ENVIRONMENTAL ASSESSMENT

MILLENNIUM AREA

HEADSTONE REMOVAL

PROJECT

LEAD AGENCY:

ARMY NATIONAL MILITARY CEMETERIES

COOPERATING AGENCY:

U.S. NATIONAL PARK SERVICE

Arlington National Cemetery

Arlington, Virginia 22211

September 2012

EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared to assess the potential impacts of the Millennium Area Headstone Removal Project on property administered by Arlington National Military Cemeteries (ANMC) and National Park Service (NPS) property at Arlington County, Virginia. The retired headstones were placed in the stream and drainage channel during the mid-20th century for stabilization and erosion control purposes.

The purpose of the project is to remove all headstones being currently used as stream stabilization within ANC and NPS-administered property, while providing stabilization measures adequate to ensure that the system is not degraded. This project would remove the headstones and dispose of them properly. The project area includes three branches of a stream within one drainage area. Measures used to stabilize the channels and prevent erosion would include cross-vane rock structures, biodegradable soil erosion control matting, and native plantings. Impacts to surrounding cultural and natural resources would be minimized through the use of hand removal of headstones where feasible, small construction equipment, and biodegradable and natural materials for channel stabilization.

This EA was prepared in compliance with the National Environmental Policy Act (NEPA) and all applicable implementing regulations. Four Action Alternatives and a No-Action Alternative were identified for this project. Three of the Action Alternatives were eliminated from detailed evaluation as they did not meet the goals of the project and/or resulted in unacceptable levels of impact. The direct and indirect impacts of the Proposed Action Alternative and No-Action Alternative were evaluated for temporary, permanent, and cumulative impacts.

The Army National Military Cemeteries and the National Park Service, as administrators of the land within ANC, will continue to work together on this and other projects to protect and restore the important natural and cultural resources of ANC and NPS property

within Section 29. This EA will be available for review and comment for 30 days from the date of posting.

MILLENNIUM AREA HEADSTONE
REMOVAL PROJECT

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ENVIRONMENTAL ASSESSMENT
ARMY NATIONAL MILITARY CEMETERIES

1.0 INTRODUCTION

The Arlington National Military Cemeteries (ANMC) Millennium Area Headstone Removal Project involves headstone removal within approximately 1400 linear feet (LF) of the stream in an eight-acre forested stream valley within Arlington National Cemetery (ANC), in Arlington, Virginia as shown in Figure 1. The study area extends from Ord and Weitzel Drive to the north and to Humphrey's Drive to the southwest. Surrounding the study area are the ANC maintenance facility and deciduous forest to the west; maintained cemetery to the north beyond Ord and Weitzel Drive; deciduous forest to the east and south; and the Superintendent's House to the southwest. One perennial stream (North Branch) and two intermittent tributary streams (Middle Branch and South Branch) convey water flow generally north through the study area.

The proposed project area is on both Arlington National Cemetery (ANC) property and United States National Park Service (NPS) property. The project location is identified in Figure 1 and Figure 2. The NPS portion of the property is part of Arlington House, the Robert E. Lee Memorial and under the administration of the George Washington Memorial Parkway. The project takes place within what historically was part of the preserved old-growth forest or woodlands maintained by George Washington Parke Custis and son-in-law Robert E. Lee as part of the Arlington House plantation. The headstones from Arlington National Cemetery were likely used over a period of at least fifty years during the 20th century for stabilization purposes. The headstones in the cemetery are periodically retired and replaced with new ones due to the erosion of inscriptions, damage, or more commonly additions to inscriptions to include the burial of a spouse. It appears as if these retired headstones were used within the project area for erosion control and construction of footways. The area consists of a portion of what is today designated as ANC Section 29 under later ANMC administration, and today is split between the NPS, as a preserved portion of the Arlington Woods, and ANC, as the site of the Millennium project expansion area.

The North Branch contains steep channel bed slopes with high banks in the upstream reach and low bank heights in the downstream reach. Areas of exposed and eroding banks exist in various locations with sediment deposition and constant channel migration. Concrete debris and about 164 headstones were found intermittently throughout the channel. The Middle Branch contains extreme slopes in the upper portion of the channel and drains from the superintendent's house. A large portion of the Middle Branch channel is lined with concrete blocks and approximately 932 headstones that are currently stabilizing the channel throughout that reach. In addition, a downstream portion of the Middle Branch is covered by sediment. This portion would need to be excavated to remove the headstones which are buried beneath the channel. The project proposes to remove the headstones within the Middle Branch while minimizing sediment loss from the project site.

The South Branch is mostly intact and functional but does contain about 40 headstones that need to be removed. Ground cover is includes poison ivy (*Toxicodendron radicans*) and English ivy (*Hedera helix*), as well as a diverse array of native species such as *Cryptotaenia canadensis*, *Sanicula canadensis*, *Collinsonia canadensis*, and *Carex sp*., among others.

The Army National Military Cemeteries (ANMC) is the lead Federal agency for this action and this NEPA document. The NPS is a cooperating agency on this EA and as such has provided extensive support during the formulation of alternatives and plan selection. The U.S. Army Corps of Engineers, Norfolk District, provides project support to Arlington National Cemetery on the project design and construction as well as the NEPA process.

As administrators of the land within the cemetery, ANMC and NPS would continue to work together on this and other projects to protect and restore the important natural and cultural resources of Arlington National Cemetery and NPS property within Section 29.

The ANMC Millennium Project is one such identified project and would be undertaken within proximity to the actions within this EA and therefore, will be described further in the cumulative impacts section.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the project is to remove all retired headstones being currently used as stream stabilization within ANC and NPS-administered property while providing stabilization measures adequate to ensure that the system is not degraded. This project would remove the headstones and grind them into dust, as Congress has determined that national cemetery headstones are not appropriate for use in this manner. Minimizing impacts to the natural and cultural resources of the area is a priority of the project. In addition, the project aims to minimize sediment erosion in the project area. The urgency for the removal is referenced in Army Direction 2010-04, *Enhancing the Operations and Oversight of the Army National Cemeteries Program*, which states that the newly appointed Executive Director's responsibilities include "…exercising authority, direction and control over all aspects of the Army National Military Cemeteries, and over the long-term development and the day-to-day administration and operations of ANC and the Soldiers' and Airmen's Home National Cemetery, including the immediate establishment of an accountability baseline for all gravesites and inurnment niches within the Army National Cemeteries and the promulgation of standards, policies and procedures that will maintain this baseline…". Although no gravesites are within the project area, it is a priority to also ensure accountability of all headstones; therefore, once they are removed from the site, ANMC would ensure that all headstones are documented.

1.2 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

Under the requirements of Section 102 of the National Environmental Policy Act (NEPA), this proposed project constitutes a Federal action; therefore, an Environmental Assessment (EA) is required. This EA has been prepared pursuant to NEPA and all applicable implementing regulations.

This EA will evaluate the direct, indirect, and cumulative impacts associated with the headstone removal and provision of necessary stream stabilization measures. This document identifies and evaluates the potential temporary and permanent effects associated with the proposed action. The potential for cumulative impacts is also addressed as defined by 40 Code of Federal Regulations (CFR) 1508.7.

1.3 PUBLIC AND AGENCY INVOLVEMENT

Coordination has occurred with the following agencies: Arlington County, Virginia Department of Historic Resources (VDHR), NPS, U.S. Fish and Wildlife Service (USFWS), Virginia Department of Conservation and Recreation (VDCR), and Virginia Department of Game and Inland Fisheries (VDGIF). Documentation of this coordination can be found in Appendix A.

Coordination for cultural resources within the area of the Millennium Area Headstone Removal Project has been initiated with VDHR. A recommendation of no adverse effects was submitted to VDHR (with a copy to NPS) and VDHR concurred (letter Marc Holma to Col. V.M. Bruzese, 12 June 2012, VDHR file# 2012-0390). Coordination with VDHR is still ongoing, particularly in reference to cultural resources on NPS lands, as NPS has additional Department of Interior requirements under both NEPA and NHPA Section 106 which must be met in order to issue the construction permit. In addition, ANMC is coordinating with Arlington County, the NPS and the Corps of Engineers for the appropriate permits and compliance actions. Because the project is partly located on NPS land, NPS would need to issue an NPS construction permit, and therefore, would need to satisfy its agency requirements under NEPA.

The U.S. Fish and Wildlife Service (USFWS) was contacted at an earlier stage of the project in order to identify any potential impacts to threatened and endangered species. No threatened or endangered species have been identified in the project area. Emails were sent in late May 2012 to follow-up with USWFS, as well as to coordinate with VDCR and VDGIF. VDGIF responded via email stating that State Listed Threatened

Bald Eagles pass through the project area but since the project site falls outside of a bald eagle management zone, VDGIF does not anticipate this project to result in adverse impacts upon eagles.

This EA will be provided electronically to interested parties for a 30-day comment period. There will also be a link to it on the ANC (http://www.arlingtoncemetery.mil/) and U.S. Army Corps of Engineers Norfolk District (http://www.nao.usace.army.mil/) websites.

2.0 PROPOSED ACTION

The Proposed Action is the removal of retired headstones, used in the 20th century to control erosion, in about 1400 linear feet (lf) of stream in an eight-acre forested area southwest of Ord and Weitzel Drive as shown in Figure 2. Each of three branches would have headstones removed. The Middle Branch, due to the current stabilization being provided by the headstones, would receive significant stabilization measures to ensure that erosion and sediment loss is minimized during and after the project (~404 linear feet). All other areas where headstones are removed would receive stabilization as necessary to avoid impacts to natural resources. Generally, this would consist of soil erosion control matting and/or native seeding in the North and South Branches.

2.1 ALTERNATIVE FORMULATION

Using data collected during an early assessment, four action alternatives were developed in order to evaluate each branch. These alternatives were developed with input from ANMC and Corps of Engineers staff, as well as NPS hydrology and natural resources staff. The alternative formulation process involved the following considerations:

- Remove headstones
- Remove two footbridges in project area
- Minimize impacts to natural and cultural resources
- Stabilize the Middle Branch where extensive headstone removal would occur
- Minimize sediment leaving the project area

2.2 IMPACT TOPICS ELIMINATED FROM FURTHER ANALYSIS AND CONSIDERATION

The following impact topics were eliminated from further analysis in this EA and a brief rationale for dismissal is provided for each topic. Potential impacts to these resources would be negligible, localized, and most likely immeasurable.

2.2.1 Wild and Scenic Rivers. The Potomac River is not designated as a National Wild and Scenic river; therefore, this impact topic was dismissed from further analysis in this EA.

2.2.2. Geohazards. There are no known geohazards within the project area; therefore, this impact topic was dismissed from further analysis in this EA.

2.2.3 Prime Farmland. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. The soil qualities, growing season, and moisture supply are those needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land can be cropland, pasture, rangeland, or other land, but not urban built-up land or water. Prime farmland is protected under the Farmland Protection Policy Act of 1981 to minimize the extent to which Federal programs contribute to the unnecessary or irreversible conversion of farmland to nonagricultural uses. Arlington National Cemetery is not considered prime farmland; therefore, this impact topic was dismissed as an impact topic in this EA.

2.2.4 Marine or Estuarine Resources. There are no marine or estuarine resources within Arlington National Cemetery; therefore, this impact topic was dismissed as an impact topic in this EA.

2.2.5 Floodplains. The project area is located high above the Potomac River and is not located within the regulatory floodplain as defined in NPS guidelines (NPS. 2003).

The floodplains of the existing streams would not be impacted by the proposed projects; therefore, this impact topic was dismissed from further analysis in this EA.

2.2.6 Air Quality. The 1963 Clean Air Act, as amended, (42 U.S.C. 7401 et seq.), requires Federal land managers to protect park air quality. Arlington National Cemetery is located in the Washington Metropolitan Area marginal non-attainment zone for ozone. With the Proposed Alternative, temporary increases in air pollution could occur during the project implementation. However, due to the relatively small scope of the proposed construction, the impacts to air quality would be localized and negligible, lasting only as long as reconstruction activities occurred. The area's current level of air quality would not be affected by the proposed project; therefore, this impact topic was dismissed from further analysis.

2.2.7 Land Use. The project area is on Federal property with Federal adjacent uses and would not impact occupancy, property values, ownership, or any type of land use; therefore, this impact topic was dismissed from further analysis in this EA.

