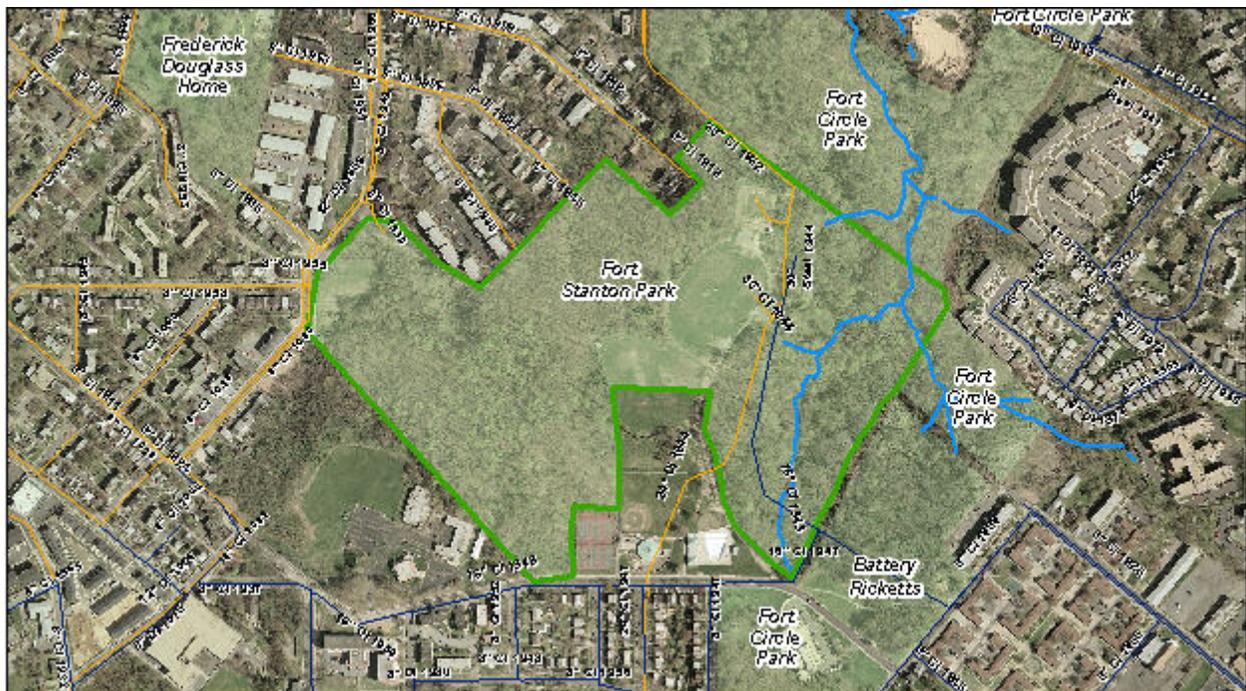




# SLOPE REPAIR, STABILIZATION, ENVIRONMENTAL RESTORATION AND TRANSFER OF JURISDICTION (DC WATER RESERVOIRS IN FORT STANTON PARK)

## *ENVIRONMENTAL ASSESSMENT*



*December 2010*

*Printed on recycled paper*

**NATIONAL PARK SERVICE  
U.S. DEPARTMENT OF THE INTERIOR**



FORT STANTON PARK  
WASHINGTON D.C.

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**SLOPE REPAIR, STABILIZATION,  
ENVIRONMENTAL RESTORATION AND  
TRANSFER OF JURISDICTION**  
*(DC WATER RESERVOIR PROPERTY)*

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## PROJECT SUMMARY

The National Park Service (NPS) and the District of Columbia Water and Sewer Authority (DC Water) propose to repair, stabilize and environmentally restore a failed slope embankment and concurrently execute a transfer of jurisdiction of NPS property to DC Water within Fort Stanton Park (U.S. Reservation 412). Fort Stanton Park is one of the Washington, District of Columbia (DC) Fort Circle Parks, and is managed by National Capital Parks – East (NCP-East). The failed slope embankment area consists of approximately 0.43-acres located on the southeast slope of DC Water’s Reservoir No. 2. The transfer of jurisdiction consists of approximately 5.9 acres and includes a fenced in area known as the Fort Stanton Reservoir Compound. The Fort Stanton Reservoir Compound consists of Fort Stanton Reservoir No. 1 (constructed in 1932 with a 3 million gallon capacity) and Reservoir No. 2 (constructed in 1943 with a 10 million gallon capacity) and some adjacent properties. As part of the transfer of jurisdiction, NPS has requested that DC Water include an area of approximately 10 feet off the fence line for maintenance purposes. The two below ground reservoirs within the reservoir compound supply drinking water and fire protection to approximately 100,000 customers in the DC Water’s Anacostia First High Service Area. The Anacostia First High Service Area generally includes the area southeast of the Anacostia River and bounded by Eastern and Southern Avenues. The proposed slope repair, stabilization, environmental restoration and the transfer of jurisdiction of NPS property to DC Water is needed to facilitate current and future repairs and maintenance operations within the reservoir compound.

This environmental assessment (EA) analyzes the impacts that would result from the implementation of the two proposed actions. Specifically, the NPS in coordination with DC Water examined alternatives for both proposed actions under this EA. The first proposed action is the Fort Stanton Park slope embankment repair, stabilization, and environmental restoration and the second proposed action is the transfer of jurisdiction of the reservoir compound from NPS to DC Water.

For the repair, stabilization, and environmental restoration of the embankment failure adjacent to Reservoir No. 2, this EA examines two alternatives: the no action (Alternative 1) and engineering fill blended with top soil (Alternative 2 – Preferred). Several other alternatives were considered but dismissed. Alternative 1 does not change the current conditions (i.e., no slope embankment stabilization or environmental restoration) and thus does not restore the failed slope embankment. If left as-is, the slope may continue to fail causing more downslope environmental damage and therefore, potentially cutoff water and fire protection service to approximately 100,000 people.

For the transfer of jurisdiction, the EA examines two alternatives: the no action alternative (Alternative 1) and the transfer jurisdiction of NPS property to DC Water (Alternative 2 – Preferred). Alternative 1 would have no impacts to the existing conditions nor would it change the current management arrangement at Fort Stanton Park. The preferred alternative would allow DC Water to complete the slope repair, stabilization, and environmental restoration and would allow DC Water to accomplish future repairs and maintenance operations at the reservoir compound under a formalized covenant agreement.

Impacts of the proposed alternatives were assessed in accordance with the National Environmental Policy Act (NEPA) and the NPS’s Director’s Order 12; *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001), which requires that impacts to park resources be analyzed in terms of their context, duration, and intensity. Several impact topics have been dismissed from further analysis because the proposed action alternatives would result in negligible to no effects to park resources. No major effects are anticipated as a result of this project.

**Note to Reviewers and Respondents:**

If anyone wishes to comment on this EA, please mail the comments directly or submit them electronically to NPS. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we would be able to do so.

**Mailed comments can be sent to:**

Superintendent, Fort Stanton Park, National Capital Parks - East  
*Slope Repair, Stabilization, Environmental Restoration And  
Transfer of Jurisdiction– Environmental Assessment*  
1900 Anacostia Drive S.E.  
Washington, DC 20020

**Comments can also be submitted on-line:**

In accordance NEPA, Section 10 of Planning, Environment, and Public Comment (PEPC) Public comments can be submitted on-line by following the appropriate links at:  
<http://parkplanning.nps.gov/NACE>.

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## **PURPOSE AND NEED FOR ACTION**

The National Park Service (NPS) and the District of Columbia Water and Sewer Authority (DC Water) propose to repair, stabilize and environmentally restore a failed slope embankment and concurrently execute a transfer of jurisdiction of NPS property to DC Water within Fort Stanton Park (U.S. Reservation 412). Fort Stanton Park is one of the Washington, DC Fort Circle Parks, and is managed by National Capital Parks – East (NCP-East). The failed slope embankment consists of approximately 0.43-acres located on the southeast slope DC Water’s Fort Stanton Reservoir No. 2. The transfer of jurisdiction consists of approximately 5.9 acres and includes a fenced in area known as the Fort Stanton Reservoir Compound. The Fort Stanton Reservoir Compound consists of Fort Stanton Reservoir No. 1 (constructed in 1932 with a 3 million gallon capacity) and Reservoir No. 2 (constructed in 1943 with a 10 million gallon capacity) and some adjacent properties (project area). As part of the transfer of jurisdiction, NPS has requested that DC Water include an area of approximately 10 feet off the fence line for maintenance purposes (Figure 1, Appendix A).

Both reservoirs are underground and constructed of concrete. The reservoirs supply drinking water and fire protection to approximately 100,000 customers in the DC Water’s Anacostia First High Service Area. The Anacostia First High Service Area generally includes the area southeast of the Anacostia River and bounded by the Eastern and Southern Avenues. The proposed slope repair, stabilization, environmental restoration and transfer of jurisdiction of NPS property to DC Water are necessary to facilitate current and future repairs and maintenance operations at the reservoir compound.

Located on NPS property in southeast Washington, DC, the approximate 72-acre Fort Stanton Park is the site of two (2) DC Water Fort Stanton Water Storage Reservoirs (No.1 and No. 2). The two reservoirs use two water mains, a 30-inch and a 24-inch, which provide water service to approximately 100,000 District of Columbia residents. Because of a slope embankment failure on the southeast side of Reservoir No. 2, DC Water proposes to perform slope embankment repair, stabilization, and environmental restoration as part of a broader project involving internal rehabilitation of Reservoir No. 2. Unlike Reservoir No. 1, Reservoir No. 2 has never been officially transferred from NPS to DC Water for management jurisdiction.

Sometime between July 18 and July 19, 2008 a slope embankment failure was first observed along the southeast edge of the service road adjacent to the Reservoir No. 2 as shown in the aerial photograph. The failure consisted of an earth slide approximately 130 feet in length, resulting in a scarp which exceeded 6 feet in height in some locations. The failure destroyed approximately 150 feet of storm drain piping, 200 feet of subsoil drainage piping, two manholes, and 250 feet of chain link fence. Soil was displaced about 100 feet into a wooded area down slope from the failure location. In addition, the 30-inch diameter water transmission main was partially exposed along the length of the scarp. The results of the failure are documented in the Figures 2 and 3 (Appendix A).

Factors that contributed to the instability and ultimate failure of the embankment include:

1. An unusual amount of precipitation during the months preceding the event;
2. The presence of gravel fill from the original construction that covers a steeply sloping clay layer;
3. Leakage from the reservoir;
4. Pipes which separated during the initial ground movement, contributing to a secondary failure;
5. Runoff from a 3.5 acre area which drains to a single catch basin.

This environmental assessment (EA) analyzes the impacts that would result from the implementation of the two proposed actions. Specifically, NPS in coordination with DC Water examined alternatives for both proposed actions under this EA. The first proposed action is the Fort Stanton Park slope repair, stabilization, and environmental restoration of the failed slope embankment as described above and the second proposed action is the transfer of jurisdiction of the reservoir compound and immediately adjacent land areas (approximately 10 feet off the fence line) from NPS to DC Water.

This EA has been prepared in accordance with the NEPA and the NPS's Director's Order 12; *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001). Compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 has occurred in conjunction with the NEPA process. Please refer below for the 1979 photo-revised United States Geological Survey (USGS) 7.5' Quadrangle: Anacostia, DC-MD (Figure 4, Appendix A) and an aerial photograph showing the location of Reservoir No. 1 and No. 2 and the location of the embankment failure (Figure 5, Appendix A).

### **PURPOSE OF THE ACTION**

The purpose of the first action is to allow DC Water to complete structural repairs, stabilize the slope embankment, and restore the embankment vegetation. The purpose of the second action is to complete a formal transfer of jurisdiction of the reservoir compound from NPS to DC Water. The formal transfer of jurisdiction would put the entire reservoir compound under DC Water management ensuring future repairs and maintenance operations for Reservoirs No. 1 and No. 2.

### **NEED FOR THE PROPOSED ACTION**

The southeast slope of Reservoir No. 2 failed sometime between July 18 and July 19, 2008. This failure compromised potable water supply and fire protection delivery to approximately 100,000 people living in the Anacostia First High Service Area. Some emergency repairs, including slope and pipe stabilization were completed to secure the infrastructure but the proposed remaining work is being evaluated in this EA. The remaining slope embankment repair, stabilization, and environmental restoration are needed to protect the water supply and assure that the slope does not fail again in the future. Currently, the slope is denuded, scarred, and not completely stabilized. The proposed transfer of jurisdiction of NPS property to DC Water is needed because the DC Water reservoirs are on NPS property and the transfer of jurisdiction would make future repairs and maintenance operations within the designated reservoir compound under a formal covenant agreement more efficient.

### **PURPOSE AND SIGNIFICANCE OF THE PARK**

Fort Stanton was built in 1861 as a Civil War-era fortification constructed in the hills above the Anacostia River. Fort Stanton was one of the forts built during the Civil War-era that encircled Washington, DC and protected the Capitol from attacks by the enemy. The forts today are collectively known as the Circle Forts. By the end of 1861, 48 defensive earthworks were completed and 68 forts had been completed. These forts covered an area around the City that measured 37 miles in circumference.

Fort Stanton was the first of six forts completed on a six mile ridge of land from Oxon Run (south) to where the District of Columbia line crosses the Anacostia (north). Fort Stanton was one of the forts east of the Anacostia and was used specifically to protect the Washington Navy Yard and the Washington Arsenal. Post war, Fort Stanton along with many other forts was dismantled by the U.S. Military. Some of the land was immediately returned to previous owners but ten forts were initially retained by the government and later returned to their original land owners. By 1873, all forts were in private ownership and in rapid deterioration.

In 1926, the newly formed National Capital Planning Commission (NCPC) pursued the construction of a road encircling Washington, DC and connecting the forts. In 1930, Congress passed the “Capper-Cramton Act”, authoring the acquisition and development of land for the District’s park and playground system. Under the Act, the NPS acquired a number of Civil War forts, including the 72 acre undeveloped parcel encompassing the remaining northern section of Fort Stanton. Since the time of its acquisition by NPS, Fort Stanton Park remains virtually undeveloped with the exception of the two reservoirs and adjacent properties.

The purpose of Fort Stanton Park, like many other national parks, is to preserve and conserve natural open spaces, scenery, wildlife, and historic objects for the present public enjoyment and for future generations.

## **PROJECT BACKGROUND AND RELATED PLANS**

The history of the Fort Stanton Reservoirs dates back to the early 1913 when water allocation for the Washington, DC area was first evaluated. To access available waters from the Anacostia River, the Anacostia Pumping Station was constructed. However, long-term water storage was not available. Fort Stanton sits atop one of the highest points in Washington, DC, overlooking the Anacostia River and is located relatively close to the Anacostia pumping station. Because of its elevation and proximal location to the pumping station, Fort Stanton was identified as a prime location for the construction of a reservoir to hold the pumped waters from the Anacostia River. Reservoir No. 1 was constructed and completed in 1932, followed shortly by the construction and completion of Reservoir No. 2 in 1943. Since the construction of the reservoirs, there have been modifications and upgrades to the structures including the addition of water lines (1944), the construction of the Reservoir No. 2 roof (1947), the installation of electrical ducts, ladders, sampling lines and lighting at Reservoir No. 2 (1949), the installation of the copper sample piping in Reservoir No. 1 (1962), and the recent rehabilitation, operation and maintenance of both reservoirs (2001 and 2003). In addition to these modifications, landslides in the vicinity of the reservoirs have also been reported (1944).

Most recently, in July, 2008, a portion of Reservoir No. 2 slope embankment failed and caused infrastructure damage that includes exposing the 30-inch water supply pipe and leaving the landscape exposed and scarred. Due to the emergency nature of the water supply pipeline being uncovered, it was necessary to immediately complete some of the repairs. However, final repair, stabilization, and environmental restoration of the slope embankment are proposed and evaluated in this EA.

