Trail Attributes	Trail Type 1A*	Trail Type 1B*	Trail Type 2	Trail Type 3	Trail Type 4
Style	Natural surface pedestrian trail	Natural surface pedestrian trail	Natural surface multiuse trail	Universal access trail	Aggregate multiuse trail
Allowable Uses	Pedestrian only	Pedestrian only	Pedestrian and cyclists	Pedestrian only	Pedestrian and cyclists
Trail Width	1–2 feet	2–4 feet*	4–8 feet typical	3–8 feet	8–10 feet typical
Specific GMP Zone(s), if applicable	Natural Zone, Rustic Zone, Historic Resource Zone, and Rustic Zone	Natural Area Recreation Zone and Developed Zone	Natural Area Recreation Zone and Developed Zone	Natural Area Recreation Zone and Developed Zone	Natural Area Recreation Zone and Developed Zone
Tread Surface/ Material	Natural native soils, surfaced as needed for hardening with natural native materials such as stone, rock, or wood	Natural native soils, surfaced as needed for hardening with natural native materials such as stone, rock, or wood	Natural native soils, surfaced as needed for hardening with natural native materials such as stone, rock, or wood	Crushed aggregate. boardwalk; brick/ masonry/ porous pavers	Crushed aggregate. boardwalk; brick/masonry/ porous pavers
Special Structures	Structures where protection of resources are needed, including: boardwalks; stairs; foot bridges	Structures where protection of resources are needed, including: boardwalks; stairs; foot bridges	Structures present and substantial. Trail infrastructure meets ABA requirements. Substantial trail bridges are used at water crossings. Drainage structures are present. Curbing could be used to retain aggregate and control braiding.	Structures present and substantial. Trail infrastructure meets ABA requirements. Substantial trail bridges are used at water crossings. Drainage structures are present. Curbing could be used to retain aggregate and control braiding.	Structures present and substantial. Trail infrastructure meets ABA requirements. Substantial trail bridges are used at water crossings. Drainage structures are present. Curbing could be used to retain aggregate and control braiding.

Trail Attributes	Trail Type 1A*	Trail Type 1B*	Trail Type 2	Trail Type 3	Trail Type 4
Signage	Kiosks; loops and trails marked with distances and difficulty. Limited interpretive signage.	Kiosks; loops and trails marked with distances and difficulty. Limited interpretive signage.	Kiosks; loops and trails marked with distances and difficulty. Limited interpretive signage.	Informational and directional signage along the trail will meet Harpers Ferry Center's accessibility guidelines for park signage. Loops and trails marked with distances.	Kiosks; signage must have ABA accessible symbols and total length of accessible trail. Loops and trails marked with distances.

*Trail type 1 as related to GMP zoning: Variation based on GMP zones exists in type 1 trails. This variation is based on zoning and related to desired experience and visitor capacity (i.e., trail type 1B is appropriate in zones with expectations for more social experiences and higher visitor use).

Appendix D: Indicators and Thresholds

Monitoring on Chattahoochee River National Recreation Area's trail system would be accomplished through the establishment of "indicators" and "thresholds." Indicators are specific resource or experiential attributes that can be measured to track changes in conditions so that progress toward achieving and maintaining desired conditions can be assessed. In this way, indicators translate the desired conditions of the plan into something that can be tracked over time to evaluate its effectiveness. Indicators help identify when a level of impact becomes cause for concern and when management action may be needed.

To identify the most useful indicators for monitoring the effectiveness of the plan, the planning team considered ongoing monitoring efforts; issues affecting natural resources, cultural resources, and visitor use and experience of the park's trails; and the trail system's desired conditions. After identifying issues that most affected the trail system's ability to achieve desired conditions, the team identified indicators related to those issues.

Thresholds represent the minimum acceptable condition for each indicator and were established by considering the qualitative descriptions of desired conditions, information on existing conditions, staff management experience, best practices from across the national park system, and public feedback received during civic engagement. Although defined as "minimally acceptable," thresholds still represent acceptable conditions. In addition, establishing thresholds does not imply that no action would be taken before reaching the threshold. Thresholds identify when conditions reach unacceptable levels and accordingly serve as a proverbial "line in the sand," letting managers and the public know that corrective action must be taken to keep conditions acceptable.

Together, indicators and thresholds provide park managers with a monitoring framework to ensure desired conditions for resources and visitor experiences are achieved and maintained over time. These are a critical component of the Visitor Use Management (VUM) framework and are considered part of the action alternative.

The planning team considered many potential indicators, but ultimately identified seven that are the most important to monitor the effectiveness of the trails management plan. The five issues or topics the indicators monitor include:
- Trail condition
- Social trailing
- Roadside parking
- Cultural resource impacts
- Visitor conflicts

Visitor use management is an iterative process in which management direction is continuously informed by new information and improved. Indicators are monitored, and adjustments are made as appropriate. As monitoring gets underway, park managers may decide to modify or add indicators if better ways are found to measure important changes in resource and experiential conditions. Information on the NPS monitoring efforts, related visitor use management actions, and any changes to the indicators and thresholds would be available to the public as appropriate.

The following are detailed descriptions of the indicators and thresholds along with rationales for why the indicator was selected, monitoring protocols, and management strategies that may be used. Several of these management strategies are currently in use and may be increased in response to changing conditions. Other management strategies would be implemented upon completion of the plan to ensure

conditions do not approach thresholds. Further management strategies would be implemented if and when monitoring indicates that conditions are changing and thresholds are being approached or exceeded. The impacts of these management strategies are analyzed in chapter 3. Details of any management strategies identified as "potential" would be developed at the time they are needed to ensure that the most effective approach is implemented.

The following management strategies apply to more than one of the indicators. Management strategies that are specific to each indicator are listed under their respective indicators.

- Conduct an outreach campaign to encourage visitors to visit lower-use trails and visit popular units at lower-use times.
- Manage group size at appropriate locations by enforcing special use permit requirement (groups larger than 35 require a permit).
- Increase visitor education (as part of Leave No Trace messaging) about the importance of staying on designated trails to protect park resources (i.e., vegetation, soils, and water). Highlight the impacts including vegetation trampling, soil compaction, erosion, and trail widening.
- Display information about high-use times on park websites or social media, and direct park staff to communicate areas that accommodate higher use when in contact with visitors.

Indicator Topic: Trail Conditions

The topic of trail conditions includes two indicators: change in trail width and presence of cross-slope on trails, as described below.

Indicator: Change in trail width

Threshold: Trail width increases no more than 25% from baseline conditions and does not exceed maximum trail width defined for its trail class and zone (see appendix F).

Rationale for Indicator and Threshold: This indicator measures change in the width of the trail tread as compared to baseline conditions and the maximum trail width defined for its trail class and zone. Baseline conditions are established when the width is first measured as part of the monitoring strategy, while the trail width standards are defined for each trail class and zone in see appendix F). The threshold is a 25% increase in trail width from baseline conditions or the maximum width allowed for its trail class and zone, whichever is less.

High levels of visitor use on trails contributes to trail widening as users pass one another and avoid wet spots. As more visitors use a trail, especially during and after rain events, the trail tends to become wider as visitors route themselves around puddles and mud. Larger groups of people using the trail together has a greater impact on increasing trail width as these groups often travel side by side. The impacts of these behaviors and patterns can readily be seen on the ground as trailside vegetation is trampled and the trail widens to incorporate formerly vegetated areas.

This indicator is closely related to soil erosion, soil compaction, water quality, and vegetation trampling. Monitoring trail width is also important to the plan, as it helps achieve two of its goals—to "increase trail lifespan and minimize maintenance needs" and "protect park resources and limit impacts from increased trail use." Growing and eroding trails require more trail maintenance. They also contribute to bankside erosion and soil runoff that enters the park's river and streams and contributes to water turbidity. Popular destinations for spring wildflower viewing have been lost due to trail widening, impacting the quality of visitors' experience and resources. Monitoring and managing trail width is important to ensuring the physical and managerial sustainability of the trail system.

Monitoring Strategy: A representative selection of sites along a trail or trails would be identified in each unit of the park for quarterly sampling. Sampling each season would allow for sufficient time for change to take place, while still being frequent enough to be sensitive to change. Sensitive resource areas that receive high levels of use would be targeted for sampling.

To make the monitoring effort reasonable, park facilities staff would enter the times and GPS locations of each trail site that needs to be monitored into the work order system to ensure this monitoring occurs as a part of routine operations. Once entered in the tracking system, the monitoring work could be shared with volunteer site stewards assigned to each unit who are already doing trail monitoring. Park staff would also contribute to the effort as their availability allows. Use of standard protocols and tools, including laser measuring tools or tape measures and precise GPS locations, would contribute to the consistency and reliability of the data collected.

Management Strategies Specific to this Indicator:

- Encourage visitors to travel single-file or with an appropriate number of people abreast to prevent trail widening.

- Increase the use of a text-for-status system to educate visitors about appropriate times to bicycle on trails to prevent use after rain.

- When trail widening occurs on a specific stretch of trail, schedule a trail day with a volunteer trail crew to address vegetation and soil impacts by decompacting and revegetating. Prioritize maintenance on trails that are widening the most.

- Improve drainage (e.g., grade reversals, cross-slope) on trails that are widening so that visitors do not have to travel around wet spots.

- Rehabilitate trails that exceed the width threshold as soon as possible to discourage further widening.

- Construct definitive trail edges along widening trails using natural or human-made materials such as fencing, rocks, logs, or other appropriate physical barriers. In order to maintain positive sheet flow, the type and location of trail edges may vary based on the trail type. For example, crowned aggregate trails would be better candidates for definitive trail edges. Likewise, large rocks, which allow for drainage, would be better candidates for the edges than a log, which obstructs drainage.

- Include trail anchors, chokes, or gateways to define the sides of the trail and discourage widening. Possible solutions include large rocks, logs, trees, or other obstacles staggered on either side of the trail that serve as physical and visual barriers to keep users on the trail.

- Install boardwalks or other form of elevated trail construction where trails widen in low, wet areas that cannot be rerouted or given drainage solutions.

- Incorporate periodic widened "passing areas" along trails at convenient resting intervals and points of interest.

- Temporarily close select trails after trail maintenance has occurred to allow decompaction and revegetation efforts to take hold and allow trailside soils to stabilize.

Indicator: Presence of cross-slope on trails

Threshold: At least 95% of surveyed trails have cross-slope and positive drainage.

Rationale for Indicator and Threshold: The rationale for the "presence of cross-slope on trails indicator is largely the same as the "change in trail width indicator" (see above). Due to the ease of monitoring both indicators together, both were retained. A trail with cross-slope is slightly higher on one side than the other, which means the trail can have sheet flow, or a thin layer or water, running across it. Sheet flow is preferable to a trail that has cupping, or depth, which leads to water draining along the trail, eventually turning the

trail into a creek. A trail with cross-slope is said to have "positive drainage" since the water leaves the trail rather than staying on it.

The presence of cross-slope on trails tends to be closely related to overall use levels. As more users travel along a trail, the tread can wear away, which leads to cupping. Once a trail has some amount of cupping, it is only going to get worse, as water will exacerbate any linear depression in the ground. Therefore, trails that have cupping have a very low tolerance, and the threshold for trails with cross-slope and positive drainage is identified at 95%. Cross-slope and positive drainage are heavily influenced by trail design (e.g., soil types, bench construction, running slope) in addition to visitor use and serves to indicate the quality of trail design approaches that have been taken.

Monitoring Strategy: The presence of cross-slope would be monitored alongside the trail width indicator. The same protocols would apply in terms of quarterly sampling at representative sites per the work order system, though additional tools such as an inclinometer, plum, or level would likely be needed. Monitoring the two indicators together contributes to their reasonableness.

In addition to monitoring the presence or absence of positive slope at the representative monitoring sites, the angle of the slope would be recorded for internal reference. If the slope is moving from a positive slope to one that is more neutral or negative at monitored points, information about this change and the time it took to occur would be used to focus preventative maintenance efforts or implement appropriate management strategies as defined below.

Management Strategies: Many of the management strategies for the trail width indicator would apply to this cross-slope indicator as well. Specifically, the use of the text-for-status system, improved drainage, trail rehabilitation, elevated trail construction, and temporary closures strategies could be applied if/ when the threshold is approached.

Indicator Topic: Social Trailing

Indicator: Number of social trails

Threshold: No more than two social trails intersecting any half-mile stretch of designated trail.

Rationale for Indicator and Threshold: This indicator measures social trailing branching from formal trails. This indicator measures trail sustainability by addressing erosion, resource concerns, and visitors straying from the formal trail towards sensitive areas such as cultural, vegetative, or wildlife areas. The threshold is no more than two social trails intersecting any half-mile stretch of designated trail.

When visitors attempt to walk towards an area of interest outside of the designated trail network, social trails form. With time, social trails can become indistinguishable from formal trails after repeated use by many visitors. Travel on social trails presents safety concerns for visitors, as visitors are no longer supported by wayfinding signage. Social trailing can also contribute to user conflicts, as it impacts visitor opportunities and experiences. Vegetation is highly sensitive to the creation of social trails, as it often includes the trampling of vegetation. As vegetation is trampled, habitats are also fragmented. By identifying social trails, the park can close unsustainable trails impacting sensitive areas.

This indicator is closely related to resource damage, safety concerns, fragmented trail networks, soil erosion, and vegetation trampling. Monitoring social trailing is important to the plan, as it helps achieve two of its goals— to "increase trail lifespan and minimize

maintenance needs" and "protect park resources and limit impacts from increased trail use." Growing networks of social trails require more trail maintenance. Sensitive resources have been impacted due to social trailing, impacting the quality of visitors' experience and resources. Monitoring and managing social trailing is important to ensuring the physical and managerial sustainability of the trail system.

Monitoring Strategy: All formal trails in each unit would undergo quarterly sampling. Sampling each season would allow for sufficient time for change to take place, while still being frequent enough to be sensitive to change. While walking on formal trails, social trails that branch from the formal trails would be tallied. Monitoring would occur by both volunteer site stewards and a combination of trail crews (i.e., Youth Conservation Corps, Student Conservation Association), volunteers, and designated park staff. In the summer, the primary group conducting monitoring would be volunteers.

Management Strategies Specific to this Indicator:
- Restore social trails to acceptable conditions if earlier management strategies have been implemented and determined ineffective.

- Place informational signs instructing visitors to not use informal trails. As possible, also provide information on the impacts that using informal trails can have on resources.

- Improve maintenance and trail markings to discourage the creation of or use of informal trails.

- Add physical barriers and other site management strategies (e.g., rocks, logs, ropes, fences, or other barriers) along trails in key areas to discourage the use or formation of informal trails.

- Additional monitoring may be conducted along trails with high numbers of informal trails to further document the extent of informal trails in an area or along a trail. National Park Service staff would then identify any additional management actions needed to improve conditions.

- Leverage site stewards and dedicated trail volunteers to be on the lookout for new social trails that may be developing.

Indicator Topic: Unauthorized Parking

Indicator: Number of days when incidents of unauthorized parking occur

Threshold: Incidents of unauthorized parking occur on no more than 10 % of days in a given month per lot.

Rationale for Indicator and Threshold: This indicator provides an important measure of parking lot conditions in relation to visitor access to popular destinations as well as potential park resource impacts. When trailhead parking lots are full, visitors park outside of designated spaces, along roadways, and on vegetation. An incident of unauthorized parking is defined as any time more than five vehicles are parked outside of a designated parking space. As unauthorized parking presents a safety issue and can harm sensitive vegetation, the threshold is identified as no more than 10% of days in a given month per lot (i.e., no parking lot experiences unauthorized parking on more than three days per month).

Unauthorized parking is closely related to visitor use in terms of the amounts of use that occurs in one distinct area at times of the day and year. During the peak visitor use hours on the trail system, demand for parking at certain lots exceeds the number of parking spaces available, causing many visitors to park on the vegetation and along the roadside. This behavior frequently occurs during the busier summer months. Changes in parking conditions are easily identifiable on the ground.

- This indicator was selected due to its importance for ensuring visitor safety. When visitors park outside of designated parking spaces, they often must walk on roads designed for vehicular travel only. Private driveways and county and city roads bordering park property often become partially blocked by cars parking illegally. Emergency medical services and law enforcement responses are hindered when their vehicles do not have enough room to navigate narrow roads that are made impassable by these illegally parked cars. Unauthorized parking also contributes to resource damage in the form of soil disturbance, erosion, compaction, and the spread of invasive plants.

- While all the parking lots are within the Developed Zone, unauthorized parking has a direct correlation with the number of people on the trail. Therefore, it is highly related to desired conditions for several different zones. The desired conditions for the Developed Zone state that, "Visitors would have convenient access to park buildings and other facilities with ample opportunity for social experiences, and a high probability of encountering other visitors or park staff." The desired visitor experience in zones where the trails are located range from a low-to-high probability of encountering other visitors. Monitoring of this indicator will help ensure the desired conditions for visitor experience in the different zones are achieved. Monitoring will also help to achieve the plan goal to "protect park resources and limit impacts from increased trail use." While there is some tolerance for resource impacts along roads and other developed areas, unauthorized parking can be unsightly and lead to visitor conflicts.

Monitoring Strategy: Monitoring would likely occur using either an automatic parking lot camera set to capture photographs at designated times or through staff observation. A shared tracking sheet among law enforcement, facility maintenance, and interpretation and visitor services staff and volunteers to note days unauthorized parking did or did not occur could be developed.

Unauthorized parking data collection is effective and manageable, offering detailed analysis to make informed management decisions. Overall, monitoring will occur at select parking lots (5–6 of the typically busy lots) on all weekend days and at least one weekday from April through October per year.

Management Strategies Specific to this Indicator:
- Increase education and signage about parking in designated areas.

- Increase education and information during peak times about where to find available parking.

- Increase enforcement of parking outside of designated areas.

- Post signs indicating that parking is full and asking visitors to return at a later, designated time.

- Address vegetation and soil impacts by revegetating areas adjacent to the roadside.

- Employ a seasonal traffic management team using recreation fees.

Indicator Topic: Cultural Resource Impacts

Indicator: Number of incidences of damage (i.e., vandalism, graffiti) at cultural resources (i.e., historic structures, archeological ruins, historic sites)

Threshold: No more than two incidents of damage to cultural resources per year, unless specifically stated for individual sites or areas.

Rationale for Indicator and Threshold: This indicator measures the number of incidences of damage at cultural resources. Damage includes vandalism, graffiti, litter, climbing on stones and mortar, and related types of intentional disturbance to cultural resources. Cultural resources include all historic structures, archeological ruins, and historic sites within the park. The threshold is no more than two incidents of damage to cultural resources per year, unless specifically stated for individual sites. At times, additional precautions may be necessary to protect specific cultural resources. This indicator will allow park staff to take appropriate measures to address damage to cultural resources.

This indicator is related to the amount of use on trails and the easy access to cultural resources they provide. High levels of visitor use on trails contributes to increased incidents of damage to cultural resources. As more visitors recreate on trails, the likelihood of cultural resources being damaged increases. For example, when one visitor creates a social trail to a cultural resource, more visitors are likely to take that trail to the sensitive resource. Similarly, when one visitor damages a cultural resource, visitors see that damage and may contribute additional damage to the already damaged resource. In this way, this indicator is sensitive to changes in visitor use patterns.

Monitoring cultural resource impacts is important to the plan, as it helps achieve several of its goals—to protect natural and cultural resources and limit impacts from increased trail use. Cultural resources, by nature, are not renewable. Monitoring all impacts to them and taking corrective action as needed is important to ensuring the long-term sustainability of the trail system.

Monitoring Strategy: Damage to cultural resources would be identified by both park visitors and park staff, including law enforcement. Park visitors are accustomed to reporting damage to cultural resources they know about, and park staff is skilled at identifying this type of damage. Monitoring of damage to cultural resources would occur annually parkwide. The rock shelters spread out throughout the park would be monitored. Some sites would be prioritized for more careful monitoring. For example, the following areas may be monitored more closely than other areas of the park due to their high concentration of cultural resources: Allenbrook/ Vickery Creek, Ivy Mill, Sope Creek, Akers Mill, Settles Bridge (ownership TBD), and the Scribner Homesite and Cemetery.

Management Strategies Specific to this Indicator:

- Integrate educational programs related to appropriate activities surrounding cultural and historic sites.

- Place educational signs at cultural sites to educate visitors about why they should not damage the areas.

- Provide deterrents to inappropriate visitor use near cultural sites (e.g., logs, rocks).

- Implement temporary or seasonal closures on trails that access cultural resources or historic sites.

- Permanently reroute trails away from cultural or historic sites.

- Implement security measures, such as alarm systems and cameras, along trails at cultural/ historic sites.

- Increase the law enforcement presence at impacted cultural/historic sites and continue enforcement of park regulations.

- Remove sensitive artifacts from the field as a last-resort preservation/protection measure.

Indicator Topic: Visitor Conflicts

The topic of visitor conflicts includes two indicators: the number of visitor complaints for bicycle/pedestrian conflicts and the number of visitor complaints for dog conflicts, as described below.

....

Indicator: Number of visitor complaints for bicycle/pedestrian conflicts

....

Trigger: The monthly number of visitor complaints of bicycle/pedestrian conflicts increases no more than 15% compared to the baseline 12-month average.

....

Threshold: The monthly number of visitor complaints of bicycle/pedestrian conflicts increases no more than 25% compared to the baseline 12-month average.

....

Rationale for Indicator, Trigger, and Threshold: This indicator measures the number of visitor complaints of conflicts between bicyclists and pedestrians on park trails. Monitoring visitor complaints will help park staff better understand the frequency of conflicts between user groups and their geographic distribution across the park. Monitoring will also help staff gauge how overcrowding on park trails negatively impacts the visitor experience.

Visitor complaints are direct reflections of visitor use patterns and social behavior on park trails. They can help highlight gaps in educational resources for trail users—for example, where there is a need for more signage explaining bidirectional traffic on the Cochran Shoals Multiuse Trail. The number of complaints received can help park staff measure success in meeting this plan's overarching goal of promoting social sustainability in the park's trail system.

This indicator will be relatively easy to monitor, as staff plan to maintain a log of all visitor complaints received including those beyond bicycle/pedestrian conflicts. Adding features to the existing text-for-status program is also possible, which would be conducted in partnership with the Chattahoochee National Park Conservancy. In this program, visitors can report complaints of bicycle/pedestrian user conflicts via text message. The number or frequency of visitor complaints can vary based on visitor perceptions of social conditions on trails; however, the park can work with external partners—like the Chattahoochee National Park Conservancy or the local Southern Off-Road Biking Association chapter—to encourage trail users to report bicycle/pedestrian conflicts.

Park staff opted to adopt this indicator based on the high level of public feedback that staff regularly receives describing bicycle and pedestrian user conflicts. The public comments received in preliminary civic engagement efforts affirmed that conflicts between user groups have a notable impact on visitor experience for trail users. As park staff receives and analyzes visitor complaints, it will consider adaptive management strategies to mitigate future user conflicts. This indicator will also inform future management actions and responses to future requests or pressures to expand bicycle use to other units of the park where bicycle use is not currently authorized. This indicator can also be used to capture reported instances of improper bicycle use in units of the park where bicycle use is not authorized.

....

Monitoring Strategy: Park staff would maintain a log of visitor complaints and analyze the number of complaints received pertaining to user conflicts between bicyclists and pedestrians. The park would also train regular trail maintenance volunteers in parks and site stewards to log visitor complaints that they receive during workdays or while in the park. External partners like the Chattahoochee National Park Conservancy and Southern Off-Road Biking Association can help encourage multiuse trail users and stakeholders

to report complaints to help park staff establish a solid baseline. Staff would work with the Chattahoochee National Park Conservancy to expand the text-for-status program to include a feature for visitors to report bicycle/pedestrian user conflicts.

Data collection would be consistent and ongoing. Reports would be gathered and analyzed monthly. Staff would initially monitor visitor complaints for 12 months to establish a baseline average (i.e., the average number of complaints received per month over that year). After this initial data gathering period, staff would compare new visitor complaints each month relative to the baseline monthly average. Staff would also analyze trail counter data to determine whether an increase in visitor complaints is related to an increase in trail use. The location in the park where the conflicts are occurring would also be considered. These findings would be discussed at the management team and/or interdisciplinary team meetings.

The number of comments received per month is likely to be higher during busier summer months than less-busy winter months. Park managers may need to adjust the trigger and threshold accordingly to account for this variability once routine monitoring is under way. Visitor use management is an iterative process in which management direction is continuously informed by new information and improved.

Management Strategies to Be Implemented upon Plan Implementation:

- Work with the Chattahoochee National Park Conservancy to expand the text-for-status program to allow visitors to report complaints of bicycle/pedestrian user conflicts.

