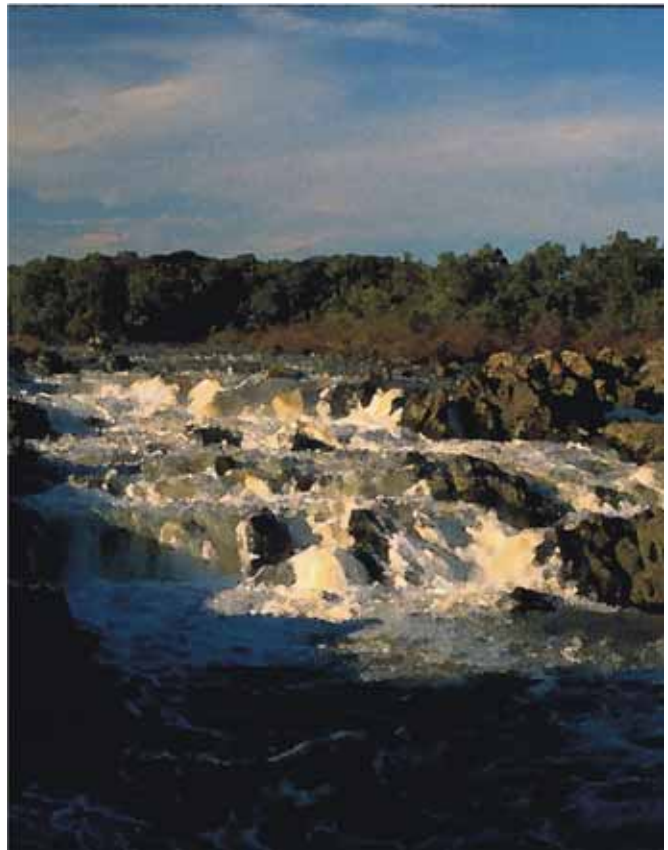


# CHAPTER 4

## Environmental Consequences



Great Falls Park Draft GMP/EIS

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## CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

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This chapter describes the potential environmental impacts of the two management alternatives prepared for Great Falls Park. As discussed in Chapter 2 of this document, these are:

- Alternative A – Status Quo/Continuation of Current Conditions
- Alternative B – Preferred Alternative

The resource areas assessed in the analysis of environmental consequences were identified based on legislative requirements, resource knowledge and information, and concerns identified by the public and governmental agencies during scoping.

Environmental Consequences discussed in this GMP/EIS are formatted in accordance with the NPS Director's Order 12 – NEPA Policy Manual. Since the EIS considers management alternatives, many of the potential impacts to individual resource areas are common to both alternatives. These are identified in the environmental consequences discussion.

The discussion in this chapter follows the “tiered” approach recommended in 40 C.F.R. Section 1502.14 that encourages agencies to tier their EISs, working from broad, general NEPA environmental impact analysis documents to more site-specific ones in decision making. The Great Falls Park GMP/EIS is a large-scale plan that identifies a broad direction. Therefore, some of the discussions in this chapter are generalized. In the future, additional environmental analysis may be conducted pursuant to NEPA, in instances where a specific action or activity, consistent with the goals and objectives of the GMP/EIS, is proposed.

This section also presents analyses of potential cumulative impacts that could result from a proposed action when considered together with any reasonably foreseeable projects that may affect the natural and human environment in the study area.

## 4.1 IMPACTS COMMON TO ALL ALTERNATIVES

There are several actions proposed in the plan that are common to all alternatives. These would have similar impacts under each alternative. The common actions and their potential impacts are discussed for the resource areas including land use and socio-economic conditions, cultural resources, natural resources, and transportation.

### 4.1.1 *Impacts on Land Use and Socio-Economic Conditions*

#### Boundaries and Land Protection

There are no boundary changes proposed under the current plan. In the future, the park may undertake establishing a revised boundary based on the criteria identified in Chapter 2 of this document. Establishing boundaries does not necessarily constitute a proposal to purchase the land within those boundaries. A variety of land protection methods are available within the authorized boundaries of the park units. In addition to fee simple acquisition, scenic, conservation, and access easements might be acquired or local zoning and cooperative planning and management could be employed.

#### Visitation and Visitor Activities

As discussed in Chapter 1 of this document, NPS management policy for Park Facilities requires that amongst others, visitor and administrative facilities be harmonious with park resources, esthetically pleasing, universally designed, and as welcoming as possible to all segments of the population. Further, one of the park's mission goals is to ensure that, "visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of park facilities, services, and appropriate recreational opportunities" (Service Mission Goal IIa). The following actions are aimed to support these policies and are common to both alternatives. Their potential impacts on either visitation or the experience of visitors to the park would be as follows:

- *Improve visitor center to enhance its appearance including the courtyard, use interior space more efficiently, modify entrance ramps to meet ADA requirements, and rehabilitate existing restroom facilities at the visitor center and comfort facility:* During renovations to the visitor center and comfort facility, there would be minor, short-term adverse impacts on visitor experience of these facilities. However, over the long-term, once these renovations are completed, visitors would benefit from the improved facilities.
- *Improve visual quality, accessibility in compliance with ADA, and visitor safety at the three existing overlooks:* There would be minor, short-term adverse impacts on visitors when the overlooks are improved. These impacts could include limited opportunities to view the Great Falls during renovations. Over the long-term, however, these measures would enhance visitor experience at the Great Falls.
- *Improve signage to identify allowable uses on trails:* This improvement would help with visitor orientation as well as reduce conflicts between various user groups on the park's trail system. Provided these signs are designed to ensure that they are compatible with

the park's natural condition and do not add visual clutter, this measure would result in a positive impact on visitor experience at the park.