2.2.8 Unique Ecosystems, Biosphere Reserves, World Heritage Sites. There are no known biosphere reserves, World Heritage Sites, or unique ecosystems listed within or adjacent to Arlington National Cemetery; therefore, this impact topic was dismissed from further analysis in this EA.

2.2.9 Indian Trust Resources. Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies is explicitly addressed in environmental documents. The Federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the U. S. to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of Federal law with respect to American Indian tribes and Alaska Native entities. The project area is not held in Trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, this impact topic was dismissed from further analysis in this EA.

2.2.10 Environmental Justice. On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations". This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement from any adverse effects by Federal policies and actions on these populations. Local residents near the Millennium Area Headstone Removal Project may include low-income populations; however, these populations would not be particularly or disproportionately affected by activities associated with the project. Therefore, this impact topic was dismissed from further analysis in this EA.

2.2.11 Socioeconomic Resources. NEPA requires an analysis of impacts to the human environment, which includes economic, social, and demographic elements in the affected area. The current conditions in the project area, as represented by the No-Action Alternative, would not have any impacts to the socioeconomic resources of the surrounding area. The proposed action would neither change local and regional land use, nor appreciably impact local businesses or other agencies. Implementation of the proposed action could provide a negligible beneficial impact to the nearby surrounding economies from short-term minimal increases in employment opportunities for the construction workforce and revenues for local businesses and government generated from construction activities. Since the impacts to the socioeconomic resources associated with the project would be negligible, this impact topic was dismissed as an impact topic in this EA.

2.2.12 Visitor Use and Experience. Although the perimeter of the Arlington Woods are visible from the road, the interior of the woods, where the project is located, are not easily accessible to the public and therefore, not commonly viewed by visitors. It is not anticipated that this project would affect the visitor experience at ANC or Arlington House in any manner. Since the impacts to the visitor use and experience associated with the project would be negligible, this impact topic was dismissed as an impact topic in this EA.

2.2.13 Human Health and Safety. No human health and safety risk factors currently exist on the project site, and none would be introduced as a result of this project. Since the impacts to human health and safety associated with the project would be negligible, this impact topic was dismissed as an impact topic in this EA.

2.2.14 Park Operations and Management. As mentioned above, the project area is not a site that is normally accessed by visitors. In addition, it is a natural area where ongoing maintenance does not occur. There may be some management of the wooded area, such as attempts to control invasive species; however, this project would not affect that management in any significant way. Since the impacts to the park operations and management associated with the project would be negligible, this impact topic was dismissed as an impact topic in this EA.

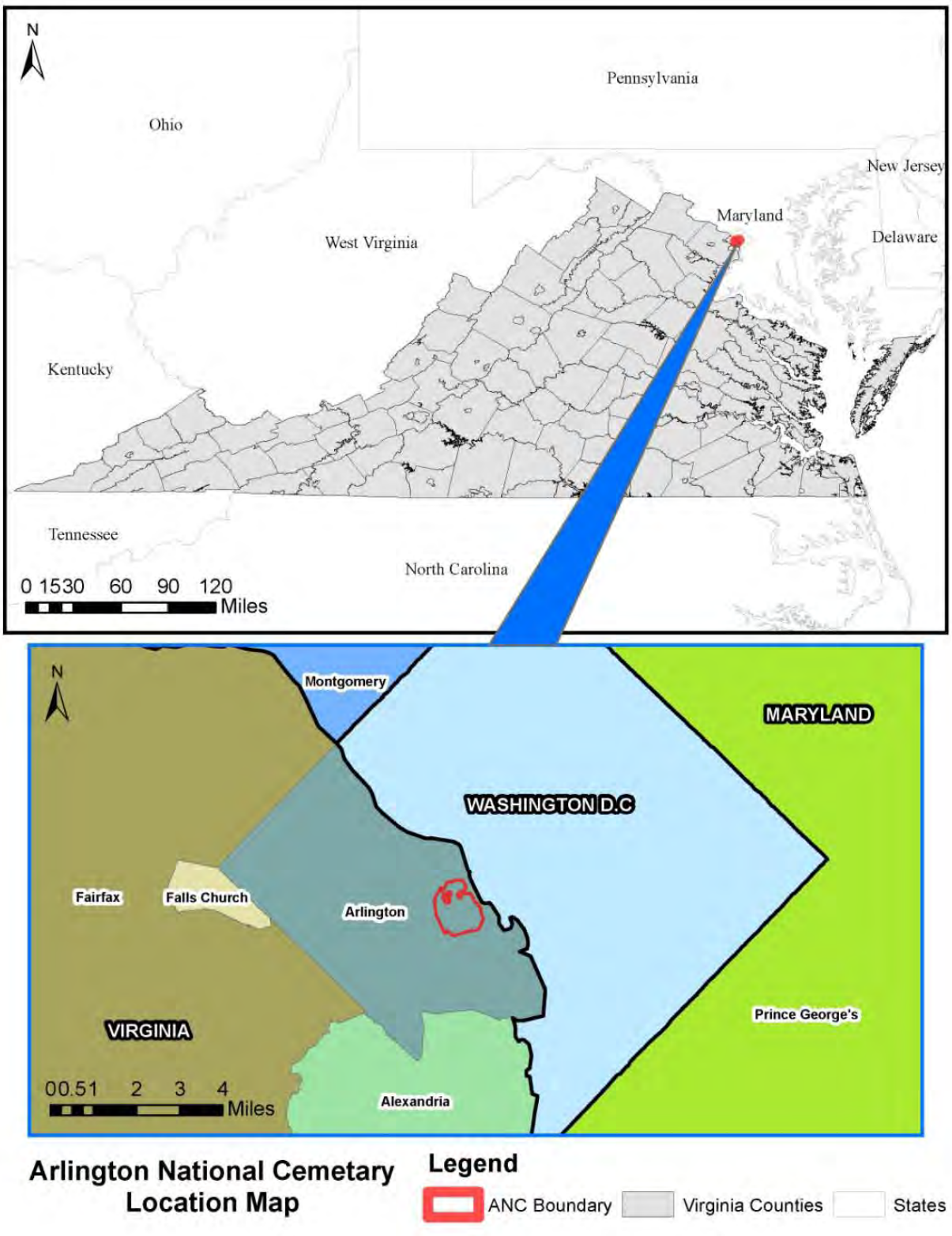

Figure 1. Arlington National Cemetery Location Map

Figure 2. Millennium Area Headstone Removal Project Location Map

3 .0 ALTERNATIVES

Under NEPA, an EA must evaluate reasonable alternatives for a project, including the No-Action Alternative. The alternatives identified for this project include Alternatives A, B, C, and D as described below. One alternative concept was discussed very early in the process and rejected before later alternatives were created. That alternative included creating new stream channels by diverting the existing Middle and/or South Branch off NPS lands and onto ANC property through forested sections of Arlington Woods. This alternative was rejected as it would require considerable grading and the removal of numerous large trees. The alternatives below were considered in greater detail. (NOTE: These alternatives only vary in the treatment applied to the headstone lined channel in the Middle Branch. All other stream areas would receive fiber matting and/or native seeding where headstones are removed. No additional stabilization or restoration techniques are anticipated to be necessary in the remaining stream areas.)

3.1 THE NO-ACTION ALTERNATIVE

NEPA regulations refer to the No-Action Alternative as the continuation of existing conditions of the affected environment without implementation of, or in the absence of, the Proposed Action. Inclusion of the No-Action Alternative is prescribed by applicable implementing regulations as the benchmark against which Federal actions are evaluated. Under this Alternative, the headstone removal would not occur.

3.2 ACTION ALTERNATIVES

Each of the alternatives described below were considered for implementation. All action alternatives include the removal of headstones. In many cases this could be accomplished manually, but in some cases equipment (such as a small skid-steer loader) would be needed to remove the headstones, especially those buried under sediment. The Middle Branch contains the most headstones; the North Branch contains fewer headstones identified in various locations within a 600-foot reach; and the South Branch contains the least number of headstones. In the North and South Branch, the only treatment that would occur in addition to the removal of the headstones is erosion control

matting and/or native seeding in all areas where bare soil is exposed due to headstone removal. The alternatives below describe the different techniques considered for stabilization of the headstone-lined portion of the Middle Branch.

3.2.1 Alternative A –Timber Log Check Dams for Stabilization along with Grading. Under Alternative A, timber log check dams would be used to stabilize the Middle Branch by decreasing water flow velocity. This alternative would include approximately twelve check dams, which would need to be cut into the bank about 6-8 feet. Rocks would be used around the dam to increase stability of the dam, catch sediment, and decrease water flow velocity. In addition, grading would occur at a maximum slope of 3:1, in order to create a more natural stream bank and work in combination with the dams to slow the velocity of the flow. This alternative does not include erosion control matting or native plantings.

3.2.2 Alternative B – Gabion sock check dams for Stabilization along with Grading, Soil Erosion Control Matting and Native Plantings. Alternative B is very similar to Alternative A, but instead of timber log check dams, approximately twelve gabion sock check dams would be used for stabilization. These gabion sock dams would serve the same purpose as the timber log check dams, but would cause significantly less impact to the streambanks, as they would only need to be cut into the bank approximately 2-4 feet. This alternative would include grading at a maximum slope of 3:1, to create a more natural stream bank. The grading would work in combination with the dams to slow the velocity of the stream flow. This alternative does include soil erosion control matting along all areas where headstones are removed and native plantings would be used to rehabilitate all disturbed areas (to include ingress and egress paths).

3.2.3 Alternative C – Combination of Coir Logs and Rocks for Stabilization along with Soil Erosion Control Matting and Native Plantings. Alternative C stabilizes the streambanks slightly differently than Alternative A or Alternative B and would first incorporate a very slight grade along the top edges of the channel – approximately 10-15% grade. Then soil erosion control matting would be used to line the channel

including along the graded banks, vertical sides, as well as along the bottom. Further, two coir logs (approximately 20 inch diameter each) would be placed in the channel and these coir logs were chosen to: decrease volume, increase sediment retention, and fill channel space more cost-effectively than rocks. The coir logs would then be surrounded (up to a depth of about two feet) with rocks. This design would follow through the channel until the channel high decreased to a depth that the coir logs were not needed, and then rocks would be used on top of the matting for stabilization.

3.2.4 Alternative D – Cross-Vane Rock Structures along with Minimal Grading as Necessary, Biodegradable Soil Erosion Control Matting and Native Plantings.
Alternative D was developed as a way to capture the benefits of some of the other alternatives while trying to avoid the impacts. In order to avoid cutting into the banks, cross-vane rock structures are proposed instead of check dams or gabions. These cross-vane structures would be constructed of rounded river cobble to form a V-shaped "dam" within the stream to slow water velocities, help trap sediment and direct flows to the middle of the stream. In addition, a sand/cobble mixture would be placed at the bottom of the channel in those areas that currently have concrete slabs lining the bottom. Although minimal bank grading as necessary is proposed, it is recognized that some bank collapse would likely occur when the headstones are removed; therefore, significant grading is not likely. The banks would be graded to a maximum of two feet back from the top of the bank only where necessary to stabilize the bank. The channel would be lined with biodegradable soil erosion control matting and the cross-vane structures would be placed on top of the matting. Erosion control matting along with native plantings would be implemented in all disturbed areas.

3.3 PREFERRED ALTERNATIVE

The preferred alternative is Alternative D. Alternative D best meets the stated goals of this project. Alternative D is also the Environmentally Preferable Alternative. This alternative would minimize impact to the project area while accomplishing the project purpose of removing all headstones from the area and minimizing sediment discharge from the site. The two footbridges in the project area would also be removed. This

alternative would minimize grading (graded area not to exceed two feet back from top of bank) in the project area, reducing impacts to both cultural and natural resources.