During discussions with the NPS, it was noted that not of the all reservoir land areas were formally transferred from NPS to DC Water. As a result, it is proposed that a maintenance and operational boundary be established encompassing DC Water’s entire infrastructure, a small amount of land around the perimeter of the security fence, and the access road. Since an EA is necessary for the repair, stabilization, and environmental restoration of the failed slope embankment, NPS also proposed the remaining land portion of the reservoir compound be transferred from the NPS to DC Water.

## NATIONAL PARK SERVICE PLANS, POLICIES, AND ACTIONS

### NPS Fort Circle Parks – *Final Management Plan 2004*

The 2004 Final Management Plan provides broad direction for the use, management, and development of the Fort Circle Parks. The first inception of the plan, the *Fort Circle Parks Master Plan* of 1968, was developed to provide similar guidance, but it was never fully implemented (NPS 2004). The current document focuses on the management of cultural and natural resources, visitor use, recreation, interpretation and education.

Within the Plan, the NPS assigns zones to separate areas of each of the Fort Circle parks to provide a framework for decisions about use and development, and to establish specific management emphasis (i.e., recreation, natural or cultural resource preservation, or special use). The 2004 Fort Circle Park Management Plan notes that “*natural resource zone*” are park areas managed primarily for forest and natural scenery, but these areas may also contain cultural resources. Natural processes would predominate except where necessary to protect or restore disturbed systems or to preserve cultural resources. The tolerance for resource degradation would be low and this zone is the largest zone in the Fort Circle Parks. Both reservoirs are located in the natural resource zone (Figure 6, Appendix A).

The NPS *Management Policies 2006* provides additional direction for the use, management, and development of all parks within the national park system. The NPS *Management Policies 2006* addresses only those policies applicable to management of the national park system. It does not address policies applicable to NPS-administered programs that serve the conservation and recreation needs of the nation, but are not directly related to the national park system. The key principals of the NPS *Management Policies 2006* were that the policies must:

- comply with current laws, regulations and executive orders;
- prevent impairment of park resources and values;
- ensure that conservation will be predominant when there is a conflict between the protection of resources and their use;
- maintain NPS responsibility for making decisions and for exercising key authorities;
- emphasize consultation and cooperation with local/state/tribal/federal entities;
- support pursuit of the best contemporary business practices and sustainability;
- encourage consistency across the system —“one national park system”;
- reflect NPS goals and a commitment to cooperative conservation and civic engagement;
- employ a tone that leaves no room for misunderstanding the National Park Service’s commitment to the public’s appropriate use and enjoyment, including education and interpretation, of park resources, while preventing unacceptable impacts;
- pass on to future generations natural, cultural, and physical resources that meet desired conditions better than they do today, along with improved opportunities for enjoyment.

## LOCAL PLANS, POLICIES, AND REGULATIONS

### District of Columbia Comprehensive Plan Update (2006)

In December 2006, the District Office of Planning completed the Comprehensive Plan for the National Capital: District Elements. This Plan focused on Washington, DC as a whole, including federal elements, the framework of many established neighborhoods, and the role of transportation. The Plan also focused on resource areas, such as Land Use, Transportation, Housing, Environmental Protection, Economic Development, Parks Recreation and Open Space, Urban Design, Historic Preservation, Community Services and Facilities, Educational Facilities, Infrastructure, and Arts and Culture.

#### **40 United States Code (USC) - Sec. 8124 - Transfer of Jurisdiction between Federal and District of Columbia Authorities**

Federal and District authorities that administer properties within the District of Columbia owned by the federal government or by the District may transfer jurisdiction over any part of the property among or between themselves for purposes of administration and maintenance under agreed-upon conditions (via covenant) by all parties. If following the EA process, it is determined that no significant impacts to resources would occur and that an Environmental Impact Statement (EIS) would not be required, decision documents would be prepared summarizing the findings of the EA and providing a concise rationale on how the NPS and the District made their final decisions. Once completed, compliance documents would be presented to the NCPC for its approval in accordance with 40 USC - Sec. 8124 (Transfer of jurisdiction between Federal and District of Columbia authorities). Upon approval, NCPC would provide its recommendation for the transfer to the Council of the District of Columbia. Following approval by the Council, the project could then begin in earnest. District authorities would be responsible for reporting this transfer of jurisdiction to Congress.

#### **SCOPING**

An internal scoping process began in July 2009 and became a public scoping process when the NPS made a public announcement on October 26, 2009. From that public announcement, one entity commented. Specifically, NCPC submitted a letter dated December 2, 2009, requesting an onsite meeting and later asked that the District of Columbia Department of Parks and Recreation (DC DPR) also be in attendance due to some common interests, such as shared use of the access road. A meeting with NCPC, DPR, and NPS was held on May 10, 2010 where in it was concluded that all of these agencies desired that the access road be included in the transfer of jurisdiction to DC Water, but that language should designate the road as being subject to shared use by all of the aforementioned parties.

A public scoping meeting was scheduled on April 17, 2010 at the request of the Smithsonian's Anacostia Community Museum to address general questions and comments for a number of projects in Ward 7, including this project. Please see Appendix B for all scoping documentation.

#### **ISSUES**

Issues describe problems or concerns associated with potential impacts from environmental conditions or current operations, as well as problems that may arise from the implementation of any of the alternatives. Potential issues associated with this project were identified by the public, DC Water staff and NPS staff, with input from other agencies consulted as part of the EA process. The identified issues form the basis for the impact topics described herein this EA.

**Natural Resources.** Both the no action and action alternatives associated with the repair, stabilization, and environmental restoration of the slope embankment would impact natural resources such as soils, water resources, water quality, wetlands, vegetation and wildlife. The transfer of jurisdiction will have negligible to moderate impacts to natural resources.

**Scenic Resources (Aesthetics and Viewshed).** Both the no action and action alternative associated with the repair, stabilization, and environmental restoration of the slope embankment would impact scenic resources, especially for the long views. The transfer of jurisdiction will have negligible impacts to scenic resources.

**Human Health and Safety.** The stability of the slope embankment and potential failure of water supply infrastructures, including the reservoirs would impact health and safety for DC Water staff, NPS staff and the general public. As such, both the no action and action alternative associated with the repair, stabilization, and environmental restoration of the slope embankment would have impacts on human health and safety. The transfer of jurisdiction will have negligible impacts to human health and safety.

## IMPACT TOPICS

The following impact topics are discussed in the “*Affected Environment*” chapter and analyzed in the “*Environmental Consequences*” chapter. The topics are resources of concern that could be beneficially or adversely affected by the actions proposed under each alternative and were developed to ensure that the alternatives are evaluated and compared based on the most relevant resource topics. These impact topics were identified based on the following: issues discussed during scoping, federal laws, regulations, executive orders, NPS *Management Policies 2006*, and NPS knowledge of limited or easily impacted resources. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration, as appropriate.

### Soils

For repair, stabilization, and environmental restoration of the slope embankment, soil would be impacted along the 0.43 acre embankment area and potentially along the down-slope environment depending on the chosen no-action or action alternatives. If no action is performed, exposed soils will continue to erode. As a result, soils are addressed as an impact topic.

### Water Resources

Water resources involve DC Water operation and maintenance of stormwater as it flows through the reservoir compound, specifically at the embankment area subject to the 2009 failure. If no action is performed, water resources would become unmanaged and could cause additional damage at the reservoir compound. As a result, water resources are addressed as an impact topic. Also, the management of reservoir water when it is discharged during reservoir maintenance operations is also discussed as a water resource impact topic. As a result, water resources are addressed as an impact topic.

### Water Quality

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation’s waters; enhance the quality of water resources; and to prevent, control, and decrease water pollution. The NPS *Management Policies 2006* provide direction for the preservation, use, and quality of water originating, flowing through, or adjacent to park boundaries. The NPS seeks to restore, maintain, and enhance the

water quality within the parks consistent with the 1972 Federal Water Pollution Control Act, as amended, and other applicable federal, state, and local laws and regulations.

The NPS *Management Policies* 2006 state that the NPS would “take all necessary actions to maintain or restore the quality of surface waters and ground waters within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations”.

A water quality standard defines the water quality goals of a water body by designating uses to be made of the water, setting minimum criteria to protect the uses, and preventing degradation of water quality through anti-degradation provisions. The anti-degradation policy is only one portion of a water quality standard. Part of this policy (40 Code of Federal Regulations (CFR) 131.12(a) (2)) strives to maintain water quality at existing levels if it is already better than the minimum criteria. Anti-degradation should not be interpreted to mean that “no degradation” can or would occur, as even in the most pristine waters, degradation may be allowed for certain pollutants as long as it is temporary and short-term. Other considerations in assessing the magnitude of water quality impacts are the effect on those resources dependent on a certain quality or condition of water. Sensitive aquatic organisms, submerged aquatic vegetation, riparian areas, and wetlands are impacted by changes in water quality from direct and indirect sources.

Activities involved with the repair, stabilization, and environmental restoration of the failed slope embankment area would potentially impact water quality. As a result, water quality is addressed as an impact topic.

The no action and action alternatives for the transfer of jurisdiction from NPS to DC Water would potentially have impacts to water quality as well. The procedure for the discharging of stormwater and reservoir water would impact water quality under the no action or action alternative. As a result, water quality is addressed as an impact topic.

### **Wetlands**

Wetlands include areas inundated or saturated by surface or groundwater for a sufficient length of time during the growing season to develop and support characteristic hydric soils (wetland soils) and hydrophytic vegetation (wetland vegetation). The NPS classifies wetlands based on the United States Fish and Wildlife Service (US FWS) *Classification of Wetlands and Deepwater Habitats of the United States*, also known as the Cowardin classification system (Cowardin et al. 1979). Based on this classification system, a wetland must have one or more of the following attributes:

- The habitat at least periodically supports predominately hydrophytic vegetation (wetland vegetation);
- The substrate is predominately undrained hydric soil (wetland soil); or
- The substrate is non-soil and saturated with water, or covered by shallow water at some time during the growing season.

The reservoir compound and adjacent areas were assessed for potential wetland habitats, to include the possibility of requiring permit(s) from the Army Corps of Engineers (ACOE) and other local agencies. A review of available aerial maps and a previous “*Wetland Delineation and Biological Survey Report for Drain Line Installation in Fort Stanton National Park, Washington DC*”, delineated by Straughan Environmental Services, Inc. on July 14, 1999, indicated that ACOE regulated Section 404 “*Waters of the United States*” are located approximately 150 feet below the failed slope embankment. Palustrine forested wetlands and small emergent wetland pockets were delineated along the main portion of the unnamed tributary to Stickfoot Branch.

Even though the ACOE does not have any associated buffers in its program and no offset protection is required for wetland habitats, if no action is performed and the slope embankment would continue to fail, then there is a possibility that forested and emergent wetlands located below the reservoir compound would be impacted. As a result, wetlands are addressed as an impact topic.

### **Vegetation**

The existing slope embankment failure denuded an area of natural forest vegetation. Vegetation was displaced approximately 100 feet from the failure location into a wooded area. The proposed no action alternatives would leave the embankment as-is without vegetation and therefore the scarred slope would continue to erode. Should the slope embankment continue to fail under the no action alternative, minor vegetation impacts would occur below the denuded area.

The action alternative would replant vegetation along the failed slope and would have an impact to vegetation below the reservoir compound. As a result, impacts to vegetation would occur under both the no action and action alternatives. As such, vegetation is addressed as an impact topic. The no action and action alternatives for the transfer of jurisdiction from NPS to DC Water would have negligible impacts to vegetation.

### **Wildlife**

The existing slope embankment failure removed forested wildlife habitats. The no action alternative would leave the embankment scarred and void of wildlife habitats that previously existed. The action alternative would impact the amount and type of wildlife habitat to be re-established. As a result, impacts to wildlife are addressed as an impact topic for the no action and action alternatives.

### **Scenic Resources (Aesthetics and Viewsheds)**

The 0.43 acres of denuded embankment may be seen by park visitors. The no action alternative would impact scenic resources since the face of the slope would remain scarred and visible from various locations and distances. The no action and action alternatives for the transfer of jurisdiction from NPS to DC Water would have negligible impacts to scenic resources for both the no action and action alternatives. As a result, scenic resources are addressed as an impact topic.

### **Human Health and Safety**

The stability of the slope embankment and potential failure of water supply infrastructure, including the reservoirs, would impact DC Water and NPS staff working in the area and public health and safety. Not repairing the existing failed slope embankment may have long-term impacts to potable water supply and fire protection to approximately 100,000 people within DC Water’s Anacostia First High Service Area. The no action and action alternatives for the transfer of jurisdiction from NPS to DC Water would have

negligible impacts to human health and safety for both no action and action alternatives. As a result of this potential impact, human health and safety are addressed as an impact topic.

### **IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS AND CONSIDERATION**

The following impact topics were eliminated from further analysis in this EA. A brief rationale for dismissal is provided for each topic. With mitigation such as soil erosion and sediment control and as noted in the EA, potential impacts to these resources would be negligible and localized. Thus, these impact topics have been dismissed, as detailed.

#### **Geology and Topography**

Activities associated with the repair, stabilization, and environmental restoration of the slope embankment and from the transfer of jurisdiction would not impact the geology and topography. Based on the current DC Water operation of the reservoir compound and noting that the transfer of jurisdiction would involve a formal covenant guiding future operations, no impacts are expected to occur to geology and topography on a short-term or long-term basis. Maintenance and repair operations would be surficial and occur on land that have been previously developed and disturbed.

Geology and topography are therefore dismissed from further analysis for all proposed actions while soils remains as an impact topic to be addressed in the Affected Environment and Environmental Consequences chapters.

#### **Floodplains**

Executive Orders 11988 (Floodplain Management) requires an examination of impacts to floodplains and the potential risk involved in placing facilities within floodplains. The NPS *Management Policies* 2006, Section 4.6.4, Floodplains; the 1993 NPS Floodplain Management Guidelines; DO-77-2; and the 1983 General Management Plan provide guidelines on developments proposed in floodplains. According to the Federal Emergency Management Agency's flood insurance rate map (FIRM) for Washington, DC (Community Panel Number 1100010030B – Effective Date November 15, 1985), the reservoir compound is not located in the 100-year or 500-year floodplain. The water released from the reservoir to perform the expansion joint repairs within Fort Stanton Reservoir No. 2 was directed into storm drains and not into the local tributary stream. The proposed project also does not place any facility or propose work within any floodplain or floodway. As such, floodplain impacts would not occur as a result of the any of the proposed actions. Therefore, the floodplains topic is dismissed from further analysis.

#### **Rare, Threatened and Endangered Species**

The Endangered Species Act (ESA) (1973), as amended, requires an examination of impacts on all federally listed threatened or endangered species. NPS policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered candidate, rare, declining, and sensitive species. Based on a letter dated January 21, 2010 from the US FWS stating that “*no proposed or federally listed endangered or threatened species are known to exist within the project impact area*”, it is not expected that any rare, threatened, and/or endangered species would inhabit the area immediately adjacent to the reservoir compound. Please refer to Appendix C for a copy of the US FWS correspondence. In addition, DC Water retained Roderick H. Simmons, a local botanist, to specifically inspect the project site. Based on Mr. Simmons' site inspection, it would be unlikely to find any rare plant species within the reservoir compound area. Given this information, no rare, threatened or endangered species impacts would occur as a result of any proposed alternatives. Therefore, rare, threatened and

endangered species topic is dismissed from further analysis. Please see Appendix D for a copy of Mr. Simon's report entitled "A Survey of Rare Natural Heritage Resources at Fort Stanton Reservoir, Washington, DC".