- Educate permit applicants on proper visitor behavior for any special park uses occurring in trail systems that allow both bicycle and pedestrian use.

Management Strategies to Be Implemented upon Reaching Trigger:

- Install temporary signage at multiuse trailheads encouraging proper visitor behavior (e.g., observing bidirectional traffic and the bicycle speed limit, not riding on muddy trails).

- Install temporary speed limit signage along multiuse trails to educate visitors about established speed limits.

- Increase social media content and public messaging encouraging proper visitor behavior on multiuse trails.

- Collaborate with key partners and stakeholder groups (e.g., Chattahoochee National Park Conservancy, Southern Off-Road Biking Association) to amplify public messaging through their respective platforms.

- Reposition park trail counters to park units where visitor complaints of bicycle/pedestrian conflict are concentrated.

- Update visitor safety information on the NPS mobile app and the park website.

- Pilot a trial separation of bicycle and pedestrian trails in areas where visitor conflicts on multiuse trails tend to be a recurring issue.

Management Strategies to Be Implemented upon Reaching Threshold:

- Increase the law enforcement presence on multiuse trails to enforce bidirectional traffic and established speed limits.

- Install bicycle weirs to prevent unauthorized bicycle use on pedestrian trails.

- Establish separate bicycle and pedestrian trails where visitor conflicts on multiuse trails tend to be a recurring issue.

Indicator: Number of visitor complaints for conflicts with dogs

Trigger: The monthly number of visitor complaints about user conflicts with dogs increases no more than 15% compared to the baseline 12-month average.

Threshold: The monthly number of visitor complaints about user conflicts with dogs increases no more than 25% compared to the baseline 12-month average.

Rationale for Indicator, Trigger, and Threshold: This indicator measures the number of visitor complaints about user conflicts with dogs. These complaints can range from improper dog waste disposal (e.g., waste bags left on the side of the trail) to the presence of unleashed dogs on park lands and even dog attacks. This indicator monitors many of the same things as the bicycle/pedestrian conflict indicator (e.g., safety, visitor conflicts, geographic distribution), but it also helps staff gauge resource damage and impairments to water quality caused by improper dog behavior on park trails.

Park staff chose to adopt this indicator based on the high level of public feedback that staff regularly receives regarding visitor conflicts with dogs on trails. Many park employees have also personally encountered dogs off leash or have even experienced dogs attack or had dogs jump on them while conducting fieldwork. The rationale for this indicator is largely the same as the visitor conflicts between bicyclists and pedestrians indicator (above).

Monitoring Strategy: Visitor conflicts with dogs would be monitored by park staff in the same way as visitor conflicts between bicyclists and pedestrians. Monitoring both indicators in the same way contributes to their reasonability. Park staff would also work with the Chattahoochee National Park Conservancy to encourage the reporting of improper dog behavior as part of the recently launched "Bag and Bin It" partnership campaign for proper dog waste disposal.

Similar to the visitor conflicts between bicyclists and pedestrians indicator, park managers may need to adjust the trigger and threshold to account for seasonal variability once routine monitoring is underway.

Management Strategies to Be Implemented upon Plan Implementation:
- Work with the Chattahoochee National Park Conservancy to incorporate more holistic dog behavior messaging in the "Bag and Bin It" partnership campaign and encourage visitors to report improper dog behavior.
- Increase social media content and public messaging encouraging proper dog behavior on all park trails.
- Update visitor safety and dog information on the NPS mobile app and park website.

Management Strategies to Be Implemented upon Reaching Trigger:
- Update visitor safety and dog information on the NPS mobile app and park website.
- Install temporary signage encouraging proper dog behavior on trails experiencing a high concentration of visitor conflicts with dogs.
- Work with partners and stakeholders (e.g., local pet stores, animal shelters) to amplify public messaging about proper dog behavior on park trails.
- Pilot a prohibition of dogs on specific trails experiencing a high concentration of user conflicts with dogs.

Management Strategies to Be Implemented upon Reaching Threshold:
- Increase the law enforcement presence in park units that have high concentrations of user conflicts due to improper dog behavior to issue citations.
- Amend the Superintendent's Compendium to prohibit dogs on park trails that experience a high concentration of user conflicts with dogs.

Introduction

Among the goals of the trails management plan are enhancing visitor experience, protecting natural and cultural resources, and limiting impacts from increased trail use (see chapter 1). Identification of visitor capacity is an important component of achieving those plan goals.

Visitor capacity is defined as "the maximum amount and types of visitor use that an area can accommodate while sustaining desired resource conditions and visitor experiences consistent with the purpose for which the area was established" (IVUMC 2019b). By identifying and implementing visitor capacities, the National Park Service can help ensure that resources are protected and that visitors have the opportunity for a range of meaningful and enjoyable experiences. In addition to being an effective management tool, identifying visitor capacities is also directed by legal mandate. The National Parks and Recreation Act of 1978 requires the National Park Service to identify and implement commitments for visitor capacities for all areas of a park unit. This appendix includes visitor capacities for the park's land-based trail systems; visitor capacities for other areas are outside the scope of this trails management plan and would be identified in future planning.

Visitor capacities are management decisions based on the best available data and other factors, including professional judgment, staff experience and expertise, lessons learned, and public input. Visitor capacity identifications, like other management decisions, provide direction. Visitor capacities can be adjusted with appropriate environmental compliance as new information becomes available through further study, analysis, and monitoring.

Visitor capacities were identified using the four guidelines described in the Interagency Visitor Use Management Council's "Visitor Capacity Guidebook," as follows:

- Determine the analysis area.
- Review existing direction and knowledge.
- Identify the limiting attribute.
- Identify visitor capacity.

Determine the Analysis Area

To analyze visitor capacity in a meaningful way, the planning team divided the trail system into analysis areas. Generally, visitor capacity is analyzed for each park unit's trail system; however, some units were subdivided into multiple analysis areas to ensure that zoning and desired conditions, as well as visitor use patterns, were relatively consistent throughout the analysis areas. Similarly, some adjacent units were combined due to shared access infrastructure, desired conditions, and use patterns.

The analysis areas include all resulting trails under the action alternative except the proposed greenway alignments. Visitor capacity for the proposed greenway, which is allowed under the action alternative, would be identified if and when the greenway is constructed. Park staff expects to collect use data from existing segments of pathway, including the Roswell Riverwalk and Rottenwood Creek, as well as the proposed Abbotts Bridge pilot greenway, to inform identification of this greenway capacity.

The analytical scope of the analysis areas includes visitors using the trail system for trail-based recreational purposes such as walking, hiking, trail running, biking, streambank fishing, wildlife watching, and sightseeing. Visitation that incidentally occurs on trails for short periods of time but is predominantly river-based or focused on a non-trail-based activity such as picnicking is excluded from this visitor capacity analysis.

For example, visitors that walk the short stretch of trail between the Powers Island parking lot and the Powers Island step-down river access to begin a float down the river are not included. The analysis areas are:

1. Bowmans Island – West
2. Bowmans Island – East and Orrs Ferry
3. Settles Bridge
4. McGinnis Ferry
5. Suwanee Creek
6. Abbotts Bridge
7. Medlock Bridge
8. Jones Bridge – North
9. Jones Bridge – South (Chattahoochee River Environmental Education Center)
10. Holcomb Bridge
11. Island Ford
12. Vickery Creek
13. Gold Branch
14. Johnson Ferry – North
15. Johnson Ferry – South
16. Cochran Shoals – Sope and Gunby Creeks, Interstate North
17. Cochran Shoals – Powers Island
18. Palisades – East
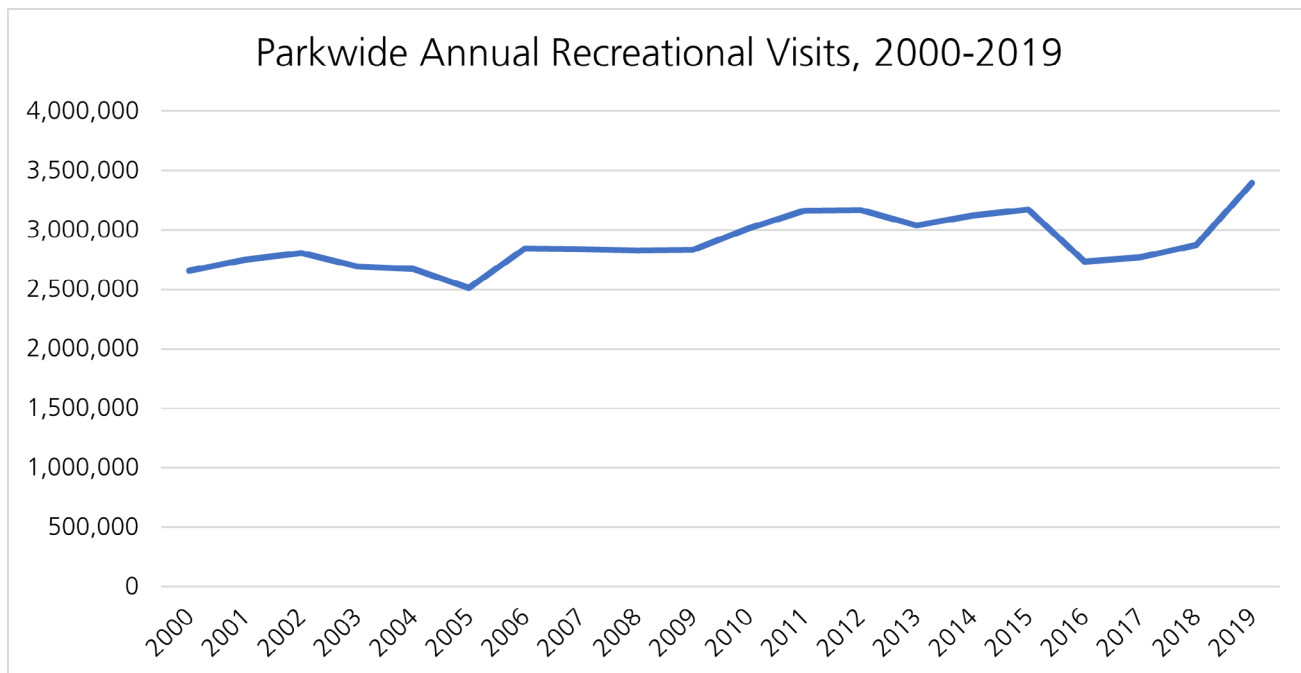19. Palisades – West

Existing Direction and Knowledge

The existing direction and knowledge section of each analysis area reviews known information about the amount, type, timing, and distribution of visitor use that is specific to each analysis area, as well as information about the desired conditions for the area. The desired conditions include the zoning descriptions from the 2009 general management plan as well as the desired conditions developed for each unit for this trails management plan (see chapter 2 for these desired condition statements).

PARKWIDE DISCUSSION OF EXISTING KNOWLEDGE

Much of the known information about the amount, type, timing, and distribution of visitor use applies parkwide and does not vary from analysis area to analysis area. This information is summarized below so that it does not need to be repeated.

Overall, annual recreational visits to the park have increased 28% over the 20 years leading up to the COVID-19 pandemic (figure E-1). Figures from 2020 are omitted from this graph due to widespread shifts in visitor use patterns seen nationwide during the pandemic (Rice et al. 2021).

Figure E-1. Parkwide Annual Recreational Visits, 2000–2019

Parkwide Annual Recreational Visits, 2000-2019

Visitation to the park is concentrated in the summer months of May through September, when overall visitation is nearly double what occurs in the winter months of December through March (figure E-2).

This parkwide data is generated primarily through inductive loop traffic counters located at entrances to parking areas throughout the park (NPS 2021). These raw traffic counts are adjusted for nonreportable visits (e.g., administrative or residential traffic), multiplied by a person-per-vehicle factor of 2.0, and added to estimates of nonvehicular arrivals to generate a count of parkwide visitation. While this parkwide data is useful for a comprehensive and long-term understanding of visitor use at the park, it may not accurately reflect visitor use on the trail system, as it does not distinguish between trail users and other visitor types who may be using the parking lots (e.g., river users). The data also does not track actual pedestrian arrivals and does not provide information about distribution across the trail system.

To develop a more refined understanding of trail use in the park, six infrared trail counters were deployed in November 2019 along trails at Bowmans Island West (1), on the Cochran Shoals Fitness Loop (1), at Island Ford (2), and at Vickery Creek (2). Data collected by these trail counters mimic the parkwide visitation data in that summer use of the trail system is higher than in the winter months, though the difference is not as dramatic as with the parkwide visitation, perhaps due to the relative attractiveness of winter month trail use as compared to winter month river use. For example, the Fitness Loop counter recorded around 40,000 to 50,000 users in the December through April period and around 60,000 to 70,000 users in the May through November period. While summer use was not quite double winter use as with parkwide visitation, trail use in the summer is still busier than winter use (figure E-3).

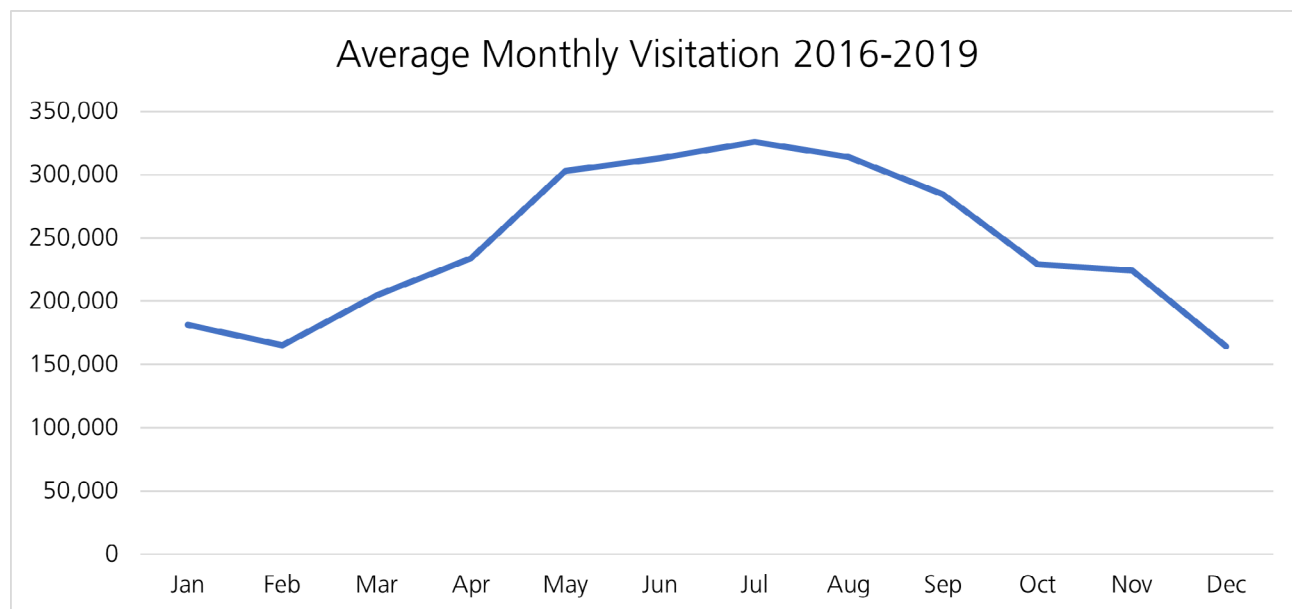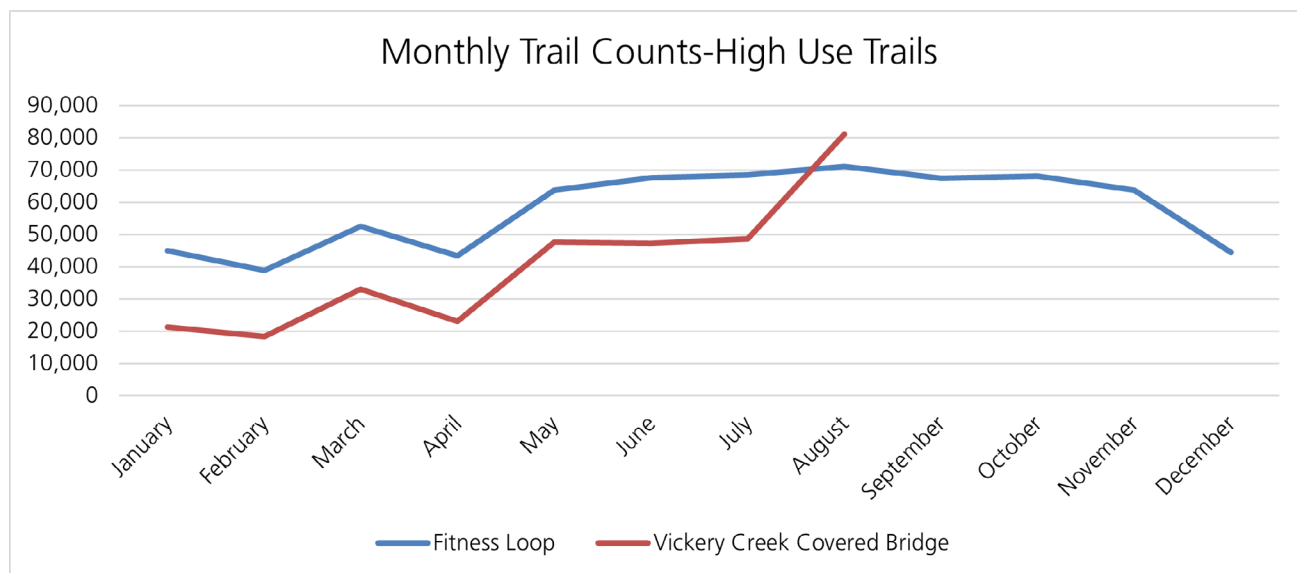Figure E-2. Parkwide Average Monthly Visitation, 2016–2019

Average Monthly Visitation 2016-2019

Figure E-3. Monthly Trail Counts on High-Use Trails

Monthly Trail Counts-High Use Trails

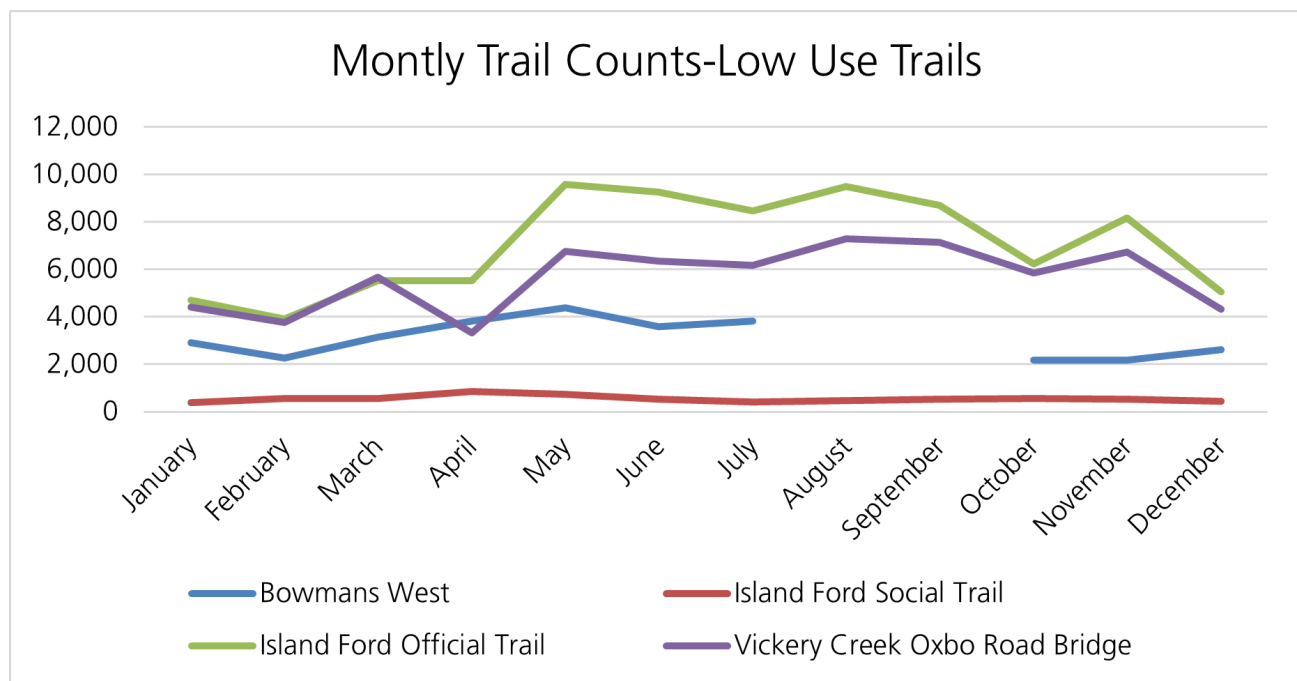Fitness Loop — Vickery Creek Covered Bridge

Breaks in lines represent months for which no data was recorded due to vandalism, theft, or a technical issue. January through July represent averages of 2020 and 2021 data. August through November represent 2020 data. December represents an average of 2019 and 2020 data.

However, the difference between summer and winter use is more dramatic on some of the lower-use trails, such as Bowmans Island – West (roughly 2,200 in February, October, and November; over 4,300 in May), the official riverside trail in Island Ford (fewer than 4,700 in January and February; more than 9,200 in May, June, and August), and the Covered Bridge Trail in Vickery Creek (around 20,000 in January and February; over 45,000 in May, June, July, and August). Generally, these lower-use trails tended to see a peak around May, with use tapering a bit in the hottest summer months before rebounding slightly in August and September (figure E-4).
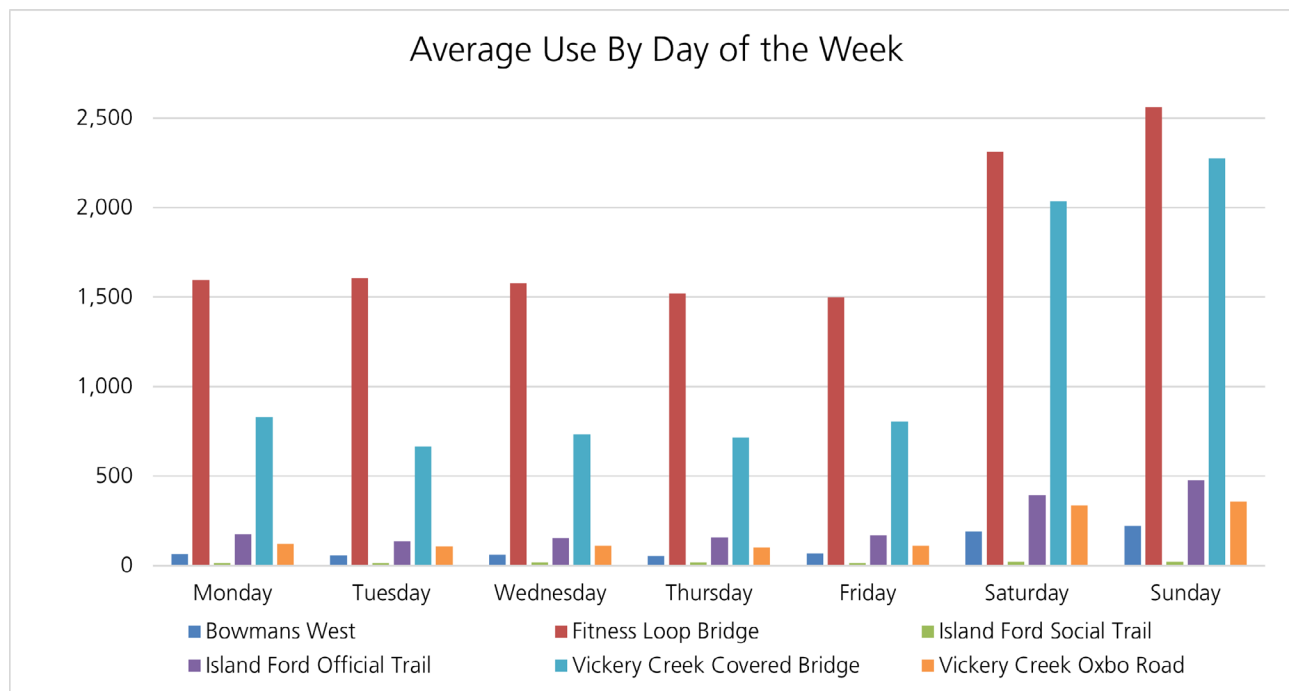
Figure E-4. Monthly Trail Counts on Low-Use Trails

Breaks in lines represent months for which no data was recorded due to vandalism, theft, or a technical issue. January through July represent averages of 2020 and 2021 data. August through November represent 2020 data. December represents an average of 2019 and 2020 data.