The staging and storage area for the project would primarily be in the existing maintenance yard, in order to minimize impacts to the woodland environment of the project area. Equipment to be used may include a tracked bobcat, wheeled skid steer, small wheeled crane, and/or small wheeled forklift. This equipment would stay within the Limits of Disturbance (LOD). The total potential temporary impact within the LOD is 40,123 SF or 0.9211 acres. The LOD is 15-foot on either side of the stream centerline. However, it is anticipated that a much smaller area would be disturbed. For the purposes of the calculation, the LOD was assumed to be 15-foot on either side of the stream centerline for all three branches. However, only the ~404 feet that would receive the significant stabilization measures would likely need this full LOD. In order to minimize impacts to natural and cultural resources, the LOD would be restricted as practicable during construction to the minimum area necessary to execute the action. Many portions of the North Branch and South Branch are anticipated to have the headstones removed manually with a wheelbarrow. Two ingress/egress paths are located adjacent to the maintenance area as shown in Figure 3 below. In order to minimize impacts, construction equipment would avoid streambanks and vegetation where possible as well as use protective matting to protect sensitive habitat.

The South Branch contains the least number of headstones. These headstones would be removed by hand and hand-carried from the brick lined drain headwaters located near the NPS Administrative buildings and parking area to the appropriate storage and disposal area. A wheelbarrow would be used to haul the headstones from the brick drain to the NPS parking area where they can be loaded into a utility vehicle and taken to the ANC maintenance yard. The use of the wheelbarrows would minimize impacts to the wooded area as well as the culturally significant area east of the South Branch.

The headstones in the North Branch would be removed by a combination of hand (for those intermittent scattered headstones) and small equipment to pick up and load the

headstones as necessary. Erosion control construction in the Middle Branch employed many headstones and cement slabs. Headstones used in this area were joined with cement. Demolition of this structure shall require the use of small construction equipment as described above. In order to replace the depth of stone removed and help stabilize the streambed, a sand/cobble mixture would be placed at the bottom of the channel in those areas that currently have concrete slabs lining the bottom. Sedimentation has buried a portion of the channel in the Middle Branch. This would need to be excavated in order to remove the headstones buried beneath the sediment. The soil excavated in this area would be stored on site so that it can be returned to the stream bed if all the digging and headstone removal lowers the bed from what it was before the project; extra material may be needed to bring the bed level to preexisting conditions. The two footbridges would be removed from the project area. Any trees which have fallen across the channel would be removed, but only to the extent needed to remove the headstones. Portions of trees which may need to be removed would be cut out and placed in the surrounding woods. All other portions of any downed trees would remain in place.

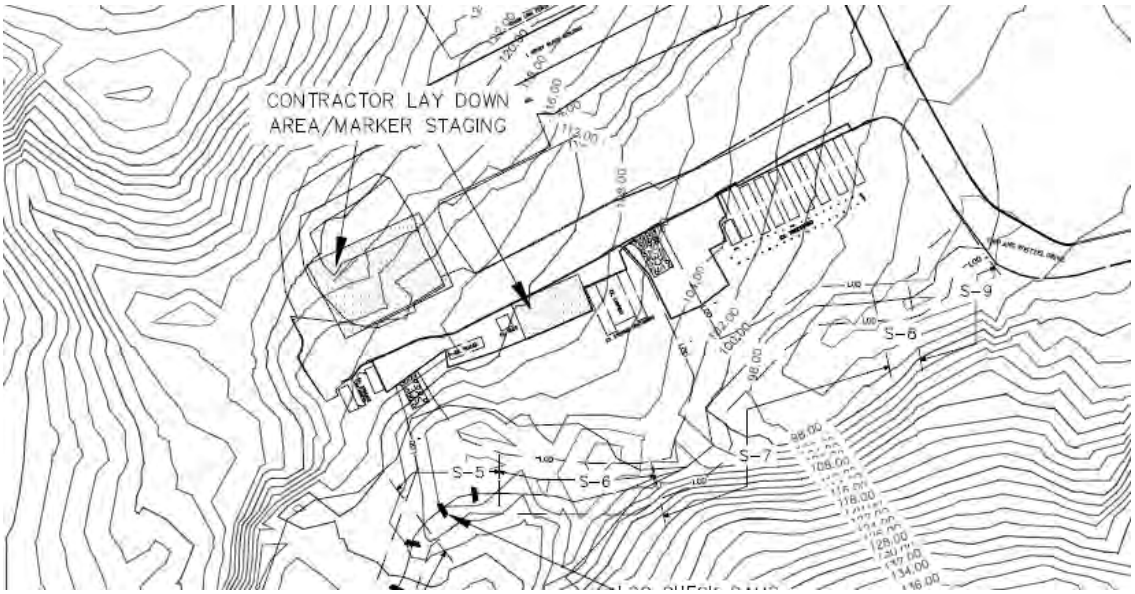

Figure 3 – Staging Area and Site Access

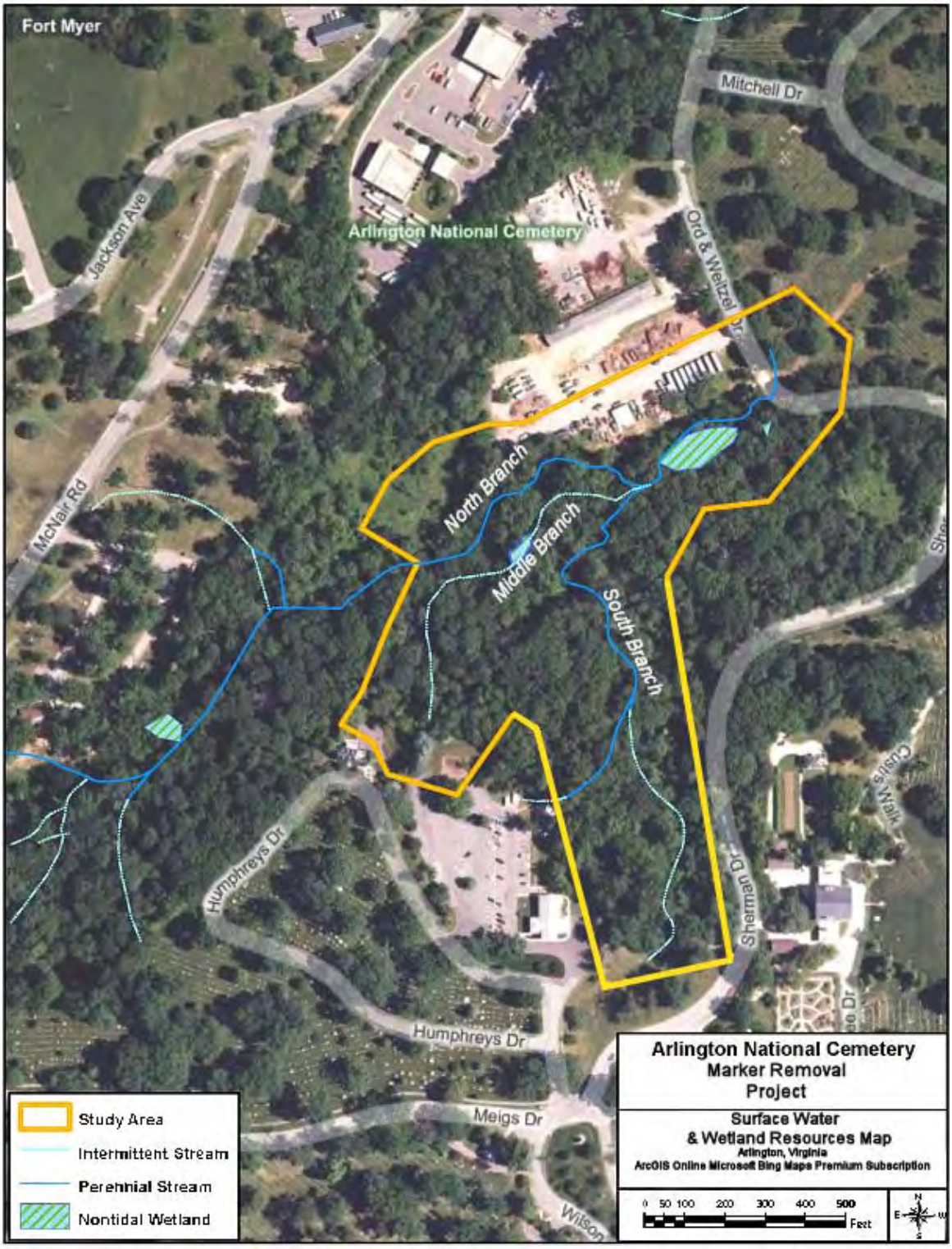

Figure 4 – Project Area Streams

Figure 5 – National Park Service Boundaries

3.4 ALTERNATIVES ELIMINATED FROM DETAILED EVALUATION

During the planning stages of the project, the other action alternatives were evaluated and eliminated from further consideration as described below. Please see Figure 4 as shown previously for the location of each Branch.

3.4.1 Alternative A. Alternative A was eliminated from further evaluation as it would have a high level of impact to the natural and cultural resources in the project area. Without any erosion control matting, it is possible that extensive erosion could occur. In addition, the timber log check dams would have to be cut into the streambed from 6-8 feet on either side in order to appropriately anchor the dam and ensure that water doesn't cut a path around it during storm events. This 6-8 feet of bank disturbance could result in up to 75 cubic yards of soil material that would need to be removed from the site and stored nearby on ANC property. This streambank impact was considered unnecessary and overly impactful to natural and cultural resources. Finally, the grading would include banks at a maximum of 3:1, which would cut the banks back significantly into the forested area, potentially impacting large trees and other vegetation. This grading could reach up to ten feet back from top of bank, and could result in up to 150 cubic yards of material, which is approximately 15 dump truck loads. This could result in significant impacts to soil and vegetation.

3.4.2 Alternative B. Alternative B was eliminated from further evaluation as it would have a high level of impact to the natural resources in the project area. Although it would likely have lesser impacts than Alternative A, the dams would still need to be cut into the bank approximately 2-4 feet, which would impact the surrounding natural and cultural resources. The 2-4 feet of bank disturbance could result in up to 24 cubic yards of material that would need to be removed from the site and stored nearby on ANC property. Finally, the grading would include banks at a maximum of 3:1, which would cut the banks back significantly into the forested area, potentially impacting large trees and other vegetation. This grading could reach up to ten feet back from top of bank, and could result in up to 150 cubic yards of material, which is approximately 15 dump truck loads. This could result in significant impacts to soil and vegetation.

3.4.3 Alternative C. Although it would result in lesser impacts to natural and cultural resources, Alternative C was eliminated from further evaluation as the NPS did not deem it appropriate to fill the channel with rocks. They felt that this would decrease the available channel volume for water conveyance; therefore, NPS would not support this alternative on their property.

4.0 AFFECTED ENVIRONMENT

This section describes the affected environment and the existing conditions for the resource categories that may be impacted by the Millennium Area Headstone Removal Project. Each resource category was reviewed for its potential to be impacted. Through this analysis, resource categories clearly not applicable to the alternatives were screened from further evaluation (and were briefly described in Section 2). Only those affected resources applicable to the Proposed Action are discussed further in this section and in Section 5.0, Environmental Consequences.

The impacts from this project would primarily be found within the project boundaries. The limits of work for the Middle Branch start in the wooded section approximately 100 feet downstream of storm drainage structures at the NPS Administrative Offices, and extends approximately 800 linear feet downstream to the confluence of the North Branch near the footbridge crossing. The limits of work for North Branch are localized and extend from confluence with Middle Branch and South Branch to Ord and Weiztel Drive, approximately 600 linear feet. Work would only occur in the upper 300-foot reach of the South Branch.

Arlington National Cemetery is a 637-acre property, administered by the Army National Military Cemeteries. The National Park Service also administers several properties within ANC, including Arlington House and portions of the wooded project area. The project study area for the Millennium Area Headstone Removal Project consists of an eight-acre forested stream buffer surrounding the 1400 lf of stream and extends from Ord and Weitzel Drive to the north, to Humphrey's Drive to the southwest. Surrounding the study area are the ANC maintenance facility and deciduous forest to the west, maintained

cemetery to the north beyond Ord and Weitzel Drive, deciduous forest to the east and south, and the Superintendent's House to the southwest. One perennial stream and two intermittent streams convey flow generally north through the study area.

4.1 SOILS

The predominant soil unit found within the vicinity of the study area is the Arlington National Cemetery (5) soil unit, according to the *Soil Survey of Arlington County, Virginia* (United States Department of Agriculture-Natural Resources Conservation Service [USDA-NRCS], 2007) and more recently available the digital NRCS Soil Survey Geographic Database (SSURGO) soils data for the county (NRCS Web Soil Survey, 2010). This soil unit is described as having deep, well drained soils on level to moderate slopes within the Upper Coastal Plain landform. Soils within the study area are not classified as sensitive or as "Prime or Unique Farmland" soils.