### **Cultural Resources**

The NHPA (NHPA; 16 USC 470 et seq.), NEPA, NPS 1916 Organic Act, the NPS *Management Policies 2006*, DO-12 (Conservation Planning, Environmental Impact Analysis and Decision-making), and NPS-28 (Cultural Resources Management Guideline) require the consideration of impacts on any cultural resources that might be affected, and NHPA, in particular, on cultural resources either listed in or eligible to be listed in the National Register of Historic Places (NRHP). Cultural resources include archaeological resources, cultural landscapes, historic structures and districts, ethnographic resources, and museum objects, collections and archives.

Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the Advisory Council on Historic Preservation.

For this study, Richard Grubb and Associates (RGA) was contracted to complete a Phase IA survey. The Phase IA survey assessed the potential for significant cultural resources. RGA concluded that the project is unlikely to impact historic properties and did not recommend any further cultural resources survey. Copies of the RGA Phase I were submitted to NPS and the District of Columbia State Historic Preservation Office (DC SHPO) for review and concurrence. Both the NPS and DC SHPO agreed with RGA's findings. Therefore, cultural resources and the specific topics addressed below are dismissed from further analysis.

The following is a description of RGA's Section 106 Process. Please see Appendix E for Section 106 Correspondence and Documentation. Please note that Appendix E contains the November 2010 Final Phase IA survey. An earlier draft version, dated May 2010, was as provided to DC SHPO for review and comment. Per DC SHPO's comments, the draft Phase IA survey has been revised and is included in Appendix E.

**Initiation of Section 106 Process (36 CFR 800.3)** - RGA initiated the Section 106 process in an email to Dr. Ruth Troccoli of the District of Columbia State Historic Preservation Office (SHPO) on January 22, 2010. Dr. Troccoli subsequently provided RGA with a nine-page document entitled "Project Data Request-Archaeology" on January 28, 2010.

**Identification of Historic Properties (36 CFR 800.4)** - RGA completed a draft Phase I Reconnaissance-Level Historical and Archaeological Survey report for the project dated May 11, 2010. This report presented the results of archaeological and architectural assessments. Based on background research, topographic setting, previous construction, documented landslides, and a site visit, the Area of Potential Effects (APE) was considered to have a low probability for containing significant prehistoric and historic cultural resources. It is unlikely that archaeological historic properties are present in the APE. No further archaeological survey was recommended.

The architectural survey determined that two properties listed on the D.C. Inventory of Historic Sites and the National Register of Historic Places are located in the vicinity of the proposed slope stabilization project, Fort Stanton and Battery Ricketts. Neither of these Civil War Fort Sites will be impacted by the project. It was anticipated that the undertaking will have no effect on either of these historic properties.

Two resources were surveyed for the current project: Fort Stanton Reservoirs No. 1 and No. 2. Neither of the reservoirs was recommended eligible for the National Register as a result of the survey. No further architectural survey was recommended.

**Assessment of Adverse Effects (36 CFR 800.5)** - In their Section 106 Review Form dated October 22, 2010, the DC SHPO indicated that they concurred with results and recommendations provided in the draft archaeological survey report. Review comments were provided which included revisions to the draft report. Upon completion of the suggested revisions and submission the final Phase I report, it is anticipated that the DC SHPO will determine that there will be no adverse effect on historic properties and that no further review or comment will be necessary.

**Resolution of Adverse Effects (36 CFR 800.6)** - Based on the DC SHPO's concurrence with the results of the Phase I report, it is expected that there will be no adverse effects to be resolved.

Specific cultural recourse evaluations are provided below:

*Cultural Landscapes* – Although Fort Stanton is a contributing resource to the National Register-listed Civil War Fort Sites (Fort Circle Parks) district (NRHP: 7/15/1974; boundary increase 9/13/1978), the remains of Fort Stanton are located approximately 1,000 feet southwest of the APE, and the remains of a second Civil War Fort Site, Battery Ricketts, are approximately 1,000 feet southeast of the project. The project area was substantially disturbed during the construction of the existing water storage reservoirs and subsequent improvements and impacts. No cultural landscapes would be impacted by the project. As such, cultural landscapes are dismissed as an impact topic.

*Historic Structures and Districts* – Fort Stanton's earthworks is a contributing property to the National Register listed *Civil War Fort Sites* (1978), and the Fort Stanton Park is listed in the DC Inventory of Historic Sites under *Fort Circle Parks* (1964). The future use of the property would be comparable to the existing use, which will preserve the current setting. Historic structures and historic districts are dismissed as an impact topic.

*Archaeological Resources* – The primary sources for archaeological resources are the DC SHPO registered archaeological site files, a database for registration and management of archaeological resources. No known archaeological resources will be affected by the proposed actions. Archaeological resources are dismissed as an impact topic.

*Ethnographic*- Because no unique cultural use of Fort Stanton Park will be affected by the proposed actions, ethnographic resources are dismissed as an impact topic.

*Museum Collections* – Implementation of any alternative under consideration would have no effects upon museum collections (historic artifacts, natural specimens, and archival and manuscript material) and therefore, museum collections are dismissed as an impact topic.

### **Visitor Use and Experience**

Visitors to Fort Stanton Park would not drive through this reservoir compound area except for the local visitors that use the DC Parks and Recreation ball fields located below (south) of the reservoir compound area. Local park visitors occasionally park along the access road when utilizing the ball fields, but do not require access to the reservoir compound. The primary reason for visiting the Fort Stanton Park is to enjoy views from scenic drive/overlooks and enjoy solitude/natural quietness. Other activities shown to be important to park visitors include walking, hiking, picnics, wildlife observation, nature study,

photography, and spending time in visitor centers. However, the project site does not lend itself to the above noted public uses.

Access to the reservoir compound is currently limited to DC Water and NPS personnel and the public would not have access to the reservoir compound property which is surrounded by fences. Both the transfer of jurisdiction and slope embankment repair, stabilization, and environmental restoration actions would have negligible or no impacts to visitor use and experience at this location. As a result, visitor use and experience are dismissed from further analysis.

### **Park Operations**

The proposed transfer of jurisdiction of the reservoir compound from NPS to DC Water should not necessitate amending the 2004 *Fort Circle Management Plan* as the area being transferred is surrounded by fences and would not require NPS staffing change. Currently, NPS has minimal managerial responsibilities on this parcel, generally limited to minor access road maintenance (i.e. pothole repair) and invasive plant species control. The transfer would delegate these tasks to DC Water.

Any park operations within the reservoir compound would cease after the transfer of jurisdiction. Road and invasive species maintenance would become the responsibility of DC Water. Park staff would have more time for other park maintenance and operations once DC Water takes over jurisdiction. The slope embankment repair, stabilization, and environmental restoration work during construction is temporary in nature and would not have impacts to park operations. As a result, park operations are dismissed from further analysis.

### **Transportation**

Under the proposed action alternative, impacts to local traffic would occur as construction vehicles travel to and from the site and along the access road during the slope repair, stabilization, and environmental restoration work. Based on the limited number of trips construction vehicles would require on this access road, and mitigations measures taken (i.e., conducting all construction activities during daylight hours, avoiding construction during school and peak traffic hours), impacts from temporary construction activities would be of short duration and would be limited to the access road.

Currently, traffic is minimal in this area and mostly limited to DC Water and NPS employees for operation and maintenance duties. There is no public access permitted within the fenced-in area and transportation would remain similar subsequent to the transfer of jurisdiction. As such, permanent and long-term changes in transportation would not be impacted by any proposed action. However, during the short-term construction phase of the project, temporary increase of traffic from contractor and construction vehicles is anticipated. As such, transportation would be minimally impacted for a short duration and with mitigation, is dismissed from further analysis.

### **Land Use**

Current land use would not be impacted and would remain the same as prior to the transfer of jurisdiction or slope embankment failure. Since land use would not change or be minimally impacted from any proposed alternatives, land use is dismissed from further analysis.

### **Socioeconomics**

The proposed actions would not appreciably affect either local and regional land use or local businesses or other agencies. Implementation of the proposed actions could provide no adverse or beneficial to local economies (i.e., minimal increases in permanent employment opportunities for the construction work

force and revenues for local businesses and government generated from construction activities and workers). Any increase, however, would be temporary and negligible, lasting only as long as the construction process.

Because access and land use at and near the reservoir compound are currently restricted to DC Water/NPS employees and not accessible to the public, nor would any proposed alternatives change these current restrictions, impacts to the economy and/or social life would not occur from any proposed action. Therefore, socioeconomic 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 US Environmental Protection Agency (US EPA), 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 identify alternatives that may mitigate these impacts.

Both minority and low-income populations are present near Fort Stanton Park; however, environmental justice is dismissed as an impact topic for the following reasons:

- NPS 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. A public scoping meeting was held at the Smithsonian Anacostia Community Museum on April 17, 2010.
- Implementation of the proposed alternatives would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse effects on any minority or low-income population.
- The impacts associated with implementation of the proposed alternatives would not disproportionately affect any minority or low-income population or community.
- Implementation of the proposed alternatives would not result in any identified effects that would be specific to any minority or low-income community.
- Any impacts to the socioeconomic environment would not appreciably alter the physical and social structure of the nearby communities.

## IMPAIRMENT

According to the 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 *Management Policies* 2006, sec. 1.4.5). Whether an impact meets this definition depends on 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. An impact on any park resource or value may constitute impairment, but an impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park; or
- Identified as a goal in park’s general management plan or other relevant NPS planning documents.

Impairment findings are not necessary for visitor experience, socioeconomics, public health and safety, or park operations because impairment finds relate back to park resources and values, and these impact area are not generally considered to be park resources of 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 provide in Appendix F of this document. Park resources considered in the determination include soils, water resources, water quality, wetlands, vegetation, wildlife, and scenic resources. A final impairment determination will be provided in the appropriate decision document developed on the findings of this EA.

## **ALTERNATIVES**

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. Project alternatives may originate from the proponent agency, local government officials, members of the public at public meetings, or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies. The alternatives analyzed in this document, in accordance with NEPA, are the result of design scoping and internal scoping.

There are two components addressed in this EA that require alternatives analysis. One component is for the Fort Stanton slope repair, stabilization, and environmental restoration and the other component is for the transfer of jurisdiction for the Fort Stanton reservoir compound property from NPS to DC Water.

The NPS explored and evaluated two alternatives in this EA:

- **Alternative 1— No Action Alternative.** No action would leave the existing slope embankment as-is; the slope embankment would remain denuded and scarred. If the transfer of jurisdiction did not occur, NPS would continue to have responsibilities of access road maintenance, removal of any invasive species when necessary at the project site, and current operations would remain as-is for both NPS and DC Water. This would imply that DC Water would still have to obtain permits from NPS to perform simple and routine maintenance and repair operations at the reservoir compound.
- **Alternative 2 — Preferred Alternative.** The preferred alternative would allow for the proper repair, stabilization, and environmental restoration of the failed slope embankment and allow for the transfer of jurisdiction of the reservoir compound from the NPS to DC Water for the purpose of management and maintenance of all reservoir operations, including the area within the reservoir compound, 10 feet off-set from the compound fence line, and the access road.

### **ALTERNATIVE 1 – NO ACTION**

The no action alternative serves as the baseline by which all other alternatives are compared. Under the no action alternative for the slope repair, stabilization, and environmental restoration, the slope embankment would not be repaired, stabilized or environmentally, rather it would remain as-is.

Under the no action alternative for the transfer of jurisdiction, the jurisdictional responsibilities for the reservoir compound would remain the same. Maintenance and operations for the NPS and DC Water would not change and DC Water would have to obtain permission and/or permits to perform routine maintenance and repairs. NPS would have maintenance responsibilities for controlling invasive species and for repairs of the access road (i.e., pot holes).

## **ALTERNATIVE 2 (NPS PREFERRED ALTERNATIVE)**

Under this alternative, the NPS would allow the incorporation of design fill/design soil, as the bottom layer of soil on top of the exposed soils within the embankment failure. The design fill is more compactable than top soil and less susceptible to water infiltration making it a more stable soil. However, design fill is not ideal for vegetation growth. To allow for vegetative replacement in the area of the embankment failure, a layer of vegetative top soil would be placed on top of the design fill layer. The vegetative top soil is looser, more water permeable, and contains more organic compounds making it ideal for plant growth. The design fill interface would be scarified in order to incorporate the top soil layer into the surface of the design fill layer. The final grade would match the existing grade above the embankment failure using the vegetative soil layer that would allow for growing native vegetation, including trees. Subsoil drains are provided at the top and bottom of the slope, as this slope currently collects some moisture. Once the reservoir joints are replaced, the source of the moisture would be substantially eliminated. Besides those subsoil drains, no drainage management system would be required under this alternative. A temporary exclusion fence (i.e., chain link or similar type fence) to deter non NPS and DC Water personal, or wildlife from entering the rehabilitation area, is also proposed around the planting site to assist in re-establishing vegetative growth. Please Figure 7 for the project area, Figure 8 for the limits and Figure 9 for a rendering of the slope stabilization (Appendix A).

Under the preferred alternative, the jurisdiction of the reservoir compound area would be transferred from the NPS to DC Water. All managerial responsibilities of the NPS would be transferred to DC Water, but the property would remain part of Fort Stanton Park. The transfer of jurisdiction would include all areas inside the perimeter fencing around the reservoirs plus an additional 10 feet off the fence line. The access road would also become part of DC Water's jurisdictional area, and DC Water would be responsible for the upkeep and maintenance of the access road. DC Water would maintain the access road but must share the use of the road with the public who utilize the DC Parks and Recreation ball fields located adjacent to the access road. The proposed transfer would facilitate DC Water's operations and maintenance procedures such that normal maintenance and repair operations could be accomplished within the reservoir compound without contact or permits from the NPS. Please see Figure 10 (Appendix A) for the transfer of jurisdiction boundary map.

The treatment of the reservoirs, including maintenance and upkeep, would continue to be the responsibility of DC Water including the maintenance the existing turf as well as reservoir maintenance by DC Water personnel. DC Water employees would continue to visit and check the reservoir compound daily. Periodically, invasive species of vegetation would be removed along the fence area by DC Water personal.

## **MITIGATION MEASURES OF THE ACTION ALTERNATIVES**

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 NPS would ensure that the following protective measures are implemented as part of either of the action alternatives. NPS would implement an appropriate level of monitoring throughout the construction process to ensure that protective measures are being properly executed and are achieving their intended results. Additionally, NPS would review the proposed mitigation in this EA document at the commencement of each phase of work to ensure that all project information is up to date and in compliance with the necessary regulations (i.e., soil erosion and sediment control).

## Soils

During temporary construction phases necessary for the repair, stabilization, and environmental restoration work, drainage would be diverted so that water is not directed down steep slopes, thus decreasing velocity and erosion potential.

- Temporary ditches would be used on site if applicable to prevent scouring and erosion.
- Culvert outlet protection (riprap aprons or basins) would be used to reduce water velocity and prevent scour erosion.
- All disturbed soil and vegetation would be replanted, to include native grasses, trees and shrubs.

