



RECORD OF DECISION

ANACOSTIA PARK WETLANDS AND RESIDENT CANADA GOOSE MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT

INTRODUCTION

The Department of the Interior, National Park Service (NPS), has prepared this Record of Decision (ROD) for the *Anacostia Park Wetlands and Resident Canada Goose Management Plan / Final Environmental Impact Statement* (plan/EIS) for Anacostia Park (the park) in Washington, DC (the District). This ROD identifies the decision, the other alternatives considered, and the environmentally preferable alternative; discusses the basis for the decision; lists measures to minimize and/or mitigate environmental harm; and summarizes public and agency involvement in the decision-making process. The Non-Impairment Determination for the selected action, which is required by NPS *Management Policies 2006* (NPS 2006), is attached.

PURPOSE AND NEED FOR THE PLAN/EIS

The Anacostia River was historically flanked with nearly 2,500 acres of tidal wetlands. In the early 20th century, the natural shoreline wetlands along the Anacostia River were severely reduced and drained to for what was then considered flood control improvements, to try and address concerns about breeding habitat for mosquitoes, and to improve navigation by channeling and containing the river. Over the years, the NPS has been working in collaboration with other stakeholders concerned about the health of the watershed to restore nearly 100 acres of tidal wetlands along the Anacostia River. However, over the past decade, the number of resident (non-migratory) Canada geese has been increasing in the park, and overgrazing is causing damage to these wetland habitats. Resident Canada geese exert a higher degree of grazing pressure on wetlands over migratory geese, because they typically feed year round on seedlings, plants, propagules, and roots (Coluccy 2009). Data collected on the effects of goose herbivory at Kingman Marsh from 2009 to 2014 support these observations. The study involved monitoring fenced (exclosed) plots and corresponding unfenced plots to document the effects of Canada goose herbivory on vegetation in Kingman Marsh. The exclosed plots used elevated fencing to permit access by herbivores such as fish and turtles but exclude mature Canada geese, whereas Canada geese had full access to corresponding unfenced plots that were monitored for making comparisons between areas the geese could access and those they could not. An analysis of the data collected from 2009-2011 documents vegetation in the exclosed plots had significantly greater vegetative cover and species richness when compared to the vegetation in the unfenced plots that were exposed to full Canada goose herbivory (Krafft et. al 2013).

The study described above (Krafft et. al 2010 and 2013) has demonstrated that grazing by resident Canada geese is damaging restored wetlands at the park resulting in:

- Adverse changes to the structure and composition of emergent vegetation;
- Erosion and sedimentation problems in the Anacostia River that have increased impacts to the water quality of the river; and
- Potential adverse effects on wildlife and fisheries habitat and the natural distribution, abundance, and diversity of native plant species.

As a result, the purpose of the plan/EIS is to guide and direct the actions of the NPS in the management of existing, restored wetlands, wetlands which may be restored in the future, and resident Canada geese.

This plan will serve as an integrated tool for the long-term planning and management of these resources in the park. The focus of this plan/EIS is to protect and manage previously restored, but since degraded, wetlands in the park, to protect existing resources, and to manage the population of resident Canada geese at Anacostia Park. While the creation of new wetlands (e.g., the filling of an area and planting it with wetland vegetation) is outside the scope of this plan/EIS and may require additional planning and compliance, the concepts presented in this plan/EIS would apply to previously restored wetlands and any wetlands restored in the future at Anacostia Park.

A plan is needed that provides resident Canada goose management strategies to facilitate the success and functionality of current and future wetland restoration activities at the park. While the creation of new wetlands is outside the scope of this plan/EIS, the concepts presented in this plan apply to previously restored wetlands and any wetlands restored in the future. Besides grazing pressures from resident Canada geese, other wetland restoration issues are occurring at Anacostia Park and include current hydrologic regimes; past planting methods, including species selection; existing seed bank; insects and disease; engineered marsh soils; removal of invasive plant species; and sediment quality. These issues can result in varied levels of planting success at the park. As a result, there is a need to determine the appropriate hydrologic regimes of current and future restored wetlands within Anacostia Park to improve the success of restoration projects. Finally, there is a need to control invasive plant species at current and future restored wetland sites at Anacostia Park.

DECISION (SELECTED ACTION)

The NPS will implement alternative B, which was described as the preferred alternative in chapter 2, of the final plan/EIS in the following sections: *Elements Included within the Management Alternatives*, *Management Techniques Common to All Alternatives (A through E)*, *Management Techniques Common to All Action Alternatives (B through E)*, and *Alternative B: High Level of Wetland Management and High Level of Resident Canada Goose Management*.

Despite continued/ongoing wetland restoration efforts, resident Canada goose consumption of wetland vegetation makes it important to manage their grazing as part of the wetland restoration efforts at the park. As a result, Alternative B combines the most aggressive wetlands management techniques, including intensive resident Canada goose management measures, in an adaptive framework. The alternative consists of numerous component actions that can be used to achieve the following desired conditions for wetlands and resident Canada geese at the park, which were identified through the planning process:

- Wetland systems that are maintained, in a pre-dominantly self-sustaining condition to deliver the best quality and quantity of wetland functions that reflect park goals and strategies, and
- A population of resident Canada geese that does not adversely impact the wetland habitats available at the park.

The NPS has committed to implementing numerous techniques as part of this plan/EIS, while others are available to the NPS for use on an as needed basis. In addition, some of the actions under the selected alternative are fully analyzed in the EIS and can be implemented immediately, while others may require additional, site-specific analysis prior to being implemented. Depending on the nature of techniques which require additional analysis, the NPS may also have to complete additional compliance reviews under the Clean Water Act, the National Environmental Policy Act, the Endangered Species Act, the National Historic Preservation Act, as well as other laws, regulations, and executive orders. Tables 1 and 2 present the wetland and resident Canada goose management actions which are part of the selected action, and indicate which the NPS has committed to carrying out, those which will be used on an as needed basis, and those which require additional analysis before they can be implemented.

Table 1: Wetlands and Resident Canada Goose Management Techniques NPS Will Use			
Element	General Description	Techniques NPS Will Use and Which Can Be Implemented Now	Techniques NPS Will Use But Which May Require Additional Analysis and Compliance to Implement
Vegetation	The NPS will use a variety of techniques to manage invasive and native plant species at the park.	Chemical Control of Invasive Plants: the park will continue treatment of invasive plant species through the National Capital Region Exotic Plant Management Team (NCR-EPMT) and increase efforts as funding and staff allow. Treatment consists of spraying herbicides from truck-based hoses, backpack sprayers, and manual measures.	Removal of Sheet Piling: the park will remove the sheet piling along the Anacostia River Fringe Wetlands. After the piling is removed, the Anacostia River Fringe Wetlands will be subjected to normal river processes (NPS 2008). If it appears that its removal is resulting in increased feeding on the wetland vegetation by the geese, the NPS could install single or double-stacked coir fiber logs in this area.
Hydrology	The selected action includes techniques which could restore the natural hydrology of the ecosystem in the park in order to enhance the wetland areas throughout. The overall goal of the hydrology element is to reduce the direct water contact with the banks and slope faces that negatively impact the functionality of the wetlands.	Enforce No Wake Zone: the park will work with the District Harbormaster to enforce the no wake zone in the areas where wakes and waves from boats may cause shoreline erosion. These areas include the Anacostia River Fringe Wetlands, Kingman Marsh, shorelines along Robert F. Kennedy (RFK) Stadium parking lots, Kenilworth Marsh, and areas adjacent to the Kenilworth Aquatic Gardens.	Not applicable.
Habitat Modification	The park will take measures to alter goose habitat, surroundings, and the availability of food and water by eliminating, modifying, or reducing access to areas attractive to geese.	Vegetative Barriers: where possible, existing vegetative buffers would be widened and new vegetative buffers would be planted to act as barriers to resident Canada goose access to the wetlands and increase the risk of fear for resident Canada goose predation by minimizing their ability to see potential predators. The park would plant herbaceous materials closer to the bank’s edges and woody material farther away as species with fibrous roots would be more beneficial for the shoreline stabilization rather than sparser woody roots. Plants would be dense and high enough (2.5 feet) to prevent the geese from seeing through or over them or walking through gaps in the plantings. New vegetative barriers will be installed and existing barriers will be widened using species of plants that are less palatable to the resident geese (see appendix C of the plan/EIS) along shorelines, wetlands, and in the following principal areas (see figures 5 to 7 of the plan/EIS): <ul style="list-style-type: none">• The entire west bank of the Anacostia River north of the CSX Railroad Bridge.• Gaps in the existing buffer along Langston Golf Course.• Select areas between the east bank of the Anacostia River and Anacostia Drive Southeast.• Shoreline along the east bank of the Anacostia River near Kenilworth Marsh.• Shorelines along RFK Stadium parking lots.• Seawall along the east shore of the Anacostia River near Deane Avenue Northeast.	Not applicable.
Resident Canada Goose Population Control	The park will use an adaptive approach to managing the resident Canada goose population to densities needed to achieve the vegetative response necessary to meet desired conditions for wetland. The initial population goal for the park is no more than 54 resident Canada geese, which may be adjusted depending on the results of monitoring and other adaptive strategies (see Adaptive Management section). The plan includes several measures to manage resident Canada geese in a manner that attains and maintains desired conditions for wetlands, including lethal control (e.g. round up, capture, euthanasia, and shooting), habitat modification, and reproductive control.	Lethal Control – the park will use lethal control as the primary means of reducing the resident Canada goose population to densities needed to achieve the vegetative response necessary to meet desired conditions for wetland (based on the results of monitoring fenced and unfenced locations). These measures will be implemented during the summer months when migratory geese are not present in the park (migratory Canada geese arrive in the fall and leave in the spring before wetland plants emerge), adult geese are molting and flightless (starting June 15 in Mid-Atlantic), and the young-of-the-year (juveniles less than 1 year old) are considered self-sufficient but unable to fly. Until the initial population goal is met, the number of geese removed will be based upon spring goose counts from the prior season. For the first two years, the park will seek to remove 40 to 60 percent of the resident population until the initial population goal is reached. If after two years the total population of resident Canada geese has not declined below 50 percent of the starting population (the population before plan implementation began), the park will increase the removal percentage by up to 10 percent each year, to a maximum of 90 percent, until the initial population goal is reached. Once the initial population goal is reached, additional removals of resident Canada geese will be based on the results of vegetation monitoring. Resident Canada geese will be herded into special designed nets by people or remote control vehicles (boats and cars) in dry, flat areas away from roads or other hazards. Once resident Canada geese are captured, trained wildlife experts will remove them by	Not applicable.
Resident Canada Goose Population Control (continued)			

