of 1981 to minimize the extent to which

federal programs contribute to the unnecessary or irreversible conversion of farmland to nonagricultural uses. No prime farmlands are found within the project area; therefore, this topic was dismissed from further analysis.

SOCIOECONOMICS

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

NATURAL SOUNDSCAPES

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

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

THREATENED, ENDANGERED, RARE, AND SPECIAL CONCERN SPECIES

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

TRAFFIC AND TRANSPORTATION

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

WETLANDS

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

WILDLIFE

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

Impairment

According to NPS *Management Policies 2006*, an action constitutes an impairment when an impact “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” (NPS 2006b, sec.1.4.5). Whether an impact meets this definition depends on the particular resource and values that would be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in questions and other impacts. An impact on any Park resource or value may constitute an impairment, but an impact would be more likely to constitute an 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 the opportunity for enjoyment of the Park; or
- Identified as a goal in the Park's general management plan or other relevant NPS planning documents.

Impairment findings are not necessary for visitor experience, public health and safety, and Park management and operations because impairment findings relate 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 the same way that an action can impair Park resources and values. A draft impairment determination for the NPS preferred alternative is provided in Appendix A of this document. Park resources considered in this determination include utilities and infrastructure, soils, vegetation, visual resources, and cultural resources. A final impairment determination will be provided in the appropriate decision document developed on the findings of this EA.

CHAPTER 2: ALTERNATIVES

Introduction

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

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

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

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

ALTERNATIVE 1: THE NO ACTION ALTERNATIVE

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

ALTERNATIVE 2: THE ACTION ALTERNATIVE (PREFERRED)

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

- Three curb and gutter options are presented that explore the edge conditions of the turf panels and the separation between the walkways and turf.
- Three options for turf soil reconstruction that explore different ratios of new material added versus reusing existing soil are proposed. All options explore the possible addition of a soil stabilizing product to improve the capabilities of turf panels to withstand heavy and intensive wear.
- Several irrigation system options are proposed that address water distribution (Options C1 – C4), water supply (Options D1 and D2), and water storage (Options E1 and E2). In each option subsurface drainage lines would be installed in the new soil profiles to transport the water collected from potential water sources into a subsurface water storage system. A subsurface pump station would 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	Option B2 (Preferred)	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 (Potential Supplement to D1)	
		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 Where feasible, 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.	

Alternative 1: the No Action Alternative

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

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

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

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

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

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

Alternative 2: the Action Alternative (Preferred)