Mapped soil units are classified as primary or secondary hydric soils based upon their listing on the *National Hydric Soils List by State* (USDA-NRCS, 2010). Primary hydric soils are defined as those soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile. The ANC soil unit is not classified as a primary hydric soil according to the *National Hydric Soils List by State*.

Secondary hydric soils are those soils that potentially contain small inclusions of primary hydric soils, typically in drainage ways or depressional areas. The ANC soil unit is not classified as a secondary hydric soil within the Commonwealth of Virginia.

4.2 TOPOGRAPHY AND FLOODPLAINS

The ANC is located within the Northern Coastal Plain Physiographic Province. The general topography of ANC includes gently rolling hills dominated by maintained grass cemetery plots. According to a review of the *Washington, D.C. West 7.5' Topographic Quadrangle* (United States Geological Survey, 2002) and other sources, the topography within the study area for the Millennium Area Headstone Removal Project is steeply

sloping generally northwest and southeast toward a stream valley that originates within the study area and conveys drainage northeast towards the Potomac River. Elevations within the study area range from approximately 150 feet above mean sea level (MSL) to 90 feet above MSL. Based on the surrounding topography, the drainage area for the project is approximately 25 acres.

4.3 HYDROLOGY AND WATER QUALITY

Arlington National Cemetery is located within the Middle Potomac-Anacostia-Occoquan watershed (Code 02070010), and is within the larger Middle Potomac Sub-Basin which covers approximately 603,520 acres (943 square miles).

A wetland delineation performed by KCI, Inc., on December 2, 2010, identified two perennial streams and one intermittent stream that convey flow generally north through the study area. A site visit to confirm the findings was also conducted by USACE Norfolk District Regulatory staff in November 2011 and as a result of this visit an amendment to the wetland delineation was added. Figure 6 depicts the streams and wetlands on the project site.

The North Branch (WUS WL001) is a second order perennial stream that conveys flow northeast through the study area to a culvert beneath Ord and Weitzel Drive and continues beyond the limits of the study area. Approximately 750 linear feet of this stream is within the study area. This perennial stream has an approximate bankfull width of 5.5 feet with an average bankfull height of two feet. A brick footbridge crosses the stream channel and portions of the channel are lined with headstones used for bank and bed stabilization. Based on the field investigation, the Cowardin Classification for this system is riverine, lower perennial, unconsolidated bottom, cobble-gravel/sand (R2UB1/2).

The South Branch (WUS WL002) is a nontidal, intermittent stream located immediately southeast of WUS WL001 and west of Sherman Drive. WUS WL002 enters the study area from the south beyond the limits of the study area and flows north to its confluence

with WUS WL001. Approximately 276 linear feet of this stream is within the study area. WUS WL002 had an approximate bankfull width of four feet with an average bankfull height of two feet. Based on the field investigation, the Cowardin Classification for this system is riverine, lower perennial, unconsolidated bottom, cobble-gravel/sand (R2UB1/2).

Figure 6 – Wetlands and Streams

Middle Branch (WUS WL003) is a nontidal, intermittent scoured channel located east of WUS WL001 and west of WUS WL002. WUS WL003 enters the study area from a stormwater outlet located north of Humphreys Drive and flows northeast to its confluence with WUS WL001. Approximately 821 linear feet of this stream is within the study area. Approximately 76 linear feet of the upstream (southernmost) portion of the stream has very steep slopes, which are stabilized with riprap and this portion of the stream is considered ephemeral in nature (non-jurisdictional). Downstream of the ephemeral segment of the stream the channel becomes intermittent. This intermittent stream had an approximate bankfull width of four feet with an average bankfull height of one foot. WUS WL003 (Middle Branch) loses channel definition as it transitions into Wetland WL003, which is 0.19 acres. The Middle Branch is filled with sediment around this area, with headstones buried beneath the sediment. The channel once again becomes defined northeast of Wetland WL003. Portions of this channel are lined with headstones used for bank and bed stabilization. Based on the field investigation, the Cowardin Classification for this system is riverine, intermittent, streambed, cobble-gravel/sand (R4SB3/4). The Middle Branch does not appear to be a natural channel, but is a result of drainage from the NPS administrative building parking lot.

The only known water quality concern in the project area is sediment which is currently eroding from the steep slope at the top of the bank near the NPS Administrative Building parking lot. No water quality contaminants issues have been identified on the project site. However, high velocities of water during storm events are cutting a large gully into the above-mentioned slope, resulting in Total Suspended Solids (TSS) and sedimentation in downstream reaches of the watershed. The headstones lining the channel downstream from the steep slope are inhibiting further erosion of the channel.

4.4 GROUNDWATER

According to the *Ground Water Atlas of the United States, Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, West Virginia, HA 730-L* (Trapp and Horn, 1997), the Arlington, VA region is underlain by the Potomac aquifer, which is part of the Northern Atlantic Coastal Plain aquifer system**.**

The Potomac aquifer in Virginia consists of the middle and lower Potomac aquifers, which are similar to the Patapsco and the Patuxent aquifers of Maryland and Delaware. The Patapsco aquifer consists of lenses of fine to medium sand and some gravel that are separated by clay beds and of medium to coarse lenses of gravelly sand. A clayey confining unit separates the Patapsco and Patuxent aquifers.

The sediments that comprise the Potomac aquifer are predominately of fluvial and deltaic origin. The maximum thickness of the Potomac aquifer in Virginia is about 4,600 feet, and the average thickness is about 800 feet. General groundwater flow in the area is toward the southeast and groundwater recharge occurs from precipitation or from downward movement through confining beds. Groundwater is not used as a drinking water supply in the Arlington area. No seeps were found present within the project area.

4.5 WETLANDS

Wetlands are identified based on characteristics of vegetation, hydrology, and soils. Prior to conducting field activities, readily available primary source materials including USGS maps, National Wetland Inventory (NWI) maps, Federal Emergency Management Agency (FEMA) floodplain data, and the Arlington soil survey were reviewed to determine the presence or absence of wetlands and streams within the study area.

A field reconnaissance for the entire study area was performed on December 2, 2010, to determine the presence or absence of wetland areas. A site visit to confirm the findings was also conducted by USACE Norfolk District Regulatory staff in November, 2011. As a result of this site visit an amendment to the wetland delineation was added. Figure 5 reflects the wetlands on the site. The small wetland area that is within the Middle Branch and may experience temporary impacts has a total area of 0.19 acre. However, only a portion of that wetland (< .10 acre) would be temporarily impacted. There is an additional wetland area at the confluence of the three main streams, but this wetland area is not expected to incur any significant impacts. NPS has noted that no seeps are present in the

project area. NOTE: NPS has specific agency requirements for NEPA and wetlands identification. Per Director's Order 12 Handbook, which deals with NPS implementation of NEPA, and NPS Procedural Manual 77-1, which deals with wetlands protection and NPS responsibilities under Executive Order 11990, NPS would use "Classification of Wetlands and Deepwater Habitats of the United States" (FWS/OBS-79/31; Cowardin et al., 1979) as the standard for defining, classifying, and inventorying wetlands and considers the creek in its entirety a riverine wetland.

4.6 VEGETATION

The entire study area for the Millennium Area Headstone Removal Project is forested. The mid to late-successional forest stand is healthy with 100% canopy closure and a large amount of invasive species coverage of English ivy (*Hedera helix*). Poison ivy (*Toxicodendron radicans*) is also very prevalent as a groundcover and vine. Typical tree species identified in the study area include red maple (*Acer rubrum*), American sycamore (*Platanus occidentalis*), black oak (*Quercus velutina*), and American beech (*Fagus grandifolia*) in the 12-19.9" size class. The shrub layer is dominated by northern spicebush (*Lindera benzoin*). Fox grape (*Vitis labrusca*) and Japanese honeysuckle (*Lonicera japonica*) were also observed within the forest stand. At the headwaters of the South Branch there exist numerous old growth trees. NPS noted that there are two native plant species (*Lonicera sempervirens* and *Prunus virginiana*) found in Arlington Woods that occur nowhere else in George Washington Memorial Parkway.

4.7 WILDLIFE RESOURCES INCLUDING RARE, THREATENED AND ENDANGERED SPECIES

According to the Animal Welfare League of Arlington (AWLA, 2010), wildlife found in this area is typical for an urban environment. Species generally include squirrel, rabbit, raccoon, opossum, fox, and deer. Songbirds and bats inhabit the area as well as various small reptiles and amphibians. Wildlife is not abundant in the area as it is surrounded by an urban environment. No threatened or endangered species are found on the site, based on data from the USFWS Information, Planning and Conservation System as well as the Virginia Department of Conservation and Recreations.

According to VDGIF, the State Threatened Bald Eagle may pass through and use areas included within the project site; however, based on the nature of the project and its proximity from active bald eagle nests in the area, VDGIF has determined that this project would not result in adverse impacts to eagles using these nests.

4.8 CULTURAL RESOURCES

Cultural resources include archaeological sites, structures, cultural landscapes, museum collections, and ethnographic resources. For the purposes of Section 106 of the National Historic Preservation Act, significant cultural resources are identified as historic properties, which are either considered to be eligible for or listed in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act mandates that Federal agencies consider the impact of their undertakings on historic properties within the project's Area of Potential Effect (APE). If adverse effects on historic, archaeological, or cultural properties are identified, then agencies must attempt to avoid, minimize, or mitigate these impacts to resources considered important in our nation's history.

4.8.1 Archaeological Resources. A cultural resources field investigation (Garrow & Associates, 1998) of NPS property consisting of a preserved section of the Arlington Woods associated with Arlington House, the Robert E. Lee Memorial (formerly Section 29 of ANC) identified one large archaeological site consisting of small prehistoric lithic resource extraction activity areas coupled with historic Custis and Lee activity areas associated with Arlington House. Listed as the Arlington Ravine Site (44AR0032), the site is located in the ravine west of Arlington House and encompasses the entire APE of this proposed undertaking (Figure 7). Site 44AR0032 was identified as consisting of six archaeological loci within a site boundary of over 21.33 acres. Miscellaneous archeological materials found outside of these loci were termed non-site finds. The loci include three areas of relatively sparse prehistoric lithic (stone) artifacts, with no diagnostic artifacts (Loci 1, 2, and 3), an area with both historic and prehistoric deposits including historic features related to Arlington House (Locus 4/5 which have the same boundary), and a focused area of prehistoric lithic artifact production containing a hearth

feature, Locus 6 (Figure 7). Loci 1, 2, and 3 are on lands ceded back to ANC from NPS, while Loci 4, 5, and 6 remain on NPS property. Spatially discontinuous loci 1, 2, and 3 have been re-designated as separate archaeological sites, 44AR0047, 44AR0048, and 44AR0049 respectively, in the Virginia Department of Historic Resources data base (Data Sharing System). Contiguous Loci 4, 5, and 6 remain as 44AR0032 (Figure 6). The 'non-site' areas between these four sites are no longer on record as being within the boundaries of an archaeological site.

VDHR Coordination: The Virginia Department of Historic Resources (VDHR), the State Historic Preservation Office, concurred with the Garrow & Associates, 1998, report conclusions and recommendations regarding the cultural resource significance of the forested landscape of the south branch area and need for preservation of that portion of former Section 29 lands in a letter dated September 30, 1999 (letter Cara Metz to Audrey Calhoun 30 September 1999 VDHR file #95-1353-F – see Consultation and Coordination Appendix A). The report was submitted for review along with an Environmental Assessment (EA) for the proposed division of the former Section 29 lands between the NPS and ANC. The VDHR acknowledged the historic component of Site 44AR0032 as NRHP eligible, as related to the significance of Arlington House; however, they cited a lack of evidence presented to support eligibility for the prehistoric component at Locus 1 (ibid.). The letter does not mention Loci 2 or 3. As the land was divided by Congressional mandate soon after and the NPS no longer had jurisdiction over the land containing Locus 1, this was not pursued. It is important to note that VDHR also commented in the letter on the EA for the proposed division of Section 29 by stating "… it appears that all alternatives with the exception of Alternative 4, the No-Action alternative, would require mitigation of significant archeological resources" (ibid.). The NPS agrees and believes that the archeological materials preserved in the Arlington Woods/former Section 29 are significant cultural resources worthy of preservation.