- *Public access to the Potomac River from the shoreline adjacent to the northern tip of the Flake to the northern tip of the Sand Box climbing area would be closed. Exceptions would be boaters and fishermen entering at Fisherman's Eddy, and in the Sand Box area, individuals who rappel in and climb out:* This measure would result in a minor adverse impact on a casual visitor's experience, since access to the river would become more restrictive. For boaters, fishermen and climbers, the impact is anticipated to be negligible. Overall, this action would result in a positive impact as it is anticipated to reduce the accidental injuries that currently occur in this area.

### Neighboring Population and Socio-Economic Conditions

The socio-economic characteristics of the area surrounding the park primarily includes established residential communities, with institutions interspersed within. Changes in the management and operations of the park in accordance with the two alternatives are not anticipated to result in a change in population characteristics in the study area, or result in a large number of new jobs. Therefore, impacts anticipated on the neighboring population and socio-economic conditions would be negligible under the two alternatives.

### Conclusion

Under measures that are common to both alternatives, there would be temporary and short-term impacts on land use resources, including visitation and visitor activities, which would be related to renovation activities. Over the long-term, the proposed measures are anticipated to result in positive impacts as park facilities would be improved consistent with NPS management policies. The proposed measures (that are common to both alternatives) would not impact the socio-economic characteristics of the neighboring areas, nor are there any adverse impacts anticipated from boundary changes based on the criteria that would be used to acquire more land. Therefore, there would be no impairment of land use and socio-economic resources under measures that are common to both alternatives.

#### **4.1.2 Impacts on Cultural Resources**

As discussed in Chapter 1 of this document, NPS management policies require that the park preserve and foster appreciation of the cultural resources in its custody. Further, one of the park's mission goals is to protect, preserve, and maintain cultural resources within a good condition, and manage them within their broader cultural context. The following actions that are common to both alternatives are aimed to support these policies. Their potential impacts on cultural resources within the park would be as follows:

- *Provide additional protection to natural and cultural resources by reducing conflicts with users on trails and improve signage along trails:* These measures would result in a positive impact on archaeological and historical resources in the park. Visitors would be guided away from sensitive areas due to improved signage along trails, and additional protection measures would be undertaken in areas where trails conflict with natural and cultural resources.

- *Develop an Integrated Resource Management Plan (IRMP) to protect sensitive cultural resources from potential vegetation damage and adopt best management practices (BMP) to protect cultural resources that are either listed, or eligible for listing, on the National Register:* These measures are anticipated to result in a beneficial impact since the IRMP and BMPs would seek to minimize potential damage from trees and other vegetation on cultural resources, including the Patowmack Canal and Matildaville.
- *Public access to the Potomac River from the shoreline adjacent to the northern tip of the Flake to the northern tip of the Sand Box climbing area would be closed. Exceptions would be boaters and fishermen entering at Fisherman's Eddy:* By restricting access in this area and to Fisherman's Eddy, the park would reduce potential damage to the Forge site (located along the access route), resulting in a positive impact on this sensitive cultural resource.

### Conclusion

The measures that are common to both alternatives are anticipated to benefit the protection and preservation of cultural resources within the park, consistent with NPS management policies. Therefore, there would be no impairment of cultural resources under measures that are common to both alternatives.

### **4.1.3 Impacts on Natural Resources**

As discussed in Chapter 1 of this document, NPS management policies require that the park preserve its natural resources, processes, systems, and values in an unimpaired condition, to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy and learn about them. The following actions that are common to both alternatives are aimed to support these policies. Their potential impacts on natural resources within the park would be as follows:

### Biological Resources

- *Provide additional protection to natural and cultural resources by reducing conflicts with users on trails:* Such measures would reduce potential damage to natural resources (such as the rare species in terrace communities along the River Trail) by focusing on resource protection, and are anticipated to result in a positive impact on biological resources.
- *Develop an Integrated Resource Management Plan (IRMP) to protect sensitive cultural resources from potential vegetation damage and adopt BMPs to protect cultural resources that are listed on the National Register:* An IRMP and BMPs are typically developed to reduce or eliminate potential environmental impacts. During the preparation of the IRMP and BMPs, the park would seek to protect sensitive cultural resources without adversely impacting biological resources. Therefore, this measure is not anticipated to result in an adverse impact.

### Air Quality

- *Add a “fast pass” lane and technology for pass holders at the entrance station:* This measure would result in a negligible benefit to local air quality. A “fast pass” lane is anticipated to result in an improved rate of traffic flow at the entrance station, which would reduce vehicle queues and localized engine idling-related vehicular emissions.

### Conclusion

The measures that are common to both alternatives would benefit the preservation of natural resources within the park, consistent with NPS management policies. Therefore, there would be no impairment of natural resources under measures that are common to both alternatives.