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

CURB OPTIONS

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

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

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

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

Figure 2.1 – Option A1

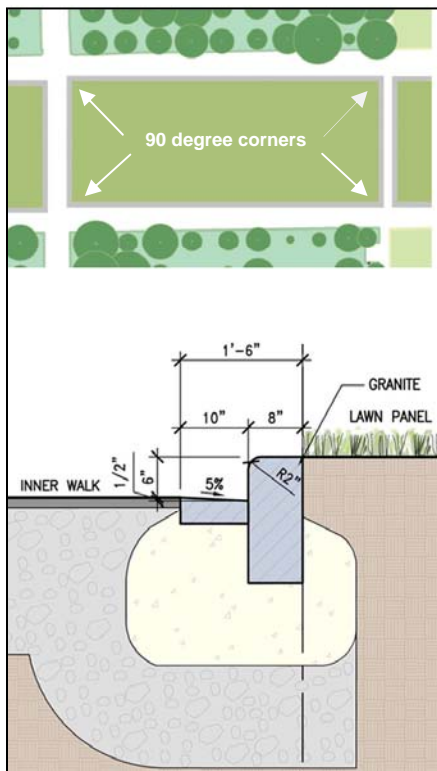


Figure 2.2 – Option A2

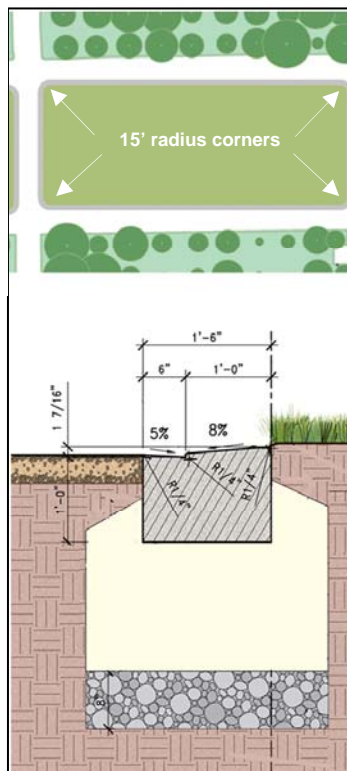
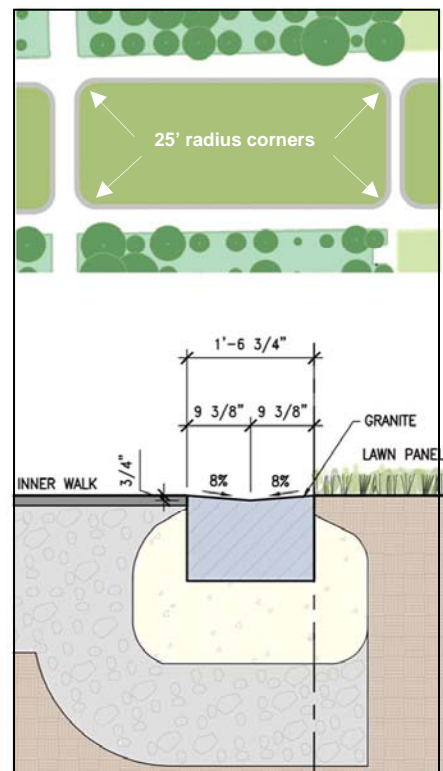


Figure 2.3 – Option A3



SOIL PROFILE OPTIONS

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

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

Option B2 – In this option (See Figure 2.5), 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. The grade would be reset to achieve a cross slope on the turf panels to encourage positive drainage.