4.8.2 Structures. Arlington House, the Greek Revival style home built by George Washington Parke Custis and later owned by Robert E. Lee, was automatically listed in the NRHP at its inception in 1966, even though the nomination form was not completed

until 1980. According to the maps that accompany the NRHP nomination form, the NR boundary for the historic property includes the house, which is located southeast of the project area and part of the wooded area across Sherman Drive from the house (Figure 5). NPS is currently updating the Arlington House NRHP nomination. The project area is located within the wooded portion of the Arlington House NR boundary. A historic landscape inventory (Garrow & Associates, 1997) identified old growth forest east of the stream in Section 29 (North Branch) as contributing to the historic landscape of Arlington House. Structural features within this area were, however evaluated in that study as not contributing to the historic landscape of Arlington House. The structural features include the footbridges, culvert, and rip-rap employing grave headstones as materials which are the subject of this undertaking as shown in Figure 5. A more recent survey of the NRHP eligible ANC Historic District evaluated the contribution of these features to the historic landscape of ANC (Haynes 2012[a]; Smith, Tooker, and Enscore, 2012). The footbridges and culvert were associated with a path connecting the area of the Old Administration Building and Superintendant's Lodge (Lodge #1) with the former site of the ANC stables (later warehouses and now a maintenance staging yard). Although these landscape features were developed during the period of significance for the historic landscape design of ANC (1864-1966), due to the ruinous condition of the culvert and footbridges, and the disappearance of the footpath, the features do not contribute to the historic landscape due to a lack of integrity. The NPS is concurrently updating the NRHP nomination for Arlington House, expanding the documentation efforts, redefining periods of significance, and re-evaluating significance of cultural resource features; however, they have not indicated that these features contribute to Arlington House. The 1998 survey (Garrow & Associates, 1998) indicated that these landscape features of Section 29 did not contribute to Arlington House.

4.8.3 Cultural Landscape. The forest west of Arlington House the Robert E. Lee Memorial was identified as contributing to Arlington House (Garrow and Associates, 1998). Historic writings, drawings, and photographs, as well as the forest composition in the ravine along what is identified as the South Branch in this publication indicated that this was existing forest at the time Arlington House was built, and was intentionally

preserved during the Custis-Lee occupation of Arlington House. Moreover, it was preserved even during the Civil War when most of the forests in what is now Arlington County were cut down to provide fields of fire for the ring of forts around Washington, as well as fuel and building material. This area of old growth, dating back 220 years or more (Figure 6) corresponds to the portion of Section 29 retained by NPS. Other portions of Section 29 deforested during the Civil War were also recommended to contribute to Arlington House, the argument being that the forest had regenerated to its appearance during the Custis-Lee period. The NPS completed a Cultural Landscape Report (CLR) in 2001. The significance of the Arlington Woods as part of the cultural landscape is emphasized in the CLR (NPS 2001: 60) by indicating that "… more than an economic rationale lay behind the preservation of the forests at Arlington. Early on in the history of the estate, the forests were considered integral to the success of the home's design. The dark trees provided a beautiful, imposing backdrop to the pale-colored classical architecture of Arlington House – a characteristic of the estate commented on throughout its history…".

4.8.4 Additional Cultural Resource Considerations. For the purposes of compliance under NHPA Section 110, ANMC is currently in the process of drafting a nomination to the NRHP (Smith, Tooker, and Enscore 2012). In addition, NPS is currently updating the Arlington House NRHP nomination. Coordination efforts with regard to cultural resources at ANC are ongoing among USACE, the Virginia Department of Historic Resources (VDHR), the National Capital Planning Commission (NCPC), the Council of Fine Arts (CFA), and the National Park Service (NPS). The NPS is concurrently updating the NRHP nomination for Arlington House, expanding the documentation efforts, redefining periods of significance, and re-evaluating significance of cultural resource features.

4.9 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

Shaw Environmental conducted environmental sampling of the Millennium Project area for the Baltimore District, USACE, which resulted in a June 2011 report. This sampling

included the proposed project area, identified in the report as “creek bed south of the old warehouse area.” An excerpt from that report is included as follows:

Six surface water samples and six sediment samples were collected along the creek bed located to the south and southwest of the former stump dump and OWA and analyzed for TCL SVOCs, TALMetals, and TPH DRO/GRO. Constituents identified in the surface water samples included barium,beryllium, iron, manganese, and selenium. Constituents identified in sediment samples included cobaltand SVOCs at concentrations above the USEPA Residential Screening Levels. The metals identified in the surface water samples were also identified in the laboratory method blank analyzed in association with this investigation. The concentrations of these metals upstream are consistent with areas adjacentto and downgradient of the “stump dump” and areas downgradient of the OWA; and no co-located, anthropogenic contaminants were detected in surface water. Therefore, the elevated metals concentrations are not indicative of site related contamination. The SVOCs identified in sediment samples were identified at concentrations above the USEPA Residential Screening Levels but below the USEPA Industrial Screening Levels. Since the property is not intended for residential use, these concentrations are not a concern. Based on these results, no further action is recommended at this AOC.

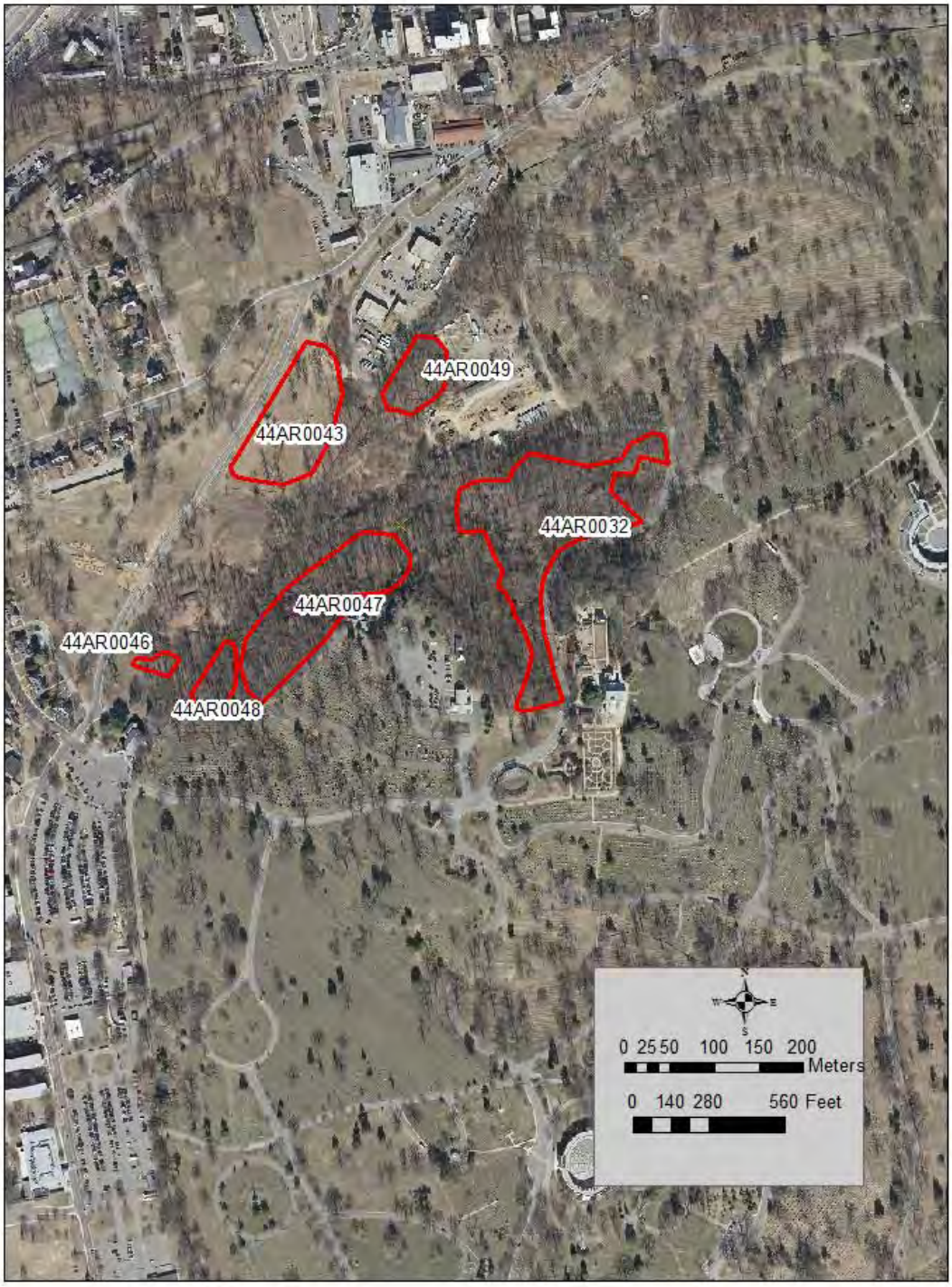

Figure 7 – Archaeological Resources

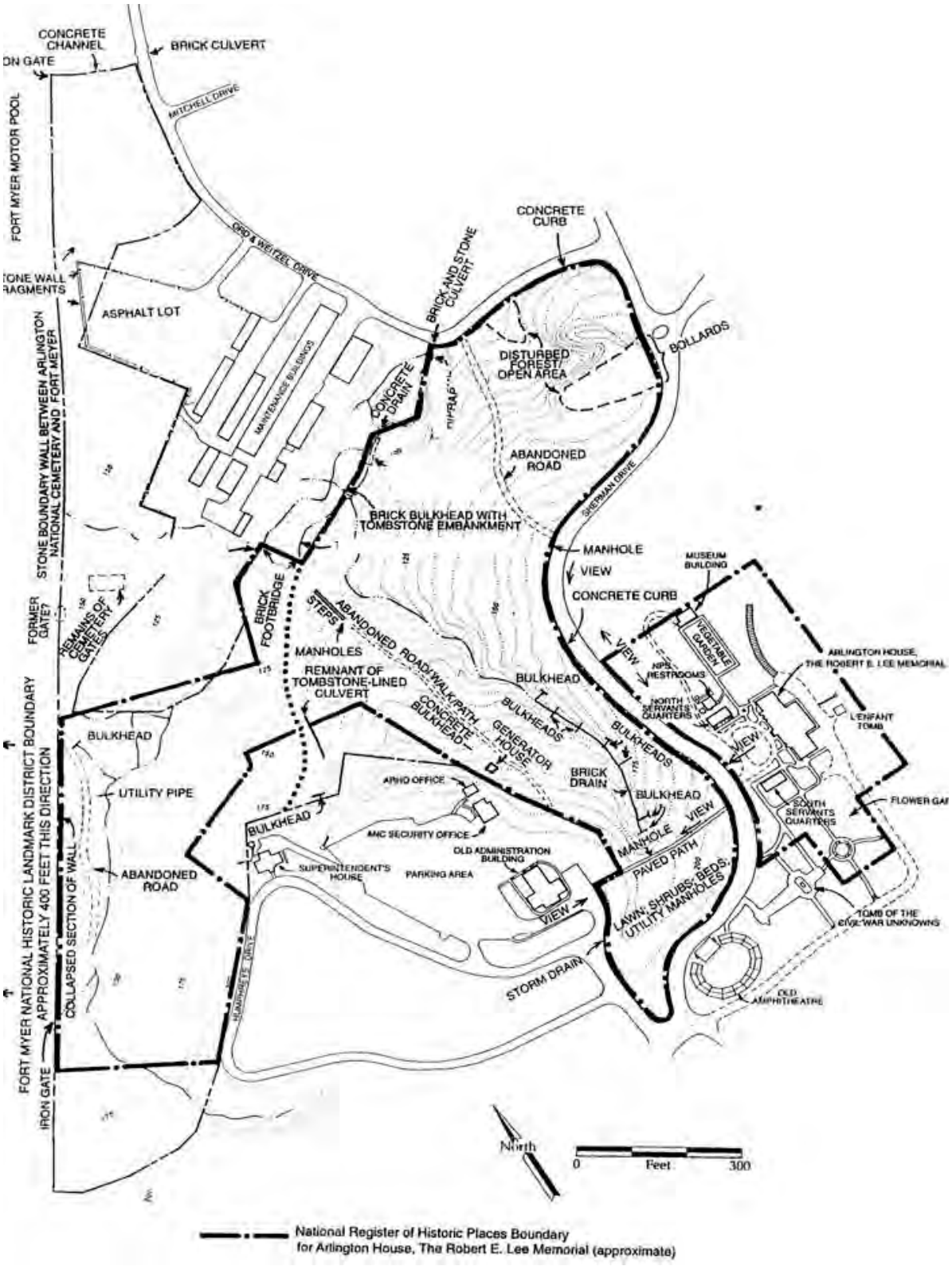

Figure 8 – Architectural Resources (Garrow & Associates, 1998)