#### **4.1.4 Impacts on Transportation Systems**

According to NPS management policies, the NPS should seek better transportation solutions, which preserve the natural and cultural resources in its care while providing a high-quality visitor experience. The following actions that are common to both alternatives are aimed to support these policies. Their potential impacts on transportation systems within and adjacent to the park would be as follows:

- *During severe crowding initiate a one vehicle out, one vehicle in policy:* When this occurs, visitors waiting in line would be informed to expect delays. This would continue to be a minor adverse impact on visitor access to the park.
- *Enhance emergency access at Sandy Landing:* The Sandy Landing boat ramp is currently unable to accommodate some of the equipment used by the Company 12 Fire Station during rescues, and access to Sandy Landing can be difficult at times due to the condition of Matildaville Trail between the Quarry and Sandy Landing. Enhancing the emergency access at Sandy Landing would benefit emergency crews by improving their ability to reach Sandy Landing and subsequently launching boats for rescues. This would result in a minor improvement to visitor safety.
- *Add a “fast pass” lane at the entrance station for pass holders:* The addition of a “fast pass” lane at the gatehouse, where pass holders would swipe their cards to gain access, would increase the processing rate, and reduce the waiting time at the gate for all visitors. Provided the parking lots are not full, queues that currently form during peak arrival periods would be reduced or potentially eliminated. This would result in a positive impact on visitor access to the park.

### Conclusion

While the transportation measures that are common to both alternatives would not result in any adverse impact on natural or cultural resources, the one vehicle out, one vehicle in policy would continue to result in a minor adverse impact on visitor experience. However, the addition of the “fast pass” lane would improve accessibility and visitor experience at the only vehicular entrance to the park. Overall, there would be no impairment of the park’s resources under transportation measures that are common to both alternatives.

## 4.2 ALTERNATIVE A – STATUS QUO/CONTINUE CURRENT CONDITIONS

This section of the document identifies potential impacts on resources that could result under Alternative A (Continue Current Conditions).

### *4.2.1 Impacts on Land Use and Socio-Economic Conditions*

#### Land Use

Under Alternative A, there would be no impacts on the surrounding uses. Land uses within the park would continue to function similar to existing conditions.

#### Visitation and Visitor Activities

Under Alternative A, there would be no changes to visitation in the short-term. In the long-term, the projected growth in the region, including Fairfax and Montgomery Counties, would likely result in increasing the number of visitors to the park. Currently, the availability of parking is the biggest determinant on the number of people who can visit the park at a given time. This condition is not anticipated to change in the future, since majority of visitors to the park would visit in a vehicle. Under existing conditions, visitors experience delays in entering the park on an average of 10 to 15 times per year. The addition of the “fast pass” lane is anticipated to alleviate some of this delay. If the visitation increases considerably in the future, there may be additional days when delays are experienced along Old Dominion Drive and potentially Georgetown Pike, resulting in an adverse impact to visitation.

Connecting the park to regional trails could mitigate some of this potential pressure, since visitors could access the park via non-motorized modes of transportation. However, depending on the increase in visitation demand, NPS could explore alternative means of providing access to the park in the future, including connecting Great Falls Park to a potential regional shuttle system.

Connecting the park to regional trails would also provide visitors additional recreational opportunities. Visitors could arrive at the park on these trails, or start at the park and explore the larger region. The additional recreational opportunities would result in a positive impact on visitor experience.

Other than the impacts identified under Section 4.1 (Impacts Common to all Alternatives), there would be minor, short-term, construction-related adverse impacts on visitor experience during renovations to the maintenance facility.

#### Community Facilities - Police, Fire, and Rescue Services

Under Alternative A, during vehicular traffic back-ups along Old Dominion Drive, police, fire and rescue services would continue to experience delays in accessing the park during emergencies. However, there would be a minor improvement to emergency access to the Potomac River due to enhancement of emergency access at Sandy Landing.



### Cumulative Impacts

Under Alternative A, no cumulative Land Use and Socio-Economic impacts are anticipated.

### Conclusion

Under Alternative A, short-term adverse impacts on visitor experience would include potential delays in entering the park, and renovation activities at the maintenance facility. In the long-term, connections to regional trails would expand recreational opportunities for visitors at the park, resulting in a positive impact. Also, in the future, increasing growth in the region could result in increasing visitor demand at the park. Since there is no proposal to increase parking within the park, added demand could increase the number of times when visitors experience delays in accessing the park. While the addition of a “fast pass” lane is anticipated to reduce the number of times visitors experience delays in entering the park, the park would consider new measures, if delays to enter the park do increase due to increased demand in the future. Therefore, Alternative A is not anticipated to result in the impairment of land use resources or visitor experience of the park.

#### ***4.2.2 Impacts on Cultural Resources***

##### Archaeological and Historic Resources

Under Alternative A, as identified under Section 4.1 (Impacts Common to all Alternatives), there would be a positive impact on archaeological and historical resources in the park due to improved signage along trails, and additional protection to natural and cultural resources in areas where trails conflict with these resources. In addition, eliminating social trails in areas of conflict with cultural resources would result in a positive impact.

The use of trails for horseback riding in the vicinity of sensitive resources (such as along Matildaville Trail in the vicinity of the Matildaville ruins) would continue the potential for damage to these resources. Also, in the future, connecting to the regional trail network would increase the usage of trails within the park. Increased usage would increase the potential for damage to sensitive cultural resources such as the historic road traces that comprise some of the trail routes.