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Element	General Description	Techniques NPS Will Use and Which Can Be Implemented Now	Techniques NPS Will Use But Which May Require Additional Analysis and Compliance to Implement
		<p>hand and take them off-site to be euthanized in accordance with American Veterinary Medicine Association guidelines. Juvenile geese will be removed first to prevent trampling. Long-handed dip nets may also be used to capture geese in open water or wetland areas. Any geese capable of flight will be sedated prior to capture. Whenever it is safe and possible, breast meat from the euthanized geese will be removed and donated to local food banks. Remaining goose carcasses will be disposed of in a landfill.</p> <p>In exceptional cases, single geese maybe shot and removed with oversight by park officials. Removal by shooting will only be performed by park officials and/or contractors that are properly trained, experienced, and licensed to use a firearm. Any geese injured but not killed during the operation will be put down as quickly as possible to minimize suffering. Noise suppression devices could also be used to minimize public disturbance. Operations will be carried out in compliance with all federal firearm laws as specified by the Bureau of Alcohol, Tobacco, and Firearms. Areas where removal by shooting may occur will be temporarily closed to the public and patrolled by NPS and U.S. Park Police to ensure safety and compliance; the public will be notified in advance of any closures when feasible. Single resident Canada geese removed from the park in this manner would be buried and not donated to local food banks.</p> <p>Reproductive Control: the park will utilize a number of reproductive control techniques to manage the resident Canada goose reproduction rates and population size, including egg oiling and egg addling. Reducing the number of resident Canada geese born at the site will decrease the number of adults returning to the site to nest, and thereby the number of resident Canada geese that need to be removed over the life of the plan. Oiling is currently in use by the park and will remain the primary management technique. The park must register for Federal Authorization with U.S. Fish and Wildlife Service (USFWS) prior to performing oiling or addling.</p> <p>Oiling and addling will be performed in accordance with the guidelines set forth in the USFWS permits. The nest will be marked with flagging and treated (oiled/addled) eggs will be marked with a lead pencil or permanent marker. Any new eggs found on subsequent visits will be oiled/addled/replaced in the same manner.</p>	
Cultural/ Education	The selected action includes enhancements to the educational offerings at the park to inform the public about wetland values and issues, including increasing educational materials and interpretation.	<p>Materials, Interpretation: the park staff will educate the public on the importance of wetlands in the environment through formal programs, dissemination of printed materials, and through impromptu interpretation by roving park staff and volunteers. Brochures could also address resident Canada goose management techniques, and include information to discourage park visitors from feeding geese and other wildlife. The park will also partner with volunteers to study water quality in the wetlands. The park will coordinate these efforts with the District and other partner agencies to encourage interested environmental organizations and other volunteers to get involved in wetland management actions. Wetland management activities could be linked with park ranger programs at various park sites.</p>	Not applicable.

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Park Operations/ Management	Park operations and management refers to efforts associated with park staff, particularly the maintenance staff, which could improve wetland function at the park. These include modifications to several aspects of the management and operations of physical facilities to improve water quality.	Improve Trash Management: better trash management will improve the appearance and perceptions of the river, reduce clogs in infrastructure and streams, and improve wetland habitat. The park will continue to support District Department of the Environment trash traps at the stormwater inlets and outlets throughout the park, increase the use of trash booms on the river, and increase volunteer clean up opportunities. In addition, the park will install more trashcans in heavily used areas and implement more frequent trash removal.	Reduce Impervious Areas: areas of impervious surfaces, such as roadways, parking lots, and sidewalks will be reconstructed to semi-pervious or pervious areas, where feasible. The park will also include innovative, environmentally sensitive designs into plans for new development to reduce imperviousness or increase perviousness, and will need to consider whether or not this is appropriate in areas where environmental investigations are ongoing. Potential areas identified for reducing impervious areas include the Kenilworth Parkside, Langston Golf Course parking lots, and parking lots surrounding the Anacostia Park Pavilion (see figures 5 to 7 of the plan/EIS). Install New Rain Gardens: the park will install new rain gardens or biocells that are created or naturally-forming in low areas. Rain gardens are planted depressions that function as small wetlands. Wildflowers or other native vegetation are typically planted in these areas. The rain garden provides a place for stormwater to infiltrate, allowing approximately 30 percent more water to soak into the ground. Rain gardens will be constructed and designed according to local guidelines. The installation of rain gardens will also help reduce the amount of impervious area in the park. Potential areas for rain gardens or biocells include the Kenilworth Aquatic Gardens parking lot, Langston Golf Course parking areas, parking lots surrounding the Anacostia Park Pavilion, and parking areas north and south of Pennsylvania Avenue (see figures 5 to 7 of the plan/EIS).

Table 2: Wetlands and Resident Canada Goose Management Techniques NPS May Use			
Element	General Description	Techniques NPS May Use and Which Can Be Implemented Now	Techniques NPS May Use But Which May Require Additional Analysis and Compliance to Implement
Vegetation	In addition to those techniques identified in Table 1 which NPS has committed to using, the park will also consider using additional techniques to enhance native vegetation in the park.	High Density Plantings: the park will increase the number of plantings throughout all the wetlands to maximize the percent basal area cover. Plantings will include species with high root mass forming abilities, such as rhizomatous species, or species with strong root structure to increase the sediment-root matrix and overall wetland soil stability. Plant heights will be variable, with average plant height being equal to or taller than average high water level. Plantings will be placed mostly in areas of the wetlands that receive longer hours of direct sunlight and less in areas that are shaded most of the day. Potential locations for techniques mentioned above are shown on figures 5 through 7 in chapter 2 of the plan/EIS.	Mechanical Seedbank Regeneration: as needed, the park may remove unwanted vegetation and till soil in areas to allow native species seed to regenerate naturally. Potential areas for mechanical seedbank regeneration include most of the wetland areas in Kenilworth Marsh, the east bank wetlands along the Anacostia River near Kenilworth Marsh, wetland areas in Kingman Marsh, and the Anacostia River Fringe wetlands (see figures 5 and 6 in chapter 2 of the EIS).
Hydrology	<p>In addition to those techniques identified in Table 1 which NPS has committed to using, the park will consider using additional techniques intended to dissipate erosive forces associated with waves, currents, ice, rainfall/runoff, obstacles, water level fluctuations, and groundwater flow. The primary focus of erosion control which may be used will be on areas of the marsh at low elevations and near the surface where vegetation/mud flat and water interface. The secondary focus will be on the higher wetland/upland interface in areas where the slopes may be failing.</p> <p>When used, shoreline protection at the open water/wetland interface will be greatest in those areas that receive the most wave action and erosion. Hydraulic modeling, bathymetric, and vegetative surveys may be needed to implement some techniques (e.g., soft armoring, flow deflectors, tidal guts). U.S. Army Corps of Engineers (USACE) permits may be required to implement some techniques that encroach into wetlands or waters of the United States pursuant to section</p>	<p>Fill and Stabilize Rills: rills are narrow, shallow incisions in the soil resulting from overland flow. Rills identified by park staff may be filled and stabilized with seed and matting, to allow upland runoff to enter the wetlands through sheet flow rather than concentrated, erosive flows.</p> <p>Remove or Modify Structures which Cause Erosion/Clog Marsh: the NPS will evaluate and consider removing structures or obstacles in the wetlands or rivers that increase erosion by redirecting flows to unstable areas or block the transport of sediments along the shoreline. These structures may include shoreline protection features, such as groins, revetments, breakwaters, or bulkheads, and natural obstacles including fallen trees, debris, beaver dams, and ice during the winter months. Beaver dams may only be removed if their presence is causing an issue for the cultural ponds in Kenilworth Aquatic Gardens. Some structures, such as bridge piers, boat docks, and dams may require further hydraulic evaluation to assess their actual impact on the shoreline. Such modifications will need to be coordinated with the structure’s owner(s) and integrate designs that are protective of the shoreline and wetlands. The park will identify and focus on areas that create eddy currents that impact the wetland or bank stability in selecting where to apply these measures.</p>	<p>Install Soft Armoring: coir fiber logs, straw bales, or brush bundles, may be placed within the restored wetland areas, as identified on figures 5 and 6 in chapter 2 of the plan/EIS, and any new wetland restoration area, as appropriate. If used, armoring will be staked along the open water/wetland interface and include small breaks so that fish can pass through. Plants will be installed in conjunction with soft arming in an alternating, random pattern. The NPS will use species appropriate for the elevations, hydrologic regime, and which are less palatable to geese until the population is at a sustainable level.</p> <p>Install Flow Deflectors: natural or man-made flow deflectors (e.g., log vanes, straw bales, or brush bundles, boulder/large rock vanes, or rip rap) may be installed in high velocity areas along the upstream, and possibly downstream, edges of the restored wetlands to redirect the erosive velocities back to the main river channel and encourage sediment build-up in non-vegetated mud flats. Potential areas for natural flow deflectors include the northern section of Kenilworth Marsh and the Anacostia River Fringe Wetlands in the central region of Anacostia River (see figures 5 and 6 in chapter 2 of the plan/EIS). If used, flow deflectors will be placed in a manner that prevents erosion of wetlands or shoreline on the opposite bank.</p> <p>Install Pre-Seeded Bog Mats: Pre-seeded bog mats with root-mat-forming plant species may be installed along the wetland shoreline. Potential locations for pre-seeded bog mats</p>

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Hydrology (continued)	404 of the Clean Water Act. Smaller projects might be covered by a Nationwide Permit while larger projects will require individual permits on a case-by-case basis. All modifications must comply with water quality standards set forth in Title 21, Chapter 11 of the District of Columbia (the District) Municipal Regulations, and be reviewed and permitted by the District Department of the Environment (DDOE) Water Quality Division prior to implementation. The park would ensure these and any other permits required by the NPS or other agencies would be obtained prior to starting work.		<p>include the previously restored wetland areas in Kenilworth Marsh, the wetland area on the East Bank of the Anacostia River near Kenilworth Marsh, and wetland areas within Kingman Marsh (figures 5 and 6 of the Final EIS).</p> <p>Reduce Shoreline Steepness: steep banks identified by park staff may be graded back or filled to create 3:1 slopes or lower and the area will be planted with species provided in appendix C of the plan/EIS to reduce the high erosion and sheer stress along the shoreline.</p> <p>Maintain and Create Tidal Guts: the park may maintain existing tidal guts and create new tidal guts, as needed, by dredging and excavating portions of the marsh to improve water availability, hydrology, and functionality of wetlands and to reduce established invasive plant communities. New native wetland plants may also be installed in these areas after work is complete. If used, dredging of a particular area will occur one time and maintenance requirements will be minimized. Potential locations for new tidal guts include two areas within Kenilworth Marsh (figure 5 of the plan/EIS).</p> <p>Monitor Water Level Changes/Alter Surface Elevations of Wetlands: the NPS may also monitor the non-tidal wetlands within the park to determine if the establishment of wetland vegetation is being impacted by extreme water level changes Where surface elevations are determined to be unsuitable for vegetative establishment within the restored wetlands, the park will consider altering wetland elevations on a case-by-case basis to achieve more mid to high marsh zones, improve vegetation establishment success, and to provide additional habitat. Potential locations for altering wetland surface elevations include areas identified in Kenilworth Marsh on figure 5.</p>
Wetland Restoration	Techniques associated with wetland restoration are intended to re-establish the habitats and functions of a former wetland. Wetland restoration measures may be used in select areas of the park as needed.	Not applicable.	<p>Stream Daylighting: stream daylighting involves removing streams from underground pipes and culverts and restoring them to the surface. The park will evaluate the potential for daylighting several streams to restore some of the form and function of the historic stream and thereby provide for new wetland functions and tidal marshes. Streams potentially suitable for daylighting include Pope Branch (figures 6 and 7 of the plan/EIS) and Fort Dupont Creek (figure 6 of the plan/EIS).</p> <p>Stream/Stormwater Outfall Modification: as needed, the park will inventory stream and stormwater outfalls and may modify them to dissipate energy and reduce erosive velocities. Modifications may include plunge pools and step-pools.</p> <p>Seawall Breaks: the park will consider installing seawall breaks as needed in the existing seawall adjacent to former wetlands to allow the river greater access to the floodplain and reestablish tidal connectivity behind the seawall. Potential areas for seawall breaks include the west bank of the Anacostia River near Kenilworth Marsh and the east bank of the shoreline just north of the CSX Railroad Bridge crossing (see figures 5 and 6 of the plan/EIS).</p>