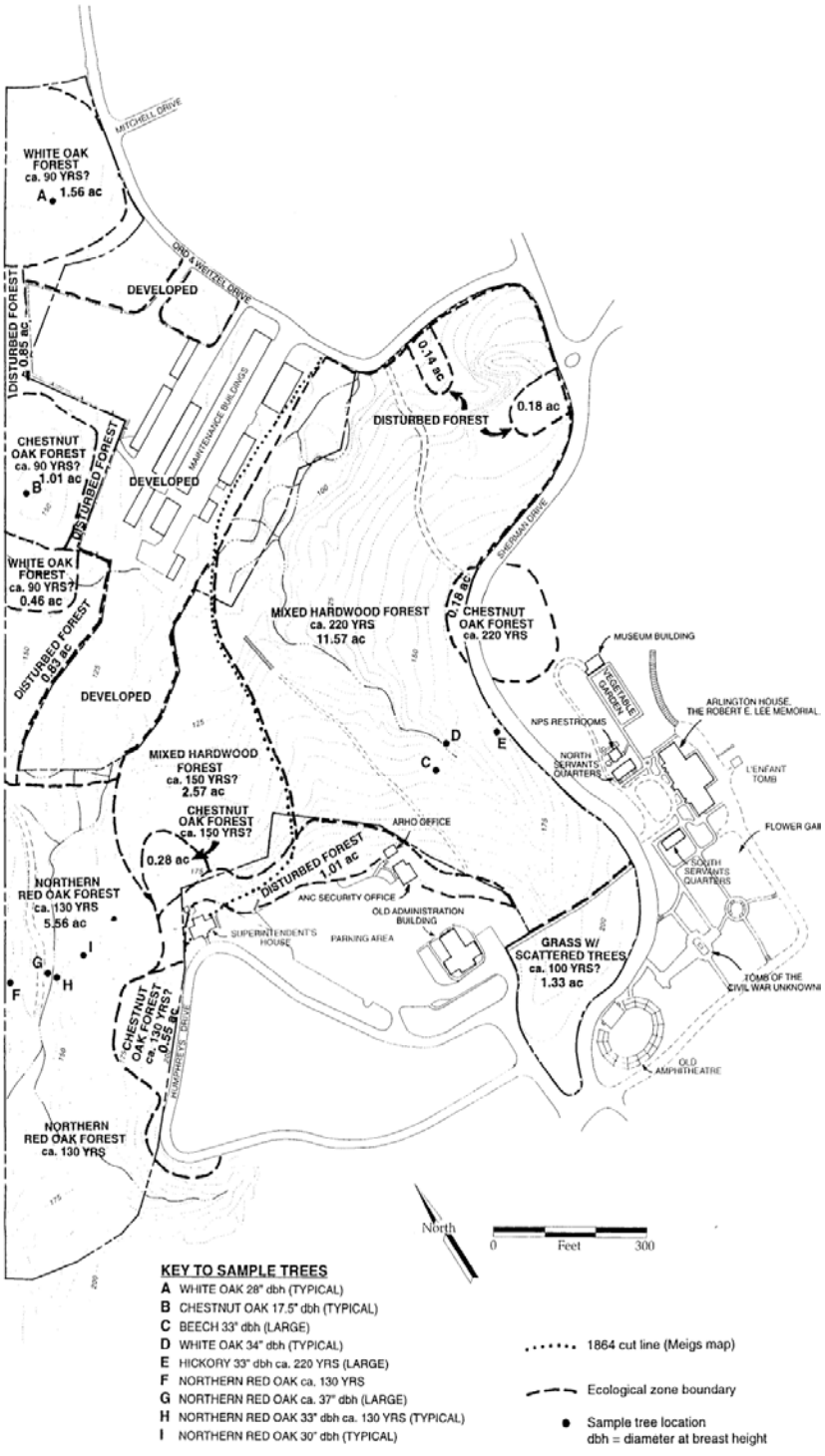

Figure 9 – Forests in Section 29 (Garrow & Associates, 1998)

4.10 TRANSPORTATION

Arlington National Cemetery is located in the easternmost portion of urban Arlington County, Virginia. It is adjacent to several highways and the Potomac River to the east, highways and residential areas to the north, Joint Base Myer Henderson Hall to the west and a U.S. Marine Corps Station, several highways, and commercial businesses to the south. The Arlington National Cemetery Metro stop is regularly served by subway trains and the ANC is also serviced by several tour bus companies.

Transportation to and from the site is limited to surface transportation on restricted-access roadways. Parking is available to visitors, accessible from Memorial Drive and the public may access the site, during public hours, by walking. Persons visiting a specific grave may obtain a vehicle pass to drive to their destination. Access permits may be obtained from ANC depending upon the type and duration of business activities.

4.11 STORMWATER SYSTEMS

Stormwater management at ANC is achieved through a system of open channels and underground pipes. Stormwater from the collection system at Joint Base Myer Henderson Hall flows into the existing channels in the Millennium Area Headstone Removal Project area to Ord and Weitzel Drive, where it enters the Arlington municipal stormwater system, which discharges to the Potomac River. A stormwater diversion project diverts water from Joint Base Myer Henderson Hall away from the project area. Water is diverted to a large underground holding tank where it is then released back into underground pipes in a different location in the cemetery.

4.12 UTILITIES (WATER, SEWER, ELECTRIC, GAS)

Potable water is supplied to ANC by the USACE Washington Aqueduct Division, which is the municipal source of drinking water for Washington, D.C. and suburban northern Virginia. There is one known water line that crosses the proposed restoration project area. Arlington County provides municipal sewage service to ANC and there are no known sanitary sewer pipes within the project area. Dominion Power supplies electrical service

to ANC from the Ft. Myer substation. There are no known above-ground cables within the project area. There is one known existing gas line that crosses the proposed project area.

4.13 NOISE

The main source of noise at ANC and the surrounding area is vehicular traffic. Other sources of noise come from maintenance operations such as lawn mowers and maintenance shops, and from funeral services such as gun salutes, bugles, and military bands. Noise levels generated by activities from the project would be similar in nature, duration, and intensity as what normally occurs at the ANC.

4.14 AESTHETICS

The immediate project area is entirely contained within a wooded area that is not often frequented by members of the public. The area is a rugged natural setting, including deep ravines and mature forests. Man-made intrusions and additions that detract from the natural setting, such as headstones placed in the stream bed and stream banks in particular, would be removed as part of this project.

5.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA identifies and evaluates the anticipated environmental consequences or impacts associated with the Proposed Action Alternatives and the No-Action Alternative. The terms “impact” and “effect” are used interchangeably in this section. Impacts may be discussed as positive or negative, significant or minor, as appropriate to the resource area. Positive impacts occur when an action results is a beneficial change to the resource, whereas negative impacts occur when an action results in a detrimental change to the resource. Significant impacts occur when an action substantially changes or affects the resource. A minor impact occurs when an action causes impact, but the resource is not substantially changed. Impacts are also discussed as temporary as well as short-and long-term impacts, and are associated with relative time frames as the direct result of the action. In this case, temporary refers to an impact only during the period of construction. Short-term describes the impact for 1-3 years post

construction, whereas long-term describes the permanent impacts that would be expected to remain for many years. This section is organized by resource area following the same sequence as in the preceding Section 4.0. This section also includes a discussion on cumulative impacts and a summary of environmental compliance with applicable environmental laws and regulations.

5.1 SOILS

5.1.1 Proposed Action. The Proposed Action would include minimal grading as a result of stabilizing the existing stream channels and removing headstones for proper disposal. Soils within the study area are not classified as sensitive or as "Prime or Unique Farmland" soils.

The Proposed Action would disturb a small portion of the 8-acre site. The staging and storage area for the project would primarily be in the existing maintenance yard, in order to minimize impacts to the woodland environment of the project area. Ingress and egress paths would be limited to the minimum area necessary, also to minimize disturbance. Equipment to be used may include a tracked bobcat, wheeled skid steer, small wheeled crane, and/or small wheeled forklift. This equipment would stay within the Limits of Disturbance (LOD). The total potential temporary impact within the LOD is 40,123 square feet or 0.9211 acres. The LOD is 15-foot on either side of the stream centerline. However, it is anticipated that a much smaller area would be disturbed. For the purposes of the calculation, the LOD was assumed to be 15-foot on either side of the stream centerline for all three branches. However, only the ~404 feet that would receive the significant stabilization measures would likely need this full LOD. In order to minimize impacts to natural and cultural resources, the LOD would be restricted as practicable during construction to the minimum area necessary to execute the action. Many portions of the North Branch and the South Branch are anticipated to have the headstones removed manually with a wheelbarrow. Two ingress/egress paths are located adjacent to the maintenance area as shown in Figure 3.

The preferred alternative would minimize grading in the project area, reducing impacts to soils. In order to minimize impacts, construction equipment would avoid streambanks where possible as well as use protective matting to protect the ground from disturbance. The minor grading that would occur along the stabilized portion of the Middle Branch would extend no more than two feet out from the top of the bank. It is estimated that this could create up to a maximum of approximately ten dump truck loads of graded material that would need to be removed from that site. This is a long-term minor impact but not necessarily negative, as ANC would store this soil on-site and attempt to find a beneficial usage for the material. There would also be long-term beneficial impacts to soils due to decreased sedimentation in the stream channel from decreased velocity of water and sediment settling in the cross-vane structures.

There is one portion of the Middle Branch that is currently buried in sediment, with an unknown number of buried headstones beneath the sediment. If considerable excavation is needed to remove currently unknown and unseen headstones, the material excavated would be stored and returned in place. If the elevation is greatly lowered by the removal of buried headstones, river cobble may be used as additional fill.

This work would require an Erosion and Sediment Control (E&SC) Plan approved by Arlington County, as well as a Nationwide Permit 18 for Minor Discharges and Nationwide Permit 33 for Temporary Construction Activities that may include access and dewatering. No dewatering activities would occur with this project. The Nationwide Permit verification has been issued (see letter dated June 13, 2012, in Appendix A). The E&SC plan would be obtained by the Army Corps of Engineers for ANMC prior to the start of construction, and would include appropriate sediment erosion control measures which would be implemented during construction. The project construction would incorporate techniques which minimize disturbance to the area. If additional headstones are found during the course of the construction work, similar techniques as described in this EA would be used to ensure that the headstones are removed with minimal disturbance to the natural and cultural resources in the area.

5.1.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no impacts to the existing soils. However, streambank erosion and channel incision would continue to occur. Sediment loads would continue to be released to downstream reaches.

5.2 TOPOGRAPHY AND FLOODPLAINS

5.2.1 Proposed Action. The Proposed Action would include construction of small cross-vane structures as well as minor grading of streambanks, removing headstones currently placed in the channels and other minor earthwork activities. Temporary and minor impacts to site drainage could occur due to measures to satisfy approved erosion control practices during construction. Work would be accomplished in manageable increments and there would be minimal exposed, nude soil areas subject to erosion by rain. Exposed areas would be stabilized by approved regulatory agency methods on a daily basis. No long-term impacts are anticipated. If additional headstones are found during the course of the construction work, similar techniques as described in this EA would be used to ensure that the headstones are removed with minimal disturbance to the natural and cultural resources in the area. Impacts to topography and floodplains are anticipated to be minor and temporary.

5.2.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no impacts to the existing topography and drainage.