This trail counter data provides additional insight into the timing of visitor use. Across all six sites, weekends had more use than weekdays. However, that difference was much more pronounced at Bowmans Island and Vickery Creek, where use is over three times higher on weekends than weekdays than at the Cochran Shoals Fitness Loop, where visitation was only 50% busier on weekends. On average, weekends were twice as busy as weekdays (figure E-5).
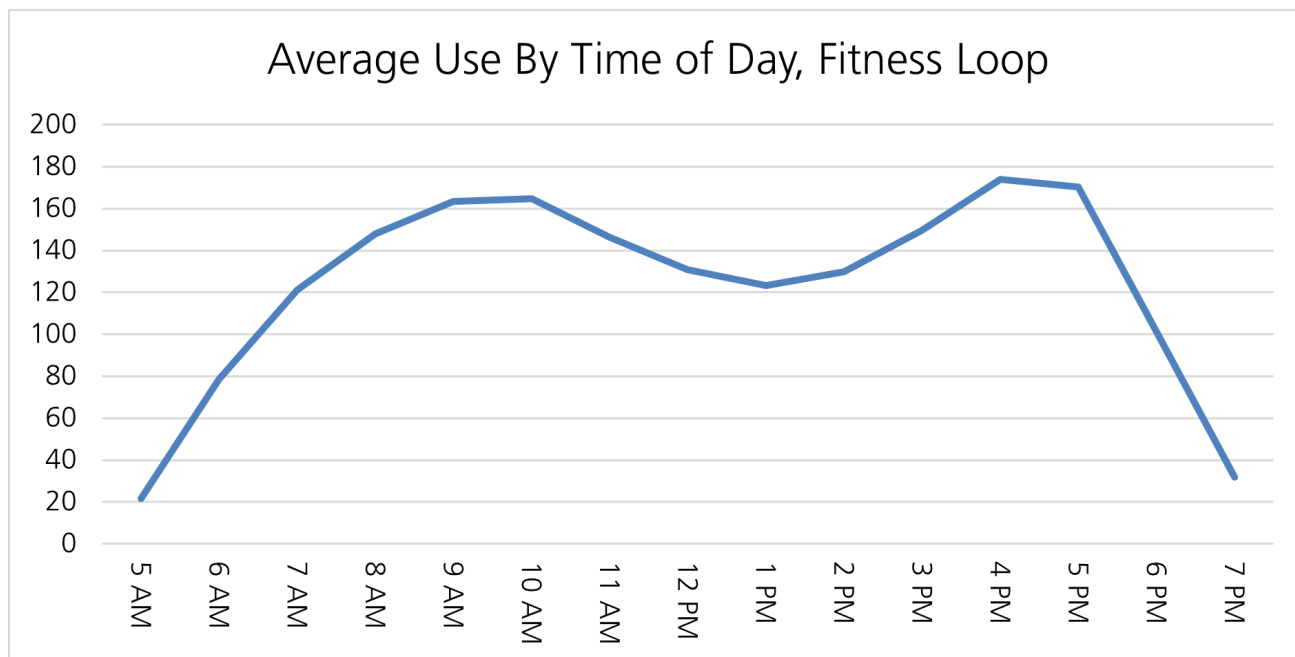
Figure E-5. Average Trail Use by Day of the Week

Average Use By Day of the Week

Legend:
- Bowmans West
- Fitness Loop Bridge
- Island Ford Social Trail
- Island Ford Official Trail
- Vickery Creek Covered Bridge
- Vickery Creek Oxbo Road

In terms of time of use, the trail counters indicate different patterns depending on the trail. At the Cochran Shoals Fitness Loop, there was a pronounced two-peak visitation pattern, with visitation peaking from 9:00 a.m. to 10:00 a.m., dipping during the middle of the day, and peaking again from 4:00 p.m. to 5:00 p.m. (figure E-6).
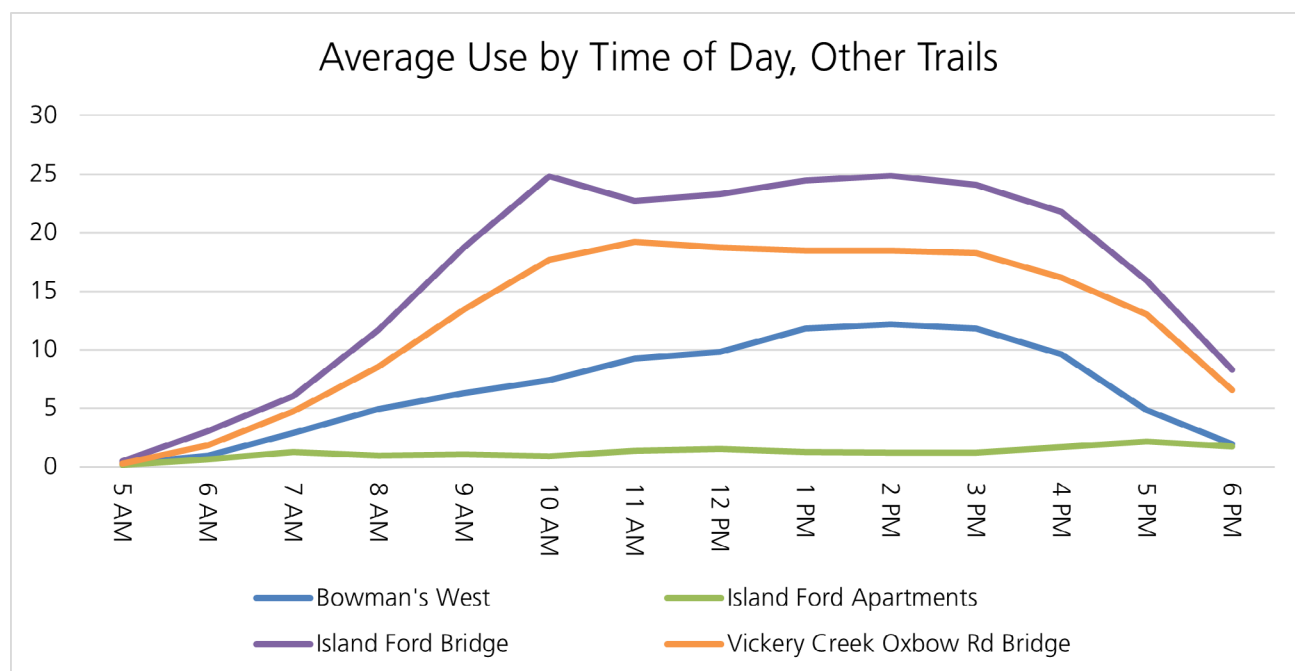
Figure E-6. Average Use of the Fitness Loop by Time of Day

Average Use By Time of Day, Fitness Loop

This trend could be a result of visitors avoiding the heat in the middle of the day and using the trail system before and after work or school. Interestingly, the two-peak visitation pattern is not as pronounced, and in most cases, not present at all at the other trails (figure E-7).

Figure E-7. Average Use of Other Trails by Time of Day

Average Use by Time of Day, Other Trails

Bowman's West — Island Ford Apartments — Island Ford Bridge — Vickery Creek Oxbow Rd Bridge

The timing of trail use is also heavily weather dependent. On days when the Atlanta area received 0.1 inches of precipitation or more, trail use is markedly lower than would normally be expected.

The long-term data from the infrared trail counters is limited to the six locations the counters were placed. Due to the high number of formal access points (and even higher number of informal access points), placing long-term trail counters throughout the park to capture all use on a long-term basis would be cost- and time-prohibitive. Therefore, to gain a sense of trail use that occurs elsewhere in the park, the planning team partnered with Strava Metro.
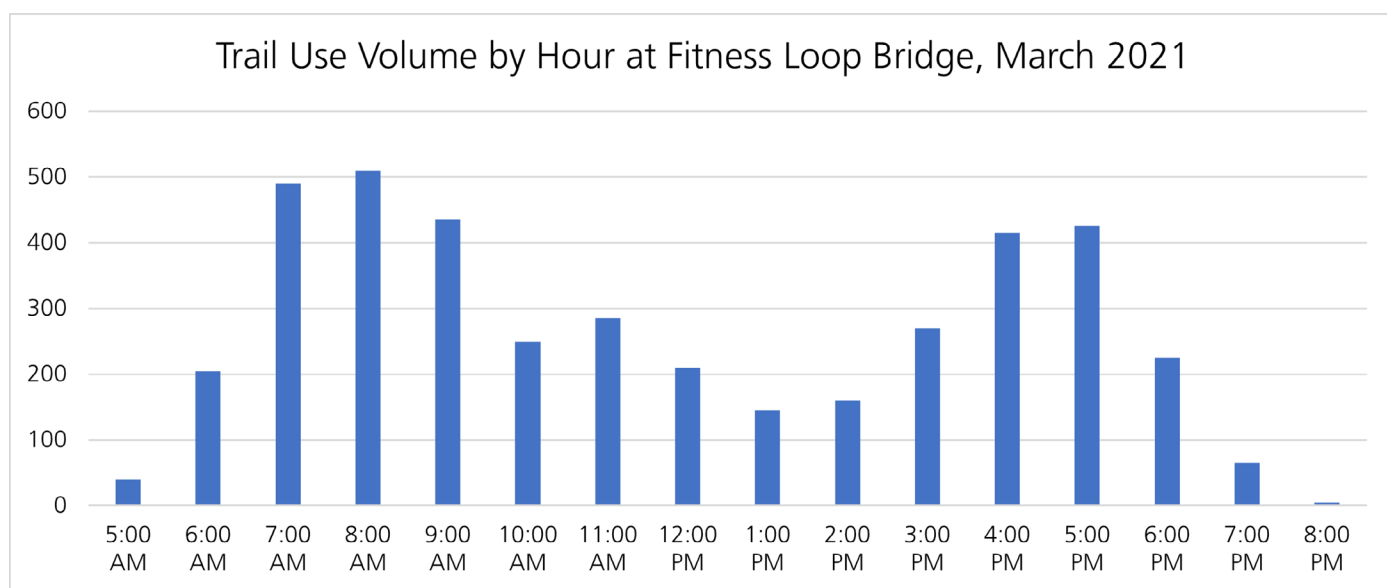
Strava is a fitness-tracking app that allows users to track and share the location, distance, and speed of workouts using their phone, GPS sport watch, or bicycle computer. Strava Metro aggregates and anonymizes this data for use by approved partners undertaking transportation planning, such as the National Park Service. The Strava Metro dashboard made available to the National Park Service under a terms of use agreement includes a "heat map" showing relative use levels on formal and user-created trails throughout the park, as

well as "street level" data that show how many trips were made on a particular stretch of trail over a customizable date range. The dashboard includes breakdowns for bicycle vs. pedestrian travel, commuter travel vs. leisure travel, information about day of the week and time of day the trail was used, average speed of travel, and age ranges and genders of users.

Using data from fitness trackers like Strava has been shown to successfully estimate trail use with limited on-site calibration (Headwaters Economics 2021). Based on previous research, the park area is a good candidate for using fitness tracking data due to its location in a major metropolitan area with recreational and commuter traffic. This report includes aggregated and de-identified data from Strava Metro.

Many of the same patterns and trends observed in the infrared trail counter data were apparent in the Strava data. For example, the two-peak visitation pattern seen at the Fitness Loop bridge was also noticeable in the Strava data for the corresponding stretch of trail (for comparison, see figures E-6 and E-8). The Strava data also mimicked the trail counter data in that weekends were much busier than weekdays.
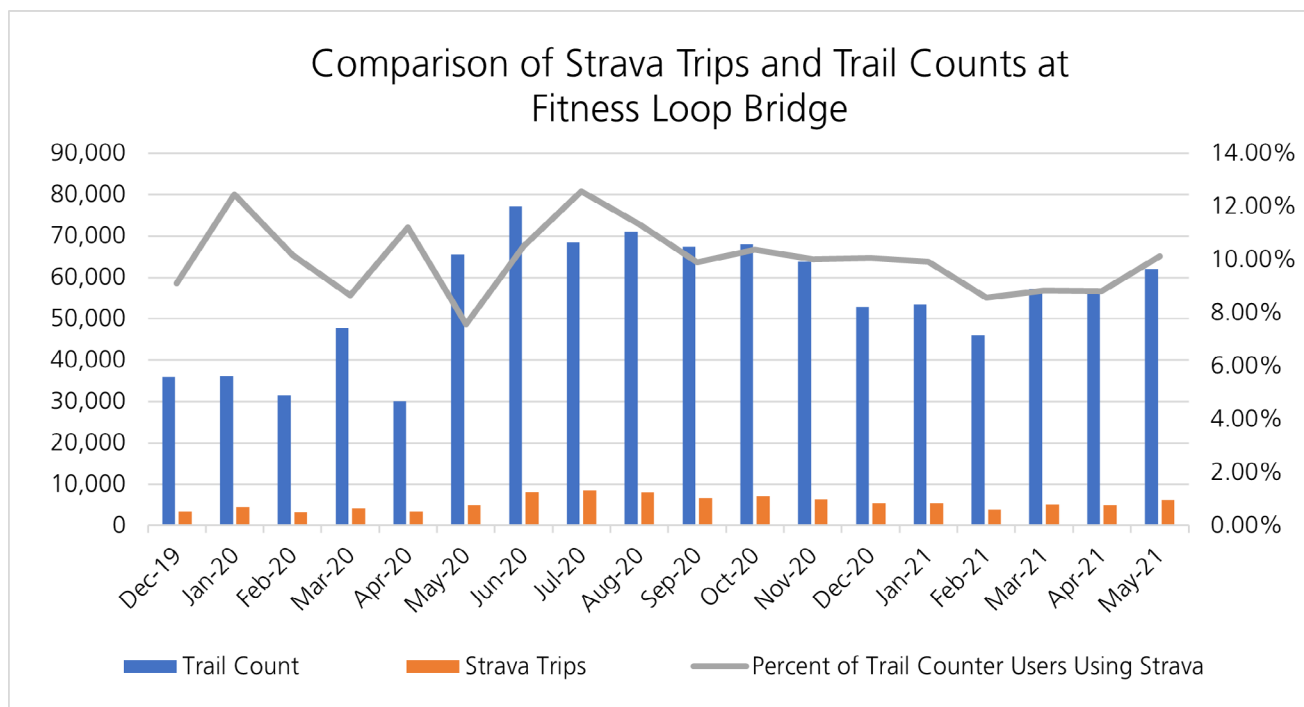
Figure E-8. Trail Use Volumes by Hour on the Fitness Loop Bridge, March 2021
Data Source: Strava Metro Dashboard

Trail Use Volume by Hour at Fitness Loop Bridge, March 2021

Knowing that the Strava data seems to be correlated with the trail counter data, it is possible to calibrate the former using the latter. Calibration is the process of adjusting estimates of total trail use to account for how much actual use is represented by the Strava use (Headwaters Economics 2021). At the Fitness Loop bridge, a comparison of Strava use levels with trail counter use levels shows that between 8% and 12% of users tracked their activity using Strava (figure E-9). The average over these 18 months was 10.0%, and the standard deviation was relatively low at 0.0128.

However, the proportion of trail users tracking their activity on Strava varies from unit to unit. During the same period at the Bowmans Island West counter, the proportion was a little over 5%, while it was just over 1% at the Vickery Creek Oxbo Road counter and around 0.5% at the Island Ford Bridge counter. This variability is not uncommon. A similar study comparing trail counts with Strava counts at four trailheads near Whitefish, Montana, found that Strava users made up between 1% and 5% of total trail users (Headwaters Economics 2018). The variability at Chattahoochee River NRA can likely be attributed to the varying levels of fitness orientation the different units attract.

Figure E-9. Comparison of Strava Trips and Trail Counts at Fitness Loop Bridge

Due to this variability in the proportion of trail users tracking their activity with Strava, the planning team undertook an effort to calibrate the Strava counts with on-the-ground trail counts from August through December 2021. The proportions from these calibrations are included in the respective visitor capacity identifications for each analysis area, where available. For some

units, the raw count of trail users collected by the on-the-ground trail counters provided useful information, particularly at units with limited access points and lower seasonal variability.

It should be noted that reliance upon the data from Strava does come with inherent challenges. The rate of technology adoption is relatively

low in some of the units, and this type of data is generally more reliable as more people use it. Additionally, Strava users are not necessarily representative of trail users as a whole. Strava users tend to be more avid, likely using the trails for longer distances and with greater frequency (Headwaters Economics 2021). For Chattahoochee River National Recreation Area, the Strava Metro dashboard shows that 44% of users are between the ages of 35 and 54, while users aged 20 to 34 comprise 36% of the sample. Users under the age of 20 and over the age of 54 account for a mere 11% and 10%, respectively (percentages do not equal 100 due to rounding). In addition to skewing toward middle ages, Strava users also tend to be male. For example, in July 2021, males comprised 64% of Strava users on the Fitness Loop bridge.

Nevertheless, the Strava data does seem to have a reliable correlation with the trail counter data, and it is reasonable to rely upon this calibrated data where other data sources are unavailable due to high cost or other factors that make it unfeasible to collect.

PROCESS FOR IDENTIFYING CURRENT USE LEVEL

The process to identify the "current use level" in each analysis area includes inputs from all the data sources described above. Given the shortcomings with data from the traffic counters (does not distinguish between trail users and other visitor types arriving by vehicle; does not track pedestrian arrivals), trail counters (long-term data is limited to the locations the counters were placed and misses many arrival routes in the porous trail system), and Strava data (only a small proportion of trail users are on Strava; Strava users are not representative of all trail users), the three data sources are considered together to "triangulate" an understanding of "current trail use" at each analysis area. This approach using the data available to best approximate current trail use is consistent with the sliding scale concept in the Visitor Use Management Framework.

To begin to develop an understanding of "current trail use" for each analysis area, the proportion of weekend use to weekday use is calculated by comparing the average weekday use to average weekend use from the available trail counter data. A "weekend multiplier" is calculated using the following equation:

$$\text{Weekend Multiplier} = ((\text{Avg Weekend Use} - \text{Avg Weekday Use}) \div \text{Avg Weekday Use}) + 1$$

If no trail counter data is available for the analysis area, 2.0 is used as the weekend multiplier since on average, weekends were twice as busy as weekdays (see figure E-5).

Next, an average of the four busiest months of 2019 traffic counter data was calculated. The four busiest months were used due to variability in busy season from counter to counter and to eliminate any months when the counter was not fully operating. Data from 2019 was used, as it is the last full year of data unaffected by shifts in use patterns seen nationally during the COVID-19 pandemic (Rice et al. 2021). This average of the high four months was adjusted using the visitor use counting procedures determined by the NPS social science program (NPS 2021c). These adjustments include a reduction for nonreportable vehicles, a people per vehicle multiplier, and an estimate of pedestrian arrivals. After these adjustments, an "average traffic counter people per day (PPD)" for the four busiest months is generated.

The average traffic counter PPD for the four busiest months is adjusted by the weekend multiplier to generate an "average traffic counter PPD on weekend days during four busiest months" using the following equation (solving for "y"):

$$7(\text{Average Traffic Counter PPD on Weekend Days During Four Busiest Months}) = 5x + 2y, \text{where (Weekend Multiplier)} x = 1y$$

To account for the fact that the traffic counters do not distinguish between trail users and non-trail users, an estimate of the portion of visitors who pass the traffic counter but do not use the trails is used. This estimate was generated for each analysis area based on park staff experience in that area. After multiplying the average traffic counter PPD on weekend days during four busiest months by the "estimated proportion of traffic counter PPD using trails," a final estimate of people per day using the trails on weekends during busy months is reached ("traffic counter estimate"). This number represents an estimate of the number of visitors who use the trails on the average weekend day during the four busiest months of the year and is therefore understood to represent a near-maximum of current use, or typical busy day (table E-1).

Table E-1. Trail Use Estimates Based on Traffic Counter Data

Analysis Area	Weekend Multiplier	Average Traffic Counter PPD (Four Busiest Months)	Average Traffic Counter PPD on Weekend Days During Four Busiest Months	Estimated Proportion of Traffic Counter PPD Using Trails	Traffic Counter Estimate (PPD)
Bowmans Island West	3.4	544	1,098	100%	1,098
Bowmans Island East and Orrs Ferry	1.8	No data available	No data available	100%	No data available
Settles Bridge	3.8	248	523	35%	183
McGinnis Ferry	1.7	No data available	No data available	N/A	No data available
Suwanee Creek	2.0	238	369	100%	369
Abbotts Bridge	1.9	160	243	20%	49
Medlock Bridge	1.6	235	324	40%	130
Jones Bridge North	4.1	348	755	85%	642
Jones Bridge (South/CREEC)*	1.8	No data available	No data available	85%	No data available
Holcomb Bridge	1.7	No data available	No data available	100%	No data available
Island Ford	2.8	557	1,023	75%	768
Vickery Creek	3.0	260	497	100%	497
Gold Branch	2.6	236	425	100%	425
Johnson Ferry North	2.6	700	1,255	50%	628
Johnson Ferry South	0.9	105	95	30%	28
Cochran Shoals	2.0	3,450	5,293	100%	5,293
Powers Island	1.8	600	872	10%	87
Palisades East	2.9	679	1,284	85%	1,092
Palisades West	1.2	1,515	1,696	80%	1,357

* Chattahoochee River Environmental Education Center

Once the estimated traffic counter estimate is determined, a second estimate is developed using trail counter calibrated Strava data. First, a "proportion using Strava" is calculated by dividing an infrared trail count from a representative location in the analysis area with the number of total Strava trips on that segment of trail during the same period (typically May 2021 for counters with several months of data; otherwise, the period the trail counter was present).

Then, Strava Metro data from the four months from April 2021 through July 2021 is reviewed to determine how many Strava Activities occurred on all access routes into the analysis area (not all on-the-ground trails show use on Strava due to low or no use by Strava users). The simple correlation, or proportion using Strava, is then used to translate the "April–July 2021 Strava activities" number into an estimate of the total number of Strava and non-Strava users who used the trail each day during the April–July 2021 time frame.

This "average April–July 2021 PPD (Strava and non-Strava)" is then adjusted by the same weekend multiplier calculated above to reach a final "calibrated Strava estimate" using the following equation (solving for y):

This number represents an estimate of the number of visitors who used the trails on the average weekend day during the period from April through July 2021 and is therefore understood to represent a near-maximum of current use, or typical busy day (table E-2).

Table E-2. Trail Use Estimates Based on Trail Counter-Calibrated Strava Data

Analysis Area	Weekend Multiplier	Proportion Using Strava	Estimated Average April–July 2021 PPD (Strava and non-Strava)	Calibrated Strava Estimate (PPD)
Bowmans Island West	3.4	2.59%	33	67
Bowmans Island East and Orrs Ferry	1.8	1.46%	11	17
Settles Bridge	3.8	0.95%	48	101
McGinnis Ferry	1.7	0.00%	0	0
Suwanee Creek	2.0	0.00%	0	0
Abbotts Bridge	1.9	0.00%	0	0
Medlock Bridge	1.6	0.00%	0	0
Jones Bridge North	4.1	0.54%	623	1,353
Jones Bridge South (CREEC)*	1.8	1.83%	215	311
Holcomb Bridge	1.7	0.00%	0	0
Island Ford	2.8	1.33%	268	493
Vickery Creek	3.0	1.02%	617	1179
Gold Branch	2.6	1.63%	223	401
Johnson Ferry North	2.6	2.52%	189	338
Johnson Ferry South	0.9	0.47%	243	219
Cochran Shoals	2.0	9.23%	3,781	5,800
Powers Island	1.8	4.50%	94	136
Palisades East	2.9	1.37%	644	1,218
Palisades West	1.2	3.60%	683	765

* Chattahoochee River Environmental Education Center

Finally, the traffic counter estimate and the calibrated Strava estimate are compared to determine a reasonable "estimate of current trail use." In some cases, a simple average of the two figures is taken. In other cases, the estimate of current trail use is weighted more heavily toward one data point or the other due to a higher degree of confidence in that number. In still other cases, raw trail counts collected during the Strava calibration effort were used as a third input when there was insufficient data to calculate either or both of the traffic counter estimate and/or calibrated Strava estimate. However, the raw trail counts are only included where this data is helpful, as in many cases it is misleading (due to it representing just one of several access points into a unit's trail system or due to a significant difference between peak visitation level time frames and the time frame trail counts were collected). This estimate of current trail use is used in the existing direction and knowledge sections of each analysis area to understand the current amount of use. To account for the assumptions and potential sources of error occurring throughout all the calculations, the estimates of current trail use are rounded up (table E-3).