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Habitat Modification	In addition to those techniques identified in Table 1 which NPS has committed to using, the park will also consider other habitat modification techniques aimed at reducing resident Canada goose access to wetlands.	<p>Exclusion Fences: Goose exclusion fencing will be installed on an as needed basis, primarily in the northern areas of the park (see figures 5 and 6 in the plan/EIS). Fences prevent geese from walking within wetland areas and grazing on the wetland plants, and prevent or discourage some birds from flying into wetland areas. Fencing materials may include woven wire, chicken wire, plastic snow fencing, construction-site silt fencing, corn cribbing, chain link fencing, netting, mylar tape, monofilament lines, stainless-steel wire, and picket fencing. If implemented, fences will be long enough to discourage geese from walking around the edges. The openings in the fence materials will be no larger than 3 inches. The NPS will consider installing fencing on top of wetland areas to prevent the geese from flying into these areas. The NPS will consider installing fencing in early spring when non-persistent plants are beginning to emerge. During the spring, geese feed on young and actively growing portions of plants continuously during daytime hours. Fencing, if used, would require maintenance throughout the life of the plan.</p> <p>Soft Armoring: single or double stacked coir fiber logs could be installed as needed around the perimeter of all planted areas in the wetlands to reduce the ease of goose access to the vegetation for feeding. Locations where soft armoring could be used are shown in figures 5 through 7 of the plan/EIS. The coir fiber logs would be adequately staked into the ground to ensure that the logs are not dislodged from the shoreline. More stakes would be used in those areas that are influenced by stronger tides. The logs would be placed so that about half of the log is submerged and plants would be installed in an alternating, random planting pattern into the top of the log. Plants to be installed would include those species that are less desirable to geese and those species that are mid- to high-marsh plants (appendix C). By planting mid- to high-marsh plants, geese would have a difficult time accessing the shoreline. Locations where soft armoring and existing buffers could be widened are shown in figures 5 through 7.</p> <p>New Plantings Less Desirable to Geese: the NPS could consider using vegetation less desirable to geese in new plantings in order to make wetlands less attractive to the geese and reduce browsing on desirable native vegetation. See appendix C of the plan/EIS for a list of species which could be considered.</p>	Not applicable.
Resident Canada Goose Population Control	In addition to those techniques identified in Table 1 which NPS has committed to using, the park will also consider using additional non-lethal techniques to manage the resident Canada goose population.	<p>Scare and Harassment: the park may implement an intensive scare and harassment program using visual deterrents, such as mylar tape, flags, and balloons, and dogs to frighten geese away from problem areas as needed. If used, these techniques will occur in open grassy areas of the park where geese tend to congregate, and in areas adjacent to the wetlands (see figures 5 to 7 of the plan/EIS). The techniques may be implemented in the spring to deter resident Canada geese from nesting at the park. Dogs can be used on both land and water in the late spring and summer but not during the molting period to avoid catching or harming the geese. Scare and harassment techniques will not be used within the wetland areas because they could potentially disturb other wildlife. If scare and harassment techniques drive the geese into the wetland areas, the use of these techniques will be discontinued. Techniques will be rotated or altered every few months to avoid goose adaptation or indifference, and will be experimented with to determine which tactics (or combinations) will be the most effective. If scare and harassment is used, the park will monitor the effectiveness of the techniques to determine which ones or combinations work best.</p> <p>Reproductive Control: the park may also use approved hatch control measures, such as OvoControl® G which decreases the hatchability of eggs, in years following an increase in population. The park must obtain a depredation permit from U.S. Fish and Wildlife Service (USFWS) prior to administering hatch control chemicals.</p>	Reproductive Control: additional reproductive control measures may be implemented as new innovative technologies and products become available and are approved for use.

Table 2: Wetlands and Resident Canada Goose Management Techniques NPS May Use			
Element	General Description	Techniques NPS May Use and Which Can Be Implemented Now	Techniques NPS May Use But Which May Require Additional Analysis and Compliance to Implement
Cultural/ Education	In addition to those techniques identified in Table 1 which NPS has committed to using, the park will also consider constructing new educational amenities (boardwalks, interpretative trails, signs, etc.) and enforcement of wildlife feeding regulations in the park.	<p>Signage and Educational Materials: as needed, the park will consider cultural and educational tools such as installing and maintaining signage to discourage park visitors from feeding geese and other wildlife, and to provide information on resident Canada goose management techniques in use at the park. Park staff will also consider preparing a technical brochure for the public that describes resident Canada goose management techniques. An understanding of goose biology and behavior can help foster a greater tolerance and willingness to work through the resident Canada goose management issues.</p> <p>Enforce Wildlife Feeding Regulations: Title 36 Code of Federal Regulations (CFR) 2.2(a)(2) states that the feeding, touching, teasing, frightening, or intentional disturbing of wildlife nesting, breeding, or other activities is prohibited within NPS properties. Feeding waterfowl is a major cause of high urban bird populations (Smith et al. 1999). Feeding waterfowl encourages geese to congregate in areas and can make geese more aggressive toward people. Park visitors caught feeding waterfowl on park property would be approached by park staff, educated on the impact of the feeding, and may be issued warnings or citations.</p>	<p>Amenities: The park may add boardwalks, interpretive trails, waysides, and exhibits throughout wetland areas to increase public awareness and appreciation of wetland issues, and to reduce foot traffic in some wetland areas.</p>

ADAPTIVE MANAGEMENT

The selected action incorporates adaptive management to guide implementation in an effective way which addresses variability and flexibility in wetland and resident Canada goose management. Adaptive management is briefly defined as a type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves monitoring, evaluating the effectiveness of applied strategies and incorporating new knowledge and learning into management approaches. This iterative approach uses results to modify management strategies, techniques, and elements (if necessary) due to the uncertainty of ecological responses to management actions. The purpose of adaptive management is not only to facilitate meeting the desired conditions of the selected action, but also to balance the greater environmental and socioeconomic goals of the Anacostia River.

Thresholds will be used to determine when a resource condition is approached which warrants taking management action. For this plan, thresholds have been established in a separate report (NPS 2009). This document provides detailed information on the science behind the following thresholds established for vegetation and resident Canada geese:

- **Vegetation:** a statistically significant difference in the amount of plant cover between the open and exclosed vegetation monitoring plots (NPS 2009b).
- **Resident Canada Geese:** an initial resident, non-migratory Canada goose population of 54. This may be adjusted to meet management goals based on the results of vegetation and resident Canada goose population monitoring (NPS 2009b).

For this plan, vegetation monitoring will be conducted annually in accordance with a vegetation monitoring plan developed by U.S. Geological Survey for Anacostia (see appendix B of the Final Plan/EIS). The monitoring would document the status of and changes to wetlands vegetation at Anacostia, including information about damage to wetland plants caused by resident Canada geese, and to evaluate the effects of management actions on wetland vegetation.

The resident Canada goose population will be monitored for approximately 15 years to determine post removal success. Population monitoring of resident Canada geese will take place from May to July after migratory flocks have left the park and during the birds' flightless period. The bird counts will include those resident Canada geese within the park. In addition, a yet to be determined percentage of the resident Canada geese could be captured following similar techniques to those described below under lethal controls, marked with collars or other means (e.g. bird banding, radio transmitters), released within the park, and monitored regularly to track local movements.

Should the evaluation of monitoring data compared with the thresholds indicate the need for action, NPS would select one or more of the management options from those available within the selected action.

CHANGES TO THE SELECTED ALTERNATIVE

The NPS made several changes to the Selected Alternative between the release of the final plan/EIS on December 19, 2014, and the date this ROD was signed, based on input from NPS personnel. These changes are detailed below.

Change 1: The NPS made a change to the Vegetation section of the above table. NPS moved high density plantings from "Techniques NPS will use and can be implemented now" to "Techniques NPS may use and can be implemented now." Recent United States Geological Survey herbivory studies (Krafft et al., 2010 and 2013) have demonstrated that wetland vegetation does respond and rebound after the removal of

resident Canada goose herbivory. In the USGS studies, new growth was significant after one season. Therefore, NPS believes high density plantings may not be necessary for, but could be helpful as a supplement to, natural regeneration of vegetation. By moving it from one table to the other, the NPS retains high density plantings as an option in the toolbox, available for implementation at any time. No changes to the impact analysis of the Selected Alternative, as disclosed in the final plan/EIS, will occur as a result of this change. In addition, an Invasive Plant Management Environmental Assessment has been started, which will help aid NPS in the decision-making process in managing invasive species throughout the park.

High Density Plantings: *the park will increase the number of plantings throughout all the wetlands to maximize the percent basal area cover. Plantings will include species with high root mass forming abilities, such as rhizomatous species, or species with strong root structure to increase the sediment-root matrix and overall wetland soil stability. Plant heights will be variable, with average plant height being equal to or taller than average high water level. Plantings will be placed mostly in areas of the wetlands that receive longer hours of direct sunlight and less in areas that are shaded most of the day. Potential locations for techniques mentioned above are shown on figures 5 through 7 in chapter 2 of the plan/EIS.*

Change 2: The NPS made a change to the Park Operations/Management section of the above table. The second sentence in the middle column has been changed from “The park will place trash traps...” to “The Park will continue to support District Department of the Environment (DDOE) trash traps...” Park staff is not available to install and maintain these traps, so the park has relied and will continue to rely on DDOE to do so.

Change 3: The NPS made a change to the Habitat Modification section of the above table. In the middle column, the sentence reads, “Fences will need to be elevated from the wetland substrate to allow other marsh animals and fish passage, while still preventing geese from walking into wetland area.” This sentence was deleted. NPS feels that fences designed to exclude resident Canada Geese should not be elevated. The park finds that elevated exclosures require significant time to monitor and maintain, and that over time, larger gaps can form, allowing geese to enter the exclosure. To ensure the required 10 centimeter gap is maintained, the entire length of fencing must be checked at least once a year to verify its position above the substrate, and mended or adjusted as needed. Through tidal action, debris accretion, and subsidence, the substrate is constantly changing. If not checked at least yearly, gaps will form, as well as areas where the fencing is touching the substrate. Adult resident Canada Geese can enter the exclosure in places where the fence is elevated more than 10 centimeters from the substrate, rendering the fencing ineffective. No changes to the impact analysis of the Selected Alternative, as disclosed in the final plan/EIS, will occur as a result of this change.

Change 4: The NPS made a change to delete “egg replacement” under the table “Techniques NPS will use and can be implemented now.” The park has practiced egg oiling in the past, but has never conducted egg replacement and most likely will not in the future. No changes to the impact analysis of the Selected Alternative, as disclosed in the final plan/EIS, will occur as a result of this change. Egg oiling and egg addling will remain population reduction techniques available to the park.

Change 5: The NPS will no longer consider the use of remote control airplanes as a means of herding resident Canada geese into special designed net. As of March 2015, The National Capital Region is governed by a Special Flight Rules Area (SFRA), which prohibits unmanned aircraft (remote control airplanes and drones) operations within the 15 mile radius of Ronald Reagan Washington National Airport without specific FAA authorization. The plan/EIS was released in December 2014 and included the possibility of using remote control airplanes as one of several ways to herd these geese. Since the project area falls within the 15 mile radius of Ronald Reagan Washington National Airport, the use of remote controlled airplanes is prohibited and no longer considered as part of this proposal.