5.3 HYDROLOGY AND WATER QUALITY

5.3.1 Proposed Action. The Proposed Action would include construction of small cross-vane structures, removing headstones currently placed in the channels and minor grading of the streambank. The Middle Branch is proposed for significant stabilization measures and would incur short-term and long-term minor beneficial impacts. Temporary minor impacts to surface water resources may occur due to removal of headstones and subsequent stabilization activities. Short-term and long-term beneficial impacts to surface water may occur as a result of the cross-vane structures,

which would slow the velocity of the water, allowing for removal of sediment and less scouring of the channel. The steep bank that is currently eroding near the NPS Old Administration Building, resulting in TSS increases during storm events, would not be either positively or negatively impacted by this proposed action. However, any sediment washed downstream has a greater likelihood of being captured in the cross-vane structures, resulting in reduced TSS and benefits to water quality. In order to avoid impacts, work would be accomplished in manageable increments to avoid extensive exposed, nude soil areas subject to erosion by a possible rain event. Exposed areas would be stabilized by approved methods on a daily basis and impacts to hydrology and water quality would be short-term and minor. It is important to note that most of the headstone lined channel is not jurisdictional, is a man-made drainage channel and therefore, it is not regulated. However, the downstream portion of the Middle Branch is an intermittent stream for approximately 150 feet.

The South Branch and North Branch would benefit from removal of the headstones. All areas where headstones are removed would receive either biodegradable soil erosion control matting or native seeding (as appropriate). These areas would only incur short-term, temporary minor impacts. The Middle Branch is usually dry except for during, and immediately following, rainfall events. Once the project is complete, there would be no long term impacts to surface water resources. If additional headstones are found during the course of the construction work, similar techniques as described in this EA would be used to ensure that the headstones are removed with minimal disturbance to the natural and cultural resources in the area. Nationwide permits #18 and #33 have been obtained from USACE Norfolk District for the work in the Middle Branch. No permit is needed for the headstone removal activities in the other stream areas.

5.3.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to the existing surface water resources. However, streambank erosion and channel incision would continue to occur, which is detrimental to water quality within the area.

5.4 GROUNDWATER

5.4.1 Proposed Action. The Proposed Action would include activities within channels with groundwater connections. It is likely that only the South Branch and the North Branch have groundwater connections; these branches would only receive headstone removal. The Middle Branch, which is a drainage channel rather than a natural stream, is unlikely to have a groundwater connection; therefore, the stabilization work occurring in this channel is unlikely to impact groundwater. No dewatering would occur during this project.

5.4.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to the existing groundwater resources.

5.5 WETLANDS

5.5.1 Proposed Action. The Proposed Action would include activities within one small wetland and three of the channels in the study area. There are two wetlands identified in the project area. However, stabilization techniques would only be used on the small wetland along the Middle Branch, as seen in Figures 4 and 6. In addition, < .10 acres of this wetland would be temporarily impacted as a result of this project. There would be only negligible and temporary impacts to the larger wetland due to removal of headstones. Approximately 1896 square feet of the one small wetland would be temporarily disturbed and then returned to its original condition during construction activities due to site access and headstone removal. Long-term impacts to wetlands or channels are not expected from the Proposed Action because Best Management Practices would be used to minimize earth disturbance and disturbed areas would be stabilized where necessary. The Proposed Action would require a Nationwide Permit 18 for Minor Discharges and Nationwide Permit 33 for Temporary Construction Activities that may include access and dewatering. The Nationwide Permit verification has been issued by USACE (see letter dated June 13, 2012, in Appendix A). DEQ also concurred via letter dated July 15, 2012, stating that no DEQ permit was required.

If additional headstones are found during the course of the construction work, similar techniques as described in this EA would be used to ensure that the headstones are removed with minimal disturbance to the natural and cultural resources in the area.

Per Section 4.5 above, NPS has specific agency requirements for NEPA and wetlands identification. NPS considers the creek, in its entirety, a riverine wetland. Under the preferred alternative, as a result of the removal of the headstones there would be short-term minor adverse impacts to the riverine wetlands associated with the creek from the disturbance caused by the activity. However, with the removal of the headstones and treatment in this project, as well as the cumulative benefits of future projects, the impacts would be beneficial as the ecological functions and values would be returned to a more natural condition.

5.5.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to the existing wetland resources. However, streambank erosion and channel incision would continue to occur which may reduce the extent and function of existing wetlands within the project area.

5.6 VEGETATION

5.6.1 Proposed Action. Impacts to vegetation are expected to be minor and short-term. It is anticipated that no trees within the project area would be removed, harvested or damaged during construction. If any large trees on NPS property are damaged, a mitigation plan would be required to mitigate for the lost tree(s). The clearing of groundcover and understory would be limited to what is necessary for the project to proceed (i.e. equipment and personnel access). Long-term impacts to vegetation are not expected from the Proposed Action because Best Management Practices would be used to minimize earth disturbance and disturbed areas would be stabilized upon completion of the project. All disturbed areas that are not within the streambed would be planted with a native seed mix as specified by the NPS.

The Middle Branch does have at least one large tree that has fallen across the stream which must be removed in order to access and remove the headstones. Only that portion of the tree which must be removed in order to access the channel would be impacted. That section would be cut away and placed on the forest floor on-site. The remainder of the tree would be left in its current position. Any other trees which might be across the channel would be treated in a similar manner.

The upper reaches of the South Branch support numerous old growth trees. To avoid impacts to the habitat, the headstones would be removed from the South Branch by hand, and a wheel barrow would be used to transport headstones out of the project area more efficiently and safely while avoiding any impacts to this sensitive section of woodlands.

5.6.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to existing vegetation. However, streambank erosion and channel incision would continue to occur which would continue to undermine existing trees along the stream channels. This would result in tree fall, debris jams and channel adjustment.

5.7 WILDLIFE RESOURCES INCLUDING RARE, THREATENED AND ENDANGERED SPECIES

5.7.1 Proposed Action. Wildlife is not abundant in the project area, as it is surrounded by urban areas. The Proposed Action would include activities within the forested study area, which would temporarily disturb any wildlife present. Construction activities would lead to increased human presence and noise, which would most likely cause wildlife to temporarily move out of the study area. Construction personnel would be mindful of all wildlife and take practical measures to avoid impacts to any wildlife in the project area. Long-term impacts to wildlife are not expected from the Proposed Action because disturbed areas would readily regenerate upon completion of the project and the area would remain forested with little human disturbance. No threatened and endangered species are identified on the site, so no impacts to those species would occur.

In late May 2012, USFWS, VDCR, and VDGIF were contacted for comment. Coordination with the USFWS showed no listed species or their habitats located within the project area. VDGIF has reviewed the project and determined that even though bald eagles have been documented in proximity to the project site, they do not anticipate this project to result in any adverse impacts upon eagles. Long term impacts to bald eagles using the area are not expected.

5.7.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to existing wildlife. However, streambank erosion and channel incision would continue to occur which would further degrade aquatic resource habitat for amphibians and aquatic biota.

5.8 CULTURAL RESOURCES

There are archeological and architectural resources located in the proposed project area. Only Locus 4 of 44AR0032 has been determined NRHP eligible as a property contributing to Arlington House. Locus 6 of 44AR0032 has been identified as potentially NRHP eligible as an individual property. Site 44AR0047, formerly identified as Locus 1 of 44AR0032 has been determined not eligible for the NRHP, and not contributing to Arlington House or the Arlington National Cemetery historic district. ANMC must consider the effects of the proposed Millennium Area Headstone Removal Project on historic properties in compliance with Section 106 of the National Historic Preservation Act.

None of the alternatives considered would result in adverse effects to historic properties. Significant archaeological resources of 44AR0032 (Loci 4 and 6) are east of the South Branch where hand removal and the use of a wheel barrow would be used to minimize and potentially avoid any impacts to cultural resources in this area. The wheelbarrow would only be used at the upper headwaters adjacent to the brick-lined drain which is the source

of South Branch. Headstones would be hand carried to the wheel barrow and taken up out of the watershed to the NPS parking area where a utility vehicle would take the headstones to the ANC maintenance yard.

5.8.1 Archeological Resources.

5.8.1.1 *Proposed Action* - Site 44AR0032 Loci 4/5 and 6 are immediately adjacent to the areas which would be affected by the proposed undertaking; however, either no effects or no adverse effects would result to these archaeological resources. Ground disturbances are not expected within the boundaries of Loci 4, 5 and 6, which are contiguous and form the new boundary of 44AR0032.

Site 44AR0047 (formerly Locus 1, 44AR0032), is a large pre-historic site located on the ridge and terraces west of the Superintendent's House and has been re-designated as an individual, NRHP ineligible site. The site has not produced information important to pre-history, nor are there indications that it contains information important to pre-history. No cultural or natural stratigraphy, archaeological features, or significant patterning of artifacts were identified by Phase I and II investigations (Garrow & Associates, 1998). Artifact density and diversity are low, and no diagnostic artifacts were recovered, so the cultural period of pre-historic use of the site is unidentified. Artifact density is very low with the exception of a small more level area at the southwest end of the site. Areas along this site's northeastern edge would be affected by the proposed undertaking. Archaeological finds were sparse in this area, and not near the potentially affected areas. Site 44AR0032 would be avoided or protective measures would be undertaken during project activities. Section 106 consultation has been concluded with the State Historic Preservation Officer (Virginia Department of Historic Resources [VDHR]), while coordination with both VDHR and NPS on cultural resources continues. A recommendation of no adverse effects was submitted to VDHR and VDHR concurred (letter Marc Holma to Col. V.M. Bruzese, 12 June 2012, VDHR file# 2012-0390). The contractor would be made aware of the cultural significance of the surrounding area, and

if any archaeological items are found during construction, a certified professional archaeologist would be on-call to make a site visit to determine the appropriate path forward.

5.8.1.2 *No-Action Alternative* - Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to archaeological resources.

5.8.2 Architectural Resources.

5.8.2.1 *Proposed Action* - Implementation of the proposed Millennium Area Headstone Removal Project would have no effect on the historic setting of NRHP listed Arlington House. The proposed
project would have no adverse effects to NRHP listed or eligible properties. Per the request of NPS, documentation was completed for the sections of the headstone-lined drainage channel; this documentation can be found in Appendix B.

5.8.2.2 *No-Action Alternative* - Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to existing historic architectural resources.

5.8.3 Cultural Landscape Resources.

5.8.3.1 *Proposed Action* - Under the proposed action no effects would result to the old-growth forest immediately west of Arlington House. Headstones would be removed from the South Branch by hand. While work along the Middle Branch would involve light machinery, damage to large trees would be avoided. The stabilization techniques would not be visible from Arlington House, which cannot be seen, and vice versa, from the Middle Branch; therefore, no visual impacts would occur. The proposed action would have the positive effect on Arlington House of removing the headstone features, thus returning the appearance of the landscape to a condition more similar to what it was during the Custis-Lee period.

Although the forest in this area contributes to the landscape of Arlington House, the proposed undertaking would not affect the appearance of the forest. Landscape features, i.e., the headstones to be removed, in this area do not contribute to the NRHP-eligible ANC Historic District or Arlington House the Robert E. Lee Memorial; nor are they individually or as a group considered NRHP eligible.

5.8.3.2 *No-Action Alternative* - Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to existing cultural landscape resources. However, the continued presence of the headstones would detract from the appearance of the landscape as approximating antebellum conditions.

5.8.4 Additional Cultural Resource Considerations. Coordination with regard to cultural resources issues at ANC is ongoing among ANMC, VDHR, USACE, and NPS.

5.9 HTRW

5.9.1 Proposed Action. As stated in section 4.9, the elevated metals concentrations are not indicative of site related contamination. Because the site is not intended for residential use, the concentrations are not a concern and no further action is recommended. The project would not have any significant impacts in regards to HTRW.

5.9.2 No-Action Alternative. The No-Action Alternative would not be expected to result in any changes to the existing conditions.

5.10 TRANSPORTATION

5.10.1 Proposed Action. The Millennium Area Headstone Removal Project would have minor, short-term adverse impacts to traffic in the area. Construction vehicles and truck traffic bringing in project materials could slightly increase traffic on the cemetery. No long-term significant impact to transportation is anticipated as a result of the Proposed Action. No additional roadways or access points would be created as part of the Proposed Action.

5.10.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to existing traffic, roadways or transportation systems.

5.11 STORMWATER SYSTEMS

5.11.1 Proposed Action. The Proposed Action would have no negative impact to stormwater systems. The streams and drainage channel would continue to handle the stormwater flows which originate in the upstream reaches.