##### Viewsheds

Under Alternative A, upgrading the maintenance facility could result in a minor improvement to the visual quality at the main entrance into Great Falls Park. The park should ensure that the improvements undertaken enhance the character of the facility at this entrance location.

### Cumulative Impacts

Under Alternative A, no cumulative impacts are anticipated on Cultural Resources.

### Conclusion

Under Alternative A, there would be a minor positive impact on cultural resources due to the proposed elimination of social trails in areas where these conflict with sensitive resources. However, the continued use of portions of existing trails that are either part of sensitive resources or adjacent to such resources would continue the potential for impairment of these resources.

### ***4.2.3 Impacts on Natural Resources***

#### Geophysical Resources

Under Alternative A, no impacts are anticipated on geophysical resources.

#### Water Resources

Under Alternative A, there would be no new impacts on water resources. The lower level of the visitor center and the two northern parking lots would continue to function within the 100-year floodplain, similar to existing conditions. The potential for flooding at the lower level of the visitor center, that includes staff offices and the food concession stand, would continue.

Also, trail erosion would continue due to regular use, and could impact surface and ground water resources. This would include the use of trails for horseback riding in the vicinity of sensitive water resources (such as near Clay Pond). In addition, in the future, connecting to the regional trail network would increase the usage of trails within the park. Increased usage would increase the potential for damage to sensitive natural resources such as the Difficult Run and Mine Run. To minimize potential impacts, the park would continue to monitor trails and make necessary repairs.

#### Biological Resources

Under Alternative A, as identified under Section 4.1 (Impacts Common to all Alternatives), there would be a positive impact on sensitive natural resources in the park due to improved signage along trails, and additional protection to natural and cultural resources in areas where trails conflict with these resources. In addition, eliminating social trails in areas of conflict with natural resources would result in a positive impact.

#### Air Quality

Under Alternative A, other than those impacts identified under Section 4.1 (Impacts Common to All Alternative), no additional impacts are anticipated on air quality.

#### Noise Levels

Under Alternative A, there would be temporary construction-related noise generated during the renovation of the visitor center and maintenance facility, the impact of which would be negligible.

### Cumulative Impacts

Under Alternative A, the anticipated growth in the region's population could result in increased visitation to the park. This could result in a considerable increase in vehicles waiting to access the park, resulting in a minor adverse impact on localized air quality. Also, the existing natural habitats within the park could be further burdened if the area around the park is developed in response to some of this anticipated regional growth.

### Conclusion

Under Alternative A, there would be potential positive impacts to natural resources due to the proposed elimination of social trails in areas where these conflict with sensitive resources. However, the continued use of portions of existing trails that are adjacent to sensitive resources would continue the potential for impairment of these resources. Also, the anticipated population growth in the region has the potential to result in a minor adverse impact on localized air quality, as well as burden the natural habitats within the park. Depending upon the pressures that may be experienced due to regional growth, the park would address this issue further in the future.

## ***4.2.4 Impacts on Transportation Systems***

### Vehicular Access

Under Alternative A, other than the impacts identified under Section 4.1 (Impacts Common to All Alternatives), no additional impacts are anticipated on vehicular access.

### Parking

Under Alternative A, there would be no change to existing parking conditions. Long delays and large queues that are experienced on peak days would continue when the parking lots are full. These delays and queues could be more frequent than the current 10 to 15 times per year, if visitor demand increases in the future. Access to homes along Old Dominion Drive would continue to be blocked during these conditions on peak days. Also, visitors arriving after the lots fill would continue to wait in the queue along Old Dominion Drive due to the one vehicle out, one vehicle in policy and due to the lack of locations to turn around.

### Cumulative Impacts

Over the long-term, the projected growth in the region could increase visitation to the park. This could result in additional days when delays are experienced along Old Dominion Drive and potentially Georgetown Pike, resulting in a minor adverse impact on the area's transportation systems.

### Conclusion

Under Alternative A, the one vehicle out, one vehicle in policy would continue to result in delays in accessing the park. Also, in the future, increasing growth in the region could result in increased visitation at the park, potentially increasing the number of times when visitors

experience delays in accessing the park. While the addition of a “fast pass” lane is anticipated to reduce the number of times visitors experience delays in entering the park, the park would consider new measures, if delays to enter the park do increase due to increased demand in the future. Therefore, under Alternative A there would be no impairment of the park’s resources under transportation systems.

#### ***4.2.5 Impacts on Site Utilities***

Under Alternative A, there could be negligible impacts on water supply and sanitary sewer systems due to the proposed improvements to existing restroom facilities, which may result in a slight increase in the use of potable water and create more wastewater. No other impacts are anticipated on site utilities.

##### Cumulative Impacts

Under Alternative A, no cumulative impacts are anticipated on Site Utilities.

##### Conclusion

The measures proposed under Alternative A would not result in the impairment of the park’s utility system.

#### ***4.2.6 Sustainability and Long-Term Management***

##### Short-Term Use of the Environment versus Long-Term Productivity

Under Alternative A, the impacts of back-ups along Old Dominion Drive, continued functioning of park staff in a flood-prone space, and inadequate spaces for park staff are not likely to be sustainable as the Washington, D.C. metropolitan region continues to spread and demand for recreation in the park grows. These conditions could adversely affect long-term protection and enjoyment of park resources.