Table E-3. Estimates of Current Trail Use

Analysis Area	Traffic Counter Estimate (PPD)	Calibrated Strava Estimate (PPD)	Trail Count (PPD)	Estimate of Current Trail Use (PPD)	Notes
Bowmans Island West	1,098	67	Limited data	600	Generally, traffic counter estimate seems high due to anomalies with that traffic counter. Calibrated Strava estimate seems low. Average is reasonable.
Bowmans Island East and Orrs Ferry	No data available	17	Limited data	25	—
Settles Bridge	183	101	Limited data	150	—
McGinnis Ferry	No data available	No data available	6	15	The average trail count on weekend days during the October and November data collection was 6. Units in the northern part of the park are generally 2.5 times busier in peak months as compared to October/November. Hence, 6 is multiplied by 2.5.
Suwanee Creek	369	No data available	No data available	375	—
Abbotts Bridge	49	No data available	Limited data	50	—
Medlock Bridge	130	No data available	Limited data	130	—
Jones Bridge North	642	1353	Limited data	750	Traffic counter data is considered more reliable at Jones Bridge North. This unit has a low Strava usage rate that could be contributing to error.
Jones Bridge (South/CREEC)*	No data available	311	Limited data	325	—
Holcomb Bridge	No data available	No data available	24	60	The average trail count on weekend days during the October and November data collection was 24. Units in the northern part of the park are generally 2.5 times busier in peak months as compared to October/November. Hence, 24 is multiplied by 2.5.
Island Ford	768	493	Limited data	650	—

Analysis Area	Traffic Counter Estimate (PPD)	Calibrated Strava Estimate (PPD)	Trail Count (PPD)	Estimate of Current Trail Use (PPD)	Notes
Vickery Creek	497	1,179	1,252	1,200	Strava data is considered more reliable at Vickery Creek, as there is no traffic counter at the primary access to the unit (the covered bridge). Long-term trail counter data at the two primary entry points (covered bridge and Oxbo Road) indicates actual use to be closer to 1,200.
Gold Branch	425	401	340	425	Trail counter covers only trail access to the unit. Trail counter data collected in slightly off-peak time in August and September.
Johnson Ferry North	628	338	Limited data	500	—
Johnson Ferry South	28	219	Limited data	200	Strava data is considered more reliable at Johnson Ferry South, as the traffic counter misses a significant portion of visitation that accesses the unit at the north end and travels through the unit.
Cochran Shoals	5,293	5,800	Limited data	5,550	—
Powers Island	87	136	Limited data	125	—
Palisades East	1,092	1d218	Limited data	1,175	—
Palisades West	1,357	765	Limited data	1,075	—

* Chattahoochee River Environmental Education Center

The Limiting Attribute

This guideline involves the identification of the limiting attribute(s) that most constrains the analysis area's ability to accommodate visitor use while achieving and/or maintaining desired conditions. For example, a limiting attribute might be encounters with other groups traveling along a trail, a historic bridge's structural integrity and ability to accommodate a volume of trail uses, or trampled vegetation. The limiting or constraining attribute varies from analysis area to analysis area. Identification of the limiting attribute is an important step, as it connects the most important resources and visitor experiences to on-the-ground conditions with the identified visitor capacity number.

Identify Visitor Capacity and Implementation Strategies

Visitor capacity contains two parts. First is the identification of the visitor capacity (maximum amounts and types of use) and second is the identification of management strategies and/or actions that could be taken to implement visitor capacity to ensure the amount of visitor use is managed to achieve and maintain desired conditions.

Identify Visitor Capacity. To identify the appropriate amounts and types of use for each of the analysis areas, the previous steps were reviewed to understand current conditions and how they compare to desired conditions for the area. Based on this understanding, the planning team determined whether visitation levels should be allowed to increase, maintained at the current level, or decreased to achieve desired conditions. If current conditions are in keeping with desired conditions, the visitor capacity allows for an increase in visitation from current levels. However, if current conditions are not consistent with desired conditions, the visitor capacity is identified below the current use level. When current conditions align with desired conditions but are close to violating them, the visitor capacity is identified at or about the current use level.

The expression of visitor capacity for the analysis areas follows a sliding scale approach, whereby more complex units have visitor capacities identified based on people entering the unit's trail system per hour (people per hour, or PPH), and less complex units have visitor capacities identified based on people entering the unit's trail system per day (people per day, or PPD). These visitor capacity measures will allow for ease of implementation and monitoring, as park staff can review trail counter data on a daily or hourly use level and quickly assess if the trail is at or over capacity.

Importantly, the mileage of official trails within a unit is changing under the action alternative (this visitor capacity is considered part of the action alternative). As such, a determination to "maintain" use at current levels may represent a decrease in the number of people using a given mile of trail in an hour or day. For example, if a unit currently has 10 miles of trails and has 1,000 people per day and the action alternative includes increasing the trail mileage to 15, maintaining use levels at 1,000 people per day actually represents a decrease in the number of people accessing the trails per mile from 100 people/mile/day to 67 people/mile/day. In this scenario, such a decrease would be more likely to achieve desired conditions. Similarly, a determination to "increase" use may actually represent a maintenance in the number of people using a given mile of trail in an hour or day, and so on. The opposite would also be true of trails that have decreased trail mileage available under the action alternative.

Implementation Strategies. Management strategies to ensure use levels stay within identified visitor capacities were adapted from best practices in visitor use management and examples from other plans and projects across the National Park Service. Implementation strategies include actions that would be taken immediately as well as adaptive management strategies. The adaptive management strategies would only be implemented if and when conditions dictate they are necessary and

after a variety of management strategies have been implemented. These conditions would be evaluated through routine monitoring (see appendix D).

The following management strategies would apply broadly to many of the analysis areas. Others that are more specific to a single analysis area are described under each analysis area.

- Increase visitor education (as part of Leave No Trace messaging) about the importance of staying on trails to protect vegetation, soils, and water.

- Encourage voluntary redistribution of use to off-peak times by increasing public education efforts and providing visitors with trip planning information on the park website, mobile app, and other venues.

- Encourage voluntary redistribution from southern units to northern units by increasing public education efforts and providing visitors with trip planning information on the park website, mobile app, and other venues.

- Increase education and signage about parking in designated areas.

- Increase education and information during peak times about where to find available parking.

- Install boardwalks in areas that are wet or high-flood zones.

- Install rock armoring to address erosion issues and increase the sustainability of trails.

- As staffing allows, increase parking enforcement for particularly egregious violations that limit other visitors' ability to park.

- Use up-to-date technology, such as interactive maps and other technology or social media, to provide information to visitors before and during their visits.

- Manage group size at appropriate locations.

Visitor Capacity Identification and Associated Implementation Strategies

Each analysis area is discussed below, including a review of existing direction and knowledge, the limiting attribute and relevant indicators, and visitor capacity identifications and associated rationale.

Bowmans Island West
ANALYSIS AREA

This analysis area includes the trail system in the Bowmans Island unit west of the Chattahoochee River.

EXISTING DIRECTION AND KNOWLEDGE

Trail use on Bowmans Island West consists of hikers, trail runners, dog walkers, and anglers accessing the river for fishing. This analysis area experiences a high level of neighborhood access from local residents. Visitation on the trails tends follows the two-peak pattern described above, with peaks around 7:00 a.m. and 5:00 p.m. Use of this area is somewhat lower than in other units, with moderate use of trails overall and high use of trails along the river. "Current trail use" is estimated at 600 people per day (see table E-3).

All trails in Bowmans Island West are in the Natural Area Recreation Zone, where the "probability of encountering other visitors would be moderate to high," while the "degree of isolation and closeness would be limited by the presence of other people." The desired conditions for Bowmans Island West include opportunities for visitors to "experience a quieter and more tranquil setting than in many of the other units, with ample opportunities for solitude." In this area, "opportunities to access the river and riverbank for fly fishing would be plentiful."

Management concerns in Bowmans Island West include social trailing, vegetation trampling, trail widening, shoreline erosion, and the spread of invasive species. Therefore, monitoring the trail condition, social trailing, and visitor conflicts indicators will be important to achieving desired conditions at Bowmans Island West.

LIMITING ATTRIBUTE

Trail condition is the attribute that most constrains the Bowmans Island West trail system's ability to accommodate use. As the area receives more visitation, more social trailing and shoreline erosion occurs. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a tranquil setting.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at higher use levels than Bowmans Island West currently has, at 900 people per day. As the mileage available increases from 4 miles to 7.9 miles under the action alternative, the number of people per mile would decrease under this visitor capacity. This lower number of people per mile would relieve some of the pressure on trail conditions so that the trail system better achieves desired conditions.

MANAGEMENT STRATEGIES

- Install maps and signage about various destinations in this unit.

- Educate park visitors about the new opportunities in this unit, especially for those who may be seeking a quieter, more tranquil area of the park where they can encounter fewer people.

- Promote this unit to increase use through social media, interpretation, local news outlets, and at local attractions (i.e., Cummings, Duluth, Lake Lanier).

- Explore potential parking opportunities to reduce pressure on available parking. Opportunities include at the ranger station; along highway 20; coordinating parking with the neighboring Army Corps; or at the trout hatchery through partnership.

- Install an NPS sign adjacent to the Army Corps sign to increase awareness of entering the NPS unit.

Bowmans Island East and Orrs Ferry

ANALYSIS AREA

The analysis area includes the eastern portion of Bowmans Island (hereafter, Bowmans East) and the Orrs Ferry unit.

EXISTING DIRECTION AND KNOWLEDGE

Currently, no official trails exist in either of these sections. Visitors still access the area using social trails. Typical uses include fishing, bouldering, walking, and some trail running. The primary destination for anglers is the river or the dam. Unlike the two-peak visitation pattern seen on the Fitness Loop, peak use at Bowmans East and Orrs Ferry typically occurs early in the morning, from 7:00 a.m. to 10:00 a.m. While these two areas can be busy on the weekends (with the department of transportation parking lot south of Highway 20 sometimes filling up), these are still some of the least-visited sections of the park. Current trail use is estimated at 25 people per day (see table E-3).

All trails in Bowmans East are in the Natural Zone. Under this plan, most of the Orrs Ferry unit would be rezoned from the Natural Area Recreation Zone to the Natural Zone, though an area near State Route 20 would remain in the Natural Area Recreation Zone. In the Natural Zone, the "level of encounters with other staff and visitors would be low." Conversely, on the trails in the Natural Area Recreation Zone, the "probability of encountering other visitors would be moderate to high." The Natural Zone tolerance for natural resource degradation will be "very low," whereas, in the Natural Area Recreation Zone, the tolerance will be "low." The desired conditions for the visitor experience in Bowmans East include "an even quieter and more tranquil setting and more opportunities for solitude as compared to the west segment of Bowmans Island. Visitors would feel like they have space, and they would have a relatively low probability of encountering many other users compared to the west segment or other units of the park." In Orrs Ferry, visitors "would experience a tranquil riverside experience . . . [and] a closeness to nature with a low level of

encounters with other visitors and park staff." The rezone in Orrs Ferry from Natural Area Recreation Zone to Natural Zone aligns with the desired conditions of preserving the area as an ecological buffer zone and protecting sensitive plant species and wildlife habitat. Bowmans East is also an area of sensitive natural resources, where "a sense of being closer to the North Georgia Mountains would prevail."

The issue of most management concern for both Bowmans East and Orrs Ferry is the impacts from anglers accessing the river. When anglers create their own informal access to the river, natural resource damage occurs from erosion, vegetation trampling, water quality impacts, and bank instability. For these reasons, it will be important to monitor trail width and depth, as well as the number of social trails, to meet desired conditions in these two areas.

LIMITING ATTRIBUTE

Impacts to resources—including vegetation, soils, and riverbanks—in both Bowmans East and Orrs Ferry is the attribute that most constrains the trail system's ability to accommodate use. As visitation in the area increases, more vegetation trampling, soil destabilization, erosion, and impacts to the water quality occur. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired conditions of a very low/low tolerance for natural resource degradation. These impacts are also closely related to crowding and congestion in the areas, which at select times may exceed the desired conditions that allow for low levels of encounters in the Natural Zone.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at higher use levels than Bowmans East and Orrs Ferry currently have, at 40 people per day. Since these two areas currently have no official trails and new sustainable trails will be implemented under the action alternative, the number of people in this unit will be able to increase under this visitor capacity while still achieving desired conditions. Approximately 5.6 miles of trail would be added to Bowmans East, with another 1.6 miles added to Orrs Ferry.

MANAGEMENT STRATEGIES

- Install maps and signage about various destinations in both units.
- Educate park visitors about the new opportunities in these units, especially for those who may be seeking a quieter, more tranquil area of the park where they can encounter fewer people.
- Develop additional parking on park-owned property south of Highway 20.
- Increase education and signage about parking in designated areas.
- Increase education and information during peak times about where to find available parking.

Settles Bridge
ANALYSIS AREA

This analysis area includes the entire trail system in the Settles Bridge unit.

EXISTING DIRECTION AND KNOWLEDGE

Because visitor activity at the Settles Bridge unit is heavily focused on river use, trail use is relatively limited and is mostly focused around the parking lot and the boardwalk. Many of those who do use the trails tend to be fishing or walking along the trails alone or in small groups. Strava use data shows that a fair number of active recreationists connect into the northern portion of the unit from the adjacent Gwinnett County Park, a connection that would be better facilitated under the action alternative. Over the years, park staff has worked to discourage people from climbing onto and jumping off the bridge.

Visitation on the trails tends to be much heavier in the morning than in the afternoon. "Current trail use" is estimated at 150 people per day (see table E-3).

Under the action alternative, all the trails would be in the Natural Area Recreation Zone, with the exception of the trails in the immediate vicinity of the boat launch, access road, and parking lot, which would be in the Developed Zone. On the trails, the "probability of encountering other visitors would be moderate to high,"

while the "degree of isolation and closeness to nature would be limited by the presence of other people." The area has a low tolerance for natural resource degradation. The desired conditions for Settles Bridge highlight the desire to have a quality land-based experience to complement the existing water-based experiences. Visitors to Settles Bridge can expect to "encounter other users with some frequency."

Management concerns in Settles Bridge include unauthorized activities occurring in and around the parking lot, including "hot rodding," dumping, littering, graffiti, and vandalism. Park managers are also concerned with encounters between humans and wildlife as well as visitor safety related to people jumping off the historic bridge. Deer poaching along the park boundary is also a concern. Monitoring the incidences of vandalism at cultural resources indicator will be important to achieving desired conditions at Settles Bridge.

LIMITING ATTRIBUTE

Trail erosion into the streams and river is the attribute that most constrains the Settles Bridge trail system's ability to accommodate use. As the area receives more visitation, more soil destabilization and erosion occur in this area, leading to runoff into the unit's streams and the Chattahoochee River. This attribute is a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a low tolerance for natural resource degradation. These impacts are also closely related to crowding and congestion, which at select times may exceed the desired conditions that allow for a moderate-to-high probability of encountering others.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified above current use levels of 225 people per day using the Settles Bridge trail system. Generally, while the parking lot area has issues unrelated to trail us and concerns exist about river use, the actual trail use at Settles Bridge is not believed to threaten desired conditions or the limiting attribute at current use levels. Therefore, the visitor capacity allows room for growth.

MANAGEMENT STRATEGIES

- Partner with Gwinnett County to encourage connectivity between the county's Settles Bridge Park and the NPS Settles Bridge unit. This strategy includes physical connectivity as well as integration of signage and wayfinding devices.

- Formalize parking spaces in the lot to increase parking efficiency and discourage unauthorized activities.

- Explore a potential increase in the Settles Bridge parking lot size and improving circulation within the parking lot.

- Explore moving the Settles Bridge parking lot further away from the river.

- Improve drainage in the Settles Bridge parking lot to improve ease of access to trails.

- Increase the law enforcement presence on peak use days to address unauthorized activities occurring in the Settles Bridge parking lot. Partner with the Gwinnett County Police Department to increase the multiagency presence.

McGinnis Ferry
ANALYSIS AREA

This analysis area includes the river-adjacent corridor of the McGinnis Ferry unit in the area rezoned as Natural Area Recreation.

EXISTING DIRECTION AND KNOWLEDGE

Since this unit contains no official trails, it currently has little to no visitor use, estimated at 15 people per day. This use is associated with people walking in from surrounding neighborhoods on social trails. Park staff has observed visitors using the area in the morning or late afternoon, before and after typical work hours.

Most of the unit will remain in the Natural Zone to preserve the buffer between the river and adjacent housing developments, which includes sensitive wetlands. In the Natural Zone, tolerance for resource degradation will be very low. Under this plan, the existing utility corridor would

be rezoned to Natural Area Recreation to help achieve connections with regional trail networks. In the future, this corridor could provide a critical connection for the potential RiverLands greenway. Also in this zone, "the probability of encountering other visitors will be moderate to high." A greenway (if constructed) would provide a more social experience.

Management concerns in McGinnis Ferry include additional social trail use (if people try to access the future greenway from the neighborhoods west of the unit), potential conflicts in the boat ramp parking lot between boaters and visitors accessing the future greenway, and conflicts between pedestrians and bicyclists on the greenway. Therefore, monitoring the trail condition (width and depth), social trails, and complaints about user conflicts will be important to achieving desired conditions at McGinnis Ferry.

LIMITING ATTRIBUTE

Impacts to the sensitive wetlands in the Natural Zone is the attribute that most constrains the area's ability to accommodate use. If the proposed greenway corridor is built in the Natural Area Recreation Zone, visitors accessing the greenway from surrounding neighborhoods could use and create social trails when crossing through the Natural Zone. As visitation in the area increases, more vegetation trampling, soil destabilization, and impacts to the wetlands can occur. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a very low tolerance for natural resource degradation.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at higher use levels than the area currently has of 50 people per day. Since no official trails are currently in this unit and a new sustainable trail will be considered in the future, the number of people in this unit will increase under this visitor capacity.

MANAGEMENT STRATEGIES

- Establish a separate parking lot at north end for a dedicated greenway and boat ramp parking access.

- Design the greenway to minimize erosion. Ad trail curbing to prevent social trailing.

- Install maps and signage about various destinations in the unit.

- Educate park visitors about the new opportunities in this unit.

Suwanee Creek

This analysis area includes the entire Suwanee Creek unit.

EXISTING DIRECTION AND KNOWLEDGE

This analysis area currently has no authorized trails; however, visitor use does occur on unauthorized trails. This use is estimated at 375 people per day. According to fitness data on Strava Metro, this use primarily follows a social trail along the creek down to the river, where it meets a "t-intersection" and travels either way along the river. Since the beginning of the trail is behind an access gate controlled by a local homeowners' association, most of these visits are presumably local residents out for a walk, hike, or run.

Under the action alternative, there would continue to be no authorized trails in this unit due to a lack of public access to the trail system. The main part of the unit is in the Natural Zone, while the Rogers Bridge portion is in the Historic Resource Zone. Per the desired conditions, "this unit does not have a desired trail-based visitor experience." As no formal land-based public access exists for this unit, management of Suwanee Creek would be primarily as a buffer zone to protect the riverbank from adjoining development. The area would also have "minimal to no development."

The Suwanee Creek unit has very sensitive cultural resources and monitoring the "number of incidences of vandalism at cultural resources" indicator will be important to achieving desired conditions.

LIMITING ATTRIBUTE

Sensitive natural and cultural resources and a lack of legal public land-based access are the attributes that most constrain the Suwanee Creek unit's ability to accommodate use. Desired conditions call for the unit to serve as buffer zone to protect natural resources from adjoining development and prescribe that there would be minimal to no development.

VISITOR CAPACITY

Given the unit's role as a buffer zone and the lack of public access or authorized trail system, the visitor capacity is identified at 10 people per day entering the Suwanee Creek unit. The visitor capacity is relatively low, as no infrastructure exists to sustainably support more visitation to the unit. However, some visitation is inevitable as local residents make their way onto social trails, and this low level of visitation is unlikely to harm sensitive resources.

MANAGEMENT STRATEGIES

- Avoid publicizing land-based recreational activities in Suwanee Creek.

- Discourage the creation of social trails by monitoring the "number of social trails" indicator.

- Monitor for any unacceptable impacts to cultural resources through monitoring the "incidences of vandalism at cultural sites" indicator.

- Educate local residents about desired conditions for Suwanee Creek and encourage "Leave No Trace" land ethics.

Abbotts Bridge
ANALYSIS AREA

This analysis area includes the entire trail system in the Abbotts Bridge unit.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Abbotts Bridge comprises predominately river users, including anglers, tubers, and visitors using the concession site. The existing pavilion draws use as a picnic site and the restroom draws use as well. Use is concentrated along the river access points. Visitation on the trails follows the two-peak pattern described above, with peaks around 7:00 a.m. and 5:00 p.m. Use of this area is moderately high when compared to other units. "Current trail use" is estimated at 50 people per day (see table E-3).

Under the action alternative, most trails in Abbotts Bridge would be in the Developed Zone, with some trails in the Natural Area Recreation Zone. Trails in the Developed Zone provide "convenient access to park buildings" and "high probability of encountering others," while trails in the Natural Area Recreation Zone have a moderate-to-high "probability of encountering other visitors," along with a low-to-moderate feeling of "closeness to nature." The desired conditions for Abbotts Bridge provide for a "family-friendly and group-friendly atmosphere" in a "relatively manicured" area with "flat and easy" trail opportunities.

Management concerns at Abbotts Bridge include trail flooding, trail damage, and social trailing, as visitors access the river for fishing and tubing. Visitor use conflicts occur between pedestrians and river users. Therefore, monitoring the trail condition and social trailing indicators will be important to achieving desired conditions at Abbotts Bridge.

LIMITING ATTRIBUTE

The floodplain is the attribute that most constrains the Abbotts Bridge trail system's ability to accommodate use. Due to the flat topography of this unit, sustainable trail alignment is almost impossible, and the area regularly floods. As visitation in the area increases, the use of flooded trails results in increased trail damage and trail braiding around flooded areas. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a relatively manicured area with flat and easy trail opportunities.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 125 people per day using the Abbotts Bridge trail system. As

the mileage available increases from 0.4 miles to 1.4 miles under the action alternative, the number of people per mile would decreases under this visitor capacity. This visitor capacity, along with the management strategies outlined below, will allow for the desired conditions of a relatively manicured area with flat and easy trail opportunities to be achieved.

MANAGEMENT STRATEGY

- Educate park visitors about the new trail opportunities in this unit to alleviate pressure on river-based activities.

ADAPTIVE MANAGEMENT STRATEGY

- Consider moving the trailhead away from the river access to separate user groups and reduce frequency of visitor conflicts.

Medlock Bridge

ANALYSIS AREA

This analysis area includes the entire trail system in the Medlock Bridge unit.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Medlock Bridge consists of hikers, trail runners, and anglers. Walkers and anglers tend to follow small, short social trails to the riverbank. The system is particularly popular with couples and also gets a fair amount of use from picknickers and dog walkers. "Current trail use" is estimated at 130 people per day (see table E-3).

Under the action alternative, all of Medlock Bridge's trails would be in the Developed Zone, where the area should have ample opportunities for "social experiences, and a high probability of encountering other visitors or park staff." The desired conditions for Medlock Bridge describe a trail system that provides feelings of ease and relaxation, and a respite from the urban surroundings will also having a developed feel.

Management concerns at Medlock Bridge include illicit activities in the parking lot, including vandalism to interpretive waysides and other media as well as litter. Heavy social trailing to the riverbank is affecting soil stability. Therefore, monitoring the social trail indicator

as well as the trail condition indicators will be important to achieving desired conditions.

LIMITING ATTRIBUTE

The ability to have a restful experience with ample opportunities for respite, ease, and relaxation as described in the desired conditions, is the attribute that most constrains the Medlock Bridge trail system's ability to accommodate use. As visitation in the area increases, the ability to experience this miniature escape from civilization would eventually be lost. This limitation is related to impacts that may occur with increasing user frequency along the riverside trail, including more soil destabilization that contributes to runoff and sedimentation into the Chattahoochee River. While the zoning desired conditions for Medlock Bridge do include a more social setting, visitation should not be allowed to increase to the point that desired conditions for a restful experience are not being achieved.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 130 people per day using the Medlock Bridge trail system. As the mileage available increases modestly from 1.5 miles to 1.6 miles under the action alternative, the number of people per mile would decrease slightly under this visitor capacity. As Medlock Bridge occasionally experiences conditions that verge upon violating desired conditions for a restful atmosphere during busy times like fishing season, identifying a visitor capacity that would result in a slight decrease in congestion on the trails is appropriate.

MANAGEMENT STRATEGIES

- Increase signage that communicates the necessity of parking in designated areas.
- Reengineer parking lot to include more boat parking spaces in northern end to decrease impacts on trail parking.
- Increase enforcement of parking outside of designated areas. A visitor use assistant or volunteer could help with enforcement at peak times.