## Water Quality

- Prior to construction, NPS would apply for registration coverage under a general permit for discharges of stormwater from construction activities. Construction site stormwater permits are based on US EPA's construction stormwater general permit and requires construction site operators to develop and implement a stormwater pollution prevention plan that uses best management practices (BMPs) for erosion and sediment control at the construction site.
- As part of the general permit, an erosion and sediment control plan consistent with local erosion and sediment control regulations and certification regulations would also be prepared.
- Avoid impacts to downstream tributary streams associated with the placement of hay bales, temporary fill, or construction/modification of channels.
- Minimize erosion from construction activities through the use of silt fences and/or erosion control blankets.
- Prior to construction, prepare and submit a hazardous material spill plan stating what response actions would be taken in case of a spill. This plan would incorporate preventative measures to be implemented such as the placement of refueling facilities, storage and handling of hazardous materials, and notification procedures for a spill. Ensure that waste oil, antifreeze, hydraulic fluid, and grease are not spilled or disposed of anywhere in the park.
- Minimize adverse effects of fuel spills through the following:
  - Storage of oils and hazardous materials with secondary containment.
  - Locate construction staging areas away from surface water features.
  - Locate activities such as refueling well away from surface water features.
  - Designate areas where refueling or construction vehicle and equipment maintenance would be performed and have containment devices such as temporary earth berm around these areas.
  - Have absorbent pads available to clean up spills.
- As part of the transfer of jurisdiction, it is understood that all activities related to the operation of the reservoirs will remain the sole responsibility of DC Water.

### **Wetlands**

- Construction limits would be clearly delineated to ensure no encroachment upon downslope wetlands. Existing wetlands are approximately 150 feet downslope of the lower boundary of the failed slope embankment,
- Erosion controls (see above) would be implemented during construction to ensure no sediment-laden runoff would be transported into the wetlands from the site work.

### **Vegetation**

- Minimize cutting trees whenever possible.
- Minimize trimming and removing vegetation to accommodate construction equipment ingress and egress.
- Avoid collision of equipment with trees and other vegetation.
- Place protective fencing around tree trunks in close proximity to construction activities to minimize potential adverse effects the bark or other tree attributes resulting from collision.
- Avoid removing trees greater than two inches in diameter during any construction work.
- Assure that any fill material imported to the site is certified clean and free of exotic plants and seeds.
- Require the construction contractor to power wash all construction vehicles and equipment prior to initial arrival at the park to remove seed and plant material.
- Re-vegetate disturbed areas (including staging areas) as soon as possible with a native seed mix to help prevent the spread of exotic invasive plant species.
- Enact monitoring protocol to ensure no new or additional exotic invasive plant species are spread into the reservoir compound.
- Ensure that all protection measures are clearly stated in construction specifications and that workers be instructed to avoid conducting activities beyond the construction zone, as defined by the roadway and construction zone fencing.
- As part of the transfer of jurisdiction, DC Water will maintain the fence around the reservoir as well as 10 feet beyond the fence to control invasive species of vegetation.
- As part of the transfer of jurisdiction, DC Water will utilize wise, green management practices to maintain the cover of the reservoirs.

### **Wildlife**

- Require the reservoir compound to be surveyed by an NPS biologist prior to the onset of construction for the presence of any non-highly mobile species (e.g., turtles) that may wander through during construction activities.
- Prohibit the feeding of wildlife in contract documents.
- Ensure food is stored in enclosed portions of vehicles or in hard-sided containers.

- Ensure trash from meals is disposed of via complete removal from the work site or via construction site trash cans and dumpsters.
- Open barrels, pickup truck beds, and dump truck beds are not to be used for disposal or accumulation of food scraps or food wrappers or containers.
- As part of the transfer of jurisdiction, DC Water will maintain a wildlife friendly environment which will promote continued wildlife habitation.

### **Threatened and Endangered Species**

- Prior to initiating any of the proposed projects, qualified park staff would survey the area for transient federal or state-listed species. If a new listed species is found in the reservoir compound, NPS would again consult with the US FWS to develop mitigations measures to ensure no impacts to these species would occur.

### **Cultural Resources**

- If during construction significant archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed. If necessary, in consultation with the DC Historic Preservation Officer, NPS, and/or Dr. Potter, will be coordinated to ensure resources are addressed. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.
- As part of the transfer of jurisdiction, DC Water will maintain the long view by preserving the viewshed of the reservoir area. No towers, including cell phone towers, will be constructed, nor will lighting be added to the DC Water jurisdiction area that will be visible from other areas of the park or visible from the air.

### **Transportation and Traffic**

- Develop a safety plan prior to initiation of construction to ensure the safety of park visitors, workers, and park personnel.
- As part of the transfer of jurisdiction, DC Water will maintain the access road and will continue to share the use of the access road with the public, including DC Parks and Recreation, to allow access to the ball fields located within the park.

## **ALTERNATIVES CONSIDERED AND NOT CARRIED FORWARD**

Council of Environmental Quality (CEQ) regulations for implementing NEPA require federal agencies explore and objectively evaluate all reasonable alternatives to the preferred alternative, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This section describes those alternatives that were eliminated from further study and documents the rationale for their elimination. During the course of internal scoping, several alternatives were considered but deemed to be unreasonable and were not carried forward for analysis in this EA. Justification for eliminating these options from further analysis was based on the following factors:

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

The following alternatives for the slope embankment stabilization and environmental restoration were considered but dismissed for the listed reasons.

### **Tiered Retaining Wall(s) with a Drainage Management System**

**Alternative Description:** This alternative proposes the use of retaining walls installed as either one or several very tall walls, or multiple shorter walls in multiple tiers. These walls are generally anchored back into the slope, which could be challenging given the existing underground piping and utilities. Also the materials used behind retaining walls would require high density engineered fill. Ground cover such as grasses can grow on the resulting slope, but subsequently, no trees would grow within the engineered fill material. In addition, this proposed alternative would have drainage concerns that would require an active drainage management system. A drainage management system would have to be installed and would include drains at the toe of slope, at the bottom of each wall, and possibly other key intercept areas requiring further excavation and more infrastructures to remove potentially trapped stormwater.

Another option under this drainage management alternative is to design micro-swales zigzagging down the slope, with an intricate drainage system to remove water that would undermine the slope. A water recharge system at the toe of the slope would accommodate the site drainage from the road. However, concerns with general maintenance and maintenance of hydraulics along this steep slope due to the velocities and quantities of water collected at the bottom of the slope, would be very challenging. A high level of maintenance would be expected to monitor the drainage system and to assure that it is functioning during and after large storm event.

**Reasons for Rejection:** The proposed drainage infrastructure would require maintenance and upkeep to prevent drainage obstructions that could compromise the embankment stability if water backed up in the designed system and slope. This constant maintenance and upkeep would add to the overall cost of this project alternative, making it the most expensive alternative. This alternative would not have the greatest longevity and imposes human vigilance for proper operation and safety. Lastly, this alternative would not allow for forest regeneration. Since the area is designated as a Natural Resource Zone in the *2004 Fort Circle Management Plan*, it would not be acceptable to NPS since natural resource zones are primarily managed to maintain forests and natural scenery.

### **Hard Engineering Fills**

**Alternative Description:** This alternative proposes to use hard engineering fill. The contractor would remove the loose embankment material and replace it with a stable material to ensure embankment stability while maintaining the existing slope. The most stable and permanent option would be concrete. Other viable alternative materials considered are riprap and gabions. The least invasive option considered under this alternative would be to use smaller grained, loose materials that would compact to very high densities and hold the slope in place. This alternative would not require any drainage management system to be installed and would be very structurally stable.

**Reasons for Rejection:** Hard engineering fills would be an eye-sore as this technique would not support new growth and thus leave the slope embankment with a scarred and denuded view. This alternative would also not allow for forest regeneration. Given that the area is designated as a Natural Resource Zone in the *2004 Fort Circle Management Plan*, it would not be acceptable to NPS or the public since natural resource zones are primarily managed to maintain a forest environment with natural scenery.

### **THE ENVIRONMENTALLY PREFERABLE ALTERNATIVE**

The environmentally preferred alternative is defined by CEQ as the alternative that would promote the national environmental policy as expressed in Section 101 of the NEPA. 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 (NEPA, Section 101).

Simply put, this means that the environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment; it also means it is the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. After completing the environmental analysis, the NPS and DC Water identified Alternative 2, the preferred alternative, as the environmentally preferable alternative in this EA.

Alternative 2 provides for the repair, stabilization, and environmental restoration of a failed slope embankment. This would be consistent with the Park's mandate for forest management and provide beneficial use to park visitors (scenic and aesthetics). The no action alternative would result in a scarred slope embankment that has potential of completely failing and causing greater risk to downslope natural resource degradation. In addition, this alternative addresses public health and safety as it assures that potable water and fire protection would be supplied to approximately 100,000 people living in the Anacostia First High Service Area. Therefore, the no action alternative would not meet the criteria for an environmentally preferable alternative.

Alternative 2 for the transfer of jurisdiction would transfer NPS operations and managerial responsibilities of the reservoir compound from NPS to DC Water. Maintenance of the access road to the reservoir compound, and control of invasive species would become the responsibility of DC Water along with other formal stipulations under the covenant agreement developed for this jurisdictional transfer. This would also allow DC Water to operate, maintain, and repair reservoir infrastructure without delays to obtain permits for many specified actions. Under the no action alternative, managerial responsibilities of the reservoir compound would remain with the NPS, and as a result, the current management conditions of the reservoir compound area would remain unchanged. NPS would continue to function as-is but would continue to assist DC Water in situations related to the maintenance and management of the reservoir area. These situations would require the use of NPS staff and have the potential to be time consuming. A summary of the environmental consequences follows in Table 1:

**Table 1: Summary of Environmental Consequences**

<b>Impact Topics</b>	<b>Alternative 1 – No Action</b>	<b>Alternative 2 - Preferred Action</b>
<b>Soils</b>	Implementation of the no action alternative would result in short-term and long-term negligible to minor adverse impacts, as the exposed soil would continue to erode downslope. Potential long-term minor to moderate adverse impacts to soils would result if the embankment should fail, eroding a larger section of embankment soil further downslope. The uncovered soil would continue to erode especially during storm events. There would be no cumulative impact to soils since no present or future activities would impact this slope embankment.	Implementation of the preferred action alternative would result in short-term minor to moderate adverse impacts to soils during construction activities. Long-term beneficial impact to soils would occur as the soils would become stable as the planted vegetation matures. There would be no cumulative impact to soils since no present or future activities would impact the soil on this slope embankment.  Implementation of the preferred action alternative for the transfer of jurisdiction would result in negligible adverse or beneficial impacts to soils. There would be no cumulative impact to the soils along this slope embankment.
<b>Water Resources</b>	Implementation of the no action alternative would result in short-term and long-term negligible to minor adverse impact to water resources, since stormwater flow on the site would remain as-is. Potential long-term adverse minor to moderate impact to stormwater may occur should the embankment fail, as a larger amount of turbid stormwater would continually flow off site. There would be minor to moderate adverse cumulative impact to downstream water resources as there would be continued turbidity contribution to offsite areas.	Implementation of the preferred action alternative would result in short-term negligible to minor adverse construction impact to stormwater. There would be negligible to minor adverse cumulative impact to downstream environments during the short-term construction activities. Beneficial impact would occur when the embankment work is completed and the planted vegetation matures to provide stormwater attenuation and filtration for downslope environments.  Implementation of the preferred action alternative for the transfer of jurisdiction would result in no adverse impact to water resources and would provide beneficial impact as DC Water will modify reservoir discharge protocols as a result of this action. There would also be no adverse cumulative impact and possibly beneficial cumulative impact to downslope environments as a result of reservoir discharge protocols modifications.
<b>Water Quality</b>	Implementation of the no action alternative would result in short-term and long-term minor to moderate adverse impact to water quality, as eroding soils would runoff into wetlands and the tributary stream. Potential long-term minor to moderate adverse impact would occur should the embankment fail, increasing downslope impact to water quality with continued soil erosion and sedimentation. There would be minor to moderate adverse cumulative impact to water quality downstream, as soil erosion and sedimentation would continue to impact downstream water quality.	Implementation of the preferred action alternative would result in minor to moderate short-term adverse impact to water quality, as soil erosion and sedimentation is expected to occur during construction activities. No long-term adverse impact will occur to water quality and long-term beneficial impact would occur as the planted vegetation matures, providing additional stormwater attenuation and filtration into downstream environments. There would be minor temporary adverse cumulative impact to downstream water quality during construction activities.  Implementation of the preferred action alternative for the transfer of jurisdiction would result in no short-term or long-term adverse impact to water quality. There would be beneficial cumulative impact to downstream water quality as the planted vegetation matures.
<b>Wetland</b>	Implementation of the no action alternative would result in short-term and long-term negligible to minor adverse impact to wetlands as soils continue to erode and silt in wetlands below the site. Potential long-term minor adverse impact would occur should the embankment fail, directly displacing wetlands/riparian areas. There would be no cumulative impact to wetland as the wetland are located in a topographic area where present and future developments would not have any impact to wetland habitats along the slope embankment.	Implementation of the preferred action alternative would result in negligible short-term impact to wetland during construction activities, as construction activities will remain 150-feet upslope. No long-term adverse impact is expected to occur to wetland but beneficial impact would occur as the planted vegetation matures to provide a forested buffer to the downslope wetland habitats.  Implementation of the preferred action alternative for the transfer of jurisdiction would result in no adverse or beneficial impact to existing wetlands. There would be no cumulative impact to wetland, as the wetland is located in a topographic area where present and future developments would not have any impact to wetland habitats along this slope embankment.

<b>Impact Topics</b>	<b>Alternative 1 – No Action</b>	<b>Alternative 2 - Preferred Action</b>
<b>Vegetation</b>	<p>Implementation of the no action alternative would result in short-term and long-term negligible to minor adverse impact to existing vegetation. Should the embankment fail and overtop downslope vegetation, long-term minor to moderate adverse impact would occur and exacerbated soil erosion and sedimentation will continue. There would be no adverse or beneficial cumulative impact to vegetation as the slope vegetation is located in a topographic area where present and future developments would not have any impact to vegetation along the slope embankment.</p>	<p>Implementation of the preferred action alternative would result in negligible to minor short-term impacts to vegetation during construction activities, as minor peripheral vegetation may be impacted by construction vehicles. Short-term and long-term beneficial impacts would occur to vegetation as the embankment stabilizes and the planted vegetation matures. There would be no cumulative impact to vegetation as the slope vegetation is located in a topographic area where present and future developments would not have any impact to vegetation along the slope embankment.</p> <p>Implementation of the preferred action alternative for the transfer of jurisdiction would result in beneficial impacts to vegetation since DC Water would be responsible for invasive plant species control within the reservoir compound. There would be no cumulative impacts to vegetation as the limited onsite vegetation is located in a topographic area where present and future developments would not have any impact to the vegetation along the slope embankment.</p>
<b>Wildlife</b>	<p>Implementation of the no action alternative would result in short-term and long-term negligible to minor adverse impact on wildlife. There is a potential for long-term minor adverse impact to wildlife should the embankment fail, thereby impacting more wildlife habitat and degrading adjacent wildlife habitat as soil erosion and sedimentation continue to occur downslope. There would be no cumulative impact to wildlife habitats since they are located in a topographic area where present and/or future developments would not have any impact to wildlife along the slope embankment.</p>	<p>Implementation of the preferred action alternative would result in negligible to minor short-term adverse impact on wildlife during temporary construction activities. Potential long-term beneficial impact would occur as the planted vegetation matures to provide more foraging and shelter habitats for wildlife. There would be no cumulative impact as the wildlife habitat is located in a topographic area where present and future developments would not have any impact to wildlife along the slope embankment.</p> <p>Implementation of the preferred action alternative for the transfer of jurisdiction would result in no adverse or beneficial impact on wildlife along the slope embankment. There would be no cumulative impact to wildlife from the transfer of jurisdiction.</p>
<b>Scenic Resources</b>	<p>Implementation of the no action alternative would result in short-term and long-term minor adverse impact to scenic resources. Potential long-term moderate adverse impact to scenic resources would occur should the embankment fail, leaving a larger visually scarred landscape. There would be minor adverse cumulative impact under Alternative 1.</p>	<p>Implementation of the preferred action alternative would result in short-term and long-term beneficial impact to scenic resources as a result of planted vegetation along the slope embankment. There would be short-term minor adverse impact during construction activities. There would be no adverse cumulative impact but beneficial impact would occur as the planted vegetation matures.</p> <p>Implementation of the preferred action alternative for the transfer of jurisdiction would result in no adverse or beneficial impact to scenic resources. There would be no cumulative impact to scenic resource from the transfer of jurisdiction.</p>
<b>Human Health and Safety</b>	<p>Implementation of the no action alternative would result in negligible to minor short-term and long-term adverse impact to human health and safety since personnel could be injured while providing maintenance to existing structures on an unstable slope embankment. There is also a potential for short-term and long-term minor impact to the Anacostia First High Service Area for potable water and fire protection services should the entire slope embankment fail. There would be no adverse cumulative impact to human health and safety.</p>	<p>Implementation of the preferred action alternative would result in short-term negligible to minor impact to human health and safety during construction activities. Potential short-term and long-term benefit would occur as the slope would be stabilized and the interruption of fire protection and water service would be minimized after construction. There would be no cumulative impact to human health and safety.</p> <p>Implementation of the preferred action alternative for the transfer of jurisdiction would result in no cumulative impact to human health and safety.</p>

## **AFFECTED ENVIRONMENT**

This chapter of the EA describes existing environmental conditions in the areas potentially affected by the alternatives evaluated. This section describes the following resource areas: soil, water resources, water quality, vegetation, wildlife, scenic resources, and health and safety. Potential impacts are discussed in the “Environmental Consequences” section following the same order.