##### Irreversible and Irretrievable Commitments of Resources

Under Alternative A, there would be a potential for irreversible or irretrievable damage to cultural resources, especially to the Matildaville ruins, due to the park’s inability to commit enough resources to mitigate natural and visitor-related impacts on these resources.

##### Unavoidable Adverse Impacts

Deterioration and eventual loss of some of the park’s cultural resources may be considered an unavoidable adverse impact. Even if visitation does not increase considerably, the heavy use of the trails within vicinity of the visitor center, and the movement of visitors away from formal trails, would continue to impact sensitive cultural and natural resources.

### 4.3 ALTERNATIVE B – PREFERRED ALTERNATIVE

This section of the document identifies potential impacts on resources that could result under Alternative B (Preferred Alternative).

#### 4.3.1 *Impacts on Land Use and Socio-Economic Conditions*

##### Land Use

Under the Preferred Alternative, there would be temporary, minor impacts on the surrounding uses from construction-related activities at the park. The demolition of the maintenance facility, construction of the new operations (including maintenance) facility at that location, and improvements at the visitor center, would result in temporary, construction-related traffic. No long-term impacts are anticipated on surrounding uses.

##### Visitation and Visitor Activities

Under Alternative B, it is unlikely that visitation would significantly increase or decrease in the short-term. Similar to Alternative A, in the long-term, the projected growth in the region would likely result in an increase in visitation at the park. Under existing conditions, visitors experience delays entering the park an average of 10 to 15 times per year. The addition of the “fast pass” lane is anticipated to alleviate some of this delay. Also, the proposed electronic message boards and the radio signal would help to reduce some of the delays by conveying the traffic conditions to visitors, giving them an opportunity to seek other parks in the region. If the visitation increases considerably in the future, the number of days when delays are experienced along Old Dominion Drive and potentially Georgetown Pike could increase, resulting in an adverse impact.

Similar to Alternative A, connecting the park to regional trails could mitigate some of this potential pressure, since visitors could access the park via non-motorized modes of transportation. However, depending on the increase in visitation demand, NPS could explore alternative means of providing access to the park in the future, including connecting Great Falls Park to a potential regional shuttle system.

Also, similar to Alternative A, connecting the park to regional trails would provide visitors additional recreational opportunities and would result in a positive impact on visitor experience.

The demolition of the maintenance facility, construction of the new operations facility, and improvements at the visitor center would result in a temporary, moderate adverse impact on visitor experience of the park’s visitor facilities. However, over the long-term, visitors are anticipated to benefit from enhanced interpretive and educational opportunities that would be offered at the visitor center to provide a better understanding of the park’s resources.

Overall, there would be a positive impact on visitor experience due to an increase in interpretive and educational programs. As identified in Chapter 3, approximately 73 percent of the visitors surveyed (in 1996) indicated that *viewing the Great Falls* was their predominant activity at the park; 41 percent of visitors surveyed indicated that *viewing wildlife* was their predominant

activity; while 31 percent indicated *visiting the Potomac Canal* as their predominant activity. The visitors participating in these and other activities would benefit from an enhancement in exhibits and interpretive material, as well as access to cultural resources at the park, as proposed in the following actions:

- *Rehabilitate VC to improve exhibits and establish an education component that would focus on resource interpretation:* This measure would expand opportunities for resource interpretation at the park.
- *Leave buried ruins and other potential cultural sites buried for protection except in a few locations where uncovering them would significantly benefit interpretation at the park:* Where cultural resources are uncovered, visitors would benefit from added resources that would become available for them to understand the significance of the park's cultural resources.
- *Stabilize and protect Matildaville:* A plan to stabilize and protect Matildaville, that would include increasing interpretation of the resource, would also benefit visitor experience.

Other beneficial impacts would include those identified under Section 4.1 (Impacts Common to All Alternatives).

Alternative B would include several actions that would result in potential adverse impacts on visitation and visitor experience, as identified below:

- *Realign or close horse access to portions of Matildaville Trail and Mine Run Trail, and control access through permitting to limit damage to resources:* These measures would modify the existing pattern of use for horseback riders. A potential reduction in trails accessible to horseback riders would result in an adverse impact on these users, however, if the trails are realigned, there would be minimal impact on these users. Requiring a permit to access the park could require visitors to plan their trips in advance. The Trail Management Plan would address these concerns further.
- *Designate with anchors and potentially reduce climbing routes, and control through permitting:* This measure has the potential to increase competition for the reduced sites and add a layer of control that could require visitors to plan their trips in advance, possibly eliminating the ability of casual climbers to partake in this activity. The Climbing Management Plan would address this concern further.

#### Community Facilities - Police, Fire, and Rescue Services

Under Alternative B, message boards would be provided along Georgetown Pike, and a radio announcement would inform visitors of the traffic and parking conditions within the park. These measures are anticipated to reduce vehicular traffic back-ups along Old Dominion Drive, which would help to improve police, fire and rescue service access to the park during emergencies. Also, similar to Alternative A, there would be a minor improvement to emergency access to the Potomac River due to enhancement of emergency access at Sandy Landing.