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

Figure 2.4 – Option B1 Soil Fracturing

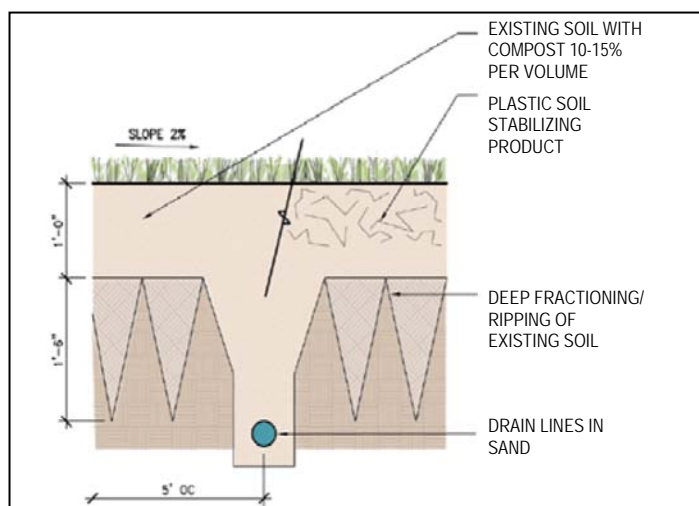


Figure 2.5 – Option B2 Existing Soil with Additional Sand

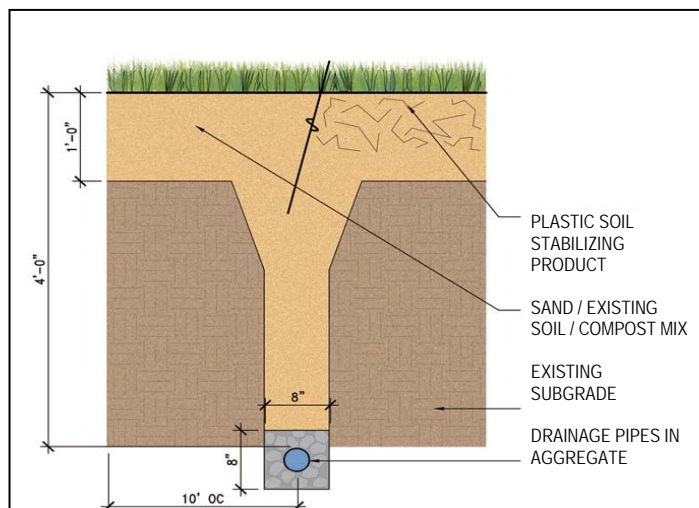
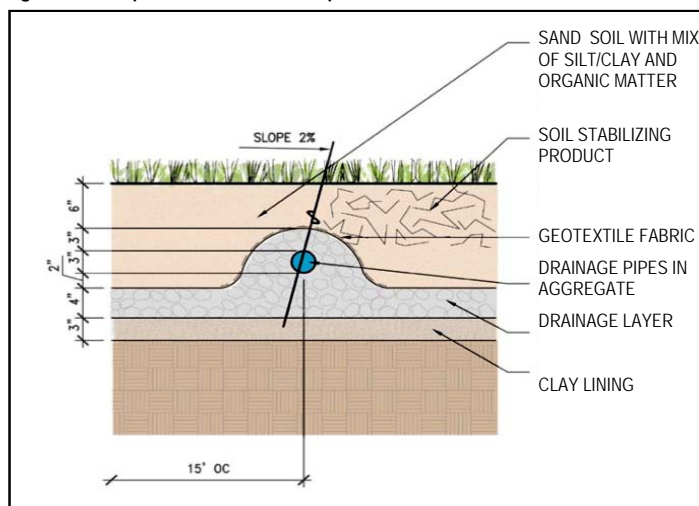


Figure 2.6 – Option B3 Sand Soil Option



IRRIGATION SYSTEM OPTIONS

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

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

WATER DISTRIBUTION

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

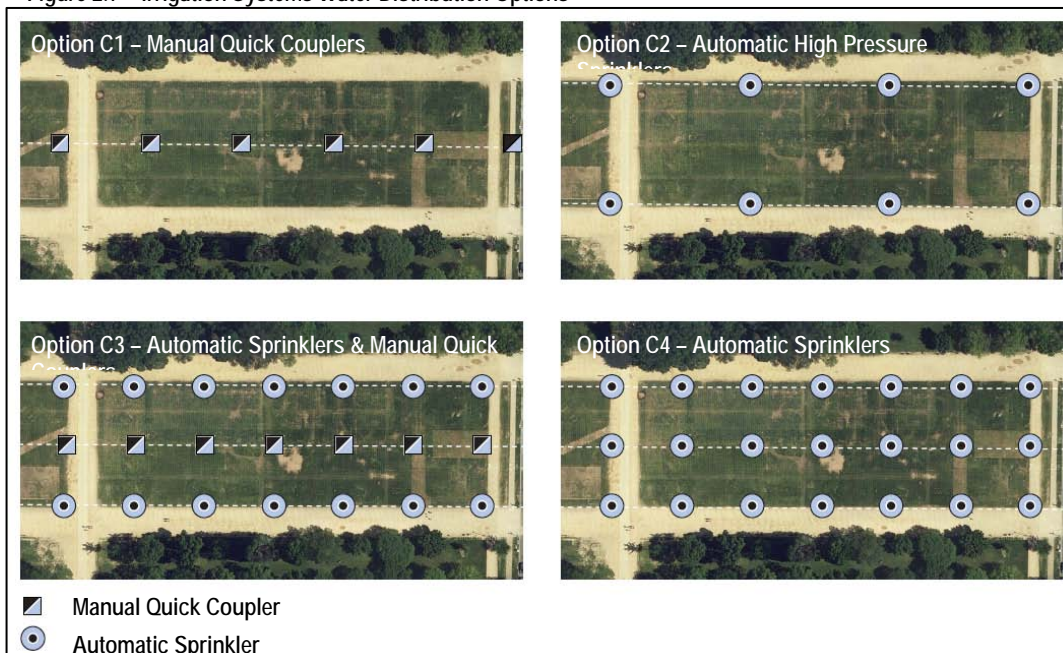
Option C1 – In this manual irrigation system, a single row of quick couplers would be installed at grade down the center of the turf panels along the east-west axis. This would be a pressurized piping system.