### **Soils**

The DC Water reservoir compound is located in Fort Stanton Park within the Coastal Plain Province, with elevations ranging from 200 feet to 260 feet above mean sea level. Fort Stanton Park occupies approximately 72 acres in the Anacostia community of southeast Washington, DC. The Fort Stanton Park is located approximately 0.75 miles southeast of the Anacostia River atop the adjacent mountain ridge.

A review of the District of Columbia Soil Survey indicates that the major soil associations at the reservoir compound are Muirkirk Variant Complex (MvD), Udorthents (U1), and Woodstown Urban Land Complex (WpB) as depicted in Figure 11 (Appendix A) (National Resources Conservation Service (NRCS) 2009). Muirkirk Variant soils are deep, well-drained to somewhat excessively drained soils composed of coastal plain sediments and found on uplands. Udorthents are soils composed of heterogeneous, earthy fill that may include organic and inorganic waste from human activity and sandy, gravelly, silty, clayey and micaceous clays. Woodstown-Urban Land Complex soils are moderately well drained soils composed of marine and alluvial coastal plain sediments and found on uplands and terraces.

Strongly sloping steep slopes of the Muirkirk Variant complex (15 to 40 percent slopes) dominate the east and west slopes of the reservoirs. Muirkirk soils are variable and commonly occur in association with a number of soil types, but a representative profile consists of a surface layer of yellowish-brown loamy sand, a subsurface layer of yellowish-brown loamy sand, and a subsoil of strong brown sandy loam underlain by red clay. Muirkirk soils have poor potential as building sites, for landscaping, lawns, or vegetable gardens, and poor potential for most recreational uses. The soils in the open area immediately adjacent to the underground reservoirs, at the eastern end of the reservoir compound, are dominated by a very heterogeneous, earthy fill associated with the Udorthents soils. The thickness and components of the fill varies, but it is typically more than 20 inches deep, consisting of a mixture of organic and inorganic waste from human activity and sandy, gravelly, clayey, silty, and micaceous soil types.

### **Water Resources**

Water resources involve stormwater management at the reservoir compound, and how stored reservoir water is discharged during DC Water maintenance operations (i.e., cleaning and disinfecting). Currently, during rain events, some stormwater water is collected through roadside catch basins and the remaining stormwater flows as overland sheet flow. Stormwater which is not initially contained by roadside catch basins interacts with the soils in the area of the embankment failure and erodes remaining soils, thereby causing the embankment to become less stable.

Cleaning and disinfection of the reservoirs' internal components occurs every 3 to 5 years. During these maintenance operations, the water from within the reservoir must be removed. DC Water has recently issued a change in the procedure for the discharge of water during maintenance operations. Water in the reservoir scheduled for maintenance is drawn down by pumping its contents into the other reservoir. After water in the reservoir was drawn down, the remaining reservoir water was discharged through pipes leading down-slope into an unnamed tributary leading to Stickfoot Branch. Currently, DC Water has employed a new method which avoids discharging water to the local tributary. The water remaining in the reservoir after drawdown is discharged directly to the sanitary sewer system and does not contribute flow to the downstream tributary. Although cleaning and disinfection of the reservoir may involve the use of chemicals, the discharge of the reservoir water to the sanitary system is regulated through a PDES permit obtained by DC Water.

### **Water Quality**

Water quality is the physical, chemical and biological characteristics of the water. The drainage basin for this project area consists of water flowing from an unnamed tributary leading to the Stickfoot Branch that then flows into the Anacostia River approximately 0.75 miles downstream. The Anacostia River flows into the Potomac River and then to Chesapeake Bay before entering into the Atlantic Ocean.

No public data is available for water quality for the unnamed tributary to Stickfoot Branch or Stickfoot Branch itself. The larger water bodies are beyond the reservoir compound and water quality would not be representative of Stickfoot Branch.

### **Wetlands**

The National Wetlands Inventory (NWI) maps do not indicate any wetlands on or directly adjacent to the reservoir compound. The Muirkirk soil series is also not listed as a hydric soil in the NRCS "2010 National List of Hydric Soils by State" as the soil exhibits a bright sandy loam matrix with Munsell Chart color of 10YR 5/6 and 4/4. A review of available maps and a previous "Wetland Delineation and Biological Survey Report for Drain Line Installation in Fort Stanton National Park, Washington DC", by O'Brien & Gere Engineers dated July 14, 1999, indicated that ACOE regulated Section 404 "Waters of the United States" are present. Specifically, a small groundwater seep flowing into a defined channel was delineated and evident on topographic mapping. The source of the seep is located approximately 20-30 feet north and northeast of the proposed repair area and the reservoir seep flows down into an unnamed tributary of Stickfoot Branch flowing into the Anacostia River. The Anacostia River is located approximately 5,000 feet north of the project site. This flow is associated with palustrine forested wetlands and emergent wetland pockets approximately 150-feet down slope and along the main portion of the unnamed tributary.

### **Vegetation**

Vegetation was surveyed by a plant botanist (Roderick H. Simmons) from the Maryland Native Plant Society, and summarized in "A Survey of Rare Natural Heritage Resources at Fort Stanton Reservoir, Washington, DC prepared by Roderick H. Simmons, dated July 2010" (Appendix D). The survey was conducted in the spring and early summer of 2010. The survey area consisted of the Fort Stanton Reservoir and the adjacent 50' perimeter for rare, threatened, and endangered plants. Significant natural communities and other conservation priorities, if observed, were also noted. Mature and notable trees occurring within the study area were not measured and individually included in the botanical survey.

## AFFECTED ENVIRONMENT

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Results from previous research were not included. Surveys were conducted from early April through June of 2010, with a final visit in July to document some of the warm-season grasses and summer wildflowers.

Three examples of intact, quality upland forest community types were identified within and abutting the study area. Appalachian/Northern Piedmont Low-Elevation Chestnut Oak Forest was observed along the northwest edge of the reservoir, both within the survey area and beyond. Species identified include the following:

### Canopy Trees:

White Oak	( <i>Quercus alba</i> )
Chestnut Oak	( <i>Quercus montana</i> )
Black Oak	( <i>Quercus veluntina</i> )
Southern Red Oak	( <i>Quercus falcata</i> )
Post Oak	( <i>Quercus stellata</i> )
Pignut Hickory	( <i>Carya glabra</i> )
Mockernut Hickory	( <i>Carya alba</i> )

### Dominant Understory Trees

Sassafras	( <i>Sassafras albidum</i> )
Black Gum	( <i>Nyssa sylvatica</i> )
Dogwood	( <i>Cornus florida</i> )
Downy Serviceberry	( <i>Amelanchier arborea</i> )
Greenbrier	( <i>Smilax</i> spp.)

### Dominant Shrub

Maple-leaf Viburnum	( <i>Viburnum acerifolium</i> )
Lowbush Blueberry	( <i>Vaccinium pallidum</i> )
Pinxter flower	( <i>Rhododendron periclymenoides</i> )

### Herb Layer

Mayapple	( <i>Podophyllum peltatum</i> )
Cut-leaf Toothwort	( <i>Cardamine concatenate</i> )

Also observed along the northwest slope below the reservoir within the steep forested ravine, was a variant of the Appalachian/ Northern Piedmont Low-Elevation Chestnut Oak Forest which included Witch Hazel (*Hamamelis virginiana*) shrubs.

The third community type was observed along the lower southeastern slopes of the reservoir, including both sides of the seepage stream below the terrace, and was identified as Mesic Mixed Hardwood Forest. Species identified include the following:

### Canopy Trees:

White Oak	( <i>Quercus alba</i> )
Northern Red Oak	( <i>Quercus rubra</i> )
Tulip Tree	( <i>Liriodendron tulipifera</i> )
American Beech	( <i>Fagus grandifolia</i> )
Post Oak	( <i>Quercus stellata</i> )

### Dominant Understory Trees

Red Maple	( <i>Acer rubrum</i> )
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Hickory Species	( <i>Carya</i> spp.)
American Elm	( <i>Ulmus americana</i> )
American Holly	( <i>Ilex opaca</i> )
Greenbrier	( <i>Smilax</i> spp.)

Dominant Shrub

Spicebush	( <i>Lindera benzoin</i> )
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Herb Layer

Mayapple	( <i>Podophyllum peltatum</i> )
Cut-leaf Toothwort	( <i>Cardamine concatenata</i> )
Christmas Fern	( <i>Polystichum acrostichoides</i> )
Lady Fern	( <i>Athyrium filix-femina</i> ssp. <i>asplenoides</i> )

The majority of the mid to upper slopes on the northeastern side of the reservoir were observed to be overrun with invasive exotic plants, but most of the lower slopes and stream banks on the southeastern side, including much of the stream itself, are in good condition containing no exotic invasive plants. Invasive exotic plants were observed in highly degraded areas of the site and the subsequent spreading of invasive species in these areas indicates past soil disturbance and/or clearing. Based on the survey performed, no rare, threatened, or endangered species were found in the study area, including species considered rare in the District of Columbia or species included in the “*Rare, Threatened, and Endangered Plants of Maryland and Natural Heritage Resources of Virginia: Rare Plants*” list. In addition to the intact, quality examples of the three upland forest community types, two species of conservation significance for Washington, DC were noted: Sweet Joe-pye weed (*Eupatorium purpureum*) and Red Mulberry (*Morus rubra*). Both of these species occur in the Mesic Mixed Hardwood Forest area, located within the 50-foot perimeter near the southeastern edge of the reservoir gate.

Based on information from the “*DRAFT Wetland Delineation and Biological Survey Report for Drain Line Installation in Fort Stanton National Park Washington, DC, prepared by Straughan Environmental Services, Inc. July 8, 1999.*”, the proposed action alternatives would not have adverse environmental impacts to the natural surroundings (vegetation). After grading back to the approximate original contours and elevations (pre-embankment failure), the area would be re-vegetated with non invasive native vegetation indigenous to the Fort Stanton forested areas. These species may include trees, shrubs and herbaceous plants that were inventoried and as listed below, but other appropriate native species can also be substituted to improve the wildlife habitats:

Trees:

American Elm	( <i>Ulmus americana</i> )
Tulip Poplar	( <i>Liriodendron tulipifera</i> )
Red Maple	( <i>Acer rubrum</i> )
Red Oak	( <i>Quercus rubra</i> )
Sweetgum	( <i>Liquidambar styraciflua</i> )
Blackgum	( <i>Nyssa sylvatica</i> )
American Hornbeam	( <i>Carpinus caroliniana</i> )

Shrubs:

Spicebush	( <i>Lindera benzoin</i> )
Arrowwood	( <i>Viburnum dentatum</i> )
Highbush blueberry	( <i>Vaccinium corymbosum</i> )
Strawberry Bush	( <i>Euonymus americanus</i> )
American Holly	( <i>Ilex opaca</i> )

Herbaceous Plants:

Goldenrod Species	( <i>Solidago spp.</i> )
Mayapple	( <i>Podophyllum peltatum</i> )
Jewelweed	( <i>Impatiens capensis</i> )
Cinquefoil	( <i>Parthenocissus quinquefolia</i> )

Prior to construction of the reservoirs, the project area comprised of a deciduous forest dominated by oaks, sassafras, and Virginia pine. Fort Stanton Park and the associated Battery Ricketts were positioned on a relatively level ridge tops cut by several ravines that drained small streams southward into Stickfoot Branch, a tributary of the Anacostia River. Small stream heads are mapped to the south and west. Within and adjacent to the reservoir compound, grading, cutting, and filling associated with the construction of the Fort Stanton reservoirs have impacted the vegetation.

**Wildlife**

Although Fort Stanton Park is moderate in size, it provides suitable breeding habitat for forest-interior Neotropical migrants. Neotropical migrants include more than 150 species of North American birds such as swallows, swifts, flycatchers, vireos, and raptors (birds of prey). Neotropical migrants also include the wood warblers, a colorful group of insect-eating songsters. For the most part, Neotropical migrant species summer/breed in North America and migrate to Central and South America (generally through south Florida and further). Species that could breed in these forest areas at and adjacent to the project area include: Eastern Wood-Pee-wee, Great Crested Flycatcher, Blue-gray Gnatcatcher, Wood Thrush, Red-eyed Vireo, Ovenbird, American Redstart, Scarlet Tanager, Common Yellowthroat, European Starling, Indigo Bunting and Yellow-rumped Warbler. Many common backyard birds such as Northern Cardinal, Tufted Titmouse, White-breasted Nuthatch, Blue-Jay, various sparrows and woodpeckers such as the Red-bellied Woodpecker, Downy Woodpecker, House Sparrow and White-throated sparrow would commonly utilize and breed within these habitats. (USGS; Patuxent Wildlife Research Center, Migratory Bird Research. *Birds of Fort Stanton Park*. Last updated on 12/17/01).

Other birds that are commonly observed at and adjacent to Fort Stanton Park are the Osprey, Chimney Swift, Northern Flicker, Acadian Flycatcher, American Crow, Fish Crow, Carolina Chickadee, Carolina Wren, House Wren, American Robin, Gray Catbird, Northern Mockingbird, Eastern Towhee, Common Grackle, Brown-headed Cowbird, House Finch and American Goldfinch. A total of 112 bird species have been recorded on the Fort Stanton Park Bird List dated December 17, 2001 (USGS; Patuxent Wildlife Research Center, Migratory Bird Research. *Birds of Fort Stanton Park*. Last updated on 12/17/01).

### **Scenic Resources (Aesthetics and Viewsheds)**

National parks are known for their scenic resources. Fort Stanton Park allows for many aesthetic views and viewshed from numerous vantage points. Fort Stanton Park is undeveloped except for the two underground reservoirs owned by DC Water in the center of the park, the access road that leads to these reservoirs, the Smithsonian Institute's Anacostia Museum for African American History and Culture, and recreational facilities including a baseball diamond, community center, tennis courts, and a swimming pool. The area surrounding Fort Stanton Park contains the residential neighborhoods of Buena Vista, Garfield Heights, and Woodland, each containing a mixture of multifamily and single-family residences.