Jones Bridge

ANALYSIS AREA

This analysis area includes the northern section of the trail system in the Jones Bridge unit, extending south until the trails around the Chattahoochee River Environmental Education Center.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Jones Bridge consists primarily of access to the river by anglers, waders, and swimmers. Hiking is a secondary use at Jones Bridge. Visitors often swim across the river to the island for sunbathing. The boat ramp and restroom draw visitors to this unit. Visitation on the trails tends follows the two-peak pattern described above, with peaks around 9:00 a.m. and 6:00 p.m. Use of this area is moderate to high, with most use concentrated along river access points. "Current trail use" is estimated at 750 people per day (see table E-3).

All trails in Jones Bridge analysis area are in the Natural Area Recreation Zone, where the "probability of encountering other visitors would be moderate to high," while the "degree of isolation and closeness would be limited by the presence of other people." The desired conditions for Jones Bridge include "diverse social opportunities" where visitors can hike, picnic, wade, and fish. This area is considered one of the "best opportunities for visitors to get into the river."

Management concerns in Jones Bridge include unsustainable trails, unauthorized parking, illegal dumping, and vandalism. Visitor conflicts occur between river user groups with competing recreation types. Therefore, monitoring the trail condition, social trailing, unauthorized parking, and visitor conflicts indicators will be important to achieving desired conditions at Jones Bridge.

LIMITING ATTRIBUTE

Congestion is the attribute that most constrains the Jones Bridge trail system's ability to accommodate use. As the area's visitation increases, more users will compete for access to the river. These impacts are a barrier to achieving the desired condition of providing one of the best opportunities for visitors to get into the river.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 750 people per day using the Jones Bridge trail system. As the mileage available increases by 0.2 miles under the action alternative, the number of people per mile would decrease under this visitor capacity. This lower number of people per mile would relieve some of the pressure on trail conditions so that the trail system better achieves desired conditions.

MANAGEMENT STRATEGIES

- Educate park visitors about trail opportunities at the Chattahoochee River Environmental Education Center, just south of Jones Bridge.

- Install signs at the parking area informing visitors that if parking at Jones Bridge is full, they can recreate at the nearby Chattahoochee River Environmental Education Center.

- Increase enforcement of regulations at this unit.

Jones Bridge – South (Chattahoochee River Environmental Education Center)

ANALYSIS AREA

This analysis area includes the southern section of the trail system in the Jones Bridge unit, including the trails around the Chattahoochee River Environmental Education Center (CREEC).

EXISTING DIRECTION AND KNOWLEDGE

Trail use at the Chattahoochee River Environmental Education Center consists of visitors to the center, hikers, and overnight campers (the park hosts limited camp programs in the meadow). Visitors are somewhat concentrated around the CREEC building, which is closed to the public, but public visitors spread out in the trail network. This area experiences a high level of neighborhood access from local residents. Visitation on the trails tends to follow

the two-peak pattern described above, with peaks around 10:00 a.m. and 6:00 p.m. Use of this area is somewhat lower than in other units. "Current trail use" is estimated at 325 people per day (see table E-3).

All trails at the education center are in the Developed Zone, which provides "convenient access to park buildings" and "high probability of encountering others." The desired conditions for the center include a "family-friendly and group-friendly atmosphere," with opportunities for "solitude and tranquility" and "educational and interpretive experiences" that would serve "novice hikers."

Management concerns at the education center include social trailing, trail braiding, wayfinding issues, and boundary concerns with neighboring landowners. Park visitors often hike on park trails at the center and cross onto neighboring private land, resulting in visitor conflicts. Therefore, monitoring the trail condition, social trailing, unauthorized parking, and visitor conflicts indicators will be important to achieving desired conditions at Jones Bridge.

LIMITING ATTRIBUTE

Wayfinding and boundary concerns are the attribute that most constrains the CREEC trail system's ability to accommodate use. As visitation in the area increases, more social trailing, wayfinding issues, and visitors trespassing onto private neighboring land are likely to occur. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a family-friendly and group-friendly atmosphere.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at higher use levels than the Chattahoochee River Environmental Education Center currently has, at 600 people per day. Under the action alternative, no additional miles of trail would be constructed in this area. Congestion on the trails is not a management concern and the park staff feel that this area is currently underused by the public. Management

concerns related to the limiting attribute would be addressed through the management strategies outlined below to ensure that this trail system better achieves desired conditions.

MANAGEMENT STRATEGIES

- Promote this unit for its trail opportunities.
- Educate visitors that some trails lead onto private property in this area.
- Install signs on NPS land marking the NPS boundary, where land beyond the sign is trespassing onto private property.
- Partner with neighboring private landowners to install signs on their property to communicate that their land is private property that is closed to the public.

ADAPTIVE MANAGEMENT STRATEGY

- Consider installing a temporary or permanent restroom at CREEC to support the public (restroom inside CREEC building is closed to the public).

Holcomb Bridge

This analysis area includes the entire trail system in the Holcomb Bridge unit.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Holcomb Bridge consists of dog walkers and hikers. This analysis area experiences a high level of neighborhood access from local residents. Trail use data is limited as this is a relatively new unit. Use of this area is very low. "Current trail use" is estimated at 60 people per day (see table E-3).

Trails in Holcomb Bridge are currently in the Natural Area Recreation Zone. Under the action alternative, this unit would be rezoned to the Natural Zone. Trails in the Natural Zone provide a "relatively undisturbed environment" with a "low probability of encountering many other people." The desired conditions for Holcomb Bridge provide "undisturbed forestland" with opportunities for "short, easy strolls" serving fitness walkers, dog walkers, and more.

Management concerns at Holcomb Bridge include trail flooding, trail damage, and social trailing. The topography at Holcomb Bridge is fairly flat, limiting opportunities for sustainable trail alignment. Therefore, monitoring the trail condition and social trailing indicators will be important to achieving desired conditions at Holcomb Bridge.

LIMITING ATTRIBUTE

Poor trail conditions is the attribute that most constrains the Holcomb Bridge trail system's ability to accommodate use. Due to the flat topography of this unit, sustainable trail alignment is challenging. As visitation in the area increases, the use of flooded trails results in increased trail damage and trail widening as visitors avoid muddy areas. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of an undisturbed forestland.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at higher use levels than Holcomb Bridge currently has at 150 people per day. Under the action alternative, no additional trails would be constructed in this unit. This visitor capacity, along with the management strategies outlined below, will allow for the desired conditions of an undisturbed forestland with short easy strolls to be achieved.

MANAGEMENT STRATEGIES

- Promote this area through marketing, social media, and website materials.
- Work with interpretation staff to direct visitors to this area.
- Add trail maps for the Holcomb Bridge unit on the park website.
- Consider holding an official opening of this unit (i.e., ribbon cutting) to publicize this unit and its trail opportunities.
- Partner with the City of Sandy Springs to hang a NPS sign under the Sandy Springs sign to inform visitors of recreational opportunities here.
- Install maps and wayfinding signs on the trails here.

Island Ford
ANALYSIS AREA

This analysis area includes the entire trail system in the Island Ford unit.

EXISTING DIRECTION AND KNOWLEDGE

Trail use on Island Ford consists of hikers (some of whom are part of large meetup groups such as the Atlanta Outdoor Club), trail runners, and anglers. Walkers and anglers are attracted to the trails along the river and the pond. The pond also attracts families and children, and trails down to the field see a lot of people headed to a picnic.

Visitation on the trails tends to be fairly level throughout the day from 9:00 a.m. to 4:00 p.m., with only slight peaks mid-morning and afternoon. "Current trail use" is estimated at 650 people per day (see table E-3).

Under the action alternative, most of the trails would be in the Natural Area Recreation Zone, though trails near the Hewlett Lodge and Park Headquarters are in the Historic Resource Zone. On the trails, the "probability of encountering other visitors would be moderate to high," while the "degree of isolation and closeness would be limited by the presence of other people." The Historic Resource Zone has a low tolerance for cultural resource degradation. The desired conditions for Island Ford highlight opportunities for "large, loosely organized hiking groups" as well as smaller groups and social experiences with friends and family. These desired conditions also highlight opportunities for cultural experiences.

Management concerns in Island Ford include shortcutting trails in the cliff areas affecting thin fragile soils, exposed roots and related safety concerns, trail widening along the river, and rock scrambling around significant rock outcrops. Therefore, monitoring the trail condition and social trail indicators will be important to achieving desired conditions at Island Ford.

LIMITING ATTRIBUTE

Impacts to resources, including vegetation, soils, streambanks, and historic rock shelters, in the area near the Hewlett Lodge is the attribute that most constrains the Island Ford trail system's ability to accommodate use. As visitation in the area increases, more vegetation trampling, soil destabilization, and impacts to the rock shelters occurs. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a low tolerance for cultural resource degradation. These impacts are also closely related to crowding and congestion in the area around Hewlett Lodge, which at select times may exceed the desired conditions which allow for a moderate-to-high probability of encountering others, large groups, social experiences, and a limited degree of isolation.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 650 people per day using the Island Ford Trail system. As the mileage available increases from 4.9 miles to 6.5 miles under the action alternative, the number of people per mile would decrease under this visitor capacity. This lower number of people per mile would relieve some of the resource challenges and crowding in the Hewlett Lodge area so that the trail system better achieves desired conditions with 650 people per day on the trails.

MANAGEMENT STRATEGIES

- Increase visitor awareness about opportunities in the northern part of the Island Ford unit. Disperse use to this "hidden gem."
- Encourage use of alternative parking lot away from Hewlett Lodge. Consider addition of a restroom in the northern parking lot to reduce congestion around the Hewlett Lodge.
- Install a parking barrier along the hairpin turn to improve visitor safety.
- Redistribute or reconfigure parking to allow parking at Hewlett Field in a way that does not disturb the viewshed of the field, as described in the cultural landscape report.

- Post signs indicating when a particular parking lot (Hewlett Lodge area) is at capacity. Encourage visitors to return at an off-peak time.

Vickery Creek

ANALYSIS AREA

This analysis area includes the entire trail system in the Vickery Creek unit.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Vickery Creek consists of a wide assortment of pedestrian users who have different motivations, including hikers and trail runners going for a longer excursion on multiple loops, walkers looking for a quick way to get outdoors and have some fun, visitors to the Riverside Park who want to enjoy the Big Creek environs, and local residents commuting through the unit on the way to and from school or work. Overall, trail use is concentrated along the western side of the unit along Big Creek and the covered bridge, as well as the mill area.

Visitation on the trails tends to follow a standard bell curve, with a peak around 2:00 p.m. This visitation is especially true along the western side of the unit along Big Creek. "Current trail use" is estimated at 1,200 people per day (see table E-3). During the busiest hours of the day, between noon and 3:00 p.m., about 11% of daily visitation enters the unit each hour, which means that about 130 people per hour are entering the unit at these peak times.

Under the action alternative, most of the trails in Vickery Creek would be in the Natural Area Recreation Zone, with the Allenbrook area included in the Historic Resource Zone. Within the Natural Area Recreation Zone, the "probability of encountering other visitors would be moderate to high," while the "degree of isolation and closeness to nature would be limited by the presence of other people." However, opportunities for solitude would occur at certain times of the day or season. On the Allenbrook side of the unit, there is a low tolerance for cultural resource degradation.

The desired conditions for Vickery Creek describe opportunities "to experience the trails in small groups of friends and families" and "safe opportunities to hike along and fish in Big Creek."

Management concerns at Vickery Creek include unauthorized activities, such as dogs off leash and bike riding, as well as visitors becoming lost when they travel through the unit and are not prepared for a walk in the forest. A general concern exists about crowding along the western edge of the unit near Big Creek. Park staff notes that these areas are primarily accessed from a parking lot managed by the City of Roswell, which encourages use in the area. This parking area frequently fills, leading to crowded trails and high encounter rates near the creek as visitors look for ideal photo opportunities and to explore the City Mills Dam and covered bridge. Due to these issues, monitoring the trail conditions, parking, social trails, vandalism at cultural sites, and conflict with dogs indicators will be important.

LIMITING ATTRIBUTE

The amount of crowding and congestion along the Big Creek corridor (the west side of unit) is the attribute that most constrains the Vickery Creek trail system's ability to accommodate use.

As visitation in the area increases, the crowding and congestion may eventually violate desired conditions for moderate-to-high encounters. Under current conditions, there is an unequal distribution of visitation across the unit, with more visitors on the west side and fewer along the east side. In some ways, this helps to achieve the desired conditions for opportunities for solitude at certain times of the day or seasons when there generally would not be opportunity for solitude or closeness to nature. However, the integrity of the park experience on the west side of the unit must be maintained to some degree, with encounter rates that are moderate to high rather than high to extreme. Currently, large groups cause occasional "traffic jams" on the trail that are difficult to pass and contribute to trails exceeding the trail width indicator.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 130 people per hour using the Vickery Creek Trail system. The capacity is identified at current use levels with the understanding that there is a need to better distribute this use across the unit to ensure desired conditions for resources and visitor experiences are achieved (since they are not being achieved at certain times on the western side of the unit under current use levels). As the mileage available increases from 7.1 miles to 7.8 miles under the action alternative, the number of people per mile would decrease under this visitor capacity. This lower number of people per mile per hour would improve the achievement of desired conditions.

MANAGEMENT STRATEGIES

- Install directional wayfinding signage encouraging more visitation to the eastern side of the Vickery Creek unit and improve flow of visitors through the western side of the unit. Increase maps and signage about various destinations away from highly developed sites. Within the western side of the unit, include targeted directional signage that shows the way to key destinations, such as the covered bridge, mill, Allenbrook, and others.

- Improve visitor awareness of the relative remoteness of the unit's interior to encourage visitors to be better prepared for the challenges present.

- Develop suggested hiking routes for the Vickery Creek unit that align with the City of Roswell tourism market.

- Provide information to visitors on sites that are likely to be busy so they know of those conditions before they arrive.

- Increase enforcement of parking outside of designated areas. A visitor use assistant or volunteer could help with enforcement at peak times.

Gold Branch

ANALYSIS AREA

This analysis area includes the entire trail system in the Gold Branch unit.

EXISTING DIRECTION AND KNOWLEDGE

All trails in this unit are in the Natural Zone. Visitors will be able to enjoy a "relatively undisturbed environment" with a "relatively low probability of encountering many people" during their time in the park. Visitors would feel "farther away from comforts and conveniences" than other units of the park. The desired conditions for trails in Gold Branch emphasize a "low-density backcountry mountain feel" and a "diverse range of challenging trail experiences." This unit will offer "scenic opportunities for birding, hiking, and trail running, including longer duration hikes and runs that include both ridgetop and water-adjacent trail experiences."

Trail use in Gold Branch mainly consists of nearby residents from adjacent neighborhoods and small outdoor meetup groups. Walkers and anglers are attracted to the trails along Bull Sluice Lake and the thriving botanical areas along streams in this unit. The unit is popular for visitors with dogs. In warm-weather months, some visitors tend to use this unit's trails to access Bull Sluice Lake and swim across to the other side, which presents visitor safety concerns for park management.

Visitation on the trails tends to increase after work hours during weekdays. A significant spike in visitation and trail use typically occurs on weekend days, with parking lots often filling up by late morning. Regardless of day of the week, visitors tend to spread out across the unit's trails. Current trail use is estimated at 425 people per day (see table E-3).

Management concerns in this unit include wildlife poaching, trail erosion along Bull Sluice Lake, visitor safety, occasional harmful algal blooms, unauthorized parking on peak weekend days, vandalism of prehistoric cultural resources, spatial concentration of recreational fishing in certain parts of the unit, and a steady increase in recreational use in recent years. Therefore, monitoring the trail condition, unauthorized parking, cultural resource vandalism, and visitor-dog conflict indicators will be important to achieving desired trail conditions in the Gold Branch unit.

LIMITING ATTRIBUTE

The opportunity for solitude is the attribute that most constrains the Gold Branch trail system's ability to accommodate higher levels of visitor use while still achieving desired conditions. Visitation to this unit has steadily increased in recent years, which threatens the unit's ability to sustain a "quieter and more tranquil setting." Many visitors who frequent Gold Branch have voiced their concern to park staff that the solace of this unit is threatened due to higher levels of visitation.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 425 people per day using the Gold Branch trail system. As the mileage available slightly increases from 4.9 miles to 5.2 miles under the action alternative, the number of people per mile would decrease under this visitor capacity. This change would allow visitors to continue to spatially spread out across the trail system and better achieve the desired conditions for a quiet and tranquil visitor experience.

MANAGEMENT STRATEGIES

- Partner with local meetup groups to voluntarily redistribute use to off-peak times.

- Increase educational signage for proper dog behavior (e.g., keeping dogs leashed, bagging dog waste, being aware of potential harmful algal blooms).

- Pilot permitting for larger recreational groups if trail usage regularly exceeds visitor capacity.

- Increase parking enforcement for improperly parked vehicles.

- Monitor erosion on riverside trails and realign trails adaptively to prevent sloughing.

Johnson Ferry North
ANALYSIS AREA

This analysis area includes the northern section of the trail system in the Johnson Ferry unit, from Johnson Ferry Road to the northern edge of the unit.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Johnson Ferry North consists of hikers, dog walkers, and anglers. Use is equally distributed between trails and river access points. The existing concession, boat launch, and boat ramp draw use to this area. Visitation on the trails tends follows the two-peak pattern described above, with peaks around 7:00 a.m. and 6:00 p.m. Use of this area is slightly lower than in other units and is often used when its neighboring Cochran Shoals is busy. "Current trail use" is estimated at 500 people per day (see table E-3).

Trails near the Johnson Ferry North Trailhead are in the Developed Zone, while trails further to the north are in the Natural Area Recreation Zone. Any trails in the Hyde Farm area would be addressed under a separate planning effort. The Developed Zone provides "convenient access to park buildings" and "high probability of encountering others;" the Natural Area Recreation Zone provides "moderate-to-high probability of encountering other visitors" along with a low to moderate feeling of "closeness to nature." The Historic Resource Zone provides visitors with the opportunity to "enjoy and understand the value" protected cultural resources. The desired conditions for Johnson Ferry North include plentiful cultural experiences and "diverse trail-based opportunities," where visitors can rent rafts and kayaks through concession.

Management concerns at Johnson Ferry North include impacts from utility work and visitor conflicts. With multiple utility lines in this area, utility work results in trail disturbance, vegetation trampling, and safety issues with visitors around heavy machinery. Visitor conflicts occur between hikers and bicyclists and off-leash dog use is a concern in this area. The public isn't currently aware that bicycles are not allowed in this unit. Therefore, monitoring the trail condition and visitor conflicts indicators will be important to achieving desired conditions at Johnson Ferry North.

LIMITING ATTRIBUTE

Spatial constrains that include creek topography and the limited extent of NPS-managed land at Johnson Ferry North limit the trail system's ability to accommodate use.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at higher use levels than Johnson Ferry North currently has at 1,000 people per day. Under the action alternative, no additional miles of trail would be constructed in this area. Congestion on the trails is not a management concern and the park staff feels that this area is currently underused by the public. Management concerns related to the limiting attribute would be addressed through the management strategies outlined below to ensure that this trail system better achieves desired conditions.

MANAGEMENT STRATEGIES

- Promote this unit and its trail opportunities for more solitude experiences.
- Work with interpretation staff to direct visitors to this area.
- Educate the public that bicycles are not allowed in this unit.
- Install signs clearly explaining that bicycles are not allowed on these trails. Bicycles are only allowed on multiuse trails.
- Install signs clarifying the NPS boundary as one enters Hyde Farm.

Johnson Ferry South
ANALYSIS AREA

This analysis area includes the entire trail system in the southern portion of the Johnson Ferry unit.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Johnson Ferry South consists of large and small groups walking south to the pavilion, hikers that tend to travel north from the parking lot on the trail before exiting the unit via a relict road, some bird watchers, and occasional fishing access. The area was historically used for education workshops as well. Per Strava Metro data, fitness-oriented users tend to travel on the northern section of trail more than the southern section. At times, a fair amount of use occurs in the parking lots for people who are travelling to either Columns Drive or Johnson Ferry North and use the Johnson Ferry South lot as a form of overflow parking.

Visitation on the trails tends to be rather level throughout the day, though it is typically busier in the morning than afternoon. "Current trail use" is estimated at 200 people per day (see table E-3).

Under the action alternative, the southern portion of the Johnson Ferry unit would be in the Rustic Zone. On the trails, visitors should find an "undisturbed environment" and be able to enjoy nature. "Opportunities for closeness to nature" and "tranquility" would also be common. The desired conditions for the southern portion of Johnson Ferry describe a "tranquil and relaxed atmosphere" with opportunities to "explore wetland complexes." A low to moderate level of encounters with other visitors and park staff could be expected except for the social activities at the pavilion.

Management concerns for the southern portion of Johnson Ferry include a number of unauthorized and illegal activities that occur in the parking lot, including dumping and littering, as well as illegal digging and ground disturbance. Managers are also aware that the wetlands in this area are still growing, sometimes impacting the trail system. As visitors sometimes illegally ride bicycles through this unit, monitoring the visitor complaints of bicycle-pedestrian conflicts indicator will be essential to ensuring that desired conditions for tranquility are being met.

LIMITING ATTRIBUTE

Preservation of opportunities for tranquility consistent with desired conditions is the attribute that most constrains the southern portion of Johnson Ferry trail system's ability to accommodate use. As visitation in the area increases, fewer opportunities for tranquility would occur, especially as visitors are confined to the parking lot, a small trail system, and the pavilion area due to the expanding wetlands. If the area started to have too many visitors at one time, the "relaxed atmosphere" with opportunities to explore wetland complexes would not be present.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified above current use levels of 400 people per day using the Johnson Ferry South trail system. This significant increase allows for plenty of room for growth.

MANAGEMENT STRATEGIES

- While ample room for growth does not exist at Johnson Ferry South, the unit would not be actively promoted due to the quality of visitor experiences available there.

- Provide information about wetland resources at Johnson Ferry to enhance opportunities for enjoyment of this resource.

- Encourage the use of Johnson Ferry South when the adjacent Johnson Ferry North and Cochran Shoals units are very busy.

- Install a security camera to address illegal dumping and other unauthorized activities in the parking lot.

- Collaborate with local jurisdictions to increase the frequency of law enforcement patrols at times when illegal visitor behavior is most common.

Cochran Shoals
ANALYSIS AREA

This analysis area includes the trail system in the portion of the Cochran Shoals unit that lies west of the Chattahoochee River—specifically, the Sope Creek, Columns Drive, and Gunby Creek areas. This analysis area includes the Fitness Loop.

EXISTING DIRECTION AND KNOWLEDGE

Trail use at Cochran Shoals is generally much heavier than at other units of the park's trail system. In addition to hikers, trail runners flock to this unit. In fact, several local high school track and cross-country teams use the area to trail under special use permits. Bikers heavily use the Sope Creek trail system, the only area in the park actively managed for bikes. Anglers can be found all along the trail system near the river, birders are frequently found along the unit's board walks, and botanist groups also use the area. Interpretive and educational programming is common in Cochran Shoals, especially near Sibley Pond. The Fitness Loop, raised boardwalk from the Interstate North Trailhead towards the Fitness Loop, Sope Creek Mill ruins, Sibley Pond, and cemetery are all popular destinations within Cochran Shoals.

Visitation patterns on the trails follows the two-peak visitation pattern described in the introduction above. "Current trail use" is estimated at 5,550 people per day (see table E-3). During the busiest hours of the day, around 4:00 to 5:00 p.m., about 10% of daily visitation enters the unit each hour, which means that about 550 people per hour are entering the unit at these peak times.

Under the action alternative, most of the Cochran Shoals trails would be in the Natural Area Recreation Zone, while trails near the Sope Creek Mill ruins would be in the Historic Resource Zone. On the trails, the "probability of encountering other visitors would be moderate to high," while the "degree of isolation and closeness would be limited by the presence of other people." A low tolerance for cultural resource degradation exists in the Historic Resource Zone. The desired conditions for Cochran Shoals describe "a fun, social, fitness-oriented trail system" that welcomes a wide diversity of visitors to this "urban backyard." A "high density of visitors would be expected at most times, especially on weekends" and encounters with others would be "consistent and frequent."