MITIGATION MEASURES

The selected action is structured, in general, to benefit park resources and mitigate ongoing impacts to wetlands at the park. It is recognized that during implementation some short-term impacts could occur and therefore measures have been identified to further avoid or minimize these impacts. Mitigation measures will be implemented to minimize the impacts on resources from management of wetlands and resident Canada geese in Anacostia Park. Mitigation measures and best management practices (BMPs) specific to the impact topics, where applicable, are presented below.

SOILS AND WATER QUALITY

Impacts of land disturbances that will negatively affect soils and may have short-term adverse effects on water quality will be minimized by appropriate BMPs which will include erosion and sediment (E&S) plans, revegetation plans, National Pollutant Discharge Elimination System (NPDES) permits or other required documents in the District.

WETLANDS

For activities that encroach into wetlands or waters of the United States, measures to minimize harm would be identified through consultation with U.S. Army Corps of Engineers (USACE) when obtaining permits that may be required pursuant to section 404 of the Clean Water Act.

If scare/harassment techniques drive the geese into the wetland areas they will be discontinued.

VEGETATION

Vegetation may be temporarily affected by disturbances associated with preparing sites for implementation of wetland management techniques. Mitigation will include appropriate BMPs such as vegetation buffers, a revegetation plan (including commitments to revegetate immediately), or other required documents in the District, depending on the total area disturbed.

WILDLIFE AND AQUATIC RESOURCES

Soft armoring (e.g., coir fiber logs, straw bales, or brush bundles) used in wetland areas will include small breaks so that fish can pass through.

Scare and harassment techniques will not be used in wetland areas because they could potentially disturb other wildlife. Dogs will not be used during the molting period to avoid catching or harming geese.

CULTURAL RESOURCES

Through consultation required by Section 106 of the National Historic Preservation Act (NHPA), the District of Columbia State Historic Preservation Office (SHPO) has indicated its concurrence with the NPS determination that the selected alternative will have 'no adverse effect' based on the following conditions: 1) continued Section 106 consultation on the proposed ground disturbing activities' effects on archaeological resources; 2) an archaeological identification survey, and /or a geoarchaeological survey if warranted; 3) mitigation of adverse effects, if such cannot be avoided; and 4) reporting of archaeological investigations following NPS and District guidelines. In order to protect the cultural integrity of the park during implementation of actions only addressed programmatically in the plan/EIS, mitigation measures, identified through future Section 106 compliance, will be implemented to reduce impacts.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The Council on Environmental Quality regulations require federal agencies to identify the environmentally preferable alternative in a Record of Decision (40 CFR 1505.2). The environmentally preferable alternative is the alternative that "causes the least damage to biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources" (43 CFR 46.30). The environmentally preferable alternative is identified by the Responsible Official upon consideration and weighing of long-term environmental impacts against short-term impacts.

Alternative B from the Final Plan/EIS (the selected action) was identified as the environmentally preferable alternative. This alternative best protects the biological and physical environment, and best enhances natural resources through an immediate reduction and long-term maintenance of a sustainable resident Canada goose population that will allow the existing wetland vegetation to recover and will protect future restored wetlands from excessive resident Canada goose herbivory. This alternative also proposes extensive wetland restoration opportunities including managing invasive plant species, creating new shoreline buffers with native species, creating tidal guts, and daylighting. Long-term impacts to many natural resources are beneficial as a result of alternative B and include the following: soils, geology, water quality, floodplains, wetlands, aquatic resources, terrestrial vegetation, and wildlife. The only adverse impact to natural resources as a result of alternative B includes adverse impacts to resident Canada geese within the park due to lethal reduction activities. Alternative B proposes more intense management techniques; the population will be lethally reduced and maintained at a lower level than current numbers throughout the life of the plan/EIS. Impacts to the population of resident Canada geese within the park will be detectable, and these impacts will be perceptible at the Maryland or DC resident Canada goose population level, but not at the Atlantic Flyway levels.

Alternative B provides more certainty in achieving the vegetation goal than alternative C and also provides for more wetlands management. Compared to alternative B, alternatives A, D, and E were not considered environmentally preferable because of their lack of effect on resident Canada goose numbers in the park. Low resident Canada goose management would result in potential adverse effects on the biological and physical resources of the park over the life of the plan.

It has been determined there will be *no adverse effect* under Section 106 as long as the following conditions are met: 1) continued Section 106 consultation on the proposed ground disturbing activities' effects on archaeological resources; 2) an archaeological identification survey, and /or a geoarchaeological survey if warranted; 3) mitigation of adverse effects, if such cannot be avoided; and 4) reporting of archaeological investigations following NPS and District guidelines (see appendix A of the final plan/EIS). In addition, in order to protect the cultural integrity of the park during implementation of actions only addressed programmatically, mitigation measures, identified through future Section 106 compliance, will be implemented to reduce impacts.

ALTERNATIVES CONSIDERED BUT NOT SELECTED

ALTERNATIVE A – (NO ACTION) EXISTING MANAGEMENT

Under the no action alternative, there would be no change in the way wetlands and the resident Canada goose populations are managed at the park. Current wetland and resident Canada goose management at the park includes limited invasive plant species management; trash management; public education; resident Canada goose population monitoring, egg oiling, and exclusion fencing; and wetland vegetation planting.

ALTERNATIVE C - MODERATE LEVEL OF WETLAND MANAGEMENT COMBINED WITH MODERATE LEVEL OF RESIDENT CANADA GOOSE MANAGEMENT

Alternative C includes many of the same wetlands and resident Canada goose management options as alternative B, but they would be applied in fewer areas or less intensively than alternative B.

Wetland Management Techniques

Hydrology—Alternative C includes many of the same management techniques as alternative B but the techniques would be in fewer locations compared to alternative B. Alternative C would not include creating tidal guts or altering water elevations as proposed in alternative B. The park may remove or modify structures or obstacles that result in moderate or severe erosion of the shorelines or wetlands; however, removal would occur in fewer locations when compared to alternative B.

Vegetation— techniques would be the same as alternative B, except the park would plant at a lower density.

Restoration—could include the installation of stream/stormwater outfall energy dissipation modifications as needed at the ends of outfalls requiring repair to remediate for erosive forces.

Cultural/Educational— the same as alternative B, except this alternative would not include constructing new boardwalks or trails as described under alternative B.

Park Management and Operations—park management and operations to improve the quality of wetlands could include the same techniques as alternative B.

Resident Canada Goose Management Techniques

Lethal Control— lethal control of the resident Canada goose population at Anacostia Park would include a less intensive population reduction when compared to alternative B. Alternative C proposes population reduction for the resident Canada goose within the park, through removal of 40 to 60% of the resident Canada goose population within the first year of the plan/EIS as the first phase towards meeting the initial goal of 54 resident Canada geese. Although monitoring may be conducted yearly, lethal control would only be used up to five times throughout the life of this plan/EIS.

Habitat Modification—Management techniques for habitat modification would be the same as alternative B except that new shoreline buffers would be placed in fewer locations compared to alternative B. Goose repellents may be used to prevent geese from grazing within the turf areas.

Scare and Harassment— The scare and harassment techniques under this alternative are similar to those in alternative B; however, they would only be implemented in areas closest to the restored wetlands and techniques would be rotated less often compared to alternative B.

Reproductive Control—Following the initial reduction in population size using lethal controls, the current egg management program would be intensified to allow more time and effort. Application of goose hatch control materials may be implemented annually if needed. Alternative C would not include implementing scare tactics prior to the nesting season.

ALTERNATIVE D – LOW LEVEL OF WETLAND MANAGEMENT WITH LOW RESIDENT CANADA GOOSE MANAGEMENT

This alternative combines less aggressive wetlands management options with a lethal resident Canada goose management option performed one time during the plan/EIS and only if necessary. This alternative offers the lowest management effort for both wetlands and resident Canada geese.

Wetland Management Techniques

Hydrology—Alternative D would include the removal of structures or obstacles that are resulting in erosion of the shoreline or wetland areas, or the clogging of the marshes.

Vegetation—Under alternative D, the NPS would continue to manage invasive plant species, but at a reduced level. Natural seedbanks would be allowed to regenerate using passive methods.

Restoration—There are no new wetland restoration efforts associated with alternative D. Conditions would continue to be similar to the no action alternative.

Cultural/Educational—There are no new cultural/educational efforts associated with alternative D.

Park Management and Operations—Alternative D would include the installation of new rain gardens.

Resident Canada Goose Management Techniques

Lethal Control—a one-time population reduction using lethal controls of 40 to 60% of the resident Canada goose population would be performed during the life of the plan, but only if necessary. The lethal control technique during this one time reduction would include round-up, and capture and euthanasia.

Habitat Modification—Alternative D would be similar to alternatives B and C because existing vegetative buffers would be widened and new vegetative buffers would be planted to act as barriers to the geese. These barriers would be planted on the west bank of the Kingman Marsh along the RFK Memorial Stadium parking lots and along the Anacostia River Fringe Wetlands. Goose exclusion fencing would be installed and maintained and new plantings less desirable to geese would be planted. All goose habitat modification elements would be implemented within the first 5 years of this plan/EIS.

Scare and Harassment—No scare and harassment techniques would be implemented under alternative D.

Reproductive Control—The current egg oiling program described in alternative A would continue.

ALTERNATIVE E - HIGH LEVEL OF WETLAND MANAGEMENT WITH MODERATE RESIDENT CANADA GOOSE MANAGEMENT WITH NO LETHAL CONTROL

This alternative combines aggressive wetland management techniques with moderately intensive resident Canada goose management activities; however, there is no lethal control.

Wetland Management Techniques

Under alternative E, wetland management techniques for hydrology, vegetation, restoration, culture/education, and park management and operations would be similar to alternative B.

Resident Canada Goose Management Techniques

Under alternative E, resident Canada goose management techniques for scare and harassment, reproductive control, and culture/education would be the same as alternative B. Habitat modification

would also be similar to alternative B, except that no existing vegetative buffers would be widened. All of the non-lethal resident Canada goose management techniques would be implemented within the first 5 years of this plan/EIS with the exception of reproductive control management techniques.

BASIS FOR DECISION

The selected action fully meets all the project objectives listed above due to the high number of resident Canada goose management techniques including lethal control, scare and harassment program, habitat alteration, and egg oiling. This alternative also proposes extensive wetland restoration opportunities including managing invasive plant species, creating new shoreline buffers with native species, creating tidal guts, and daylighting. Other alternatives proposed did not fully meet each of the objectives.

In addition to meeting the project objectives, the selected action will have long-term beneficial impacts central to the purpose and significance of the park, namely wetlands (see “Chapter 4: Environmental Consequences” of the final plan/EIS, and the summary of impacts in table 6 on page 107 of the EIS). The majority of the wetland and resident Canada goose management techniques included under the selected action will not diminish the character-defining features or the overall integrity of historic resources and will have *no adverse effect* (for Section 106) on historic structures, districts, and archeological resources (see Public and Agency Involvement section). However, seawall breaks and daylighting, which are future wetland management techniques considered under alternative B, could have an *adverse effect* (for Section 106) on the Anacostia River Seawall, which is potentially eligible for the National Register of Historic Places (NRHP). Future planning and compliance may be necessary to assess possible impacts to the Anacostia River Seawall in the event that NPS implements the seawall breaks and daylighting associated with the alternative. If impacts to cultural resources were found to be of such magnitude that a finding of *adverse effect* under Section 106 of the National Historic Preservation Act would result, the NPS will consult with the District of Columbia State Historic Preservation Office and the Advisory Council. Adverse effects under Section 106 will be mitigated by context sensitive design or other measures developed during future Section 106 consultation as stipulated in a formal Memorandum of Agreement.