5.11.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to existing stormwater drainage and collection systems.

5.12 UTILITIES

5.12.1 Proposed Action. The Millennium Area Headstone Removal Project would avoid all utilities in the project area; therefore, there would be no impacts to existing utilities within the project area as a result of the Proposed Action.

5.12.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no direct impacts to existing utilities within the project area.

5.13 NOISE

5.13.1 Proposed Action. The Proposed Action would result in minor, short-term, local increases in noise production during the construction period. This noise would result from the use of construction equipment needed for removal of the headstones as well as stabilization in the Middle Branch. The construction crews would be required to comply with all applicable laws regarding noise, including time of day restrictions and maximum decibel levels.

5.13.2 No-Action Alternative. Under the No-Action Alternative the Millennium Area Headstone Removal Project would not occur; therefore, there would be no noise impacts beyond those associated with daily activities at the facility.

5.14 AESTHETICS

5.14.1 Proposed Action. The Proposed Action would improve the visual and aesthetic environment of the project area by improving the channels to a more stable flow and appearance. The project also would have a beneficial impact on the visual and aesthetic value of the area by removing the headstones that have been placed in the stream channel and along the banks. Impacts to aesthetics would be minor, long-term and positive.

5.14.2 No-Action Alternative. The No-Action Alternative would have long-term adverse impacts to the project area as the channels would continue to erode the banks and form new channels in the landscape. Also, under the No-Action Alternative, the headstones would remain in the stream channel and along the banks, which would continue to degrade the natural appearance of the forested area.

5.15 CUMULATIVE IMPACTS

A cumulative impact is defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). This section also states "such impacts can result from individually minor but collectively significant actions taking place over a period of time."

Evaluations of cumulative impacts include consideration of the Proposed Action with past and present actions, as well as reasonably foreseeable future actions. Compliance with applicable Federal, state and local regulations would assist in ensuring that implementation the Proposed Action would minimize the incremental impacts of past, present, and future actions.

5.15.1 Proposed Action. This project would have a beneficial cumulative impact to ANC and the surrounding area. The proposed action includes headstone removal as well as stabilization where necessary as a result of the removal. The headstone removal would improve the aesthetic and natural qualities of the wooded area. The streambed improvements would likely result in reduced sedimentation from the project area. Suspended sediment is a negative attribute of water quality in the Chesapeake Bay and its tributaries; therefore, reduction in sedimentation is in support of Executive Order 13508, Protecting and Restoring the Chesapeake Bay Watershed. Only very short term and minor negative impacts were identified in any of the resource areas; however, the long term benefits would remain.

This project would remove retired headstones from the project area and provide subsequent stabilization. There are additional ANC projects that have already occurred and would occur in the near future. The cumulative impact assessment for each resource area would include the following actions as already occurred or reasonably foreseeable to occur in this area:

- Past - Joint Base Myer-Henderson Hall (JBM-HH) Stormwater Retention System.
- Present - Millennium Area Headstone Removal (this action).
- Future - ANC Millennium Project to include:
    - Twenty-seven acre expansion to increase the total number of burial and inurnment spaces available; thereby extending the life of Arlington National Cemetery as an active cemetery;
    - Stream Restoration of the North Branch referenced in this EA;
    - Evaluation of stormwater draining from the NPS Old Administration Building parking lot and subsequent remediation; and
    - Future-long-term usage of all surrounding areas to remain as a National Cemetery (Master Plan).

As described in the following table, overall cumulative impacts of these projects are generally beneficial in nature with some minor and temporary negative impacts to some resource areas.

5.15.2 No-Action Alternative. Implementation of the no-action alternative would not result in any additional cumulative environmental impacts at the project area. Sedimentation and stream scouring would continue, and the headstones would remain on-site.

TABLE 1. CUMULATIVE IMPACT ANALYSIS

Impact Topics	JBM-HH stormwater retention	Millennium Area Headstone Removal Project	Millennium Project	Cumulative Impacts Summary
Soils	Beneficial long-term impacts due to reducing cumulative stormwater runoff to project area, lessening soil erosion on the site.	Minor short-term impacts due to removal of soil from streambank due to grading. There would also be long-term beneficial impacts to soils due to decreased sedimentation in stream channel from decreased velocity of water and sediment settling in the cross-vane structures.	Beneficial long-term impacts due to stormwater retention treatments to ANC parking area in front of Old Administration Building. This would include reductions to cumulative stormwater runoff to project area, lessening soil erosion on the site.	In combination with related actions and short-term minor impacts of Alternative D, there would be beneficial long-term impacts to soils.
Topography and drainage	Beneficial long-term impacts due to improved management of stormwater and decreased overland drainage.	Long-term beneficial impacts due to decreased velocity in stormwater drainage channel	Major topography and drainage impacts to be minimized and mitigated by stream restoration. Drainage directly onto Millennium Area Headstone Removal Project site to be beneficial long-term impacts	Drainage issues addressed in JBM-HH project as well as Millennium Project would result in long-term beneficial impacts to area.

Surface water resources	Beneficial long-term impacts due to decreased overland stormwater drainage.	Long-term beneficial impacts due to decreased sedimentation in the project area	Some major negative impacts to intermittent streams to be mitigated by stream restoration of perennial North Branch to result in long-term beneficial impacts.	Beneficial impacts to surface water resources as a result of restoration of currently eroding North Branch under Millennium in combination with removal of headstones and subsequent stabilization in Middle Branch and South Branch.
Groundwater	Insignificant Impact	Insignificant Impact	Insignificant Impact	Insignificant impact
Wetlands	Insignificant Impact	Temporary minor impacts due to project activities within <.1 acre of wetland	No identified wetlands to be impacted during Millennium construction.	Temporary minor impacts due to removal of headstones and subsequent stabilization.
Vegetation	Insignificant Impact	Temporary minor impacts within the LOD to be mitigated by seeding with native species in disturbed areas and minimizing construction equipment size and frequency of trips to extent possible	Major impacts to vegetation to be minimized to degree possible with design techniques which minimize loss of large trees. Impacts also mitigated by additional plantings of new trees in final design.	Long-term minor impacts to vegetation to be minimized and mitigated with avoidance and additional tree plantings.
Wildlife Resources	Insignificant Impact	Temporary minor impacts during construction		Minor impacts to wildlife during construction of each project.

Cultural Resources	Negligible impacts to cultural resources	No adverse effects to historic properties - cultural Cultural resources would not be negatively impacted as Alternative D	Effects to cultural Cultural resources are under evaluation.	No adverse impact as cultural resources would be avoided and or mitigated for in Millennium as necessary.
HTRW	No contamination issues	No contamination issues	Minor impacts to be mitigated with appropriate remediation techniques.	Insignificant impact as any contaminated sites would be mitigated through appropriate remediation techniques.
Transportation	Short term very minor impacts due to construction equipment	Short-term very minor impacts due to construction equipment	Short-term major impacts would be minimized as possible and would only occur during construction of project.	Short-term minor impacts to transportation due to construction projects.
Stormwater Systems	Long term beneficial management of stormwater systems	Long-term beneficial impacts due to decreased water velocity in channel	Long-term beneficial management of stormwater.	Long-term beneficial management of stormwater.
Utilities	Insignificant impacts to all utilities except beneficial stormwater management systems	Insignificant impacts	Any utilities would be avoided and/or relocated.	Insignificant impact due to avoidance and/or relocation.
Noise	Temporary minor impacts due to construction equipment	Temporary minor impacts due to construction equipment	Temporary minor impacts due to construction equipment	Temporary minor impacts due to construction equipment

Aesthetics	Insignificant impacts	Beneficial impacts due to removal of retired headstones	Beneficial impact due to restoration of stream and improved area for burials and inurnments.	Beneficial long-term impacts due to headstone removal and Millennium projects.

5.16 COMPLIANCE WITH ENVIRONMENTAL STATUTES

The following table outlines compliance with all applicable environmental laws and regulations. Those statutes marked as "pending" would be in full compliance before initiation of construction activities.

Table 2: Compliance of the Proposed Action with Environmental Protection Statutes and Other Environmental Requirements	
Federal Statutes	**Level of Compliance[1]**
Anadromous Fish Conservation Act	Full
Archeological and Historic Preservation Act	Pending
Clean Air Act	Full
Clean Water Act	Full
Coastal Barrier Resources Act	N/A
Coastal Zone Management Act	Full
Comprehensive Environmental Response, Compensation and Liability Act	N/A
Endangered Species Act	Full
Estuary Protection Act	Full
Federal Water Project Recreation Act	N/A
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act	N/A
Magnuson-Stevens Act	N/A
Marine Mammal Protection Act	N/A
Migratory Bird Act	Full
National Historic Preservation Act	Pending
National Environmental Policy Act	Pending
Resource Conservation and Recovery Act	Full
Rivers and Harbors Act	Full
Watershed Protection and Flood Prevention Act	Full
Wild and Scenic Rivers Act	N/A
Executive Orders (EOs), Memoranda, etc.	
Protection and Enhancement of Cultural Environment (EO 11593)	Full
Floodplain Management (EO 11988)	Full
Protection of Wetlands (EO 11990)	Full
Prime and Unique Farmlands (Memorandum, Council on Environmental Quality, 11 August 1980	N/A
Environmental Justice in Minority and Low-Income Populations (EO 12898)	N/A
Protection of Children from Health and Safety Risks (EO 13045)	N/A
Executive Order 13508 – Protecting and Restoring the Chesapeake Bay Watershed	Full

6.0 ENVIRONMENTAL COMMITMENTS

1. If any large trees on NPS property are significantly impacted, a mitigation plan would be developed per NPS standards.
2. Trees that have fallen across the stream would be impacted only to the degree necessary to access the headstones in the channel. The rest of the tree would be left in place and the portion that is cut out would be left in the wooded area.
3. Any soil removed from the streambanks would be stored in close proximity to the project site (on ANC property).
4. Sedimentation has buried a portion of the channel in the Middle Branch which would need to be excavated in order to remove the headstones buried beneath the sediment. The soil excavated in this area would be stored on site so that it can be returned to the stream bed and if all the digging and headstone removal lowers the bed from what it was before the project, river cobble may be used as additional fill to bring the bed level to preexisting conditions.
5. Native seed mix (NPS approved list) would be used to revegetate any impacted areas not within the stream.
6. Biodegradable soil erosion control matting would be used within the stream in all impacted areas.
7. The contractor would be made aware of the cultural significance of the surrounding area, and if any archaeological items are found during construction, a certified professional archaeologist would be on-call to make a site visit to determine the appropriate path forward.
8. All areas where headstones are removed would receive either biodegradable soil erosion control matting or native seeding (as appropriate).
9. Construction personnel would be mindful of all wildlife and take practical measures to avoid impacts to any wildlife in the project area as specified in NPS access permit. This includes language and instructions for the preservation of Northern Two-lined Salamanders (*Eurycea bislineata*) encountered during construction.

10. All construction equipment would be power-washed and inspected for invasive plant material and seed before being transported to the work site to reduce the introduction of invasive species.

7.0 CONCLUSIONS

The Army National Military Cemeteries (ANMC), Arlington County, Virginia, has prepared this National Environmental Policy Act (NEPA) documentation for the Millennium Area Headstone Removal Project. The Proposed Action is the removal of headstones in the project area and resultant stabilization of the channel using cross-vane structures, biodegradable soil erosion control matting, and native seeding.

Short-term impacts associated with the Proposed Action include very minor and temporary effects on land use, soils, groundwater, wetlands, vegetation, and wildlife. Short-term impacts to noise levels may also be encountered during construction. Short-term impacts would cease with the completion of construction.

Long-term beneficial impacts to surface water, topography and drainage, stormwater, and aesthetics would be expected as a result of the Proposed Action.

This Environmental Assessment was prepared by ANMC, USACE and NPS in compliance with the NEPA and all applicable implementing regulations. Based on the evaluation of environmental impacts described in Section 5.0, no significant impacts would be expected from the Proposed Action; therefore, an Environmental Impact Statement will not be prepared.

8.0 CONTACT INFORMATION

If you have any questions or wish to provide comments, please contact Mrs. Susan Conner of the U.S. Army Corps of Engineers, Norfolk District, at ArlingtonStream@usace.army.mil or 757-201-7390.

9.0 REFERENCES

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