Management concerns at Cochran Shoals run the gamut and include all the issues the indicators and thresholds are designed to monitor. For instance, large groups frequently use the Cochran Shoals trails and travel side by side, contributing to trail widening and vegetation damage. Roadside parking is a significant issue, particularly at Columns Drive and Interstate North Trailheads, and parked cars are a common target for thieves. Informal access via unauthorized social trails is an issue throughout the unit, with many accesses stemming from apartment complexes around the unit. The Sope Creek ruins are often vandalized, and visitor conflicts are common here. This issue is particularly applicable on the multiuse trails, where bicyclists sometimes travel after rain events and on the Sibley Pond trail where bicyclists and pedestrians frequently come into contact. General resource damage, including plant poaching, due to high volumes of visitation is a concern at Cochran Shoals, and this concern is exacerbated by the unit's connectivity to regional trail systems, which increases the recreational demand on the trail system.

LIMITING ATTRIBUTE

Visitor impacts to streambank resources are the attribute that most constrain the Cochran Shoals trail system's ability to accommodate use. As visitation in the area increases, more users go to the creek sides, and these riparian areas show signs of traffic, including soil and vegetation loss. Areas along Sope Creek are particularly affected, where the soils are not suitable for the level of visitation they receive. The bank destabilization contributes to water turbidity and quality issues in the park and is a barrier to achieving the goal

of sustainable trails. Damage to the Sope Creek ruins—including social trails around the ruins, visitors climbing on the ruins and moving rocks, and some instances of graffiti—also limits the Cochran Shoals area's ability to accommodate visitor use and threatens the desired condition for a low tolerance for cultural resource degradation in the Historic Resource Zone. Impacts to visitor experience from conflicts between bicyclists and pedestrians, as well as dogs off leash, also contribute to limiting Cochran Shoals' ability to accommodate use by threatening desired conditions for a fun and welcoming trail system.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 550 people per hour entering the Cochran Shoals trail system. To achieve desired conditions, fewer people at one time on each stretch of trail so the impacts to streambanks, issues at the Sope Creek ruins, and visitor conflicts are reduced. As the mileage available increases from 19.1 miles to 24.9 miles under the action alternative, the number of people per mile would decrease under this visitor capacity. While the Fitness Loop will remain popular, other areas will become less crowded due to the creation of new trails, thereby reducing pressure on soils, streambanks, and cultural resources. In addition, engineering improvements to the trail system would better enable it to accommodate current use levels sustainably.

MANAGEMENT STRATEGIES

- Emphasize the use of the text-for-status program so visitors know when trails are open to biking.
- Continue to educate visitors on why trails are closed and why they need to stay off trails after rain events.
- Formalize a bicycle volunteer in parks program to educate visitors on where and when it is appropriate to ride (i.e., not after rain events or on trails closed to bicycles).
- Increase roving, uniformed active engagement to help relay

educational messages to the public. A visitor use assistant or volunteer could continue to walk the trails as well.

- Increase education around fee compliance to help support park operations in this area.
- Consider additional areas for river overlooks to reduce erosion issues related to informal access points. Add overlooks as needed.
- Consider additional areas for river access points to reduce erosion issues related to informal access points. Add access points as needed.
- Consider adjusting the current bicyclist/pedestrian system from a directional system to bicycle-only days and pedestrian-only days or separating pedestrian use from bicycle use on the current multiuse trail system.

Cochran Shoals Powers Island
ANALYSIS AREA

This analysis area includes the trail system in the Powers Island area on the eastern side of the Chattahoochee River in the Cochran Shoals unit.

EXISTING DIRECTION AND KNOWLEDGE

The trails in Powers Island are popular with walkers. Slight peaks occur around 8:00 a.m., noon, and 5:00 p.m. Trail users share the same parking lot with river users (both private and concessioner users). Competition for parking peaks during the warmer summer months. Current trail use is estimated at 125 people per day (see table E-3).

The trails in the Powers Island area are in the Natural Area Recreation Zone, where a probability of encountering other visitors would be moderate to high. Tolerance for resource degradation will be low. The desired conditions for the Cochran Shoals unit as a whole state that a "high density of visitors would be expected at most times, especially on weekends. Encounters with other visitors would be consistent and frequent."

Management concerns in Powers Island include a congested parking lot, trail width and depth from heavy visitor use on the trails nearest the parking lot, and damages to cultural and natural resources. Therefore, monitoring incidents of unauthorized parking, the trail condition, number of social trails, and incidents of damage to cultural resources indicators will be important to achieving desired conditions at Powers Island.

LIMITING ATTRIBUTE

Impacts to natural resources is the attribute that most constrains the Powers Island trail system's ability to accommodate use. Impact to natural resources include vegetation, soils, and riverbanks. As visitation in the area increases, more vegetation trampling, soil destabilization, erosion, and impacts to the sensitive natural resources occur. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a low tolerance for natural resource degradation.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 125 people per day. In the Powers Island area, some problematic trails would be restored, and a desirable loop around the perimeter would be created to attract more walkers and hikers. This change would result in a lower number of people per mile, which would relieve some of the resource challenges and crowding so that the trail system better achieves desired conditions with 125 people per day on the trails. However, no change to the parking lot will occur, so the area as a whole will not be able to accommodate additional use.

MANAGEMENT STRATEGIES

- Where possible, encourage visitors to use sites that can handle high volumes of use during peak use times.
- Use press releases/media before historically crowded weekends to prepare the public for crowds.
- Increase maps and signage about various destinations in and outside of highly developed sites.

- Provide information to visitors about sites that are likely to be busy so they know of those conditions before they arrive.
- Increase education and signage about parking in designated areas.
- Increase education and information during peak times about where to find available parking.
- Display information on park websites or social media, and direct park staff to communicate about areas that accommodate higher use when in contact with visitors.
- Post signs indicating parking is at capacity (return at a later, designated time).
- Use innovative technology or methods to communicate with the public about other opportunities that are available to them in or outside of the park.
- Designate some short-term parking spaces at key locations to ensure that a variety of people can visit the site over a day and use levels stay within the thresholds.
- Provide real-time information regarding parking and access opportunities (e.g., text alerts and radio station updates).
- Deploy intelligent transportation systems to provide visitors with information about parking lot status. This information would be conveyed to visitors before and/or upon entry to the frontcountry.
- Consider a temporary queuing system until more vehicles leave the area. Actions might include turning vehicles away.

Palisades East
ANALYSIS AREA

This analysis area includes the trail system on the eastern side of the Palisades unit.

EXISTING DIRECTION AND KNOWLEDGE

The trails in Palisades East are popular with people walking their dogs, hikers, trail runners, and people visiting the bamboo stand. The same two-peak visitation pattern seen on the Fitness Loop is also seen in Palisades East, with peak use

occurring from 6:00 a.m. to 9:00 a.m., and 6:00 p.m. to 7:00 p.m.; however, unlike the Fitness Loop, use at Palisades East is almost double in the morning what it is in the afternoon. This area is one of the more popular areas of the park. Current trail use is estimated at 1,175 people per day (see table E-3). During the busiest hours of the day, around 8:00 a.m. to 1:00 p.m., about 10% of daily visitation enters the unit each hour, which means that about 120 people per hour are entering the unit at these peak times.

Under the action alternative, the trails would be in the Natural Zone, where the level of encounters with other people would be low. In the Natural Zone, tolerance for natural resource degradation will be very low. Palisades East visitors would have "opportunities to connect with nature and experience solitude and relative peace and quiet, despite high visitor use at times." Visitors would also have "opportunities to experience some of the most iconic scenery in the park as well as the biodiversity the Palisades have to offer."

Management concerns in Palisades East include congested parking lots at Indian Trail and Whitewater, trail width and depth from heavy visitor use, dogs off leash, and conflicts between dogs and trail users. Therefore, monitoring incidents of unauthorized parking, the trail condition, and visitor complaints for conflicts with dogs indicators will be important to achieving desired conditions in Palisades East.

LIMITING ATTRIBUTE

Impacts to natural resources and the visitor experience are the attributes that most constrain the Palisades East trail system's ability to accommodate use. Impact to natural resources include vegetation, soils, and riverbanks. As visitation in the area increases, more vegetation trampling, soil destabilization, and impacts to the sensitive natural resources may occur. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a very low tolerance for natural resource degradation. These impacts are also closely related to crowding and congestion in

the area, which at times may exceed the desired conditions which allow for the opportunity to "connect with nature and experience solitude and relative peace and quiet, despite high visitor use at times."

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 120 people per hour. The total trail mileage in Palisades East would increase by 2.7 miles under the action alternative, so the number of people per mile would decrease under this visitor capacity. This lower number of people per mile would relieve some of the resource challenges and crowding so that the trail system better achieves desired conditions with 120 people per hour on the trails. In addition, the trail system would undergo a full-scale redevelopment and environmental restoration to create a sustainable, manageable trail system with a high diversity of quality trail experiences. This will relieve some of the resource challenges so that the trail system better achieves desired conditions. However, the parking lot will not change, so the area as a whole will not be able to accommodate additional use.

MANAGEMENT STRATEGIES

- Where possible, encourage visitors to use sites that can handle high volumes of use during peak use times.

- Use press releases/media before historically crowded weekends to prepare the public for crowds.

- Increase maps and signage about various destinations in and outside of highly developed sites.

- Provide information to visitors about sites that are likely to be busy so they know of those conditions before they arrive.

- Increase education and signage about parking in designated areas.

- Increase education and information during peak times about where to find available parking.

- Display information on park websites

or social media, and direct park staff to communicate about areas that accommodate higher use when in contact with visitors.

- Increase enforcement of parking outside of designated areas.

- Post signs indicating parking is at capacity (return at a later, designated time).

- Use innovative technology or methods to communicate with the public about other opportunities that are available to them in or outside of the park.

- Designate some short-term parking spaces at key locations to ensure that a variety of people can visit the site over a day and use levels stay within the thresholds.

- Provide real-time information regarding parking and access opportunities (e.g., text alerts and radio station updates).

- Deploy intelligent transportation systems to provide visitors with information about parking lot status. This information would be conveyed to visitors before and/or upon entry to the frontcountry.

- Consider a temporary queuing system until more vehicles leave the area. Actions might include turning vehicles away.

Palisades West
ANALYSIS AREA

This analysis area includes the trail system on the western side of the Palisades unit.

EXISTING DIRECTION AND KNOWLEDGE

The trails in Palisades West are popular with people walking their dogs, hikers, trail runners, bicyclists, and large groups. The same two-peak visitation pattern that occurs on the Fitness Loop also occurs in Palisades West, with peak use occurring from 6:00 a.m. to 10:00 a.m. and 4:00 p.m. to 7:00 p.m.; however, unlike the Fitness Loop, use at Palisades West is almost double in the morning what it is in the afternoon. This area of the park is one of the more popular. Current trail use is estimated at 1,075 people per day (see table E-3). During the busiest hours of the day,

around 4:00 p.m. to 5:00 p.m., about 12% of daily visitation enters the unit each hour, which means that about 130 people per hour are entering the unit at these peak times.

Under this plan, most trails west of the river would be rezoned from the Natural Zone to the Natural Area Recreation Zone, while the Rottenwood Creek Trail would remain in the Developed Zone. The probability of encountering other visitors would be moderate to high in the Natural Area Recreation Zone and high in the Developed Zone. Tolerance for natural resource degradation will be low. The desired conditions for Palisades West state that visitors would have "opportunities to connect with nature and experience solitude and relative peace and quiet, despite high visitor use at times." Also, despite its location inside the Atlanta Perimeter, the "Palisades unit would have rustic, forested feel evocative of the North Georgia Mountains."

Management concerns in Palisades West include congested parking lots, trail width and depth from heavy visitor use, dogs off leash, and conflicts between dogs and trail users. Therefore, monitoring incidents of unauthorized parking, the trail condition, and visitor complaints for conflicts with dogs indicators will be important to achieving desired conditions in Palisades West.

LIMITING ATTRIBUTE

Impacts to natural resources and the visitor experience are the attributes that most constrain the Palisades West trail system's ability to accommodate use. Impact to natural resources include vegetation, soils, and riverbanks. As visitation in the area increases, more vegetation trampling, soil destabilization, and impacts to the sensitive natural resources may occur. These impacts are a barrier to achieving the goal of sustainable trails and may threaten the desired condition of a low tolerance for natural resource degradation. These impacts are also closely related to crowding and congestion in the area, which at times may exceed the desired conditions that allow for the opportunities for solitude at certain times of the day or season.

VISITOR CAPACITY

Given the limiting attribute, visitor capacity is identified at current use levels of 130 people per hour. The total trail mileage in Palisades West would increase by 1.6 miles under the action alternative, so the number of people per mile would decrease under this visitor capacity. This lower number of people per mile would relieve some of the resource challenges and crowding so that the trail system better achieves desired conditions with 130 people per hour on the trails. In addition, the trail system would undergo a full-scale redevelopment and environmental restoration to create a sustainable, manageable trail system with a high diversity of quality trail experiences. This action will relieve some of the resource challenges so that the trail system better achieves desired conditions. However, the parking lot will not be changed, so the area as a whole will not be able to accommodate additional use.

MANAGEMENT STRATEGIES

- Where possible, encourage visitors to use sites that can handle high volumes of use during peak use times.

- Increase public education efforts to encourage voluntary redistribution of use to off-peak times.

- Use press releases/media before historically crowded weekends to prepare the public for crowds.

- Increase maps and signage about various destinations in and outside of highly developed sites.

- Provide information to visitors about sites that are likely to be busy so they know of those conditions before they arrive.

- Increase education and signage about parking in designated areas.

- Increase education and information during peak times about where to find available parking.

- Display information on park websites or social media, and direct park staff to communicate about areas that accommodate higher use when in contact with visitors.

- Increase enforcement of parking outside of designated areas.

- Post signs indicating parking is at capacity (return at a later, designated time).

- Use innovative technology or methods to communicate with the public about other opportunities that are available to them in or outside of the park.

- Designate some short-term parking spaces at key locations to ensure that a variety of people can visit the site over a day and use levels stay within the thresholds.

- Provide real-time information regarding parking and access opportunities (e.g., text alerts and radio station updates).

- Deploy intelligent transportation systems to provide visitors with information about parking lot status. This information would be conveyed to visitors before and/or upon entry to the frontcountry.

- Consider a temporary queuing system until more vehicles leave the area. Actions might include turning vehicles away.

Section 1. Introduction and Purpose

Introduction

The trails management plan provides an opportunity to step back and review the current trail system and evaluate its sustainability for user enjoyment, resource protection, and park management operations. One of the primary objectives identified during public scoping was to establish a trail program that will be systematic in providing stewardship of the Chattahoochee River National Recreation Area trails for years to come.

To ensure that the trails management plan is implemented successfully, the park has created these sustainable trail guidelines. The guidelines serve as a roadmap for trail construction, maintenance, and management in the park and focus on the following topics to incorporate best planning, design, and management practices for trail sustainability:

- **Trail Design.** The guidelines outline the basic principles and practices to administer during the site assessment and design phases of trail development. Guidance includes the trail development process for trails in Chattahoochee River NRA; identifying trail classes and types and their design and management criteria; site assessment and site design best practices; and program guidance for the development of trail facilities, signage, and accessibility and mobility that is suitable to each trail's individual site conditions.

- **Trail Construction.** The guidelines establish basic principles and best practices to administer during the physical construction and maintenance of a trail.

- **Management, Maintenance, and Monitoring.** The guidelines recommend management actions that will sustain park trails for future generations. Guidance is provided on annual and long-term maintenance, trail closures, management of trails for special use permit events, and trail monitoring.

Purpose

The intention of this document is to formalize existing practices and provide guidance on trail design, management, construction, and maintenance specific to Chattahoochee River NRA. The objectives of trail guidelines are to (1) ensure a consistent look without compromising local initiative, (2) ensure a high standard of quality without overbuilding, (3) ensure a basic level of safety without removing all risk, (4) maximize accessibility without compromising the character of the trail, and (4) ensure environmental and resource protection throughout the entire process.

Sections

The trail guidelines are divided into five primary sections:

- Section 1. Introduction and Purpose—This section provides an overview and defines the purpose of sustainable trail guidelines at Chattahoochee River NRA.

- Section 2. Trail Types and Reclassifications— This section outlines a general trail classification system that will be used by Chattahoochee River NRA for design and management.

- Section 3. Trail Planning and Design—This section outlines the basic principles, steps, and practices to administer for the site assessment and design of a trail.

- Section 4. Trail Construction—This section outlines basic principles and practices to administer during the physical construction of a trail.

- Section 5. Management, Maintenance, and Monitoring—This section presents guidance for trail management that will sustain park trails for future generations. The guidance includes annual and long-term maintenance, trail closures, management of trails for special use permit events, and trail monitoring.

Section 2. Trail Types and Reclassifications

Trail Types

Four types of trails are identified in the Chattahoochee River NRA trails management plan. Each trail type has a distinctive use that informs design criteria and guidelines recommended for each trail type. These guidelines provide a range of design specifications based upon the user type, intended experience, and conditions in specific trail locations. An overview of the four types is provided below and is followed by specific design guidelines for each trail type. Under each trail type description, the recommended design guidance is provided for each applicable trail class. The park's four trail types are:

- Type 1—Natural surface pedestrian trail

- Type 2—Natural surface multiuse trail (pedestrian and bicyclist)

- Type 3—Universal access trail

- Type 4—Aggregate multiuse trail (pedestrian and bicyclist), which includes the Cochran Shoals Fitness Loop and potential greenway corridors.

The 2009 general management plan (GMP) specifies which facilities are allowable in each zone. These sustainable trail guidelines specify which trail types within those zones will have those facilities. Put another way, the general management plan supersedes the sustainable trail guidelines, and the sustainable trail guidelines are meant to further define the guidance in the general management plan. For example, a boardwalk may be allowable on a type 1 trail, but it may not be an allowable facility on a type 1 trail in all management zones per the general management plan.

Figure F-1. Typical Section of Natural Surface Pedestrian Trail (Island Ford)

TRAIL TYPE 1—NATURAL SURFACE PEDESTRIAN TRAIL

Design Criteria: Tread narrow and rough. Few or no allowances for passing.

Materials: The trail surface will be native soils with limited grading.

Table F-1. Trail Type 1—Natural Surface Pedestrian Trail Characteristics

Trail Features	Description
Trail Width—Natural Zone, Rustic Zone, Historic Resource Zone, Rustic Zone	1–2 feet*
Trail Width—Natural Area Recreation Zone, and Developed Zone	2–4 feet*
Trail User	Pedestrian only
Tread Surface/Material	Natural native soils, surfaced as needed for hardening with natural native materials such as stone, rock, or wood
Horizontal Clearance	3–4 feet
Vertical Clearance	8 feet
Longitudinal Slope	Varies, not to exceed 30%
Cross-sectional Slope	2% typical, but not to exceed 5.5%
Special Structures*	Structures where protection of resources are needed, including boardwalks, stairs, foot bridges
Signage*	Kiosks; loops and trails marked at intersections and with difficulty. Limited interpretive signage.
Trailheads	Visible trail markings/signage
Accessibility	Substantial barriers present. Challenges to accessibility may exist.
Trail Maintenance	Routine annual maintenance. Maintenance in response to reports of unusual resource problems requiring repair/resource protection/trail safety, such as storm damage creating heaving large numbers of downed trees.

* **Trail type 1 as related to GMP zoning**: Variation based on GMP zones exists in type 1 trails. Most often these changes based on zoning can be found related to the characteristic of trail width, as seen in table 1, but structures and signage may also vary by zone. Please see the trails management plan for further information.

Figure F-2. Typical Section of Natural Surface Multiuse Trail (Cochran Shoals)

TRAIL TYPE 2—NATURAL SURFACE MULTIUSE TRAIL (PEDESTRIAN AND BICYCLIST)

Design Criteria: Tread narrow and rough. Width accommodates unhindered one-lane travel, with occasional allowances for passing.

Materials: The trail surface will be native soils with limited grading and will not include any nonnative material for hardening.

Table F-2. Trail Type 2 Natural Surface Multiuse Trail Characteristics

Trail Features	Description
Trail Width	4–8 feet typical and 10 feet when necessary for passing
Trail User	Pedestrian and bicyclists
Tread Surface/ Material	Natural native soils, surfaced as needed for hardening with natural native materials such as stone, rock, or wood
Horizontal Clearance	3–4 feet
Vertical Clearance	8 feet
Longitudinal Slope	Varies, not to exceed 30%
Cross-sectional Slope	2% typical, but not to exceed 5.5%
Special Structures	Trail structures may be common. Trail bridges as needed for resource protection and appropriate access Boardwalks; drainage; bridges, puncheons, and armoring
Signage	Kiosks; loops and trails marked at intersections. Limited interpretive signage.
Trailheads	Visible trail markings/signage; caution signs at trail crossings or technical sections
Accessibility	Substantial barriers present. Challenges to accessibility may exist; however, per the park compendium (2021), electric bikes and other power-driven mobility devices are allowed on all multiuse trails, which may reduce some athletic barriers.
Trail Maintenance	Routine annual maintenance. Maintain clearance for user convenience/recreational experience. Maintenance in response to reports of unusual resource problems requiring repair/resource protection/ trail safety.

Figure F-3. Typical Section of Universal Access Trail (Cochran Shoals)

TRAIL TYPE 3—UNIVERSAL ACCESS TRAIL

Design Criteria: The trail tread width and surface will adhere to Architectural Barriers Act (ABA) standards and create a trail that provides access to the widest range of user abilities. Tread will be wide and relatively smooth with few irregularities. Width accommodates unhindered one-lane travel, with frequent or regular allowances for passing and will incorporate resting intervals.

Materials: Surfaces will range from natural to imported materials and hardened surfaces based on trail user volume and resource conditions.

Table F-3. Trail Type 1 Universal Trail Characteristics

Trail Features	Description
Trail Width	3–8 feet
Trail User	Pedestrian only
Tread Surface/ Material	Crushed aggregate; boardwalk; brick/masonry/porous pavers
Horizontal Clearance	1–2 feet
Vertical Clearance	8 feet
Longitudinal Slope	Up to 5% (standard), 5% to 8.33% maximum; requires resting intervals every 200 feet, 8.33% to10% every 30 feet, and 10% to 12% maximum every 10 feet.
Cross-sectional Slope	5% maximum
Special Structures	Structures present and substantial. Trail infrastructure meets ABA requirements. Substantial trail bridges are used at water crossings. Drainage structures are present. Curbing could be used to retain aggregate and control braiding.
Signage	Where provided, informational and directional signage along the trail will meet Harpers Ferry Center's Programmatic Accessibility Guidelines for park signage. Loops and trails are marked with distances.
Trailheads	Trailhead signage should include length of the trail or trail segment; type of trail surface; typical and minimum trail tread width; and typical and maximum trail grade; typical and maximum trail cross-slope. Temporary conditions and hazards will also be communicated when necessary.
Accessibility	Meets or exceeds ABA standards
Trail Maintenance	Routine annual maintenance. Targeted high level of accessibility. Trail prepared for earliest opportunity to use in season. Maintenance in response to reports of unusual resource problems requiring repair/resource protection/trail safety. Maintenance of universal access trails to be prioritized over other classes. Seasonal and other temporary conditions and potential hazards will be clearly communicated to the public at the trailhead and other related public information platforms. Repairs to trail tread will maintain a firm and stable surface where applicable.

Figure F-4. Typical Section of Aggregate Multiuse Trail (Cochran Shoals)

TRAIL TYPE 4—AGGREGATE MULTIUSE TRAIL

Visitor Experience: These aggregate multiuse trails are used by hikers, joggers, and cyclists as well as by administrative and emergency vehicles. The trails have an 8- to 10-foot trail tread width. Aggregate multiuse trails serve a variety of trail users because of easy terrain and proximity to visitor services. Higher volume of use places greater importance on maintaining trail conditions and trail use education.

Materials1F: A crushed aggregate mix is recommended. Where greater stability is required (greater than 4%), pervious and non-pervious materials are recommended that align with the characteristics of the trail, trail use volume, and resource condition. Railings and boardwalks are used where necessary.

Table F-4. Trail Type 4 Aggregate Multiuse Trail Characteristics

Trail Features	Description
Trail Width	8–10 feet typical*
Trail User	Pedestrian and bicyclists
Tread Surface/Material	Crushed aggregate; boardwalk; brick/masonry/porous pavers
Horizontal Clearance	2–6 feet shoulders
Vertical Clearance	8 feet
Longitudinal Slope	3%–15%
Cross-sectional Slope	1%–5%
Special Structures	Structures present and substantial. Trail infrastructure meets ABA requirements. Substantial trail bridges are used at water crossings. Drainage structures are present. Curbing could be used to retain aggregate and control braiding.
Signage	Kiosks; signage must have ABA accessible symbols and total length of accessible trail. Loops and trails marked with distances.
Trailheads	Visible trail markings/signage
Accessibility	Meets or exceeds ABA standards
Trail Maintenance	Routine annual maintenance. Targeted high level of accessibility. Trail prepared for earliest opportunity for peak season use. Maintenance in response to reports of unusual resource problems requiring repair/resource protection/trail safety. Seasonal and other temporary conditions and potential hazards will be clearly communicated to the public at the trailhead and other related public information platforms. Repairs to trail tread will maintain a firm and stable surface where applicable.