PUBLIC AND AGENCY INVOLVEMENT IN THE PLANNING PROCESS

The NPS places a high priority on public and agency involvement and providing the opportunity to comment on proposed actions. The planning process for the plan/EIS was conducted with extensive public and agency involvement that included multiple newsletters, workshops, meetings, and formal public comment processes. These activities are briefly summarized below and a detailed discussion is presented in “The Public Scoping Process” section in chapter 5, of the final plan/EIS.

PUBLIC SCOPING

On June 25, 2007 Anacostia Park released a Public Scoping Brochure for public review and comment. The public was invited to submit comments on the scope of the planning process and potential alternatives through August 10, 2007. During the comment period, two public scoping meetings were held on July 17 and July 18, 2007 at the U.S. Park Police Anacostia Operations Facility. NPS staff were available to visit with the participants and answer questions. A total of 31 participants attended.

During the public scoping period, 49 separate pieces of correspondence were received and entered into the Planning, Environment, and Public Comment (PEPC) system. A comment analysis report was generated and was made available on the PEPC website for the public. This report included the number and type of comments received, a summary of the substantive comments received, and a list of the organization or groups that participated in the public scoping effort.

After considering the comments received during public scoping, initially evaluating potential alternatives, and continuing to analyze data, the NPS decided to complete an EIS rather than an environmental assessment for this plan. As a result, on January 8, 2008, the NPS published a second newsletter that notified the public of the change of approach to the planning process, the scope of the plan, and next steps. The NPS published a Notice of Intent to prepare an EIS in the *Federal Register* on January 9, 2008 in Volume 73, No.6, which served as an announcement of an additional 30-day public comment period. Only one correspondence was received.

The NPS released a third newsletter to the public on August 29, 2008, which outlined proposed alternatives to be evaluated in the EIS. The public was invited to submit comments on alternatives through October 3, 2008. During the comment period, seven separate pieces of correspondence were received. A public comment analysis report was generated and made available to the public on November 6, 2008.

PUBLIC REVIEW OF THE DRAFT PLAN/EIS

On July 21, 2011, the NPS released the *Draft Anacostia Park Wetlands and Resident Goose Management Plan/EIS* for public review and comment. Copies of the document were distributed to individuals, agencies, organizations, and local libraries/community centers. The document was also available online at http://parkplanning.nps.gov/anac_wetland_and_goose_management_plan_EIS. The draft plan/EIS included a description of the proposed project and alternatives, a description of the resources found within the study area, and an analysis of the impacts of the proposed project on these resources. The NPS published a Notice of Availability (NOA) for the draft plan/EIS in the *Federal Register* on July 26, 2011. The Environmental Protection Agency published an NOA on July 29, 2011 formally initiating the comment period, which was open until September 26, 2011.

During the comment period, a public meeting was held at the U.S. Park Police Anacostia Operation Facility on September 7, 2011. NPS staff were available to visit with meeting attendees and to answer questions. Formal public comment sessions were then recorded by a court reporter. A total of three individuals attended the public meeting in Anacostia, and spoke during the public hearing.

During the comment period on the draft plan/EIS, 13 separate pieces of correspondence from 5 states (DC, Maryland, New Jersey, Pennsylvania, and Virginia) were received. Comments were received from individuals, as well as from organizations and state and federal government agencies. Commenters generally supported the draft plan/EIS for resident Canada goose and wetland management in Anacostia. However, some commenters felt that additional non-lethal options for resident Canada goose management needed to be explored, and did not support lethal management of the resident Canada goose population. All comments, regardless of their topic, were carefully read, coded, and analyzed. Under each code, all substantive comments were grouped by similar themes, and those groups were summarized with a concern statement. The NPS responded to the concern statements (see appendix E of the final plan/EIS), and incorporated comments and suggested revisions where appropriate.

FINAL PLAN/EIS

The final plan/EIS was available for public inspection for a 30-day no-action period, which began with the publication of the Environmental Protection Agency NOA of the final plan/EIS on December 19, 2014. As with the draft plan/EIS, the NPS issued its own *Federal Register* Notice of Availability of the final plan/EIS on December 3, 2014, and also announced the availability on the parks' websites (www.nps.gov/anac); through mailings sent to interested parties, elected officials, and appropriate local and state agencies; and by press releases. The final plan/EIS was made available through several outlets, including http://parkplanning.nps.gov/anac_wetland_and_goose_management_plan_FEIS, in local libraries and community facilities, and was available on CD or hardcopy by contacting the park.

SECTION 7 CONSULTATION

Consultation with the USFWS and the National Oceanic and Atmospheric Administration (NOAA) Fisheries has been completed as required by the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act (see appendix A of the final plan/EIS).

In 2005, NPS consulted with the USFWS and NOAA-Fisheries to identify any endangered or threatened species potentially located within the proposed project area. In response, USFWS sent a letter on November 10, 2005, stating that none of the federally endangered or threatened species under USFWS jurisdiction is known to occur within Anacostia Park. Therefore, no biological assessment or further section 7 consultation with the USFWS is required. NOAA-Fisheries sent a response on November 22, 2005, stating that the endangered shortnose sturgeon (*Acipenser brevirostrum*) has been documented in the Potomac River, and transient shortnose sturgeon may occur in the Anacostia River. However, NPS determined the activities associated with this project would not adversely affect the shortnose sturgeon.

The NPS sent another consultation letter to the USFWS on December 22, 2009, explaining that subsequent to the initial consultation with USFWS, NPS determined that an EIS was necessary for the wetland and resident Canada goose management plan. The letter further described the project. A response was received on January 6, 2010, stating that except for the occasional transient individuals, no federally listed endangered or threatened species are known to exist within the project impact area and no further section 7 consultation was required.

On October 26, 2011, the USFWS determined Kenk's amphipod (*Stygobromus kenki*) was a candidate for listing under the Endangered Species Act. NPS policy is to treat candidates as listed species, especially when a species will become listed during the life of a plan. A USFWS letter dated January 6, 2010, stated that the activities associated with the project would not affect any federally endangered species, and this applies because Kenk's amphipod occurs north of and not within the Anacostia Park project action area.

Additionally, on February 6, 2012, during preparation of the final plan/EIS, the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) Chesapeake Bay distinct population segment was federally listed as endangered. As a result, on October 24, 2012, the NPS requested technical assistance from the National Marine Fisheries Service (NMFS) Protected Resources to help determine potential for this and other federally listed species to occur in the project area. The NMFS responded on October 31, 2012, stating no federally listed or proposed threatened or endangered species and/or designated critical habitat for listed species under the jurisdiction of NMFS are known to exist in the vicinity of the proposed project. As such, no further coordination with NMFS Protected Resources Division was needed.

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

A consultation letter was sent to the DC SHPO on December 22, 2009, describing the proposed wetland and resident Canada goose management plan. A response was received on February 1, 2010, indicating that Anacostia Park is eligible for listing on the NRHP and the DC Inventory of Historic Sites.

In accordance with Section 106 of the NHPA, the NPS sent a copy of the draft plan/EIS to the Maryland and DC SHPOs, with a request for concurrence with a 'no adverse effect' determination for certain elements of the selected action. On August 24, 2011, the Maryland SHPO responded with their determination that there are no historic properties affected by the selected action in Maryland.

After subsequent consultation, the DC SHPO responded on January 4, 2013, indicating their concurrence with the 'no adverse effect' determination based on the following conditions: 1) Continued Section 106 consultation on the proposed ground disturbing activities' effects on archaeological resources; 2) Archaeological identification survey, and /or geoarchaeological survey if warranted; 3) mitigation of

adverse effects if such cannot be avoided; and 4) reporting of archaeological investigations following NPS and District guidelines. Copies of the correspondence documenting completion of Section 106 compliance can be found in appendix A of the plan/EIS.

CONCLUSION

Based on the above factors and considerations, the selected action best meets the purpose and need of the plan/EIS while fulfilling the NPS statutory mission and responsibilities. The selected action includes all practical means to avoid and minimize environmental harm from implementation of the selected alternative have been incorporated, as described in the final plan/EIS and this Record of Decision.

The required “no-action period” before approval of the ROD was initiated on December 19, 2014, with the U.S. Environmental Protection Agency’s Federal Register notification of the filing of the final plan/EIS (79 FR 244)

The official responsible for implementing the selected action is the Superintendent of National Capital Parks-East, Washington, D.C.

Approved by:



Robert A. Vogel, Regional Director
National Capital Region, National Park Service

6-29-16
Date

LIST OF ACRONYMS AND ABBREVIATIONS

BMP	best management practice
CFR	Code of Federal Regulations
E&S	erosion and sediment
NCR-EPMT	National Capital Region Exotic Plant Management Team
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
PEPC	Planning, Environment, and Public Comment
plan/EIS	Anacostia Park Wetlands and Canada Goose Management Plan / Environmental Impact Statement
RFK	Robert F. Kennedy
ROD	Record of Decision
SFRA	Special Flight Rules Area
SHPO	State Historic Preservation Office
the District	Washington, DC
the park	Anacostia Park
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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ATTACHMENT

Non-Impairment Determination for the Selected Action

By enacting the National Park Service (NPS) Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of Interior and the NPS to manage units “to conserve the scenery and the natural and historic objects and wild life therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations” (16 USC § 1). *NPS Management Policies 2006*, Section 1.4.4, explains the prohibition on impairment of park resources and values:

While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures the Park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The NPS has discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park (NPS 2006 sec 1.4.3). However, the NPS cannot allow an adverse impact that will constitute impairment of the affected resources and values (NPS 2006 sec 1.4.3). An action constitutes impairment when its impacts, in the professional judgment of the responsible NPS manager, would “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values” (NPS 2006 sec 1.4.5). To determine impairment, the NPS must evaluate the “particular resources and values that will be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts (NPS 2006 sec 1.4.5).

Section 1.4.5 of *Management Policies 2006* states:

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

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

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

Pursuant to the NPS Guidance for Non-Impairment Determinations and the NPS National Environmental Policy Act (NEPA) Process¹, the non-impairment determination for the selected action is included here as an attachment to the Record of Decision (ROD). The selected action which will become the Wetlands and Resident Canada Goose Management Plan (the plan) for Anacostia Park in Washington, DC is described in detail in the ROD. This plan combines the most aggressive wetlands management techniques including intensive resident Canada goose management measures. It consists of numerous component actions that will be implemented to achieve management goals. This non-impairment determination only evaluates those actions which will be implemented directly as a result of the ROD for this plan, and which may not require additional analysis, planning, and/or compliance.

Also per the guidance, the non-impairment determination has been completed for all resource impact topics analyzed in detail in the final Anacostia Park Wetlands and Canada Goose Management Plan / Environmental Impact Statement (plan/EIS); however, a non-impairment determination is not made for visitor experience or park operations because they do not constitute park resources and values subject to the non-impairment standard.

SOILS

The Anacostia Watershed has seen major alterations to its soil from the past 150 years of development. Major alterations of the tidal portion of the Anacostia River by the U.S. Army Corps of Engineers began in the 1920s and left fill materials (Udorthents soils) along much of the riparian buffer in the District portion of the Anacostia River. The major concern with respect to soils is erosion. Soil erosion occurs along the Anacostia River and its tributaries from the large volume of stormwater in the system. Erosion has occurred in the tributaries from urban runoff and flash floods. Soil surrounding the outfall pipes along the seawall has eroded away due to the high velocity of the water spilling into the river. A seawall runs along the east and west bank of the Anacostia River. The seawall has failed in various areas. The loss of soil has created large scour holes behind the seawall, particularly in areas along the river bank below the CSX railroad tracks near the park headquarters. Construction along the river has also resulted in erosion of soils. Some small-scale erosion occurs due to the tidal action on the mud flats.