A GIS viewshed analysis was completed for the embankment failure location. A viewshed is an area that is visible from a specific location based on elevation values of a digital elevation model. The viewshed analysis uses the elevation value of each GIS cell of the digital elevation model to determine visibility to or from a particular cell. All vegetation is removed as part of the analysis. The cell is defined as a GIS location point. The location of this particular cell used for the viewshed analysis varies depending on the needs of the analysis. The GIS viewshed analysis performed for the embankment failure location in reference to all other areas within Fort Stanton Park (the cell) identified that the location of the embankment failure is visible from many locations within the Park. Please refer to Figure 12 (Appendix A) for a copy of the GIS viewshed analysis map.

The findings of the viewshed analysis indicate that the location of the embankment failure is visible from several public-access areas of the park including the access road (looking north), the pool (looking north), and all areas east of the access road (looking north). The viewshed analysis also indicates that the location of the embankment failure is visible to areas outside of Fort Stanton Park including the residential properties located to the northeast of Fort Stanton on Skyland Terrace (looking west) and the properties located southeast of Fort Stanton on Bruce Place (looking northwest).

### **Human Health and Safety**

The NPS is committed to providing appropriate, high-quality opportunities for visitors and employees to enjoy the parks in a safe and healthful environment. The NPS strives to protect human life and provide for injury-free visits. One of the core values, as stated in the NPS 2006 *Management Policies* and Director's Order 50B, *Occupational Safety and Health Program*, is the safety and health of its employees, contractors, volunteers, and the visiting public. It is the policy of the NPS to provide a safe and healthful place of employment to protect federal and private property from accidental damage or loss, and to meet or exceed all applicable statutory, regulatory, and policy requirements relating to safety, health, and the environment.

Protecting human health and safety is of the utmost importance for DC Water. Health and safety of workers, visitors and contractors are priority. The slope embankment repair, stabilization, and environmental restoration has critical human health and safety issues, whether for onsite scenarios or for the operation of potable waters for approximately 100,000 people in the DC Water Anacostia First High Service Area.

## ENVIRONMENTAL CONSEQUENCES

### GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURES EFFECT

This chapter addresses the potential impacts to each of the impact topics discussed under the “Affected Environment” chapter for each of the alternatives. The action alternatives are compared to the no action alternative, or baseline condition of the reservoir compound within Fort Stanton Park, to determine impacts to resource topics. In the absence of quantitative data, best professional judgment was used. In general, effects were determined through consultation and collaboration with a multidisciplinary team of NPS, the DC Water, and other professional staff. Regulatory agency consultation with the US FWS, the DC SHPO, and other existing data sources such as park planning documents and the NCP-East website were also used to assess the potential impact of each alternative.

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

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

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

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

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

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

### CUMULATIVE IMPACTS

NEPA regulations require an assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “*the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions*” (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively moderate or major actions that take place over a period of time. Cumulative impacts were considered for all alternatives, including the no action alternative. With that in mind, there are no known specific present or foreseeable future projects that would act cumulatively on this project. This can be attributed to the isolated nature of the project site within a fenced-in portion of Fort Stanton Park, and the fact that there would be no long or short-term change in the use of the site were either of the two action alternatives selected. As a result, the

cumulative impact evaluation considered the overall general effects of localized urbanization around the project area. The contribution to the overall cumulative impacts from the alternative presented in the EA to the overall cumulative impacts is negligible.

## SOILS

### Methodology and Assumptions

Potential impacts to soils are assessed using the extent of disturbance to existing disturbed soils, natural undisturbed soils, and the potential for soil erosion resulting from the proposed actions. Analysis of possible impacts to soil is based on current land use, history of soil disturbance, on-site inspection of the soils within the reservoir compound, review of existing literature and maps, and information provided by the NPS and other agencies.

### Study Area

Soil analysis consists of the 0.43 acre slope embankment failure boundaries and the transfer of jurisdiction fenced-in property (including an area of approximately 10 feet off the fence line). Construction related to the repair, stabilization, environmental restoration and other operational and maintenance activities would not occur outside this project area.

### Impact Thresholds

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

*Negligible* – Soils would not be impacted or the impact would be below or at the lower levels of detection. Any impacts to soils would be considered slight.

*Minor* – Impacts to soils would be detectable. Impacts to undisturbed areas would be small. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.

*Moderate* – Impacts to soils would be readily apparent and result in a change to the soils over a relatively wide area. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.

*Major* – Impacts to soils would be readily apparent and substantially change the character of soil cover over a large area both inside and outside of the DC Water reservoir compound. Mitigation measures necessary to offset adverse impacts would be needed, extensive, and their success would not be guaranteed.

*Duration* – Short-term impacts occur during the implementation of the alternative and long-term impacts extend beyond implementation of the alternative.

### Impact of Alternative 1 – No Action Alternative Analysis

**Analysis.** Under this alternative, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated under this EA. The failed slope embankment would continue to erode into the downslope environments. Short-term and long-term negligible to minor adverse impacts to soils would occur and potentially becoming a long-term minor to moderate adverse impact to soils should the embankment collapse, eroding a larger section of the embankment soil further downslope.

**Cumulative Impacts.** Impacts to soils are site specific and are not affected by cumulative development or construction outside the DC Water reservoir compound or the failed slope embankment. Because of the hilltop location of soils along the slope embankment, cumulative impacts would not occur immediately within or adjacent to the project site. Any recent projects that may have occurred in the area of Fort Stanton Park would not represent actions that would result in any impacts to soils within the project site. There are no present or future construction activities that would result in any other cumulative impacts to soils. As a result, implementation of Alternative 1 would result in no adverse or beneficial cumulative impacts to soils.

**Conclusion.** During storm events, stormwater runoff within the failed slope embankment would erode and transports soils downslope and eventually into wetlands (approximately 150-foot downslope) and an unnamed tributary to Stickfoot Branch. This soil transport would only occur during storm events and would result in short-term and long-term negligible to minor adverse impacts depending on the severity of the storm. Should the slope embankment collapse, minor to moderate adverse impacts would occur to soils.

### **Impact of Alternative 2 – Preferred Action Alternative**

**Analysis.** For the slope embankment failure along the 0.43-acre area, implementation of the action alternative would result in the repair, stabilization, and environmental restoration of the failed slope embankment. NPS approved trees and shrubs would also be planted to ensure long-term slope stability. Minor to moderate short-term adverse construction impacts to soils would occur during the repair, stabilization, and environmental restoration work. The short-term construction impacts would be mitigated by the implementation of soil erosion and sediment control plan and the specified mitigation measures noted in this EA. Long-term beneficial impact would occur from the implementation of the preferred action alternative as the failed slope embankment would be repaired, stabilized and environmentally restored with native planted trees and shrubs to secure the soils.

The transfer of jurisdiction under Alternative 2 would facilitate and improve repair and maintenance operations allowing DC Water to complete minor reservoir compound work in a timely manner. There would be no adverse or beneficial impacts to soils under Alternative 2.

**Cumulative Impacts.** Impacts to soils are site specific and are not affected by cumulative development or construction outside the DC Water reservoir compound or the failed slope embankment. Because of the hilltop location of soils along the slope embankment, cumulative impacts would not occur immediately within or adjacent to the project site. Any recent projects that may have occurred in the area of Fort Stanton Park would not represent actions that would result in any impacts to soils within the project site. There are no present or future construction activities that would result in any other cumulative impacts to soils. As a result, implementation of Alternative 2 would not result in any cumulative impact to soils.

**Conclusion.** Implementation of Alternative 2 would result in short-term minor to moderate adverse impacts to soils from the temporary disturbance of soil during construction activities. There would be long-term benefits as the repaired, stabilized and environmentally restored trees and shrubs continue to mature on the slope embankment. The transfer of jurisdiction under Alternative 2 would facilitate and improve repair and maintenance operations allowing DC Water to complete minor reservoir compound work in a timely manner. There would be no adverse or beneficial impacts to soils under Alternative 2. There would be no adverse or beneficial cumulative impacts to soils associated with this alternative.

## **WATER RESOURCES**

### **Methodology and Assumptions**

Potential impacts to water resources are assessed based on perennial stormwater and over land flow through the failed slope embankment and the DC Water reservoir compound. In addition, the evaluation of impacts includes the downslope environments during storm events, which may encourage erosion.

### **Study Area**

The study area for water resource analysis consists of the 0.43 acre slope embankment failure boundary and the transfer of jurisdiction fenced-in property (including an area of approximately 10 feet off the fence line). Construction related to the repair, stabilization, environmental restoration and other operational and maintenance activities would not occur outside this project area.

Since the reservoir property is located on a hilltop, all precipitation will originate from the reservoir site flowing to the lower topographic environments.

### **Impact Thresholds**

The following thresholds were used to determine the magnitude of impacts from water resource on the project site:

*Negligible* – Impacts from water resources to downstream environments would not be detectable and impacts from storm events would be within historical or expected flows based on annual precipitation. There would be no modification or impacts of any stormwater flow characteristics over the slope embankment or the reservoir compound, thereby having no impacts to any downstream environments.

*Minor* – Impacts from water resources to downstream environments would be detectable but still remain within historical or desired stormwater flow conditions based on annual precipitation. Modification or impacts of stormwater flows characteristics over the slope embankment or to any down slope environment would not occur and any increase of stream flow rates would be minor. Mitigation, if needed, would be simple and successful.

*Moderate* – Impacts from water resources to downstream environments would be detectable for both stormwater flows and effect to downstream environments. Historical baseline or desired stormwater flow conditions would be temporarily altered. Modification of the slope embankment and downslope environments would be apparent and result in changes to overland flow characteristics during high stormwater flow conditions. Mitigation measures to offset potential adverse impacts could be extensive, but would be possible.

*Major* – Impacts from water resources to downstream environments would be detectable and frequently altered from the historical baseline or desired stormwater flow characteristics. Historical baseline or desired stormwater flow conditions would be temporarily exceeded. Modification to any downslope environments would be readily apparent and would cause substantial change to stormwater flow characteristics. Channelizing and scouring would occur and mitigation measures to offset adverse impacts would be extensive and their success could not be guaranteed.

*Duration* – Short-term impacts occur during the implementation of the alternative; long-term impacts extend beyond implementation of the alternative.

### **Impact of Alternative 1 – No Action Alternative**

**Analysis.** Under this alternative, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated. Stormwater flowing over the failed slope embankment would continue to erode soil into downslope environments. Short-term and long-term negligible to minor adverse impacts to water resources would occur and potentially becoming a long-term minor to moderate adverse impact to water resources should the embankment collapse, continuing to exacerbate stormwater turbidity downslope. Stormwater flow over the rest of the reservoir compound would remain unchanged under Alternative 1.

**Cumulative Impacts.** Impacts to water resources may be affected by cumulative land disturbances and/or developments outside the reservoir compound, as stormwater flows offsite. Since other water resources are located downstream of the slope embankment, cumulative impacts would occur when other land disturbances and/or developments within the local watershed directly or indirectly affect downstream water resources through added turbidity in stormwater. There would be negligible to adverse cumulative impacts to downstream water resources with Alternative 1.

**Conclusion.** Implementation of the Alternative 1 would result in potential negligible to minor short-term and long-term adverse impacts to water resources, as the embankment will continue to erode into downstream environments. Potential long-term minor to moderate adverse impact would result should the slope completely fail.

### **Impact of Alternative 2 – Preferred Action Alternative**

**Analysis.** Alternative 2 calls for the repair, stabilization, and environmental restoration of the slope embankment. There would be short-term negligible to minor adverse impacts to stormwater during temporary construction activities. The short-term adverse construction impacts during the repair, stabilization, and environmental restoration work but would be mitigated by the implementation of soil erosion and sediment control plan and by actions specified in the mitigation measures noted in this EA. Long-term benefits would occur when the vegetation matures on the embankment to provide additional stormwater attenuation and filtration into downslope environments.

Alternative 2 also includes the transfer of jurisdiction of the reservoir compound from the NPS to the DC Water. Implementation of the transfer of jurisdiction would result in no adverse impacts to water resources and would provide beneficial impacts as DC Water will modify reservoir discharge protocols as a result of this action.

**Cumulative Impacts.** Impacts to water resources may be affected by cumulative land disturbances and/or developments outside the reservoir compound. Since water resources are located downstream, cumulative impacts would occur if land disturbances and/or developments occurred within the local watershed directly or indirectly affecting downstream water resources through soil erosion and sedimentation. The transfer of jurisdiction would not have any adverse cumulative impacts and possibly beneficial cumulative impacts to downslope environments as a result of reservoir discharge protocol modifications.

**Conclusion.** There would be short-term negligible to minor adverse impacts to water resources during the repair, stabilization, and environmental restoration construction activities. Long-term benefits would occur when the vegetation matures on the embankment to provide additional stormwater attenuation and filtration into downslope environments. Impacts to water resources may be affected by cumulative land disturbances and/or developments outside the reservoir compound. Since water resources are located downstream, cumulative impacts would occur if land disturbances and/or developments occurred within the local watershed directly or indirectly affecting downstream water resources through soil erosion and sedimentation.

Implementation of the transfer of jurisdiction would result in no adverse impacts to water resources and would provide beneficial impacts as DC Water will modify reservoir discharge protocols as a result of this action. The transfer of jurisdiction would not have any adverse cumulative impacts and possibly beneficial cumulative impacts to downslope environments as a result of reservoir discharge protocol modifications.

## **WATER QUALITY**

### **Methodology and Assumptions**

The NPS *Management Policies* 2006 state that the NPS would “*take all necessary actions to maintain or restore the quality of surface waters and ground waters within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations*”. A water quality standard defines the water quality goals of a water body by designating uses to be made of the water, setting minimum criteria to protect the uses, and preventing degradation of water quality through anti-degradation provisions. The anti-degradation policy is only one portion of a water quality standard. Part of this policy (40 CFR 131.12(a) (2)) strives to maintain water quality at existing levels if it is already better than the minimum criteria. Anti-degradation should not be interpreted to mean that “*no degradation*” can or would occur, as even in the most pristine waters, degradation may be allowed for certain pollutants as long as it is temporary and short-term. Other considerations in assessing the magnitude of water quality impacts are the effect on those resources dependent on a certain quality or condition of water. Sensitive aquatic organisms, submerged aquatic vegetation, riparian areas, and wetlands are impacted by changes in water quality from direct and indirect sources.

Given the above policies and objectives, water quality impacts were assessed based on the potential for the alternative to alter current water quality conditions.

### **Study Area**

The study area for water quality analysis consists of the 0.43 acre slope embankment failure boundaries and the transfer of jurisdiction fenced-in property (including an area of approximately 10 feet off the fence line). The downstream environment is also noted since water quality would be measured in the stream environment. Construction related to the repair, stabilization, environmental restoration and other operational and maintenance activities would not occur outside this project area.

### **Impact Thresholds.**

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

*Negligible* – Impacts (chemical, physical, or biological) would not be detectable, would be within desired water quality standards or criteria, and would be within historical or desired water quality conditions. Modification of natural stream channel and flow characteristics would be below detection.

*Minor* – Impacts (chemical, physical, or biological) would be detectable but would be within desired water quality standards or criteria and within historical or desired water quality conditions. Modification of natural stream channel would be detectable and would measurably alter stream flows. Mitigation, if needed, would be simple and successful.

*Moderate* – Impacts (chemical, physical, or biological) would be detectable and historical baseline or desired water quality conditions would be temporarily altered; however, overall water quality would remain within regulatory standards. Modification of the natural stream channel would be readily apparent and result in changes to instream flow characteristics during high flow or low flow conditions. Mitigation measures to offset potential adverse impacts could be extensive, but would be successful.

*Major* – Impacts (chemical, physical, or biological) would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would temporarily be slightly and singularly exceeded. Modification of the natural stream channel would be readily apparent and would cause substantial changes to in-stream flow characteristics. Mitigation measures to offset potential adverse impacts would be extensive and their success could not be guaranteed.

*Duration* – Short-term impacts occur during all or part of alternative implementation; long-term impacts extend beyond implementation of the alternative.