* Areas of the fitness loop (river adjacent in Cochran Shoals) have a trail width that appropriately exceeds 10 feet.

Note: The 2022 *Comprehensive Trails Management Plan* identifies existing paved routes as type 4 trails in Vickery Creek (the Roswell Riverwalk Trail), Gold Branch (the Lower Roswell Trail), and Palisades (the Rottonwood Creek Trail). These routes are managed for the same types of trail users and visitor experiences but may be maintained as paved infrastructure. No new construction of paved trails will occur.

Definitions of Trail Reclassifications in This Plan

Beyond the identification of the four trail types for park trails, the trails management plan classifies some existing trails for "rehabilitation" or "restoration."

Rehabilitation. This trail class entails a one-time reconstruction of an existing trail in which the new trail would follow the existing alignment. Trails were tagged with this class when the current trail had a safety concern, serious recurring water issues (i.e., drainage), or extremely poor trail condition. Types of work expected to occur in this trail class include earthwork (e.g., establishing a drainage ditch), reversing slopes (i.e., grade reversals), rock armoring, and heavy brush clearing.

Restoration. Roads, trails, recreation areas, and river crossings that are not part of the designated system would be restored to pre-disturbed conditions. Before implementation, park staff would determine the exact restoration strategy needed based on factors such as the likelihood that vegetation would naturally recover and the extent of the existing human impacts. Restoration would be contingent on funds and staff availability, may be subject to additional compliance (particularly section 106 of the National Historic Preservation Act), and may be phased over time.

Restoration of trails as proposed in the trails management plan is critical to achieving the desired conditions and visitor experiences intended of the plan. Furthermore, as described in chapter 3 of the plan, trails and their use impact wildlife through fragmentation and loss of habitat, so new trail construction is intended to be offset by restoration of unsustainable trails in other areas of the park. Any new trail construction in a park unit must be accompanied by restoration of trails in that unit, as identified for such treatment in the trails management plan.

Active Restoration. The intention of active restoration is to reconstruct the natural spacing, abundance, and diversity of native plant species as much as possible. Active revegetation may require implementation level compliance (see section 3.2.3) and is broken down into two categories:

1. Major ecological improvements: This category of restoration is the most intensive in terms of time, money, and required equipment. Major ecological improvements would involve substantial earthwork, including using heavy machinery (i.e., grubbing, recontouring, obliterating tread), and would result in a significant improvement to the landscape.

2. Minor ecological improvements: This category of restoration is less technically complex, involves minimal tools, and could be completed by volunteers. Minor ecological improvement techniques would involve replanting (using native species seed), fencing, or similar methods.

Passive Restoration. Passive restoration allows surrounding vegetation to colonize the abandoned trail. This method is appropriate in areas that are likely to fill in if left alone. The process works when erosion has been stopped and the trail has been scarified allowing adjacent vegetation to spread and grow rapidly. This modest level of restoration would involve placing barriers on trails, scarifying the trail tread, and allowing the plants to revegetate on their own.

Section 3. Trail Design

The general planning and site design process applies to new trail construction as well as reroutes for the rehabilitation and restoration of existing trails. Please refer to appendix B of the trails management plan for the route corridors.

Trail Design Process

This phase of development begins with the selection of a trail construction corridor identified in the 2022 trails management plan and approved by the superintendent. Upon this selection, the following planning steps are recommended for all trail projects in the park:

Step 1. Establish a Trail Design Team. A project manager from the park will be assigned at the initiation of a trail project. The project manager will complete any necessary compliance for project implementation using a designated trail design team, otherwise known as an interdisciplinary team. The team will serve as advisors and reviewers during the trail planning, design, and construction process. The team can consist of the park facility manager, park biologist, hydrologist, environmental protection specialist, accessibility coordinator, outdoor recreation planner, and communications/public affairs specialist, as deemed necessary to the trail location and conditions. Based on the conditions of the proposed trail, additional trail design team members, including user group representatives and nonprofit partners, may be involved.

- **1.1 Determine Intent of Trail.** The trail design team will review the trails management plan, including the trail type from section 1 of this appendix, to determine the design parameters and establish the trail intent. Corridors for new trails will follow alignments identified in the trails management plan.

Step 2. General Site Assessment for Trail Alignment. A site visit will be conducted at the potential trail corridor to identify challenges and opportunities for the general alignment. The assessment will identify an implementation alignment within the corridor proposed by the trails management plan. The trail design team will identify sensitive areas and pertinent issues. Compliance requirements will be identified by the trail design team.

- **2.1 Site and Trail Plan.** The project manager will develop an initial site and trail plan based on general site assessment and field conditions, surveys, consultation with the trail design team, and discussions with resource management and maintenance staff.

- **2.2 Flagging the Trail Alignment Corridor.** The project manager will flag the proposed trail layout in the field. The project manager will coordinate with the interdisciplinary team and management team at the park before flagging materials being placed to ensure public awareness of the activity.

- **2.3 Conduct Implementation Level Compliance for Trail Construction (as necessary).** The trails management plan and its associated programmatic agreement for the treatment of cultural resources requires that before any new construction or active restoration of trails, an archeological survey will be carried out in previously unsurveyed corridors and that any archeological sites encountered will be evaluated for eligibility for the National Register of Historic Places. Impacts to eligible properties will be avoided through modification of the trail alignments or minimized in consultation with the state historic preservation officer and tribes.

- Natural **resource surveys and wetlands delineations are also expe**cted in advance of ground-disturbing activities. The park's database of sensitive species should be consulted before trail construction or active restoration and, as necessary, in consultation with the park's resource managers, the park's biological survey to identify species of concern and wetlands statements of finding may be required before finalizing a plan for trail work.

Step 3. Finalize Construction Plan. The project manager will refine the site plan based upon the results of resource surveys and with input from

the trail design team, which will result in a final layout, cost estimates, construction techniques, staging locations, and equipment guidance.

- **3.1 Pre-Approved Maintenance Plan.** Before construction, the park superintendent needs to provide an approved maintenance plan for the trail that outlines how the new asset will be maintained through park staff or volunteer labor.

Step 4. Construct Trail. See "Section 4. Trail Construction" below and the "Mitigations Measures Applied to Alternative 2 (NPS Preferred)" section in chapter 2 of the trails management plan.

Step 5. Formalize Management, Maintenance, and Monitoring Plan. See "Section 5: Management, Maintenance and Monitoring."

General Guidance for Trail Design

This section provides general guidance for trail design as well as the supporting amenities. The guidance set forth aligns with the procedures described above for the Chattahoochee River NRA trail planning process.

Physical design. Establishing baseline design principles for every trail, whether it be rehabilitation and restoration of existing trails or the development of a new trail, will be essential for the long-term sustainability of the trail system, minimizing its impact to park resources, and providing a safe and enjoyable experience for the park visitor. These general design principles have been compiled from other recent NPS trail plans and guided from past work and publications on sustainable trail development throughout the United States. These principles should be considered part of the design development and construction practices for every trail in the park and reviewed during step 2 of the Chattahoochee River NRA trail planning process. It is also appropriate to consult any updated trail guidance from NPS policy once a trail corridor has been established and approved.

Accessibility and mobility guidance. The National Park Service strives to ensure that all people have the highest level of accessibility that is reasonable to NPS programs, facilities, and services in conformance with applicable regulations and standards as outlined in Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services.* The National Park Service intends to provide accessibility within all trail and facilities within the park. Each trail and its associated amenities and facilities will be evaluated on its conditions, its level of accessibility determined, and applicable design methods integrated into the trail design.

Trail location. The most sustainable trails are located along the sides of hills and follow the elevation contours providing undulation for drainage. Following this design assists with water drainage from the trail and keeps users on the trail, preventing widening.

Trail alignment. Sustainable trails traverse slopes rather than directly descending a hillside. A trail traversing a slope allows for sheet runoff of water, which causes less erosion and minimizes the creation of gullies. Because of poor soils at Chattahoochee River NRA, creating trails that follow the fall line or move perpendicular to contours is unsustainable. Such fall-line trails degrade over time, creating erosion of soils and requiring consistent maintenance.

The following design principles are a set of sustainable principles that should be used when engaging in the trail planning process as it relates to step 2:

- **The half rule.** The grade of a trail should not exceed half of the grade of the sidehill on which it is located. Exceptions to the half rule occur when soils in the location of the trail are prone to erosion, in which case the maximum sustainable trail grade may be considerably less than half of the grade of the sidehill. Except in rare and limited situations, the maximum grade of a trail should not exceed 15%.

- **Sustainable grade.** The overall average grade of the trail should be generally 10% or less. An average grade of 10% or less can decrease the impacts of erosion.

- **ABA-compliant grade.** To meet ABA requirements, maximum lengths for segments are identified for slope ranges that exceed 5%. These ranges include 5%–8.33%, maximum length 200 feet; 8.33%–10%, maximum length 30 feet; and 10%–12%, maximum length 10 feet. Trail segments not exceeding 5% running slope can be any length. Trail segments begin and end with resting intervals (ABA Accessibility Standards, section 1017).

- **Grade reversals.** A grade reversal is a brief change in elevation where the trail drops subtly before rising again. Incorporating the use of grade reversals in trail design will assist in water drainage and minimize the potential for erosion. Prior guidance for trail construction included the use of both rock and log waterbars; however, using grade reversals rather than these built features will result in less cyclic maintenance over time.

- **Outslope.** Trails should be built with a slight tilt (about 5%) of the trail tread toward the low side of the trail. Where outslope is difficult to implement, the use of grade reversals should be implemented before and after that section to reduce the amount of water accumulation.

Design with natural and cultural resources. Park trails would be designed to avoid sensitive natural and cultural resources. When avoidance of a resource is not feasible, designing the trail to minimize its impact will be required. Best practices and sustainable design methods that minimize impacts to cultural resources and complement natural features will be used. The following guidance pertains to trail design within park resources:

- **Alignment outside of buffer zones.** Ensure trail alignment design is outside of buffer zones identified during site assessment for sensitive natural resources and cultural resources, and/or implement management and design measures for those areas where the trail must cross through established buffer zones. The US Environmental Protection Agency recommends a protected buffer of 50 feet around wetlands and streams where siting of campsites, parking areas, or other structures should be avoided. In addition to wetlands and streams, natural resources, including certain plant and animal species/communities, granite outcrops, wetlands, seeps, and springs, should all be buffered when possible. The park's database of sensitive species should be consulted before trail alignment, construction, and maintenance to locate and avoid sensitive areas and sensitive species. In addition, surveys should be conducted to inventory and identify these resources of concern before any new trail construction so that they may be avoided. Trails would seek to achieve a minimum buffer of 50 feet around sensitive resources, but buffers may be increased based upon the sensitivity of the resource.

- **Archeological and historical site protection.** Archeological inventories covering the project area must be complete before starting any new trail construction or restoration project. Historic properties will be avoided where possible through minor reroutes of trails. If avoidance is not possible, measures will be taken to limit or mitigate impacts to cultural sites. Reference the programmatic agreement under development for the trails management plan for guidance on the completion of compliance associated with cultural resources when implementing the trails management plan.

- **Drainage.** Design methods to manage stormwater and trail runoff naturally through dissipation and infiltration should be identified and developed as part of the overall design of the trail in order to reduce runoff velocity, erosive conditions, and stream head

cutting. Additional infrastructure required to meet drainage requirements should also be identified on the site plan.

- **Stream crossings.** When a stream crossing is the only viable option, it should be designed and constructed at no greater than a 8% grade. Crossings should be located on gradually sloping stream banks to minimize impact (IMBA 2004). Trails should not parallel a stream for an extended distance. If the trail should need to travel along a waterway, it should be aligned in a manner that it moves toward and away from the waterway at intervals that are determined appropriate for the size of the river or stream and the existing riparian habitat conditions. Boardwalk crossings for streams should span the channel of the stream and any boardwalk posts or fill should be kept above the ordinary high-water mark of stream channels.

- **Wetland boardwalks.** If a trail is constructed within a wetland, a boardwalk system is recommended. The boardwalk design should provide a layout that minimizes the width of the boardwalk tread and the number and size of pilings (helical piers) needed for excavation and uses best practices that minimize the area of excavation. Additionally, trail or boardwalks in or near wetlands should be constructed during winter, if feasible, and the width of temporary access roads for construction should be minimized to reduce impacts to aquatic resources. Any impacts or changes to identified wetlands require a Clean Water Act 404 permit through the US Army Corps of Engineers and permits by the Georgia Environmental Protection Division.

Soil suitability. Sustainable trails consider the soil conditions and user patterns to identify design measures required for long-term sustainability. Since the soils at Chattahoochee River NRA are identified as poor, the following measures should be addressed in the trail planning process:

- **Minimize user-caused soil displacement.** Design trails that avoid abrupt corners and sharp hills, when feasible. Design trails that incorporate consistent flow, insloped turns, and the use of trail hardening practices in areas that are susceptible to soil displacement.

- **Determine infrastructure.** Once a general trail alignment is determined in step 2, further layout of infrastructure will be identified. Determination of the type of infrastructure, costs, and general design will need to be assembled during the site design phase. When necessary, ensure to budget for trail hardening measures before construction to avoid soil erosion problems.

- **Create clear sightlines for multiuse trails.** Avoiding abrupt stops and use of braking will create less erosion issues for bicyclists and preserve trail tread.

Trail Facilities

The park's trail system contains support facilities to provide access and amenities for visitors. The design and types of facilities are an important aspect of the management and use of park trails. The park's general management plan includes descriptions of appropriate facilities by zone, and the trail-related facilities will conform to allowable infrastructure by GMP zone.

Sustainable design and climate friendly practices. All new improvements to existing trail facilities should be designed and developed recognizing the character of the park and aim to meet NPS Climate Friendly and Sustainable Design Guidelines. Using low-impact design standards, such as Leadership in Energy and Environmental Design, sustainable sites, and building guidelines, and including the use of

recycled materials, the Environmental Protection Agency's WaterSense program, the park's environmental management program, and other similar programs, should be considered where applicable.

Trail Amenities

The Chattahoochee River NRA trails management plan describes three types of access points: trailheads, primary access, and secondary access. Public access to the park's trail system and connection to local communities would be facilitated by this system of access points. Modifications to parking and supporting trail infrastructure would be handled on a case-by-case basis. Please reference chapter 2 in the trails management plan under the action alternative for further descriptions.

Trailheads. Trailheads are places that serve as a starting or ending points along a trail that provide information and, potentially, facilities at varying levels of services to the trail user and park visitor. Trailheads are developed areas on federally owned and NPS-managed lands that include a parking lot, trail access signage, and trail access. Trailheads may also include other facilities as outlined in the trails management plan and can vary based on the designated zoning. Refer to the maps in appendix B for locations of trailheads.

- **Restrooms.** New and/or improved restroom facilities should be designed using NPS Sustainable Design Guidelines (NPS 2009) and NPS Climate Friendly Program Guidance (NPS 2011). Types, quantity, and locations for restrooms will be based upon zoning, trail access classification, and maintenance requirements.

- **Bike racks.** Bike racks may be installed at designated trailheads where bicycle use is authorized. Design and placement of the bike racks should reflect and maintain the character of the park and its resources. Materials for bike racks should provide minimal additional maintenance when installed.

- **Benches.** Benches will be located along trails and at trailheads, where applicable. Benches should fit the character of trail type and will adhere to the bench standards currently in place at the park.

- **Picnic tables.** Picnic tables will be limited to designated picnic areas of the park and generally not located on trails.

Primary trail access points. Primary trail access points are areas on federally owned and NPS-managed lands that have minimal facilities in comparison to trailheads. They typically exist in locations where NPS trails intersect with external trails systems or municipal pedestrian pathways. Primary trail access points include trail access signage and trail access. Refer to the maps in appendix B for locations of primary trail access points.

Secondary trail access points. Secondary trail access points are on NPS boundaries with lands not owned or managed by the National Park Service and which may include trail access signage and authorized trail access. These secondary trail access points are typically owned and managed by park neighbors, such as homeowners' associations or apartment complexes. The locations of authorized secondary trail points would be determined in partnership with park neighbors upon implementation of the trails management plan and are therefore not included in the maps in the plan.

Trail Signage and Markers

Trail and trailhead naming. Trailheads and trail access points throughout the park would be formally named and designated, as will some popular trail routes. These names would be used on signage, maps, and other informational materials to improve wayfinding, trip planning, and sense of place.

Signage. Trails and destinations would be clearly marked with signs. Signage located at trailheads and both primary and secondary trail access points would be standardized. Trail

markers would be installed at trail junctions and destinations, and mile markers could be considered for use along the greenway or Fitness Loop. Please see the trails management plan for additional information and locations.

Trail information. A variety of trail information should be available to trail users through trailhead signage, on-trail information, trail maps, and the use of digital media at trailheads and through mobile applications (e.g., NPS mobile app). Trail characteristics and condition information are required at all trailheads, including:

1. length of the trail or trail segment
2. type of trail surface
3. typical and minimum trail tread width
4. typical and maximum trail grade
5. typical and maximum trail cross-slope
6. types of users permitted on trail
7. hazards such as rocks and roots on trail
8. temporary hazards and seasonal conditions such as flooding, surface maintenance needs, or intruding vegetation

Section 4. Trail Construction

This section outlines general guidance for construction, including the rehabilitation and restoration of existing trails and the development of new trails. Collaboration during the trail design process with maintenance and resource management disciplines at the park are the cornerstones for successful construction of the trail, long-term sustainability, and minimal maintenance.

Using the best management practices to construct a new trail or improving an existing trail is critical to its future maintenance and management. The following general guidelines are recommended for basic activities and methods to use during trail construction. The park's trail guidelines and practices should stay updated to trail industry standards, nationally and regionally, that are beneficial to the trail user and park

resources. Information in this section is adapted from the trail guidance manuals cited in the reference section of this document but primarily from the National Park Service, US Forest Service, Minnesota and Michigan Department of Natural Resources Trail Guidelines, and the International Mountain Biking Association's Trail Solutions manual.

Guidance on Trail Construction Practices

Trail clearing. Clearing vegetation for any new trail will be coordinated with park staff consisting of disciplines in or equivalent to planning and design, plant ecology, biology, and trail construction and maintenance during Step 2.2 Flagging the Trail Alignment Corridor. For protection against erosion and to maintain resource integrity, native vegetation should be retained when possible.

The amount of trail clearing needed will be based upon the category of trail type and the GMP zone within which it is identified. Trail clearing should be made as narrow as possible.

Healthy trees of any size should not be removed except where they interfere with trail traffic and/ or the trail cannot be relocated to eliminate the interference. Healthy trees over 12 inches diameter breast height should remain, and the trail should be routed to avoid being placed within the area directly under the outer circumference of the tree branches (i.e., the dripline). When branches extend over the trail, the corridor would follow the vertical trail clearance standards.

Base construction. Construction of sidehill trails usually requires grading the bed for the trail, but if the existing surface is flat and provides a suitable tread, leave it undisturbed. This practice will reduce erosion and maintenance. On level ground, form the trail base by building up rather than cutting down. Remove all duff before making cuts or fills for the tread. Start grading on the upper slope and carry it down to the finished grade. The usual procedure is to "scratch" a continuous line along the upper slope using a Pulaski or McLeod. Remove any excess

duff at this time. Begin excavation along this line using the appropriate equipment for the trail. The depth, width, and material of surfacing are determined by the quality of the native material and the class of the trail, as specified in these guidelines. As a standard of practice, do not add material or fill to the trail on these contour trails; rather, create a full bench.

Drainage. Proper drainage is a key component to the sustainability of any trail. Drainage control on a trail relates to two primary types of water control: surface and subsurface water.

- **Surface drainage.** Methods to manage surface drainage include outslope, grade reversals, drain dips, varying the trail grade, and armored crossings.

- **Outslope**. Establishing an outslope to a trail will allow water to sheet across and off the trail instead of funneling down its center. Outslope design should exceed running slope to be effective. If loose soil is present, the incorporation of grade reversals is recommended.

- **Grade reversals/drain dips.** A drain dip provides subtle grade changes to a trail, allowing water to exit the trail at intervals. This process reduces the volume and erosive power of water runoff along a trail corridor. Drain dips should be located where they will be most effective. Features such as natural contours, side slope, and trail grade must be studied closely to determine where the largest volume of water can be intercepted. Soil conditions, vegetative cover, and downslope steepness must also be considered when selecting a drain point and outflow location. Ideally, drain dips should be located where natural swales or drainage ways bisect the trail. A drain dip begins on the up-trail side of a normal outslope. The outslope is gradually increased (4%–10%) as the trail grade is cut and lowered to the trough and drain point. The terrain and volume of water encountered usually determines the length and the degree of outslope used on a trail. Generally, steep terrain and higher flows require longer drain dips with more outslope.

The trough is dug across and down the trail at a 30-degree angle and should also be dug with a 15% downslope to ensure adequate drainage and sediment transport. From the trough, the down-trail side sharply rises to the original grade and outslope. This angle must not be too steep or this portion of the trail will be worn down or scuffed into the trough by trail users. Below the drain point, a ditch or drainage channel must be provided to allow water to escape from the trail and fill slope without creating undue erosion. This channel is sized according to the volume of water generated by the drain dip. This channel may also require armoring with native rock to reduce scouring and bank erosion. When a trail cannot support enough drainage dips to meet its drainage needs, knicks and rolling grade dips can be a practice to evaluate as an option. These options feature an outsloped depression in the tread, followed by a long, gentle dirt ramp. The ramps are typically long, at 10–20 feet from tip to tail and outsloped at 5%. The total length of a rolling grade dip varies widely depending on the steepness of the trail tread, but it is typically 15–30 feet.

- **Armoring the tread.** When natural drainage and/or use types create conditions that prevent the maintenance of a natural tread and no other locations are available, the use of hardening material is recommended. Hardening the tread will minimize maintenance, stabilize the surface, and minimize erosion and drainage impacts to adjacent natural resources. Armoring techniques to consider include stepping stones and rocks.

- **Mixed aggregate.** Mixed aggregate is typically used on trails located on flat terrain with poor drainage and where the use of dips and reversals are not feasible. Aggregate mix material comprising 3/4-inch crushed gravel with the crusher fines is recommended for this application and used to build up the trail tread. This mix keeps a dry surface for visitors to traverse, reducing off-trail travel.

- **Turnpike.** Turnpike construction is used in areas where the trail tread remains wet and no relocation options are available. Turnpiking builds up the trail tread higher than the water. Turnpikes are used in short intervals (not in wetlands) where trails cross over seasonal drainages or low-lying areas.

- **Edge protection.** Where a trail travels along a side slope, drainage and erosion issues can arise due to trail user patterns. Edge protection techniques should be evaluated and considered in some locations to assist with stabilizing the trail and reducing maintenance. Techniques to consider include curbing; establishing a vegetative shoulder; installing a constructed barrier, such as low wall or fencing; or visitor education and enforcement. Site conditions, trail use, trail type, and desired trail experience should be factors in determining the best technique.

- **Tread watersheds.** A tread watershed consists of the tread surface plus any uphill area where runoff flows onto the trail and down to a dip between two crests of a grade reversal. This design approach limits erosion on the trail by reducing the amount of water on the given trail segment. Designing the trail with a rolling grade with crests and dips will assist in creating tread watersheds.

Trail climbs. To maintain sustainable grades but meet the topographic terrain that exists within the park, trails require direction changes or placement at sustainable grades to help gain the elevation at a consistent and sustainable rate. Tread climb relates to the steepness and length of a trail overall and between individual tread crests and dips. In general, tread climbs should not exceed one-fourth to one-third of the fall line or the direct drainage paths of the natural terrain. Fall line climbs should be avoided when possible. If the trail needs to meet the fall line climb, ensuring proper grade reversals on the upslope side of the trail is imperative to reduce erosion and water runoff.

- **Climbing turns.** Climbing turns should be used on grades that do not exceed 7%. Turn radii should be wide, generally 20 feet or more. Incorporating a grade reversal just above the turn is recommended. Armoring the fall line section of the turn and adding a choke point to slow users before the turn will reduce user-caused erosion. If possible, use a natural feature as a visual guiding point for trail users to anticipate the climbing turn and to appropriately determine their speed if cycling or running, which will help reduce erosion.