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

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

Option C4 – 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.

Figure 2.7 – Irrigation Systems Water Distribution Options



WATER SUPPLY

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

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

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

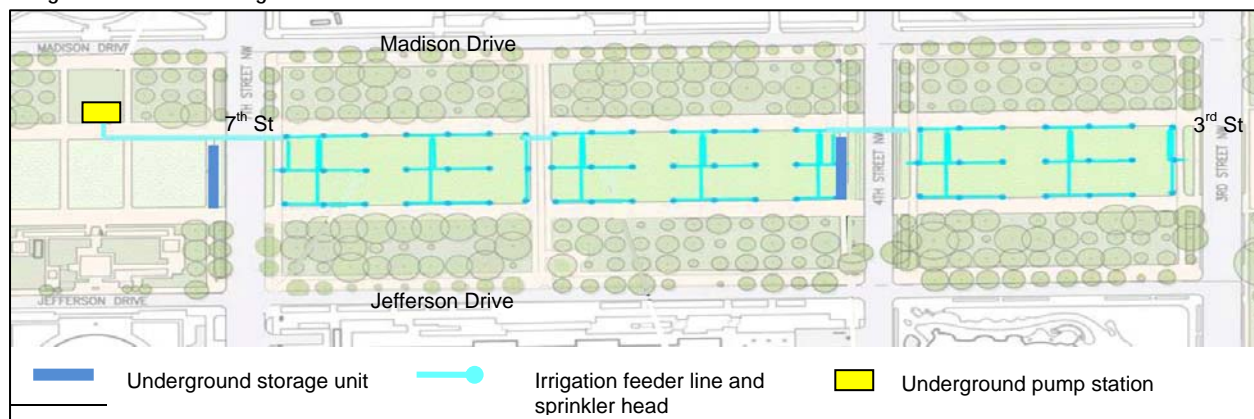
WATER STORAGE

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

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

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

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.

ELEMENTS COMMON TO ALL OPTIONS

Turf Panel Maintenance

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

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

Turf Management Strategies

The failure to maintain turf on the Mall is attributed to the combination of the high intensity and duration of multiple events coupled with inadequate recovery time between events. Large tents and structures are often erected during events, and can be very damaging to the turf and soil. Not only does the use of tents and structures contribute to soil compaction in the areas under the tent coverings, but this activity also destroys the entire turf plant by eliminating sunlight. Insufficient water, due to poor drainage at the surface and within the soil profile, combined with soil compaction, all contribute to the decline in the health of the turf. NPS studies have found it unlikely that design changes to the Mall will improve the conditions to the point where acceptable turf can be maintained under the current use and event schedule and practices (NPS 2009c).

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

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

Rest Periods – To enable turf recovery after instances of heavy use, the NPS may schedule a gap between events, the length of which would be determined by circumstances. The recommended rest period would depend on the magnitude and scale of special events, as well as whether temporary structures are used, and how many of them.

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

Construction

Construction would likely occur in four phases so that portions of the project area (to the east and west of 7th Street NW) would be under construction while some of the remaining areas would be used for staging. Public access to a portion of the Mall for vista enjoyment and photography would be maintained.