The plan provides the NPS with tools to dissipate erosive forces associated with waves, currents, rainfall/runoff, and obstacles in the river. Soft armoring (e.g., coir fiber logs, straw bales, or brush bundles planted with native vegetation; pre-seeded bog mats) will be used in restored wetland areas to protect wetland edges. To address issues created by upland runoff, the park will monitor for rills and fill and stabilize them so that runoff enters wetlands as sheet flow instead of concentrated, erosive flows. Structures or natural obstacles which appear to increase erosion downstream by redirecting flows to other unstable areas and blocking the transport of sediments along the shoreline will be removed. The NPS will also work with the District Harbormaster to enforce the no wake zone in the areas where the wetland edge may be affected by wakes from passing boats or by flash, or surge, flows from stormwater runoff. Combined these techniques are intended to reduce surface water runoff and associated erosion, thus reducing actual soil loss during rain events. These activities will also minimize the effects of wave action which undercuts the banks and beaches, thereby reducing the potential for bank slumping and the removal, transport, and deposition of the bank sediments along the shoreline.

In addition, techniques to improve wetland vegetation and modify habitat for resident Canada goose control (e.g., high density planting efforts, new and expanded vegetative buffers along the Anacostia River, goose exclusion fencing and vegetative barriers) will have indirect benefits for soils. The management of the resident Canada goose population at target densities identified for meeting wetland

¹ "Guidance for Non-Impairment Determinations and the NPS NEPA Process." National Park Service, 2011.

desired conditions will reduce grazing of shoreline areas by geese, which will in turn decrease loss of turf, terrestrial vegetation, and/or wetland vegetation. These activities will reduce bare ground, stabilize soils adjacent to the river, and minimize soil erosion potential.

Construction activities associated with the preparation of sites for the hydrology, vegetation, and habitat management described previously will result in localized land disturbances such as removal of vegetation, re-grading of sites, exposure of soil and other construction activities that will negatively affect soils. The installation of signage to discourage feeding of Canada geese would contribute to these localized effects. However, these construction-related impacts will be temporary and will be minimized through appropriate best management practices (such as use of silt fences, temporary buffers, overlay materials, and seeding techniques to stabilize soil and prevent wind and water erosion). Depending on the total area of soil disturbed, the NPS may also need to prepare erosion and sediment plans, a revegetation plan, or other documents and permits required in the District. As a result, many of these activities would have no discernible to small, detectable impacts on the rate of localized soil erosion or the ability of soils to support native vegetation.

Despite short-term soil disturbances during preparation of sites for hydrology, vegetation, and resident Canada goose management, mitigation will be employed to slow the associated rate of soil erosion and the ability of soils to support native vegetation will be maintained. Ultimately, the improvements in wetlands and reduced resident Canada goose herbivory associated with the selected action will have long-term benefits to park soils and will support the mission of the NPS at Anacostia Park to “protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations.” As a result, the selected action will not result in impairment of soils at Anacostia Park.

HYDROLOGY

The Anacostia River is formed by the confluence of the free-flowing (non-tidal) Northeast and Northwest Branches at Bladensburg, Maryland in Prince George’s County. The Anacostia River system is fed by numerous lateral tributaries and has been altered by a history of construction and dredging. The tidal influence in the Anacostia River extends approximately 1,000 feet upstream of this confluence in both Branches. Flow in many segments of the tidal portions of the river can move either upstream or downstream, depending on tidal conditions. In the downstream portions of the river, hydrodynamics are dominated by the direction and magnitude of the tidal surge. In this location, the Anacostia River acts like a lake or sink due to slow water movement. Because time flushing in the Anacostia is dependent upon the tide, water may reside in the river for extended periods of time before reaching the downstream Potomac River. Hydrologic connections exist between the river and Kenilworth and Kingman Marsh, both of which experience tidal exchanges twice daily. The morphology of the tidal Anacostia River system has been dramatically altered by a history of heavy construction and dredging activities. The hydrology of the Anacostia River is also predicted to be affected by climate change as a result of mean sea level rise, coastal flooding, drought, and the increase in extreme weather events such as intense precipitation and storm events.

The selected action includes techniques to improve the hydrologic function of the Anacostia Watershed. Rills will be monitored, filled, and stabilized, as needed so that runoff enters wetlands as sheet flow instead of concentrated, erosive flows. The removal or modification of structures or natural obstacles that cause erosion or clogging of the marsh will improve the stream and channel flow in the local areas where these obstructions exist. In addition, the plan will result in indirect benefits to hydrology by minimizing the loss of vegetation, revegetating, and stabilizing areas within and along the river through soft-armoring wetland edges; high density planting efforts; new and expanded vegetative buffers along the Anacostia

River; goose exclusion fencing and vegetative barriers; and the management of the resident Canada goose population at target densities identified for meeting wetland desired conditions.

The combination of techniques described will have detectable, localized benefits to hydrology in the Anacostia Watershed by improving stream and channel flow and by creating conditions to capture more stormwater and increase infiltration. This will mimic natural drainage processes; reduce the volume of stormwater runoff that enters the Anacostia River during rain events; and help provide resiliency for the Anacostia River system in the face of potential changes to hydrology associated with climate change.

The Anacostia River and its associated shorelines and wetlands are central to the purpose and significance of Anacostia Park. Improving hydrology of the river in a manner that mimics natural processes and improves stream and channel flow will help not only now, but will also build resiliency for the Anacostia River system in the face of potential changes associated with climate change. As a result, the selected action supports the mission of the NPS at Anacostia Park, which was established to “protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations” and will not result in impairment of hydrology at Anacostia Park.

WATER QUALITY

The water quality of the Anacostia River has been highly degraded (USEPA and NOAA 2009) due to point and non-point source pollution, including refuse from historic toxic contamination, sewer overflows and leaks, and urban stormwater runoff. In addition to these water quality issues, the lower tidal section of the Anacostia as well as Kingman Marsh and tributaries to the Anacostia River within Anacostia Park have been classified by the District as an Impaired Segment under Section 303(d) of the Clean Water Act. Pollutants of concern include, among other things bacteria (including fecal coliform), organics, total suspended solids, metals, oil & grease, and trash. Resident Canada geese contribute to these effects as a result of both herbivory on wetland plants which results in erosion and increased turbidity, but also as a source of fecal coliform. While the effect of fecal matter on the water quality of the Anacostia River has not been studied at the park, it is likely that the contribution of fecal droppings from resident Canada geese is small when compared to other sources of pollution.

The techniques described in the soils analysis to minimize erosion, improve wetland vegetation, and manage resident Canada geese (e.g., soft armoring of wetlands, controlling upland runoff, high density planting efforts, new and expanded vegetative buffers along the Anacostia River, goose exclusion fencing and vegetative barriers, and resident Canada goose population control) will have indirect benefits for water quality at the park. These activities will reduce bare ground and increase vegetated areas, stabilize soils along the river, and reduce erosion and sedimentation which contributes to the current water quality concerns. Improvements to wetlands in the park will also decrease turbidity, improve water clarity, and improve water quality in the Anacostia River as they serve as a trap for nutrients and sediment (and associated pollutants and pathogens binding to sediment) carried by urban runoff from surrounding uplands. Coupled with the control of upland runoff and improved trash management, this should minimize the amount of non-point source pollution reaching the river. Managing a resident Canada goose population at much lower numbers will also reduce the amount of bacteria entering the system, although it unclear how much fecal droppings from geese contribute to the current water quality conditions.

Construction-related activities associated with aspects of the plan described in this analysis will result in localized land disturbances such as removal of vegetation, re-grading of sites, and exposure of soil that will increase erosion potential during implementation. However, these effects will be temporary and minimized through appropriate best management practices (such as use of silt fences, temporary buffers, overlay materials, and seeding techniques to stabilize soil and prevent wind and water erosion).

Depending on the total area disturbed, the NPS may also need to prepare erosion and sediment plans, a revegetation plan, or other documents and permits required in the District. As a result, the potential for water quality to be affected is minimal. If impacts occur, they will be localized, with little to no detectable effects on chemical or biological water quality parameters, including turbidity.

The Anacostia River is central to the purpose and significance of Anacostia Park. Short-term construction activities have the potential to affect water quality during preparation of sites for hydrology, vegetation, and resident Canada goose management. However, mitigation will be employed so effects on chemical or biological water quality parameters are localized and cause little to no detectable effects. Ultimately, the improvements in wetlands and reduced resident Canada goose herbivory associated with the selected action described above will have long-term benefits to water quality by reducing erosion and sedimentation, urban run-off, and non-point sources of pollution that currently affect water quality at the park. This will support the mission of the NPS at Anacostia Park to “protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations.” As a result, the selected action will not result in impairment of water quality at Anacostia Park.

FLOODPLAINS

The 100-year floodplain extends several hundred feet from the River in the park boundary, except the areas surrounding estuaries and tributaries of the Anacostia River. A flood protection levee is located along the east bank of the Anacostia River and extends from Poplar Point to the southwest corner of the Naval District Washington (NDW) Anacostia Annex, approximately 1.84 miles. The majority of the levee is an earthen berm, but approximately 1,100 feet is constructed of concrete. The concrete floodwall is located along the bulkhead of the NDW Anacostia Annex Marina (DCOP 2003). Additionally, a seawall stabilizes portions of both the western and eastern banks of the Anacostia River.

The techniques described in the soils analysis to minimize erosion, improve wetland vegetation, and manage resident Canada geese (e.g., soft armoring of wetlands, controlling upland runoff, removal of structures or natural obstacles, high density planting efforts, new and expanded vegetative buffers along the Anacostia River, goose exclusion fencing and vegetative barriers, resident Canada goose population control, and working with the District Harbormaster to enforce the no wake zone) will have indirect benefits for floodplains at the park. These activities will improve the natural resources of the floodplains in the park by increasing vegetation in localized areas along the river and minimizing erosion that results in soil loss. These improvements will also enhance the ability of the wetlands in the floodplain to attenuate and/or alter flows from periods of prolonged precipitation by storing and gradually releasing floodwaters at lower heights and velocities. Removal of structures in the floodplain will also improve floodplain functions by removing developments that cause an impediment to water movement.

Construction-related activities associated with implementing the aspects of the plan described in this analysis will result in localized land disturbances such as removal of vegetation, re-grading of sites, and exposure of soil that will negatively affect the natural resources and other functions of floodplains. However, these activities will be temporary and their effects minimized through appropriate best management practices (e.g., use of standard construction erosion control techniques, preparation of erosion and sediment plans, a revegetation plan, or other documents and permits required in the District). As a result, impacts are expected to be localized and not affect the overall functionality of the floodplain.

The Anacostia River is central to the purpose and significance of Anacostia Park. Short-term construction activities have the potential to temporarily affect floodplains during preparation of sites for hydrology, vegetation, and resident Canada goose management. However, mitigation will be employed so the overall functionality of the floodplain is not affected. Ultimately, the improvements in wetlands and reduced

resident Canada goose herbivory associated with the selected action described above will have long-term benefits to floodplains by increasing the vegetation, minimizing erosion that results in soil loss, and enhancing the ability of the floodplain to attenuate and/or alter flows. This will support the mission of the NPS at Anacostia Park to “protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations.” As a result, the selected action will not impair floodplains at Anacostia Park.