### **Impact of Alternative 1 – No Action Alternatives**

**Analysis.** Under Alternative 1, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated under this EA. The failed slope embankment would continue to erode and wash soil and other pollutants downstream. Short-term and long-term minor to moderate adverse impacts to water quality would occur and potentially becoming a long-term minor to moderate adverse impact to water quality should the embankment collapse, continuing soil erosion and sedimentation downslope.

**Cumulative Impacts.** Impacts to water quality may be affected by cumulative land disturbances and/or developments outside the reservoir compound. Since tributaries and streams are located downslope of the failed embankment, cumulative impacts would occur if land disturbances or developments occurred within the local watershed directly or indirectly affecting downstream environments through continuing soil erosion and sedimentation. There would be minor to moderate adverse cumulative impacts to downstream water quality with the Alternative 1, as continued erosion and sedimentation could occur and degrade downstream water quality.

**Conclusion.** During storm events, stormwater runoff within the slope embankment will transport soil and other pollutants into an unnamed tributary. This soil erosion and sedimentation process would occur during storm events and would result in short-term and long-term minor to moderate adverse impacts to water quality. Should the slope embankment continue to fail and collapse, minor to moderate adverse impacts would occur to water quality in the unnamed tributary and possibly to further downstream waterways.

### **Alternative 2 – Preferred Action Alternative**

**Analysis.** Alternative 2 includes the repair, stabilization, and environmental restoration of the failed slope embankment. Temporary construction disturbances during storm events would increase stormwater runoff and have minor to moderate short-term adverse impacts to water quality, as soil erosion and sedimentation would occur downslope. This temporary adverse impact would be mitigated by the implementation of soil erosion and sediment control plan and actions as specified in the mitigation measures noted in this EA. After the stabilization is complete, beneficial impacts would occur as the planted vegetation matures, providing stormwater attenuation and filtration into downslope environments.

Alternative 2 also includes the transfer of jurisdiction of the reservoir compound from the NPS to the DC Water. Implementation of the transfer of jurisdiction would result in no adverse impacts to water quality and would provide beneficial water quality impacts as DC Water will modify reservoir discharge protocols as a result of this action.

**Cumulative Impacts.** Impacts to water quality may be affected by cumulative land disturbances and/or developments outside the reservoir compound. Since tributaries and streams are located downslope of the failed embankment, cumulative impacts would occur if land disturbances and/or developments occurred within the local watershed directly or indirectly affecting downstream environments through contribution of soil erosion and sedimentation. There would be short-term minor to moderate adverse cumulative impacts to downstream water quality, as soil erosion and sedimentation will occur during temporary construction activities. Long-term beneficial cumulative impacts would occur and would provide stormwater attenuation and filtration as the planted vegetation matures.

Alternative 2 also includes the transfer of jurisdiction of the reservoir compound from the NPS to the DC Water. Implementation of the transfer of jurisdiction would result in beneficial cumulative impacts as DC Water would modify reservoir discharge protocols as a result of this action.

**Conclusion.** During construction activities related to the repair, stabilization, and environmental restoration work, stormwater runoff would transport soil and other pollutants into an unnamed tributary causing minor to moderate adverse impacts. This adverse impact will be mitigation during construction and would have only temporary adverse impacts to water quality. Once the repair, stabilization, and environmental restoration work is completed, long-term benefits to water quality would occur as the planted vegetation matures along the slope embankment. There would be short-term minor to moderate adverse cumulative impacts to downstream water quality, as soil erosion and sedimentation would occur during temporary construction activities. Long-term beneficial cumulative impacts would occur and would provide stormwater attenuation and filtration as the planted vegetation matures.

Alternative 2 also includes the transfer of jurisdiction of the reservoir compound from the NPS to the DC Water. Implementation of the transfer of jurisdiction would result in no adverse impacts to water quality and would provide beneficial water quality impacts as DC Water will modify reservoir discharge protocols as a result of this action. Implementation of the transfer of jurisdiction would also result in no cumulative adverse impacts to water quality and would provide cumulative beneficial impacts as DC Water will modify reservoir discharge protocols as a result of this action.

## **WETLANDS**

### **Methodology and Assumptions**

Potential impacts to wetland resources were limited to previously delineated wetland habitats (a referenced in this document) located approximately 150-foot downslope of the failed slope embankment. These forested and emergent wetlands are associated with a tributary of Stickfoot Branch.

### **Study Area**

The study area for wetland analysis consists of delineated wetlands located approximately 150 feet downslope of the failed slope embankment and the associated a tributary of Stickfoot Branch.

### **Impact Thresholds**

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

*Negligible* – No wetland habitats would be affected or some minor wetland areas could be affected as a result of the alternative, but there would be minimal effect to the overall wetland habitat. The effects would be on a small scale and no long-term impacts would occur.

*Minor* – The alternative would affect some wetland areas and plants and would also affect a relatively minor portion of the overall wetland habitat. Mitigation to offset adverse effects, including special measures to avoid affecting any wetland plants or wildlife species could be required and would be effective.

*Moderate* – The alternative would affect some wetland plants or wildlife species and would also affect a sizeable or relatively large wetland area. Mitigation to offset adverse effects could be extensive, but would likely be successful.

*Major* – The alternative would have a considerable effect on wetland plants or wildlife species populations, including species of special concern, and affect a relatively large wetland area. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

*Duration* – Short-term impacts would last less than one year; long-term impacts would extend beyond implementation of the alternative.

### **Impact of Alternative 1 – No Action Alternatives**

**Analysis.** Under this alternative, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated under this EA. The failed slope embankment would continue to erode without proper stabilization and vegetation plantings. Short-term and long-term negligible adverse impacts to wetland habitats would occur and potentially becoming a long-term minor adverse impact to wetland habitats should the embankment collapsed into the wetlands.

**Cumulative Impacts.** There are no present or proposed future actions that would act cumulatively to impact wetland habitats under Alternative 1. These wetlands are not located in a topographic location where current and future developments will cumulatively impact their functions. As a result there would be no adverse or beneficial cumulative impacts to wetland habitats under Alternative 1.

**Conclusion.** Implementation of Alternative 1 would result in short-term and long-term negligible to minor adverse impacts to wetland habitats located 150-feet below the failed slope embankment. There are no present or proposed future actions that would act cumulatively to impact wetland habitats under Alternative 1.

### **Alternative 2 – Preferred Action Alternative**

**Analysis.** Alternative 2 includes the repair, stabilization, and environmental restoration of the failed slope embankment. This alternative would result in a vegetated slope that would mature into a forest habitat resulting in short-term and long-term beneficial impacts, as the wetlands would have an adjacent vegetated upland buffer. Short-term construction activity would not disturb any wetland habitats located 150 feet below the failed slope embankment, therefore, no adverse impacts would occur to wetlands from construction activities.

The transfer of jurisdiction under this alternative would provide beneficial impacts since DC Water would be expected to remove invasive vegetation when encountered on the reservoir property under the covenant and this would minimize the opportunity of invasive plant species to spread into wetland areas.

**Cumulative Impacts.** There are no present or proposed future actions that would act cumulatively to impact wetland habitats under the preferred action alternative. These wetlands are not located in a topographic location where current and future developments will cumulatively impact their functions. As a result there would be no cumulative impact to wetlands under Alternative 2.

**Conclusion.** Implementation of alternative 2 would result in short-term negligible impacts to wetlands during construction activities. There would also be short-term and long-term beneficial impacts to wetlands after the slope embankment area is repaired, stabilized and environmentally restored, as the wetlands would have an adjacent vegetated upland buffer.

If the transfer of jurisdiction occurs, there would be no adverse or beneficial short-term or long-term impacts related to wetland habitats under Alternative 2.

## VEGETATION

### Methodology and Assumptions

Available information on vegetation and vegetative communities occurring within the reservoir compound was compiled and reviewed. This included an on-site survey (April 8, 2010) by a local botanist (Rod Simmons) from the Maryland Native Plant Society. Predictions about short-term and long-term project impacts on vegetation were based on general characteristics and proposed actions affecting vegetated areas associated with the alternatives.

### Study Area

The study area for vegetation analysis consists of the 0.43 acre slope embankment failure boundaries and the transfer of jurisdiction fenced-in property (including an area of approximately 10 feet off the fence line). Construction related to the repair, stabilization, environmental restoration and other operational and maintenance activities would not occur outside this project area.

### Impact Thresholds

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

*Negligible* – No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be on a small scale and no species of special concern would be affected.

*Minor* – The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. Mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, could be required and would be effective.

*Moderate* – The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population and over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful. Some species of special concern could also be affected.

*Major* – The alternative would have a considerable effect on native plant populations, including species of special concern, and affect a relatively large area in and out of the park. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

*Duration* – Short-term impacts would last less than one year; long-term impacts would extend beyond implementation of the alternative.

### Impact of Alternative 1 – No Action Alternative

**Analysis.** Under Alternative 1, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated under this EA. The failed slope embankment would continue to erode without proper stabilization and vegetation plantings. Short-term and long-term negligible to minor adverse impacts to vegetation would occur as soil erosion and sedimentation would continue in the forest environment. Long-term minor to moderate adverse impacts to vegetation could occur should the embankment collapsed and continue to exacerbate soil erosion and sedimentation.

**Cumulative Impacts.** There are no present or proposed future actions that would act cumulatively to impact vegetation under the no Alternative 1. The entire reservoir site is located on a hilltop and no current or future developments would cumulatively impact onsite vegetation. As a result there would be no adverse or beneficial cumulative impacts to vegetation under the no Alternative 1.

**Conclusion.** Implementation of Alternative 1 would result in short-term and long-term negligible to minor adverse impacts to vegetation as soil erosion and sedimentation continues along the failed slope embankment. Long-term minor to moderate adverse impacts to vegetation could occur should the slope embankment completely fail. There would be no adverse or beneficial cumulative impacts to vegetation.

### **Impact of Alternative 2 – Preferred Action Alternative**

**Analysis.** Alternative 2 includes the repair, stabilization, and environmental restoration of the failed slope embankment. This alternative would result in a vegetated slope that would mature into a forest habitat resulting in short-term and long-term beneficial vegetation impacts. Temporary construction activity would disturb minor vegetation to complete the proposed work, so there would be minor short-term adverse impacts during construction activities. All construction disturbances would be restored as the slope embankment would be completely replanted.

The project restoration sequence for all vegetated areas along the project area includes the removal of existing unsuitable soil and re-grading to obtain original topography. This is done by placing and compacting clean suitable fill (as needed) followed by 12” - 24” of a topsoil support layer to obtain original grades. Following establishment of the soil support layer, yard waste/compost would be spread to a depth of 3” and tilled into the top 3” of the root zone. Upon completion of the soil work, trees, shrubs and herbaceous species, should be planted followed by the coir fiber logs (if needed) to hold the area in place. The coir fiber logs are to be installed parallel to the contour lines and then staked in. Next, the naturalization/stabilization seed mix should be hydro seeded. Immediately after hydro-seeding the stabilization matting is to be installed to stabilize the seeding.

The transfer of jurisdiction under this alternative would provide beneficial impacts to vegetation since DC Water would be expected to remove invasive vegetation on the reservoir property under the covenant.

**Cumulative Impacts.** There are no present or proposed future actions that would act cumulatively to impact vegetation under the Alternative 2. The entire reservoir site is located on a hilltop and no current or future developments will cumulatively impact onsite vegetation. As a result there would be no adverse or beneficial cumulative impacts to vegetation under the Alternative 2.

**Conclusion.** Implementation of Alternative 2 would result in short-term negligible to minor impacts to vegetation during construction activities. There would also be short-term and long-term beneficial impacts to vegetation after the slope embankment area is repaired, stabilized and environmentally restored. There would be no adverse or beneficial cumulative impacts to vegetation under Alternative 2.

If the transfer of jurisdiction occurs, there would be no adverse or beneficial short-term or long-term impacts related to vegetation under Alternative 2.

## WILDLIFE

### Methodology and Assumptions

The Organic Act of 1916, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise they are protected from harvest, harassment, or harm by human activities. According to The NPS *Management Policies 2006*, the environmental restoration of native species is a high priority (sec. 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, along with the natural abundance, diversity, and the ecological integrity of plants and animals. Information on wildlife and wildlife habitat occurring within the reservoir compound was taken from park documents and records.

The assessment of short-term and long-term wildlife impacts was based on the review of existing wildlife and the likelihood the proposed actions would directly or indirectly impact wildlife and their habitats.

### Study Area

The study area for wildlife analysis consists of the 0.43 acre slope embankment failure boundaries and the transfer of jurisdiction fenced-in property (including an area of approximately 10 feet off the fence line). Construction related to the repair, stabilization, environmental restoration and other operational and maintenance activities would not occur outside this project area.

### Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on wildlife and wildlife habitat:

*Negligible* – There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

*Minor* – Impacts would be detectable, but they would not be expected to be outside the natural range of variability of native species' populations, their habitats, or the natural processes sustaining them. Mitigation measures, if needed to offset adverse effects, would be simple and successful.

*Moderate* – Breeding animals of concern are present; animals are present during particularly vulnerable life-stages, such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the park unit. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they could be outside the natural range of variability. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.

*Major* – Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability. Key ecosystem processes might be disrupted. Loss of habitat might affect the viability of at least some native species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

*Duration* – Short-term impacts would last less than one year; long-term impacts would occur longer than one year.

### **Impact of Alternative 1 – No Action Alternative**

**Analysis.** Under Alternative 1, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated under this EA. The failed slope embankment would continue to erode downslope causing short-term and long-term negligible to minor adverse impacts to wildlife and wildlife habitats. Long-term adverse minor impacts to wildlife and wildlife habitats would occur should the embankment collapse. No endangered or threatened wildlife species are known to inhabit the area directly downslope or adjacent to the failed embankment.

**Cumulative Impacts.** There are no present or proposed future actions that would act cumulatively to the impacts to local wildlife and wildlife habitat that would occur under Alternative 1. The entire reservoir site is located on a hilltop and no current or future developments will cumulatively impact onsite wildlife or their habitats. As a result, there would be no adverse or beneficial cumulative impacts to wildlife and wildlife habitat under Alternative 1.

**Conclusion.** Implementation of the no Alternative 1 would result in short-term and long-term negligible to minor adverse impacts to wildlife and wildlife habitat due to the loss of 0.43 acre of forest habitat. There is a potential for long-term minor adverse impacts should the slope embankment fail, thereby impacting more wildlife habitats.

### **Impact of Alternative 2 – Preferred Action Alternative Analysis**

**Analysis.** Under Alternative 2, activities that would occur during the construction work associated with the repair, stabilization, and environmental restoration of the failed slope embankment would have negligible to minor short-term adverse impacts on wildlife and wildlife habitats. Potential long-term beneficial impacts would occur as the planted vegetation matures to provide more foraging and shelter habitats for local wildlife.

**Cumulative Impacts.** There are no present or proposed future actions that would act cumulatively to the impact wildlife and wildlife habitats under Alternative 2. The entire reservoir site is located on a hilltop and no current or future developments will cumulatively impact onsite wildlife or their habitats. As a result, there would be no adverse or beneficial cumulative impacts to wildlife and wildlife habitat under Alternative 2.

**Conclusion.** Implementation of Alternative 2 would result in negligible to minor short-term adverse impacts associated with construction activities, and long-term beneficial impacts to wildlife and wildlife habitats from the planted vegetation as more foraging and shelter habitats will be available for local wildlife.

For the transfer of jurisdiction, there would be no beneficial or adverse impacts to wildlife or wildlife habitats.

## SCENIC RESOURCES (Aesthetics and Viewsheds)

### Methodology and Assumptions

Impacts to scenic resources were determined by considering the effect of the existing conditions and the proposed construction and operations at the reservoir compound upon those park visitors who utilize the area.