Under Alternative B, the holding tank off Jackson Lane would be expanded. This would provide additional water for use during fire emergencies and would result in a positive impact.

### Cumulative Impacts

Under Alternative B, there may be temporary cumulative impacts when activities within the park are examined in conjunction with anticipated activities outside the park. If the duration of demolition/construction at the park occurs simultaneously with construction of the proposed CCT, PHNST, or the Georgetown Pike Trail, there would be temporary and minor adverse impacts on surrounding land uses due to these construction activities.

### Conclusion

Under the Preferred Alternative, short-term adverse impacts on visitor experience would include potential delays in entering the park, renovation activities at the visitor facility, and demolition and construction activities at the maintenance facility site. Also, realigning or closing portions of Matildaville and Mine Run Trails would affect horseback riders. Similarly, designating and potentially reducing climbing sites and controlling through permitting would affect climbers. In the long-term, connections to regional trails would expand recreational opportunities for visitors at the park, resulting in a beneficial impact. Also, in the future, increasing growth in the region could result in increasing visitor demand to access the park. Since there is no proposal to increase parking within the park, added demand could increase the number of times when visitors experience delays in accessing the park. If that happens, the park would consider new measures to reduce the periods when visitors experience delays in accessing the park. Overall, while visitor experience would be modified for some users, the Preferred Alternative is not anticipated to result in the impairment of park resources or visitor experience of the park.

## **4.3.2 Impacts on Cultural Resources**

### Archaeological and Historic Resources

Under the Preferred Alternative, there would be several actions resulting in impacts on archaeological and historic resources including:

- *Prepare a Trail Management Plan, eliminate most social trails, restrict new social trails from developing, and explore realigning or closing horse access to portions of Matildaville Trail and Mine Run Trail:* Under these measures, visitor access near sensitive resources would be controlled through realignment or closure of trails. These measures would help to reduce the potential damage to historic and archaeological resources, including the Patowmack Canal, a designated National Historic Landmark, resulting in a positive impact.
- *Rehabilitate the visitor center to improve exhibits and establish an educational component that would focus on resource interpretation:* Additional interpretive exhibits and educational programs are anticipated to strengthen a visitor's understanding of the park's exceptional resources, as well as the benefits of protecting and preserving these

resources. This measure is anticipated to result in a positive impact on the park's archaeological and historical resources.

- *Leave buried ruins and other potential cultural sites buried for protection except in a few locations where uncovering them would significantly benefit interpretation:* This measure would allow for the continued preservation of most buried ruins. While uncovering selective sites for professional historical and archaeological research would be a positive impact as it would help to increase knowledge and expand interpretation, the sites would be exposed to the natural environment and could be adversely impacted in the long-term. Adequate measures should be adopted to ensure the continued preservation of the selective sites that would be uncovered.
- *Develop a plan to stabilize and protect Matildaville:* Under this alternative, the park would increase active management of Matildaville. This resource contributes to the Patowmack Canal's cultural landscape and improving interpretation of this linkage, as well as adopting measures to prevent further damage of this resource, would result in a positive impact.

### Viewsheds

Under the Preferred Alternative, there would be several changes that would influence the existing viewsheds within and outside the park. These include the following:

- *View of the maintenance facility:* The existing maintenance facility would be replaced by a new operations facility. This would be located immediately north of the entrance station and would be visible to visitors entering/exiting the park. The design of this new facility would influence a visitor's entrance experience at the park. Therefore, to result in a positive visual impact, the design of the facility should be sensitive to its highly visible location.
- *Views from C & O Canal NHP:* The proposed operations facility, to be located at the site of the existing maintenance building, is unlikely to be visible from the C&O Canal NHP, due to the existing vegetative buffer along the river's edge. However, if a tall structure is constructed as part of the proposed facility, it has the potential to be observed from across the river. The park should ensure that appropriate visual analysis is conducted during the design of this facility to confirm that no adverse impacts result to views from C&O Canal NHP.

### Cumulative Impacts

Under the Preferred Alternative, no cumulative impacts are anticipated on cultural resources, when activities within the park are examined in conjunction with anticipated activities outside the park.

### Conclusion

Under the Preferred Alternative, protection of cultural resources at the park would be enhanced due to the proposed elimination of most social trails, development of a Trail Management Plan



that would explore realigning or closing horse access to portions of the Matildaville Trail, establishment of an education component that would focus on resource interpretation, and developing a plan to stabilize and protect Matildaville. Leaving most buried ruins covered would also benefit those resources, however, if some ruins are uncovered for interpretation purposes, the park would adopt adequate measures to ensure that these are not impaired. Therefore, the Preferred Alternative would not result in the impairment of cultural resources.

### ***4.3.3 Impacts on Natural Resources***

#### Geophysical Resources

Under the Preferred Alternative, no impacts are anticipated on geological resources, topography, or soils.

#### Water Resources

##### *Watersheds and Resource Protection Areas*

Under the Preferred Alternative, the park would provide technical assistance to neighbors on water resource management techniques. In addition, the park would demonstrate the use of these techniques when improving the visitor center or during the construction of the new operations facility. These measures would raise awareness, as well as identify measures to reduce the impacts of stormwater runoff on the area's watershed, and therefore are anticipated to result in a positive impact on water resources.