WETLANDS

The Anacostia River was historically flanked with nearly 2,500 acres of tidal marsh. Most of the areas known today as Anacostia Park, including Kingman Marsh, Kingman Island, and Kenilworth Marsh, were created or enlarged by the U.S. Army Corps of Engineers during reclamation work designed to improve navigation by channeling and containing the river within a stone seawall. Numerous restoration efforts by various federal, local, and community organizations have been completed, are currently underway or are scheduled for the Anacostia River and its tributaries. Many of these restoration efforts are located either within or adjacent to Anacostia Park, including Kenilworth Marsh, Kingman Marsh, Anacostia River Fringe Wetlands, Heritage Island Wetlands, Pope Branch, Hickey Run, Watts Branch, and Poplar Point. Although wetland habitats are being restored within Anacostia Park, some are being damaged in part by resident Canada geese that are overgrazing the wetland plants.

The purpose, need, objectives, and desired conditions for wetlands management at the park are all tied to restoring, protecting, and maintaining wetlands systems, their functions, and their values in a predominantly self-sustaining condition. The selected action provides the NPS with a variety of tools to meet these goals, with management of the resident Canada goose population at target densities to decrease browsing on wetland vegetation as a key component. Resident Canada geese exert a higher degree of grazing pressure on wetlands over migratory geese, because they typically feed year round on seedlings, plants, propagules, and roots (Coluccy 2009). Coupled with the use of goose exclusion fencing, planting vegetative buffers, and a scare and harassment program, decreased browsing associated with a smaller, better distributed resident Canada goose population is expected to reverse the effects of previous overgrazing, as documented in studies in the park (Krafft et al. 2013) and the nearby Patuxent River (Haramis and Kearns 2006). If the resident Canada goose population can be managed during the growing season of wetland vegetation (typically March through November along the Anacostia River), there will be at least half a growing season for wetland vegetation to actively recover from goose herbivory activities. Therefore, a recovery period for wetland vegetation that immediately follows resident Canada goose removal may allow the vegetation to become more resilient (through increased rootmass and propagules) to goose herbivory by the following spring.

In addition to addressing grazing pressures from resident Canada geese, the selected action includes other wetland restoration techniques such as high density planting efforts with more appropriate species selection; removal of invasive plant species; soft armoring around the perimeter of wetlands and other erosion control techniques to control upland runoff and remove/modify structures that negatively affect the marsh; and enforce no wake zones along the river. As described in the soils and hydrology analysis, these techniques will help reduce erosion and sedimentation patterns that affect the creation and maintenance of wetlands, and will create conditions to restore more natural hydrological connections to wetlands. The removal of invasive plant species in wetland areas as part of the selected action will provide opportunity for improved growth of native wetland vegetation through reduced competition.

The combination of these techniques will not only increase the areal coverage of the wetland areas, but could also increase diversity of wetlands through natural recruitment (as supported by current hydrology). The selected action will also help offset the predicted effects to wetlands that will result from climate change. Increased buffers along the river can help offset impacts of sea level rise, providing an

opportunity for wetland habitats to migrate inland (Erwin 2009). Removal of invasive plant species that act as key stressors on wetland ecosystems will also provide more resiliency in the face of climate change, which is expected to result in changes in invasive species colonization.

Construction-related activities associated with implementing the aspects of the plan described in this analysis will result in localized land disturbances such as removal of vegetation, re-grading of sites, and exposure of soil that will have limited, localized negative effects on the abundance of wetland vegetation. However, these activities will be temporary and their effects on the abundance of wetland vegetation will be minimized through appropriate best management practices as described in the soils, hydrology, and water quality analysis. As a result, while construction-related activities may have some limited, localized effects on the abundance of wetland vegetation, there would be no observable or measurable changes to wetlands in the park, or their ability to support vegetation or wildlife.

Anacostia Park is significant, in part, because it protects one of the few remaining tidal wetlands in the nation's capital and reflects changing attitudes towards wetlands. The wetlands in the park are important components of the naturalized shoreline that provides habitat for native plants and animals, and the recreational and educational opportunities that also make the park significant. While short-term construction activities have the potential to temporarily affect wetlands during preparation of sites for hydrology, vegetation, and resident Canada goose management, mitigation will be employed so there would be no observable or measurable changes to wetlands in the park, or their ability to support vegetation or wildlife. Ultimately, the techniques described in this analysis are intended to meet the purpose, need, objectives of wetland management at the park, which are tied to restoring, protecting, and maintaining wetlands systems, their functions, and their values in a pre-dominantly self-sustaining condition. The selected action will have a beneficial impact on wetlands at the park because it will slow the current erosion rate and reduce riverine wetland loss in the park; improve the abundance, diversity, and functionality of wetlands; and create resiliency in the face of climate change. This will support the mission of the NPS at Anacostia Park to "protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations." As a result, the selected action will not result in the impairment of wetlands in Anacostia Park.

AQUATIC RESOURCES

Historically, the Anacostia River was a valuable spawning ground and nursery area for anadromous fish and provided habitat for other aquatic species as well. Today the fishery remains below its potential because of poor water quality. Aquatic resources that have been observed within Anacostia Park include benthic invertebrates, shellfish, and finfish. Aquatic life can be harmed when dissolved oxygen levels decrease below 5 milligram per liter of dissolved oxygen (USEPA 2000). The Anacostia River's dissolved oxygen regularly falls below the standard and at times it approaches zero (DCFWD 2001).

Wetlands provide diverse aquatic habitat for benthic macroinvertebrates and finfish in the Anacostia River. Wetland plants also serve as a food source (detritus) for aquatic wildlife. Long-term improvements to wetlands described in detail in the 'Wetlands' analysis above will provide additional detritus and create a more complex habitat to support benthic macroinvertebrates and finfish species, including the four finfish species listed by the District Wetlands Action Plan (WAP) and observed at Anacostia Park (alewife [*Alosa pseudoharengus*], American eel [*Anguilla rostrata*], American shad [*Alosa sapidissima*], and blueback herring [*Alosa aestivalis*]). Habitat quality for aquatic wildlife will also be enhanced by improvements in water quality described in detail in the 'Water Quality' analysis (e.g., decrease turbidity, improve water clarity, reduce nutrients and sediment and associated pollutants carried by urban runoff, reduce bacteria entering the system); and increased shade and the associated reductions in surface water temperatures in areas immediately adjacent to improved shoreline buffer vegetation and wetlands.

Construction-related activities associated with some aspects of this plan (e.g., removal/modification of obstacles in the river, high density plantings) will result in localized disturbances to submerged lands during implementation. This could directly affect and/or displace benthic macroinvertebrates and finfish. However, most fish species are mobile and able to temporarily avoid submerged areas during construction. Localized terrestrial and submerged land disturbances such as removal of vegetation, re-grading of sites, and exposure of soil associated with these and other vegetation, hydrology, and resident Canada goose populations, could also affect water quality as result of increased erosion potential. However, these activities will be temporary and their effects will be minimized through appropriate best management practices (e.g., use of standard construction erosion control techniques, preparation of erosion and sediment plans, a revegetation plan, or other documents and permits required in the District). As a result, as described in the 'Water Quality' analysis, there will be little to no detectable effects on chemical or biological water quality parameters, including turbidity. Therefore, while construction-related activities may have some limited, temporary localized effects on aquatic habitat and wildlife, they will not interfere with natural processes sustaining aquatic resources. Foraging, reproduction, and the viability of benthic macroinvertebrates and finfish will not be affected.

The Anacostia River and the associated aquatic resources are central to the purpose and significance of Anacostia Park. Short-term construction activities have the potential to temporarily affect aquatic resources during preparation of sites for hydrology, vegetation, and resident Canada goose management. However, mitigation will be employed so implementation will not interfere with natural processes sustaining aquatic resources, and reproduction and the viability of benthic macroinvertebrates and finfish will not be affected. Ultimately, the improvements in wetlands will have long-term detectable improvements in food sources, habitat quality, and natural processes sustaining benthic macroinvertebrates and finfish in the park. This will support the mission of the NPS at Anacostia Park to "protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations." As a result, the selected action will not result in impairment of aquatic resources at Anacostia Park.

VEGETATION

Within Anacostia Park, the types of terrestrial vegetation and habitat include riparian buffers, upland forests, open meadows, and planted landscaped areas (NPS 2004). There are also emergent wetlands and forested wetland habitats in the park. The District WAP has stated that invasive and alien plant and animal species are the overall biggest threat across both terrestrial and aquatic habitat types within the District (DCDE 2006). Invasive plant species in the park include bush honeysuckles (*Lonicera* spp.), common reed, English ivy (*Hedera helix*), Japanese barberry (*Berberis thunbergii*), Japanese honeysuckle, Japanese knotweed (*Polygonum cuspidatum*), mile-a-minute (*Persicaria perfoliata*), multiflora rose (*Rosa multiflora*), tree of heaven, and wisteria (*Wisteria sinensis*). These species are targeted for control by the NPS.

Habitat modification techniques (e.g., planting 25- to 50-foot buffers along the shorelines of the river throughout the park; increasing the width of existing vegetated buffers; planting species that are less desirable to geese (for example, arrow arum); planting persistent, native species with high root mats and variable heights in high density) are proposed as part of the selected action for resident Canada goose management. Soft armoring (e.g., coir fiber logs, straw bales, or brush bundles planted with native vegetation; pre-seeded bog mats) is also proposed to protect wetland edges. These aspects of the plan will not only directly result in an increase in the abundance and diversity of native vegetation in the park, but also, when coupled with invasive plant control, will decrease the likelihood that invasive vegetative species will encroach and persist in these locations.

Vegetation will also benefit from maintaining the resident Canada goose population at target densities, as this will substantially decrease grazing of shoreline and terrestrial vegetation (including turf feeding areas). Increased physical barriers (such as vegetated barriers) along the water's edge will also restrict the movements of geese between the water and shore and will provide a beneficial impact by limiting the potential for future overgrazing of these areas.

The selected action will require some localized vegetation removal associated with the re-grading of sites or construction activities associated with implementing hydrology techniques, vegetation techniques, and wetland restoration techniques. However, vegetation disturbance will be temporary and minimized as much as possible. The areas will also be revegetated immediately following site preparation. As a result, there may be limited loss of vegetation in the park, but there would be no detectable change in the diversity or functionality of vegetation and plant populations in the park.

The purpose and significance of Anacostia Park both tie back to protecting natural resources, including native plants, in the midst of the development in the District of Columbia. While implementation of the selected action has the potential to disturb localized vegetation, these disturbances will be temporary, minimized, and revegetated immediately, resulting in no detectable change in the diversity or functionality of vegetation and plant populations in the park. Habitat modification, vegetation, and resident Canada goose population management techniques under the selected action will ultimately result in increased native plant coverage and decreased invasive plant coverage in the park. As a result, the plan will support the mission of the NPS at Anacostia Park "protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations." As a result, the selected action will not result in impairment of vegetation at the park.

WILDLIFE

The diversity of habitat within Anacostia Park, including riparian floodplains, emergent and forested wetlands, upland forests, and open meadows, provide a unique natural environment for wildlife in an otherwise urban area. While the nature of the area reduces habitat suitability for secretive or interior dwelling species, adequate food sources, escape cover, and available breeding habitats, the National Capital Parks - East has documented 188 bird, 50 butterfly, 30 fish, 24 reptile, 18 amphibian, and 17 mammal species as either residents within or migrants passing through Anacostia Park as well as numerous other invertebrates (NPS 2003).