### Study Area

The study area for scenic resource analysis consists of the 0.43 acre slope embankment failure boundaries and the transfer of jurisdiction fenced-in property (including an area of approximately 10 feet off the fence line). Construction related to the repair, stabilization, environmental restoration and other operational and maintenance activities would not occur outside this project area.

### Impact Thresholds

The following thresholds were defined:

*Negligible* — Park visitors would likely be unaware of impacts to scenic resources associated with the alternatives. There would be no noticeable change in aesthetics and viewshed that would impact visitor use and experience or in any defined indicators of visitor satisfaction or behavior.

*Minor* — Changes in aesthetics and viewshed where visitor use and/or experience would be slightly detectable, but would not to any appreciably limit or degrade critical characteristics of the visitor experience. Visitor satisfaction would remain stable.

*Moderate* — Few critical characteristics of the aesthetics and viewshed would be experienced by park visitors. The number of park visitors engaging in any specified passive recreation activity would be altered. Some visitors who desire their continued use and enjoyment of the activity/visitor experience might be required to pursue their choices in other available local or regional areas. Visitor satisfaction would begin to either decline or increase.

*Major* — Multiple critical characteristics of the desired park aesthetics or viewshed would change and/or the number of participants engaging in an activity related to aesthetics or viewshed would be greatly reduced or increased. Visitors who desire their continued use and enjoyment of the activity/visitor experience would be required to pursue their choices in other available local or regional areas. Visitor satisfaction would markedly decline or increase.

*Duration* – Short-term impacts would be immediate, occurring during implementation of the alternative. Long-term impacts would persist after implementation of the alternative.

### Impact of Alternative 1 – No Action Alternative

**Analysis.** Under Alternative 1, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated under this EA. The failed slope embankment would continue to be a visible scar for park visitors from various views. As presented in the viewshed analysis, the location of the embankment failure is visible from several public-access areas of the park including the access road (looking north), the pool (looking north), and all areas east of the access road (looking north). The viewshed analysis also indicates that the location of the embankment failure is visible to areas outside of Fort Stanton Park including the residential properties located to the northeast of Fort Stanton on Skyland Terrace (looking west) and the properties located southeast of Fort Stanton on Bruce Place (looking northwest). Short-term and long-term minor adverse impacts to scenic resources would occur and potentially becoming long-term moderate adverse impacts to scenic resources should the embankment collapse.

**Cumulative Impacts.** Impacts to scenic resources may be affected by cumulative development inside and outside the reservoir compound. Any recent projects that may have occurred around Fort Stanton Park included new construction, residential or commercial redevelopment, installation of utility towers, or creating of new roadways, would represent actions that could result in cumulative impacts to scenic resources. As a result, implementation of Alternative 1 would result in negligible cumulative impact to scenic resources.

**Conclusion.** Implementation of Alternative 1 would result in short-term and long-term minor adverse impacts to scenic resources for some park visitors. In addition, long-term moderate adverse impacts to scenic resources would occur if the failed slope embankment fail and collapse along the ridge. Any recent projects that may have occurred around Fort Stanton Park would represent actions that could result in cumulative impacts to scenic resources. As a result, implementation of Alternative 1 would result in minor adverse cumulative impacts to scenic resources.

### **Impact of Alternative 2 – Preferred Action Alternative Analysis**

**Analysis.** Under the preferred action alternative, scenic resources would be improved when trees and shrubs are planted along the slope embankment. The failed slope embankment would be repaired, stabilized, and environmentally restored and the scarred landscape would no longer be visible from any of the views previously identified in the viewshed analysis, resulting in short-term and long-term beneficial impacts. There would be short-term minor adverse impacts during construction activities.

The transfer of jurisdiction from NPS to DC Water would result in a no adverse or beneficial impacts to scenic resources.

**Cumulative Impacts.** Impacts to scenic resources may be affected by other developments inside and outside the reservoir compound. Projects that may have occurred around Fort Stanton Park including new construction, residential or commercial redevelopment, installation of utility towers, or creating of new roadways, would represent actions that could result in cumulative impacts to the scenic resources. Currently, there are no present or proposed future actions that would act cumulatively to impact scenic resources under Alternative 2.

**Conclusion.** Implementation of Alternative 2 would result in short-term minor adverse impacts associated with construction activities and long-term beneficial impacts to scenic resources as the trees and shrubs mature and the natural landscape is restored on the embankment. Any recent projects that may have occurred around Fort Stanton Park would represent actions that could result in cumulative impacts to scenic resources. As a result, implementation of Alternative 2 would result in beneficial cumulative impacts to scenic resources.

There are no beneficial or adverse impacts to scenic resources from the transfer of jurisdiction. No beneficial or adverse cumulative impacts to scenic resources would occur from the transfer of jurisdiction.

## **HUMAN HEALTH AND SAFETY**

### **Methodology and Assumptions**

Impacts to visitor and NPS staff health and safety are determined qualitatively based on the existing conditions of the site and overall safety concerns. The impact assessment also considered potential impacts to Anacostia First High Service Area for potable water and fire protection services by comparing current service with service under both alternatives.

### **Study Area**

The study area for human health and safety analysis consists of the 0.43 acre slope embankment failure boundaries and the transfer of jurisdiction fenced-in property (including an area of approximately 10 feet off the fence line). Construction related to the repair, stabilization, environmental restoration and other operational and maintenance activities would not occur outside this project area.

An expanded study area is also considered since for this resource provide potable water and fire protection to approximately 100,000 people living in the Anacostia First High Service Area.

### **Impact Thresholds**

The impact intensities for health and safety were defined as follows:

*Negligible* — The impact to health and safety would not be measurable or perceptible.

*Minor* — The impact to health and safety would be detectable but would not have an appreciable effect on overall public health and safety. Individuals could be affected in a localized area. If mitigation were needed, it would be relatively simple and would likely be successful.

*Moderate* — The impacts to health and safety would be readily apparent and result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.

*Major* — The impacts to health and safety would be readily apparent and result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed, and success would not be guaranteed.

*Duration* – Short-term impacts would be immediate, occurring during implementation of the alternative. Long-term impacts would persist after implementation of the alternative.

### **Impact of Alternative 1 – No Action Alternatives**

**Analysis.** Under Alternative 1, the DC Water reservoir compound including the failed slope embankment would remain unchanged. No repair, stabilization, environmental restoration or any other ground disturbing activities would be initiated under this EA. The failed slope embankment would continue to erode into the downslope environments. If the slope is not repaired, stabilized and environmentally restored, there is a possibility that someone may be injured while working on or below the unstable slope or if a total collapse occurred when personnel were performing maintenance along the slope embankment. Under this no Alternative 1, minor short-term and long-term adverse impacts to human health and safety would occur. There is also a potential for minor short-term and long-term impacts to the Anacostia First High Service Area for potable water and fire protection services should the entire slope embankment collapse. If service from Fort Stanton were disrupted, 100,000 people in Anacostia would be without water. Attempts to maintain service would require direct pumping of the pressure zone but would most likely rupture the systems piping as pressure is not easily modulated. Water may also be accessible from Anacostia 2<sup>nd</sup> High Service Area. However, storage within this zone is significantly smaller and could not supply all of the current 100,000 water recipients.

**Cumulative Impacts.** Impacts to human health and safety are site specific and are not affected by cumulative human health and safety impacts outside the study area. Any recent projects that may have occurred in the area of Fort Stanton Park would not represent actions that would result in any impacts to human health and safety issues. As a result, implementation of Alternative 1 would result in no cumulative impact to human health and safety.

**Conclusion.** Implementation of Alternative 1 would have no short-term or long-term beneficial impacts to human health and safety. Implementation of Alternative 1 would result in a negligible to minor short-term and long-term adverse impact to human health and safety since personnel could be injured while providing maintenance to existing structures on an unstable slope embankment. Also, working personnel could potentially be injured as a result of the entire embankment collapse. There would be no adverse or beneficial cumulative impacts.

### **Impacts of Alternative 2 – Preferred Action Alternative**

**Analysis.** Under Alternative 2, the slope embankment would be repaired, stabilized and environmental restored. There would be short-term negligible to minor adverse impacts to human health and safety during construction activities but these would be minimized by implementing DC Water and OSHA protocols under human health and safety. Once the slope is repaired, stabilized and environmentally restored, there would be minimal possibility that NPS staff and/or DC Water staff of being injured from aslope embankment collapse. There would be long-term benefits as interruption of water service and fire protection in the Anacostia First High Service Area would be minimized after construction.

The transfer of jurisdiction of the reservoir compound from the NPS to the DC Water would have no beneficial or adverse impacts to human health or safety.

**Cumulative Impacts.** Impacts to human health and safety are site specific and are not affected by cumulative human health and safety impacts outside the study area. Because of the hilltop location, cumulative human health and safety impacts would not be expected within or adjacent to the reservoir compound. Any recent projects that may have occurred in the area of Fort Stanton Park would not represent actions that would result in any impacts to human health and safety issues. As a result, implementation of Alternative 2 would not result in any cumulative impact to human health and safety.

**Conclusion.** Implementation of Alternative 2 would have negligible to minor short-term impacts to human health and safety during construction activities. There would be no adverse or beneficial cumulative impacts to human health and safety after the slope embankment is repaired.

The transfer of jurisdiction from NPS to DC Water would have no beneficial or adverse impacts to human health and safety.

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## **CONSULTATION AND COORDINATION**

Along with the release of notification to the public, the following agencies were consulted during the public scoping of this EA in November 2009: National Capital Planning Commission, US Commission of Fine Arts, District Department of Transportation, DC Office of Planning, District Department of the Environment, DC Department of Consumer and Regulatory Affairs, Office of Councilmember Marion Barry, Ward 8 Constituent Office, and the Anacostia Community Museum.

The NPS contacted the US FWS in October 2009 requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened in the Fort Stanton Reservoir area. US FWS responded in January 2010 stating that no proposed or federally listed endangered or threatened species are known to exist within the project impact area. Copies of US FWS correspondence are provided in Appendix C.

The DC SHPO was contacted regarding the Section 106 process completed as part of the EA. RGA initiated the Section 106 process in an email to Dr. Ruth Troccoli of the DC SHPO on January 22, 2010. Upon completion, a copy of the draft Phase I Reconnaissance-Level Historical and Archaeological Survey report for the project, dated May 11, 2010, was provided to DC SHPO for review. DC SHPO reviewed the draft report and provided comments which were subsequently incorporated into the final version of the Phase I Survey. Additional details regarding the Section 106 process are provided in the Cultural Resources section of the Impact Topics Dismissed from Further Analysis and Consideration section of the EA. Copies of DC SHPO correspondence are provided in Appendix E.

A presentation of the proposed project was made to the community on April 27, 2010 at the Smithsonian Anacostia Community Museum. Copies of the documentation associated with the presentation are provided in Appendix B.

DC Water and NPS met with representatives from the National Capital Planning Commission and the DC Department of Parks and Recreation to discuss future plans for Ft. Stanton Park on May 11, 2010.

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## GLOSSARY AND ACRONYMS

**Affected Environment** — The existing environment to be affected by a proposed action and alternatives.

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

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

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

**Cultural Resources** — Historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason.

**Cumulative Impacts** — Under NEPA regulations, the incremental environmental impact or effect of an action together with the effects of past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7).

**Deciduous** — Describing tree species that have leaves that fall off every season.

**Emergency Services** — Public services that respond to emergency situations including police, fire, rescue, and EMS.

**Enabling Legislation** — National Park Service legislation setting forth the legal parameters by which each park may operate.

**Endangered Species** — “...any species (including subspecies or qualifying distinct population segment) that is in danger of extinction throughout all or a significant portion of its range (ESA Section 3(6)).” The lead federal agency, US FWS, for the listing of a species as endangered is responsible for reviewing the status of the species on a five-year basis.

**Endangered Species Act (ESA) (16 USC 1531 et seq.)** — An Act to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species.

**Environmental Assessment (EA)** — An environmental analysis prepared pursuant to the *National Environmental Policy Act* to determine whether a federal action would significantly affect the environment and thus require a more detailed EIS.

**United States Environmental Protection Agency (US EPA)(40 CFR 131.12 (a)(2))** — *(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following: (2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State’s continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.*

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

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

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

**General Authorities Act** — The National Park Service General Authorities Act of 1970 is an amendment to the National Park Service Organic Act of 1916. The amendment included the following: *Congress declares that the National Park Service, which began with establishment of Yellowstone National Park in 1872, has since grown to include superlative natural, historic, and recreation areas in every major region of the United States, its territories and island possessions; that these areas, though distinct in character, are united through their inter-related purposes and resources into one national park system as cumulative expressions of a single national heritage; that, individually and collectively, these areas derive increased national dignity and recognition of their superb environmental quality through their inclusion jointly with each other in one national park system preserved and managed for the benefit and inspiration of all the people of the United States; and that it is the purpose of this Act to include all such areas in the System and to clarify the authorities applicable to the system.*

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

**National Historic Preservation Act of 1966 (16 USC 470 et seq.)** — An Act to establish a program for the preservation of historic properties throughout the nation, and for other purposes, approved October 15, 1966 [Public Law 89-665; 80 STAT.915; 16 USC 470 as amended by Public Law 91-243, Public Law 93-54, Public Law 94-422, Public Law 94-458, Public Law 96-199, Public Law 96-244, Public Law 96-515, Public Law 98-483, Public Law 99-514, Public Law 100-127, and Public Law 102-575].

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

**NPS Natural Resource Zone** — Park areas that are managed primarily for forest and natural scenery, these areas may also contain cultural resources.

**Neotropical migrant species** — A bird that breeds in Canada and the United States during our summer and spends our winter in Mexico, Central America, South America or the Caribbean islands.

**Organic Act** — Enacted in 1916, this Act commits the National Park Service to making informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations.

**Planning, Environment, and Public Commenting (PEPC)** — A web-based system that has been created for and adopted by the NPS to be used nationwide. This system would allow people to gain access to current plans and related documents that are available for review and open for comment.

**Scoping** — Scoping, as part of NEPA, requires examining a proposed action and its possible effects; establishing the depth of environmental analysis needed; determining analysis procedures, data needed, and task assignments. The public is encouraged to participate and submit comments on proposed projects during the scoping period.

**Topography** — The physical features of a surface area including relative elevations and the position of natural and man-made (anthropogenic) features.

**Wetlands** — The U.S. Army Corps of Engineers (Federal Register, 1982) and the Environmental Protection Agency (Federal Register, 1980) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

## **ACRONYMS**

ACOE Army Corps of Engineers  
BMPs Best Management Practices  
CEQ Council on Environmental Quality  
CFR Code of Federal Regulations  
DC District of Columbia  
DC SHPO District of Columbia State Historic Preservation Office  
DC Water District of Columbia Water and Sewer Authority  
DC DPR District of Columbia Department of Parks and Recreation  
EA Environmental Assessment  
EIS Environmental Impact Statement  
ESA Endangered Species Act  
FIRM Flood Insurance Rate Map  
FONSI Finding of No Significant Impact  
NCP-East National Capital Parks-East  
NCPC National Capital Planning Commission  
NEPA National Environmental Policy Act  
NHPA National Historic Preservation Act  
NPS National Park Service  
NRCS National Resources Conservation Service

NRHP National Register of Historic Places

NWI National Wetlands Inventory

PEPC Planning, Environment and Public Comment

Reservoir Compound - The approximately 5.9-acre area proposed for jurisdictional transfer is situated in a portion of Fort Stanton Park.

RGA Richard Grubb and Associates

USDA United States Department of Agriculture

US EPA United States Environmental Protection Agency

US FWS US Fish and Wildlife Service

USC United States Code

USGS United States Geological Survey

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## APPENDICES