##### *Surface and Ground Water*

Under the Preferred Alternative, eliminating existing social trails and prohibiting new social trails could have an indirect positive impact, as visitors would be guided away from sensitive areas along the edges of existing water bodies and groundwater recharge areas or seeps. In addition, closing or realigning horse access to portions of trails (such as Mine Run Trail in the vicinity of Clay Pond) would reduce potential erosion-related impacts, as well as potential impacts related to horse manure, resulting in a positive impact. The park would continue to monitor trail use and make necessary repairs to minimize other erosion-related impacts.

##### *Wetlands and Waters of the United States*

Under the Preferred Alternative, no direct impacts are anticipated on existing wetlands within the park. However, eliminating existing social trails and prohibiting new social trails could have an indirect positive impact as visitors would be guided away from sensitive areas such as those adjacent to the Potomac River. Also, an effort to educate visitors through increased interpretive programs regarding benefits of preserving wetlands could result in an indirect positive impact.

##### *Floodplains*

Under the Preferred Alternative, the park would relocate staff offices from the lower level of the visitor center to a new facility to be constructed at the site of the maintenance facility. The visitor center is located within Potomac River's 100-year floodplain. Under the Preferred

Alternative, the lower portion of the visitor center would be used to support the proposed educational function. Since this area would still be prone to flooding, the park should use this space for non-habitable uses to prevent flood-related damage.

The existing maintenance facility borders the western edge of the Potomac River's 100-year floodplain, with a portion of the facility possibly within the floodplain. Under the Preferred Alternative, the park would construct a new facility at this location. In accordance with DO #77-2 (Floodplain Management), the park would undertake a detailed study of this site to identify the extent of the floodplain. If possible, the new facility would be located outside the floodplain. However, if the floodplain covers most of this site such that portions of the new facility would be within the 100-year floodplain, the facility would be sustainably designed such that habitable space would be located above the flood zone, and mitigation measures would be identified to minimize potential loss of property during a flood event. Consistent with the policy, a Statement of Findings would be prepared as part of further analysis if portions of this facility are located within the floodplain.

### *Water Quality*

Under the Preferred Alternative, no water quality impacts are anticipated within or adjacent to the park. Difficult Run would continue to remain impaired since the park's contribution to this watershed is extremely small. However, the park would work with its neighbors and other regional agencies to adopt measures that would help to improve this water body.

### Biological Resources

#### *Vegetation*

Under the Preferred Alternative, there are several proposed changes that would impact existing vegetation within the park. These include the following:

- *Develop USPP stables off Jackson Lane:* The area off Jackson Lane is mostly wooded with some clear areas. Developing stables and a paddock area for horses may require clearing some of the existing vegetation in this area and could result in a minor adverse impact. The park should ensure that the location would result in the least amount of disturbance to mature and other sensitive vegetation.
- *Eliminate most existing social trails and prohibit new social trails:* These changes may result in a minor positive impact as visitors would be guided away from sensitive vegetation along highly managed trails, and overlook areas adjacent to the River Trail.

#### *Wildlife Habitat*

Under the Preferred Alternative, no impacts are anticipated on wildlife habitat within and adjacent to the park.

### *Rare, Threatened and Endangered Species*

Under the Preferred Alternative, several changes are proposed that have the potential to impact rare, threatened and endangered species within the park. The proposed changes include the following:

- *Eliminate most social trails, and prohibit additional social trails:* These efforts would reduce potential damage to sensitive areas as visitor movement would predominantly be restricted to formal trails. This would reduce potential damage to rare, threatened and endangered species within the park, resulting in a positive impact.
- *Prepare a Climbing Management Plan, designate climbing sites, potentially reduce the number of climbing sites, and control usage through NPS permitting:* There are several rare species in terrace communities located along the cliff areas where climbing routes are currently located. Designating climbing sites and potentially reducing the number of sites would allow the park to eliminate locations where the routes have the most potential for damaging these sensitive resources, resulting in a positive impact.

### Air Quality

Under the Preferred Alternative, there would be minor, short-term construction-related, adverse impacts to air quality as a result of demolition of the maintenance facility, and construction of the new operations facility. Emissions produced during construction would vary daily depending on the type of activity. However, it is the total annual emissions by which the conformity exemption is calculated, and these are not anticipated to exceed de minimus thresholds.

Potential reduction in vehicular traffic back-ups along Old Dominion Drive due to improved signage would reduce localized vehicular emissions, resulting in a positive impact.

### Noise Levels

Under the Preferred Alternative, there would be minor, construction-related, adverse impacts on park visitors during demolition of the maintenance facility, construction of the new operations facility, and renovation of the visitor center. Visitors would be subject to construction noise as they drive or walk by the location of the maintenance facility or when they visit the visitor center. These impacts would be temporary, lasting through the duration of construction.

The movement of heavy trucks hauling demolition waste, excavated soil, and construction materials would generate noise that could result in a temporary adverse impact on residences along Old Dominion Drive and Georgetown Pike.

There would be no anticipated increase in operational noise impacts.

### Cumulative Impacts

Under the Preferred Alternative, several potential cumulative impacts could affect natural resources. These include the following:

- There would be temporary construction-related impacts on local air quality and noise, depending upon the duration of demolition/construction activities within the park, and the proposed Cross County Trail, PHNST, and Georgetown Trail.
- Similar to Alternative A, the anticipated growth in the region's population could result in increasing visitation to the park. This could result in a considerable increase in vehicles waiting to access the park, resulting in a minor adverse impact on localized air quality. Also, the existing natural habitats within the park could be further burdened if the area around the park is developed in response to some of this anticipated regional growth.