The District Wildlife Action Plan (WAP) identifies species of greatest conservation need and their habitats as well as listing and giving the status and trends of these species and priority habitat types. Currently there are 148 species and 13 priority habitat types listed for the District. Of the listed species of conservation need, a total of 15 birds, five mammals, 13 reptiles, 13 amphibians, four fish, and nine invertebrates have been identified within Anacostia Park.

Wetlands provide habitat and the essentials necessary for a diversity of types and abundance of wildlife species typically associated with wetlands, including the numerous, urban-tolerant wildlife species that are found within the park. Wetland plants serve as a food source (seeds, roots, leaves) for many wildlife species.

Wetland restoration techniques (e.g., high density planting efforts with more appropriate species selection; removal of invasive plant species; soft armoring around the perimeter of wetlands and other erosion control techniques to control upland runoff and remove/modify structures that negatively affect the marsh; removing invasive species; enforcing no wake zones along the river) and resident Canada goose habitat modification techniques (e.g., planting 25- to 50-foot buffers along the shorelines of the

river throughout the park and increasing the width of existing vegetated buffers) will contribute benefits to wildlife by enhancing native habitat within the park. The resident Canada goose population will also be intensively managed as part of this alternative, which will reduce the current excessive browsing on wetland and terrestrial vegetation. Removal or modification of the structures/obstacles in the river causing erosion would allow areas to revert to natural conditions and functions over time. The combination of enhancing the freshwater tidal ecosystem and reducing the resident Canada goose population will allow wetlands to reach the desired condition of a predominantly self-sustaining systems (containing advanced seral- (or successional-) stage habitat conditions) and will improve habitat for wildlife, including migratory Canada geese that use the park on a seasonal basis and the species listed by the District WAP as species of greatest conservation need which have been observed at Anacostia Park. The selected action will increase the areal coverage of the wetland areas, and increase diversity of and improve wetlands and shoreline vegetation as cover, foraging, and nesting habitat for wildlife species.

Improved quality of habitat will indirectly benefit wildlife species as well as a result of an increase in food sources (seeds, roots, leaves, benthic macroinvertebrates, and finfish). Specifically, aquatic birds (ducks and migratory geese, loons, grebes, coots, rails), wading birds (herons, bitterns, egrets), gulls/terns, and other permanent residents (osprey, kingfisher, double-crested cormorant) that utilize wetlands and their fringe habitat will benefit from improved wetland areas as would mammals (beaver, river otter, muskrat, mink, raccoon), reptiles (turtles, snakes, lizards), amphibians (toads, frogs, salamanders) and numerous invertebrates such as butterflies and dragonflies.

Some activities associated with implementation of the selected action, including scare and harassment techniques and construction required for hydrology and vegetation management, have the potential to disturb or displace wildlife as well. Visual deterrents and/or dogs will be used to manage the distribution of resident Canada geese, and along with the noise and heavy equipment needed to implement some actions, may cause wildlife to temporarily avoid a particular area. Migratory Canada geese would not be affected by scare and harassment techniques because these actions would take place when migratory flocks have left the park. Land disturbances associated with construction activities also have the potential to remove vegetation that serves as habitat for wildlife. Wildlife in the park are accustomed to urban sounds and disturbances, and revegetation will occur immediately after construction is complete. As a result, while there may be localized and occasional responses to disturbance by some individuals, the selected action will not interfere with overall population levels, and sufficient habitat will remain to maintain the viability of all species.

The purpose and significance of Anacostia Park both tie back to protecting natural resources, including habitat for animals, in the midst of the development in the District of Columbia. While implementation of the selected action has the potential to disturb local wildlife and wildlife habitat, wildlife in the park are accustomed to urban sounds and disturbances, and the effects will be temporary, minimized, and habitats will be revegetated immediately. As a result, the selected action will not interfere with overall population levels, and sufficient habitat will remain to maintain the viability of all species. Habitat modification, vegetation, and resident Canada goose population management techniques under the selected action will ultimately increase the areal coverage of the wetland areas, and increase diversity of and improve wetlands and shoreline vegetation as cover, foraging, and nesting habitat for wildlife species. Improved quality of habitat will indirectly benefit wildlife species as well as a result of an increase in food sources (seeds, roots, leaves, benthic macroinvertebrates, and finfish). As a result, the plan will support the mission of the NPS at Anacostia Park “protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations.” Therefore, the selected action will not impair wildlife at the park.

RESIDENT CANADA GEESE

The total number of Canada geese (migratory and resident populations) in North America has increased from 980,000 in 1960 to 3,734,500 in 2000 (mid-winter survey) (USFWS 2005). The resident Canada goose was thought to be extinct from the 1930s to 1960s, but is now considered overabundant in many regions. The resident Canada goose populations are growing more rapidly than migrant species. In the Atlantic Flyway, the resident Canada goose population increases 6 to 14 percent annually (NPS 2004). For the population within the park, NPS conducts annual surveys. In July 2009, the goose counts were conducted for nine days spanning three weeks during the flightless period. The 2009 mean goose count within these nine days at four sectors (Kenilworth, Kingman, Heritage Island, and Anacostia East locations) was 492 geese, with a range of 175 to 667 total geese per day for all sectors (NPS 2009). In June 2010, the goose counts were conducted for five days spanning two weeks during the flightless period. The mean for 2010 within these five days at four sectors (Kenilworth, Kingman, Heritage Island, and Anacostia East locations) was 564 geese, with a range of 94 to 619 total geese per day for all sectors (Bates 2010). The goose counts in 2011 were conducted during six days. The counts at Kingman for 2011 were the highest (at 445 total geese) since the count began in 2009. From 2004 through 2011, Kingman represents the location with the highest number of geese. Figures 30 through 32 of the EIS present the approximate goose count locations, areas, and zones for counts at Kenilworth Marsh, Kingman Marsh, Heritage Island Wetlands, and Anacostia Park East.

To help protect and restore sensitive wetlands in the park, the selected action includes habitat modification and resident Canada goose population management techniques to improve the distribution and reduce the number of resident Canada geese in the park. Habitat modification techniques proposed as part of the selected action are intended to make areas less attractive to resident Canada geese and include planting buffers, installing and maintaining exclusion fencing, and making new plantings attractive by using species less desirable to resident Canada geese. These techniques, when combined with the potential use of scare and harassment program, are intended to minimize impacts on wetlands in the park by re-distributing geese to less sensitive locations. The resident Canada goose population inside Anacostia Park will be managed to an initial population goal of 54, using reproductive control, round-up, capture, and euthanasia and lethal removal with firearms, if needed. It is expected it will take several years to reach this goal, and ultimately, the initial target of 54 resident Canada geese could be adjusted depending on the vegetative response to the associated reduction in grazing pressure. Over the long-term, these same techniques will be used to maintain a resident Canada goose population in the park consistent with desired conditions for a manageable population that allows restored wetlands within the park to function as a system. A smaller resident Canada goose population will result in less competition for nesting and foraging resources and will also help offset pressures associated with climate change. For example, fewer resident Canada geese in the park will minimize the potential for density-dependent (self) regulation of the population that may occur from sea level rise and the inundation of tidal flats used by geese for foraging and nesting.

While implementation of the plan will result in population level effects on resident Canada geese within the park and surrounding areas, the population will remain healthy, viable, and self-sustaining. A smaller, yet stable resident Canada goose population will minimize competition for nesting and foraging resources, and will help offset potential effects of climate change. This will support the mission of the NPS at Anacostia Park to “protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations.” As a result, the selected action will not result in impairment of the resident Canada goose population at Anacostia Park.

HISTORIC STRUCTURES AND DISTRICTS

Two historic structures within the project area have been listed on the National Register of Historic Places (NRHP): Kenilworth Aquatic Gardens and the Langston Golf Course Historic District. In addition to these resources, two other resources have been determined as eligible for the NRHP: the Anacostia Shoreline Pump Station and Anacostia Park itself.

Several management actions will be implemented adjacent to National Register-listed or eligible historic structures or districts or within the boundaries of historic districts. Wetland management techniques include the management of invasive plant species, the buffering of the shoreline, and high density planting. Future resident Canada goose management techniques under alternative B include shoreline buffers throughout Anacostia Park, installation of goose exclusion fencing, soft armoring around the perimeter of restored wetlands, and an increased width of vegetative buffers. While these techniques will affect the setting in the vicinity of Kenilworth Gardens, Langston Golf Course, and Anacostia Park as whole (including other potentially eligible resources), these actions will not diminish the character-defining features or the overall integrity of these historic resources.

Throughout the development of the EIS, NPS consulted with the Historic Preservation Office of the District of Columbia's Office of Planning (DC SHPO) and the Maryland State Historic Preservation Office (SHPO). As a result of consultation, the Maryland SHPO indicated no historic properties will be affected. The DC SHPO stated that implementation of the plan will not affect the built environment, and concurred with the NPS 'no adverse effect' determination, based on the following conditions (see appendix A of the plan/EIS):

- 1) Continued Section 106 consultation on the proposed ground disturbing activities' effects on archaeological resources (those elements or techniques requiring additional compliance and not evaluated in this non-impairment determination);
- 2) Archaeological identification survey, and /or geoarchaeological survey if warranted;
- 3) mitigation of adverse effects if such cannot be avoided; and
- 4) reporting of archaeological investigations following NPS and District guidelines.

While there will be some potential for impacts on Historic Structures and Districts, consultation with the Maryland and DC SHPOs indicated there would be no historic properties affected and concurrence with the determination of 'no adverse effect, respectively, under Section 106 of the NHPA. The concurrence from the DC SHPO was predicated on the implementation of mitigation to ensure there would be no loss of character-defining features or information potential of known and unknown resources. As a result, Historic Structures and Districts will continue to be protected in a manner consistent with the purpose of Anacostia Park to "protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations". Therefore, there will be no impairment of Historic Structures and Districts.

ARCHEOLOGICAL RESOURCES

Archeological sites were identified in what are now park lands as early as the 1880s, but urbanization and land-filling has made it difficult to investigate these sites in modern times. Approximately 45 sites have been identified and given site numbers along the Anacostia River, including 26 sites located in the park.

Some elements of the selected action have the potential to affect archeological resources as a result of ground-disturbing activities, including the installation of erosion control measures; installation signage to

discourage feeding of Canada geese; high density planting efforts; new and expanded vegetative buffers along the Anacostia River; and goose exclusion fencing. Some of these activities will occur near known archeological sites and others could affect unknown archeological resources. These activities could result in some loss of archeological resource integrity, but not to the extent that there would be loss of any character-defining features or information potential. As described previously, the Maryland SHPO indicated no historic properties would be affected, and the DC SHPO concurred that implementing these elements of the plan would have ‘no adverse effect’ on archeological resources under Section 106 of the National Historic Preservation Act, based on the conditions discussed above (see also appendix A of the PLAN/EIS):

As a result, these sites will continue to be protected in a manner consistent with the purpose of Anacostia Park is to “protect natural and nationally significant historic resources, promoting and regulating the use of the area in such a manner as will leave them unimpaired for the enjoyment of future generations”. Therefore, there will be no impairment of archeological resources.

LIST OF ACRONYMS AND ABBREVIATIONS

NCR-EPMT National Capital Region Exotic Plant Management Team
NDW Naval District Washington
NEPA National Environmental Policy Act
NPS National Park Service
NRHP National Register of Historic Places

Organic Act..... National Park Service Organic Act of 1916

plan/EIS..... Anacostia Park Wetlands and Canada Goose Management Plan / Environmental Impact Statement

ROD Record of Decision

SHPO State Historic Preservation Officer

the District..... Washington, DC

WAP..... Wetlands Action Plan

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