Mitigation Measures for the Action Alternative

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

VISITOR USE AND EXPERIENCE

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

PUBLIC SAFETY

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

CULTURAL RESOURCES

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

VISUAL/AESTHETICS

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

SOILS

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

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

Alternatives Considered but Not Carried Forward

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

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

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

WATER SUPPLY

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

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

WATER STORAGE

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

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

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

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

WATER DISTRIBUTION

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

The Preferred Alternative

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

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

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

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

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

CURB AND GUTTER OPTION A2

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

SOIL PROFILE OPTION B2

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

IRRIGATION SYSTEM – WATER DISTRIBUTION OPTION C4

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

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

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

IRRIGATION SYSTEM – WATER SUPPLY OPTION D1

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

IRRIGATION SYSTEM – WATER STORAGE OPTION E2

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

The Environmentally Preferable Alternative

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

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

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. The NPS, in accordance with the Department of the Interior policies contained in the Departmental Manual (516 DM 4.10) and the CEQ's NEPA's Forty Most Asked Questions (CEQ n.d.), defines the environmentally preferable alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA (Section 101[b]; 516 DM 4.10). In their Forty Most Asked Questions, CEQ further clarifies the identification of the

environmentally preferable alternative, stating “Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ n.d.).

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

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

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

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

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

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

How the Alternatives Meet the Objectives

The project objectives, enumerated in “Chapter 1: Purpose and Need,” must be achieved to a large degree for the action to be considered a success. The alternatives and options selected for detailed analysis must 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
Improve the visual quality of the National Mall	<p>Does not meet this objective.</p> <p>The no action alternative would not 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, nor would it address the lack of clear visual distinction between the walkways and turf panels. 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.
Accommodate high levels of use in the project area in a manner that sustains the character and integrity of the National Mall	<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 events would allow them 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>
Result in a more sustainable and healthier urban ecosystem that implements best management practices	<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.
Maximize the site’s potential for stormwater management and minimize reliance on public water sources	<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 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 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 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
Visitor Use and Experience	<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 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 resulting from continuance of current event management policies. However, due to the continued degradation and worn appearance of the turf panels as a result of events management, there would be long-term moderate adverse impact to visitor experience. 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 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 short-term moderate adverse impacts to visitor use and experience resulting from construction activity of the action alternative, in combination with the short-term moderate adverse effects of other past, present, and reasonably foreseeable future actions, would result in long term beneficial impacts interspersed with short-term moderate adverse cumulative effects during construction periods.</p>
Public Safety	<p>Under the no action alternative, there would be long-term minor 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. There would also be long-term minor adverse impacts to public safety because of diminished accessibility during snow periods caused by the impossibility of snow removal. The long-term minor 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 impacts to public safety.</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 moderate 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
Park Management and Operations	<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, as well as extra work required as a result of broken irrigation systems, would continue to create a noticeable and substantial strain on existing Park staff and operating costs to mitigate against the effects of intense visitor use. Additional staff are needed to maintain the current condition, resulting in long-term moderate adverse impacts to Park management and operations.</p> <p>Current use practices for 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 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 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>
Utilities and Infrastructure	<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: Continuation of these practices would result in continued long term, minor adverse impacts to the irrigation system, since although the effects on a functioning system would be noticeable, further damage to an already damaged system and difficult to repair system would not be noticeable. The impacts on the storwmater utility from the continued compaction related to no change in recovery are discussed in the previous paragraph. There would be no impacts to other utilities.</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 and beneficial 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 re-establishment after construction completion.</p> <p>Cumulative Impacts: The long-term beneficial impacts to vegetation resulting from the implementation of the action alternative, when combined with the long-term beneficial impacts from other past, present, and future projects, would result in long-term beneficial cumulative impacts to vegetation.</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
Cultural Resources: Historic Districts and Structures; Cultural Landscapes	<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>
Archeological Resources	<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: Because there is no impact to archeological resources as a result of the no action, it would not contribute to the overall cumulative effect on archeological resources.</p>