### Conclusion

Under the Preferred Alternative, protection of natural resources at the park would be enhanced due to the proposed elimination of most social trails, development of a Trail Management Plan that would explore realigning or closing horse access to portions of Mine Run Trail, establishment of an education component that would focus on resource interpretation, and designation of climbing sites to avoid potential impact on rare plant species. The anticipated growth in the area's population could result in increasing visitation and potentially burdening the existing natural habitats within the park. If demand for accessing the park increases substantially, the park would explore additional measures to minimize potential impacts on the existing natural resources. Potentially locating portions of a new facility in the 100-year flood zone could result in a negligible impact on the floodplain. Consistent with DO #77-2, a Statement of Findings would be prepared as part of further analysis if portions of the proposed new facility are located within the floodplain. Therefore, the Preferred Alternative would not result in the impairment of natural resources.

#### ***4.3.4 Impacts on Transportation Systems***

In addition to the improvement options common to all alternatives discussed under Section 4.1, Alternative B identifies two additional traffic-related options: (1) dynamic message boards (signs) placed along transportation routes leading to the park (Georgetown Pike and Old Dominion Drive), and (2) a radio announcement to indicate when the parking lots are full.

### Roadway Access and Parking

Message boards on Georgetown Pike and a radio announcement would alert visitors that the parking lots are full at Great Falls Park. By having dynamically updated information available on signs on Georgetown Pike, and on a particular radio channel, visitors would be provided with an opportunity to make a decision before turning onto Old Dominion Drive – whether to wait in line for parking, or seek to visit alternative parks in the area. Either of these measures is anticipated to result in a positive impact on visitor access to the park.

### Cumulative Impacts

Under the Preferred Alternative, there could be potential temporary adverse cumulative impacts from construction-related traffic on area roadways if demolition/construction activities in the park (demolition of maintenance facility, construction of the new operations facility, etc.) occur during the same period as construction of the proposed PHNST, CCT or GPT outside the park.

Also, similar to Alternative A, over the long-term, the projected growth in the region could increase visitation at the park. This could result in additional days when delays are experienced along Old Dominion Drive and potentially Georgetown Pike, resulting in an adverse impact on the area's transportation systems.

### Conclusion

Under the Preferred Alternative, the one vehicle out, one vehicle in policy would continue to result in delays in accessing the park. Also, in the future, increasing growth in the region could result in an increase to visitation at the park, potentially increasing the number of times when visitors experience delays in accessing the park. If that happens, the park would consider new measures to reduce such delays. The proposed message boards and radio announcement would inform visitors about parking and traffic conditions at the park and are anticipated to benefit visitor accessibility. Overall, under the Preferred Alternative, there would be no impairment of the park's resources under transportation systems.

#### ***4.3.5 Impacts on Site Utilities***

Under the Preferred Alternative, the demolition and construction of a new facility at the maintenance facility site would result in construction-related impacts on utilities. Also, while no impacts are anticipated on water and sanitary sewer systems due to the anticipated expansion of restroom facilities, additional water and wastewater system models and a utility capacity study should be performed prior to undertaking these improvements. The expansion of the water tank along Jackson Lane would result in providing additional potable water to the park, resulting in a positive impact.

If public water is extended to the park in the future, the park would coordinate the route and access to the existing water main (located at the intersection of Georgetown Pike and State Route 683) with the Fairfax County Water Authority.

### Cumulative Impacts

Under the Preferred Alternative, no cumulative utility impacts are anticipated.

### Conclusion

The measures proposed under the Preferred Alternative would not result in the impairment of the park's utility system.

### ***4.3.6 Sustainability and Long-Term Management***

#### Short-Term Use of the Environment versus Long-Term Productivity

Alternative B proposes several actions that would have short-term adverse effects, but would result in improving the long-term productivity of the park, including:

- Improvements at the visitor center would temporarily result in reducing exhibit space and impacting interpretive programs for visitors. However, over the long-term, improvements to exhibits, as well as visitor programs at the visitor center, would benefit the interpretation and long-term productivity of the park's cultural and natural resources.
- Demolition of the maintenance facility and construction of the new operations facility would impact management operations at the park over the short-term. However, over the long-term, the management of the park would improve due to improved spaces for the various operations-related uses.
- Removal of existing social trails would result in changing the current pattern of use. Over the long-term, this would help to preserve sensitive natural and cultural resources.

#### Irreversible and Irretrievable Commitments of Resources

Construction activities under Alternative B would require the use of building materials that are often drawn from natural resources. The materials used at the park would be sought from the existing building construction industry, similar to other construction projects in the region. While using natural and fabricated building materials in the park would be irreversible, none of these materials would be considered limited or scarce resources whose use at Great Falls Park would threaten the continued availability or existence of that resource.

#### Unavoidable Adverse Impacts

Deterioration and eventual loss of some of the park's cultural resources may be considered an unavoidable adverse impact. The heavy use of the trails within vicinity of the visitor center would continue to impact sensitive cultural and natural resources.