- **Switchbacks.** Switchbacks are sharp, directional changes on a trail to gain elevation in limited space. Switchbacks should be avoided if possible. When switchbacks are necessary, construct the turns as flat as possible. On sideslopes of less than 30%, treat the switchback as a climbing turn. If this results in the center line grade being steeper than is desirable, shorten the radius and design a step section. Provide 15–30 feet of barrier back from the turning point to prevent trail users from crosscutting inside the switchback. A gutter-type ditch, 8 inches deep and 12 inches wide across the top, should be constructed along the bottom of the cut bank to extend from the spill point up grade for 20 feet. The trail tread paralleling the ditch should have a 10% inslope that will drain water from the tread into the ditch. The tread surface, down grade from the crown line for 20 feet, should be constructed with a 10% outslope that will drain water off the trail. A traffic control barrier should be constructed by placing large rocks along the outer edge of the up-grade trail section, forming a continuous barricade. The barrier should be a minimum of 14 inches high and extend from the crown line on the turn section up grade for a minimum distance of 15 feet. Consideration of handrails should be made where applicable and necessary where steep grades or drop-offs exist.

- **Turning approaches.** The upper and lower 20 feet approach sections extending away from the turning point, and the turn section should be constructed to have no less than the trail tread width. The tread on the approach sections and on the turn section should not exceed the prevailing grade of the trail and have no surface rocks over 2 inches in diameter or solid rock protrusions above the trail bed.

Drainage crossings. Crossings of streams can have significant impacts to resources if not implemented properly. At all times, avoiding drainage and stream crossings is the preferred option. If crossings are unavoidable, the following drainage crossing options will need to be evaluated and considered to determine the best option for a specified trail area. Determination of the best methods for drainage crossings should be evaluated in compliance with Director's Order 77: *NPS Benefits Sharing*. Drainage crossing design should consider characteristics of the trail, level of use, and level of development of the trail.

- **Direct crossing.** If drainage flows are intermittent, evaluation of the installation of a primitive crossing should be considered. The use of the trail, type of trail, and resource conditions will influence this consideration. If a direct crossing begins to alter the drainage flow, then other crossing options will need to be installed.
- **Hardened tread crossing.** Hardened tread crossings should only be used where water depths during high flow are less than 3 feet, water velocities are low, trail use is low and water quality conditions will not significantly change. Hardening techniques include use of stones, gravel, and cobble to fortify the trail tread. These materials should be used at sizes appropriate for the stream conditions and trail type.

- **Culverts.** Elevated crossing are preferred over culverts as culverts can alter the water quality and stream functions significantly depending on the drainage size. Culverts should only be used when other natural water management methods are not feasible for site conditions.
- **Bridges/boardwalks.** Bridges and boardwalks are the preferred method for drainage crossings when avoidance of waterway crossings is not possible. The scale, width and materials for structures should be compatible with trail use, trail experience, GMP zone, and minimization of resource impacts. Staff will ensure consistency in bridge design across park units based on the trail type and GMP zone with a goal of establishing a distinct NPS visual identity. Bridge spans should aim not to install piers or footers into waterway. Spans greater than 24 feet should examine materials other than wood to establish long-term sustainability. A minimum bridge width should match the width of the trail. Railings, materials, and styles should be considered for the level of use, ABA requirements, proximity, and characteristics of trail. Materials should be selected based upon structural integrity and site appropriateness. Cultural landscapes and historic characteristics of the area should also be considered during design.

Other structures. Trails may require additional structures to protect the resource and provide a safe trail corridor for its users. These structures include but are not limited to retaining walls and steps.

- **Retaining walls.** Retaining walls are structures of wood or stone designed to stabilize the trail base on a side slope. Native logs should be used only if rock is not readily available, and the native logs should be peeled before placement to ensure a longer life expectancy and reduce replacement. A solid foundation on earth or rock is required to obtain a rigid, safe retaining structure and the removal of water behind the wall is necessary for its design.

- **Steps.** Steps should be discouraged to minimize infrastructure, maintenance and accessibility restrictions. Steps are recommended only as a safety feature where the physical conditions prohibit the alignment of a trail with the natural topography.

Trail restoration. Once a trail has been designated closed or a section relocated, the closed or old trail will be restored to a natural condition consistent with the location's surrounding resources (see section 2 for more information on passive and active restoration).

Recommended steps to take in reverting the trail to a natural condition and avoiding the continuing use of the trail include: 1) Tilling or scarifying the retired tread so that new plants can seed themselves. 2) Planting or transplanting from old route native species to avoid invasive plant issues. 3) Disguising and blocking the corridor with natural material to eliminate the visual corridor and the risk of continual use on the closed section of trail. 4) Installing "Restoration in Progress" signage to inform trail users to stay off of the restored area.

Construction practices to reduce diesel emission impacts. Best practices, where applicable, to reduce diesel emission impacts during trail construction or restoration should be followed as recommended by US EPA for areas in non-attainment of National Ambient Air Quality Standards.

Section 5. Management, Maintenance, and Monitoring

A critical step often forgotten in the trail development process is a strategy for the management, maintenance, and monitoring of a trail after its construction. This section provides recommendations for three management actions: 1) trail management, 2) basic trail maintenance practices, and 3) methods for trail assessment and monitoring.

Trail Management

General Trail Operating Levels. The Park will use three trail operation levels. Condition benchmarks under specific resource conditions for each operating level are described in the sections below.

- **Trail open/fully operating.** The trail is operating as currently permitted with no restrictions for use or trail modifications required.

- **Trail seasonal/temporary closure.** The trail is temporarily closed on a seasonal basis or other temporary purpose for a resource condition. A notice will be provided on the duration and reason for the closure.

- **Full permanent closure.** Trail conditions cannot be sustained to meet the goals and principles set forth in the trails management plan. Upon exceeding monitoring triggers or thresholds from the trails management plan (see appendix D and chapter 2), the Superintendent, will determine trail closures. Upon the Superintendent's decision, park staff will proceed with the trail closure and site restoration.

Trail Operating Benchmarks for Resource Protection. The Park has established benchmarks on specific park resource conditions to assist in determining the operational level of a trail.

- **Trail Open/Full Operating.** The trail is in good condition and is open for use. No major obstacles or repairs are underway. The trail tread is 75% dry and with no significant mud.

- **Trail Seasonal/Temporary Closures.** Seasonal closures are prescribed to designated trails to protect park resources and to meet the goals of a sustainable trails system in the Park. Seasonal closures will reduce impacts to park resources, minimize risk of tread widening, reduce annual maintenance costs to high-risk areas and provide an improved visitor experience during the drier seasons of the year. Natural resource related seasonal closures will

address three primary conditions: wet/ muddy conditions, flood events, and annual nesting activities. The Park may identify additional resource issues that require seasonal trail closures. Seasonal closures will occur when the following resource issues are observed:

- » **Wet/Muddy Conditions.** Trails that are susceptible to wet, muddy conditions due to seasonally wet conditions and have high load or high use conditions will be subject to seasonal closures. The park can close additional trails as wet conditions arise. The park can also open the seasonal closed trails if the annual wet season is dry.

- » On type 2 (natural surface multiuse) trails, bicycle use is not allowed within 24 hours of a rain event. Park staff will work with partners to maintain a text-for-status program for local bicyclists to check on the operating status of type 2 trails before visiting.

- » **Flood conditions.** A flood event that covers a trail or trail facility at a level as determined in the Park's Flood Incident Plan, whereby access is prohibited.

- » **Annual Nesting.** Seasonal closures will occur in designated areas of the park where annual nesting activities occur. These areas will be identified on an annual/seasonal basis with the park biologist and the conditions of trail restrictions for the seasonal closure.

- Trail Rehabilitation, Re-Routes, and Permanent Closures. Through the trails management plan, the planning team has made every effort to reconfigure the park's trail system along sustainable routes by following contours, creating positive drainage, and other best practices. However, over time, conditions may change that affect the overall sustainability of certain sections of trail. For example, some trails may become unsustainable due to shifts in the area's hydrology, changing climate, or other

factors. Furthermore, resource conditions may change such as colonization of the area by sensitive, threatened, or endangered species. As these conditions change, park management may need to rehabilitate or re-route sections of trail, and in some cases permanently close them altogether. Restoration methods outlined in Section 4 would be followed where closures occur.

The Trail Conditions indicators (see appendix D) would be actively monitored. If thresholds are exceeded on a particular trail, it may be re-routed or permanently closed if other Management Strategies are not effective at bringing the indicator back to consistency with the threshold.

If a trail is impacting a sensitive plant or animal species, a buffer distance around that species would be determined based upon the individual species' sensitivity. If the species' presence is long-term in nature, the trail may be re-routed or permanently closed. Sensitive species are defined as those critical to the park's resource integrity, as well as threatened and endangered species, that are adversely impacted by human presence along the trail.

Event Special Use Permits. When special use events are requested for trail use, the event applicant will be required to submit with its permit request, an event sustainable trail plan. The plan (conditions of the permit) will require the permittee to outline how the trail will be protected and maintained before, during and after the completion of the event. The plan will adhere to the principles set forth in the Leave No Trace stewardship program and that exceptional damage due to use and day of event conditions is addressed in partnership with the Park. Park staff will review the plan as part of the permit approval process.

Trail Maintenance

Maintenance. Sustainable trails aim to require less maintenance and fewer resources to maintain their intended use. However, cyclic maintenance is still necessary to preserve the

life of the trail tread and reduce costly major maintenance projects. Maintenance of trails should work to keep the original design of trail and use sustainable techniques to respond to problem areas. (New River Gorge EA/Managing Mountain Biking: IMBA's Guide to Providing Great Riding [Webber 2007]).

General Maintenance. A level of general maintenance for each trail type and their respective trail class has been identified in Section 2 of these guidelines. General maintenance activities assist in providing a safe and consistent trail surface for visitors and minimizing long-term resource impacts. Specific maintenance activities should be developed that align with the designated trail type. General primary maintenance activities that will be conducted for all trails within the park will include:

- Tread Maintenance
- Mowing
- Pruning
- Pathway Clearing

Conditions and practices for each of these maintenance activities will be set by the Maintenance Division in consultation with the facility manager. They will also be reviewed by other staff in the Resource Management Division to minimize impacts on specific park resources where minimum maintenance can occur while providing a safe, sustainable trail. Levels and types of maintenance will also need to be determined in relation to NPS management systems for recurring and cyclic maintenance, preventive maintenance, component renewal, deferred maintenance, and operations.

An annual schedule is recommended for maintenance activities that would occur during a one-year seasonal cycle. The annual maintenance schedule will assist the park in prioritizing areas of concern based upon use levels, lifecycle of a trail, resource conditions, and park priorities, and will identify priority tasks for the trail volunteer program.

Maintain Existing Trails. Beyond general maintenance of the trail, trails will need to be maintained to sustain their structural integrity and changes related to visitor use and park resource conditions. Tread conditions that include the degree of muddiness, drainage control, erosion and vegetation cover are structural condition factors that exist within the park. In addition, structural integrity of trail features, such as bridges, drainage components, railings, and other trail facility structures will need to be assessed and maintained over time. Maintenance of these structural elements of the Park's trails will be conducted annually for drainage structures and reviewed every 2-5 years on other trail structural components and their conditions. Maintenance schedules will be predicated on the capacity of park operations, including park staffing and trail volunteers available to conduct the work.

- **Brushing.** On type 3 and 4 trails, the shoulders / corridor should be mowed at least twice per growing season, but on high-use trails, more often as needed. An adjustable boom mower is very efficient at brushing the corridor and adjacent ditches (type 3 and 4 only). On all trail types, the corridor should be trimmed of branches following the criteria for each trail type set forth in section 2 of these guidelines. Tree trimming should be done so that branches are cut flush with the main branch or trunk of the tree.

- **Tread Surface Maintenance**

  » **Aggregate Tread Maintenance - The trail may need to be graded in spring or fall and should be done when the surface is wet.** This can be helpful in directing the flow of water to avoid erosion and repair normal wear of the surface. After grading, the trail should be recompacted to reduce the migration of material. If the surface becomes loose and aggregate material is starting to migrate due to use or erosion it will be necessary to re-shape and compact

the trail to maintain its integrity. Staff should take care to avoid "trail creep" that results from aggregate being fanned out during any regrading. It may be necessary to add material to fill holes and shape properly. Applying water to the trail before compacting will enhance the rate of compaction and help protect against intrusion of water in the future.

> » **Natural Surface Maintenance - It is important to maintain at least a 2% cross-slope to keep water from resting on the trail.** Re-grading and shaping this slope may be occasionally necessary along portions of the trail.

- **Trail Structure Maintenance.** Repair broken planks, protruding screws or nails, railings, surface, and check for structural damage. Bridges should be checked during regular maintenance and repaired promptly if issues arise.

- **Trail Drainage Maintenance.** Culverts. Clean debris from culverts and swales on both ends of the culvert at least once per year or as needed.

- **Trail Signage Maintenance.** Repair broken planks, protruding screws or nails, railings, surface, and check for structural damage. Replace as necessary.

- **Maintenance for Accessibility.** Addressing routine maintenance on tread surfacing and vegetation trimming ensures that trails do not create additional hazards and obstacles for accessibility.

Trail Monitoring

Monitoring trail conditions and their response to changes in natural conditions, visitor use, or operational issues is an important management tool to maintain the Park's trail system. Monitoring methods have been identified in Appendix D: Indicators and Thresholds and two indicator topics are especially applicable to the physical aspects of trails - trail conditions and social trailing.

Trail Conditions. Continued assessment of trail conditions is a critical activity to meet sustainability goals of trails set by the general guiding principles of these guidelines and the goals and objectives of the trails management plan.

- **Indicator.** Change in Trail Width.

- **Threshold.** Trail width increases by no more than 25% from baseline conditions and does not exceed maximum trail width defined for its trail type as outlined in section 2 of this appendix.

- **Indicator.** Presence of Cross-Slope on Trails.

- **Threshold.** At least 95% of surveyed trails have cross-slope and positive drainage.

Social Trails. Informal trails (aka social trails) are visitor-created trails; often shortcuts; not promoted; duplicative; destructive to resources; and can be unsafe in certain locations.

- **Indicator.** Number of social trails.

- **Threshold.** No more than two social trails intersecting any half-mile stretch of designated trail.

Please refer to Appendix D: "Indicators and Thresholds" in the trails management plan for additional clarification, rationale, and monitoring and management strategies related to trail monitoring.

Appendix G: Comprehensive Trails Management Plan, Civic Engagement Summary Report, June 2021

Chattahoochee River National Recreation Area
Comprehensive Trails Management Plan
Civic Engagement Summary Report

Executive Summary

From March 15, 2021, through April 15, 2021, the National Park Service (NPS) invited the public to provide input as part of a civic engagement process for the development of a comprehensive trails management plan ("the plan," "trails plan") for Chattahoochee River National Recreation Area ("the park").

To introduce the planning effort, the National Park Service held two virtual public meetings to discuss the development of the trails plan and answer questions about the project. These virtual public meetings were held on Thursday, March 25 at 6:30 p.m. (EST) and on Friday, March 26 at 1:30 p.m. (EST). During the virtual meetings, NPS staff explained the planning process, showcased methods for public comment, and answered participants' questions.

Park staff developed two methods for submitting plan comments online. In the first method, the public could submit written comments by mail, email, and on the project website at https://parkplanning.nps.gov/CRNRA_Trails. In the second method, the public could submit comments online using an interactive platform called a "storymap," which provided trail proposals and the ability to upload concerns, designs, and suggestions (accessed at https://arcg.is/1PKmna).

At the close of this comment period, the Park Service received more than 300 correspondences on the project website. In addition, the project storymap logged more than 190 correspondences. Of the correspondences submitted on the project website, 96% were from Georgia residents and less than 1% was from residents of Tennessee, Colorado, Alabama, and Massachusetts.

This report provides an overview of the planning process and a summary of public comments grouped into thematic topics to ensure a complete and thorough analysis.

Planning Process

The planning process began in spring of 2018 when the National Park Service contracted with Applied Trails Research to gather preliminary public input via an online "social pinpoint" interface. This valuable public input provided an understanding of public perceptions of issues, opportunities, and priorities with the trail system; what trail users value about the system; current trail uses and conflict areas; and aspects of the trail system that should be retained, expanded, or modified.

This input informed a collaborative preliminary design process between Applied Trails Research and the NPS planning team. This preliminary design process identified refined desired conditions for trails in each park unit, a draft layout of a sustainable trail system in each park unit, and a suite of preliminary management strategies that would apply parkwide. These three elements were included in the Chattahoochee River NRA Preliminary Trails Management Plan that was released for public review and comment in March 2021.

The public input on the Preliminary Trails Management Plan will inform modifications to the desired conditions, trail designs, and parkwide management strategies. The planning team is in the process of refining the plan based on this public input. The next step is for the NPS planning team to prepare a comprehensive trails management plan and conduct associated environmental compliance. The comprehensive trails management plan will undergo another round of public review and comment before being finalized. The National Park Service will announce this public comment period by media release on the project website at https://parkplanning.nps.gov/CRNRA_Trails and via other sources.

Throughout the planning process, the Park Service has sought and will continue to engage with the public and park partners to gather input on the project. The NPS planning team is grateful to those who engaged in the most recent public comment process and appreciate the robust and thoughtful input. This input is key to developing a plan that best serves the park resources, its managers, its stakeholders and community members, and its trail users.

Comments by Topic Themes

Trail Building and Maintenance
Many commenters expressed a desire for better trailhead signs, new trail markings to indicate changes in difficulty of terrain, more directional signs or arrows, more interpretive signs, and posted regulations (e.g., speed limits for bikes). Some commenters expressed a desire to keep equestrian trails, add additional accessible paved trails, and add formal river/fishing access and overlooks. A number of commenters suggested placing signs to enforce visitors to "stay off the trails when wet" to prevent erosion.

Regarding trail surfaces, commenters expressed a wide range of preferences, including crushed gravel, paved surfaces, and natural surfaces. Suggestions included more vegetation pruning, stabilizing areas along the riverbank (e.g., short boardwalks or viewing platforms); filling in ruts by bridges and walkways over water, sweeping debris on bridges, and leveling off large indentations on trails. Commenters also expressed concern with the feasibility of maintaining the additional proposed trails, given the funding and staffing limitations.

Recreational Use: Bicycling
A number of commenters noted the value of having opportunities to bike at the park and a desire for more trails to accommodate safe mountain biking and casual riding. Many commenters desire bike trails that provide diverse opportunities, such as paved, gravel, and single-track trails, for riders of all skill levels. Respondents also expressed a desire for more connecting trails to disperse visitors throughout the park and reduce congestion on trails.

Feedback suggested that bike use on trails contributes more to erosion than pedestrian use on trails. Many commenters noted safety concerns on multiuse trails related to user conflicts between bicyclists and pedestrians, hikers, and runners and a few commenters noted concerns with bicyclists' high speeds. Both bicyclists and pedestrians expressed concerns about the safety of multiuse trails. Commenters provided the following suggestions to address safety concerns with multiuse trails: separation of users by trail (bicyclist-only trails and pedestrian-only trails), exclusive use days (e.g., Monday/Wednesday/Friday/Sunday for bikes and Tuesday/Thursday/Saturday for hikers), enforcing a bike speed limit on multiuse trails, and opening up the entire park to bicycles and pedestrians to disperse use throughout the park.

Commenters also noted specific locations where bike connections would improve the user experience and suggested improvements to enhance the user experience within Cochran Shoals, including stabilizing soft shoulders, maintaining challenging terrain, and improving navigability of rock armoring.

Recreational Use: Climbing
Some commenters appreciated the inclusion of climbing resources at Bowmans Island and Vickery Creek in the plan and urged this planning effort to also include and recognize specific additional climbing access trails in other units (such as Vickery Creek, Cochran Shoals, Palisades, Medlock Bridge, Jones Bridge, and Island Ford).

Resource Concerns
Several commenters expressed support for protecting both water quality and wildlife and removing invasive vegetation on trails when implementing the plan. Feedback also included concern about dogs, such as conflicts between dogs and park visitors and resources. Suggestions to address these concerns included enforcing the dogs-on-leash policy and installing receptacles to hold pet waste.

Partnerships and Volunteers
A few commenters suggested that the park explore partnerships with various organizations (e.g., nonprofits, cities, federal agencies) to assist in the planning and ongoing maintenance of the trails and to integrate justice, equity, diversity, and inclusion into the plan.

Other suggestions included using a volunteer program to help support trail design, install educational signs, and promote safety on the trails. These commenters suggested offering "part-time" and "full-time" volunteer opportunities with targeted marketing to veterans, retired individuals, college students, and academic departments at local high schools and colleges.

Facilities
Several commenters conveyed appreciation for facilities in park units. Others expressed a desire for restroom facilities in every unit (especially in parking areas) and more trash receptacles and bicycle racks at key locations throughout the park.

Chattahoochee RiverLands Greenway
Many respondents expressed support for integrating the recently completed Chattahoochee RiverLands Greenway Study into the comprehensive trails management plan (see "Additional Context on the Chattahoochee RiverLands Greenway Study and National Park Service" on page 5). These commenters support the full integration of the RiverLands Greenway for the following reasons: enhanced regional connectivity, dispersed visitor use across communities, enhanced bicycle access to the park, and enhanced recreational opportunities.

Some respondents opposed integrating the RiverLands Greenway into the trails plan for the following reasons: reduction of the natural character of park units through increased development and use, increased congestion, and impacts to natural resources in the park.

The majority of commenters expressed appreciation for the integration of the RiverLands Greenway in certain park units. However, other commenters were concerned that the proposed RiverLands' Preferred Alignment (see the callout box on page 7 for additional context) is not proposed for inclusion in the following units: Bowmans Island, Orrs Ferry, Abbotts Bridge, Johnson Ferry (outside the scope of this plan), and a portion of Settles Bridge. Some commenters would also like the plan to include a new pedestrian bridge/crossing to connect Morgan Falls Overlook Park (owned and managed by the City of Sandy Springs) to the Johnson Ferry North unit and also to nearby sections of the RiverLands' Preferred Alignment.

Many commenters expressed frustration around the park's proposed adoption of the RiverLands' Practical Alignment in certain units instead of uniformly integrating the RiverLands' Preferred Alignment in the trails plan. Commenters expressed concern that if the Preferred Alignment is not fully integrated into the park's plan, the RiverLands Greenway would be limited in its success and viability. Some commenters also expressed frustration about perceived communication issues between the RiverLands team and the NPS planning team. Commenters conveyed frustration that some local jurisdictions have already procured funding to develop trails proposed in the RiverLands' Preferred Alignment that travel through park units and are not proposed for adoption in the park's trails plan. Respondents recommended holding meetings with all affected cities and counties before publicizing the next draft of the trails plan.

Support for the Comprehensive Trails Management Plan

Several commenters expressed gratitude for the following elements of this plan: adding more mileage of trails, enhancing Atlanta-area sustainability and connectivity, providing big-picture trail connections, proposing different trail surface types, including a long-term vision, providing a high level of detail, expanding trails to support Atlanta's growing population, communicating through various platforms, and protecting water quality.

Critiques of the Comprehensive Trails Management Plan

Some commenters expressed concern that new trails and trail access points might result in increased congestion, higher demands on parking leading to overflow on residential streets, and increased crime in adjacent neighborhoods. A few commenters also provided specific suggestions to further refine the goals, purpose, and need language stated in this plan. A small number of commenters critiqued the trail designs in the plan for lacking familiarity of the units.

Out of Scope

A number of comments were outside of the scope of this trails plan. Park staff acknowledges that these comments are important issues to the park and surrounding communities and is exploring solutions to these concerns in separate efforts. This report includes these comment summaries to provide a holistic picture of comments received.

As a reminder, the purpose of the comprehensive trails management plan will be "to provide guidance for improving trail conditions and connecting the 15 park units within the National Recreation Area as part of a sustainable, accessible, and regionally integrated trail system."

Parking and Roads

Some commenters expressed a desire for parking expansion throughout the entire park and provided specific recommendations for locations of parking expansions. Respondents pointed to safety concerns about narrow roads providing access to park units. While this trails plan will identify potential management strategies for parking at certain trailheads, addressing parkwide parking management and expansion is outside the scope of this plan. Parking concerns will be addressed through other efforts and discussions with municipalities and adjacent landowners. The National Park Service is actively developing specific parking lot projects across the park and seeking funds for additional areas.

River-Related Recreation

Some commenters expressed a desire for paddle-up campsites, ADA-accessible river access, stabilization of the riverbank, increased opportunities for fishing and wildlife viewing, and safer river access at specific boat launches. A few commenters expressed a desire for increased enforcement to reduce the frequency of littering and visitors' consumption of alcohol on park property.

Connectivity to Trail Systems Well Outside of the Park Boundary

One of the goals of this trails plan is to "enhance or enable appropriate connectivity with existing or planned regional trail networks." A few commenters expressed a desire for the plan to connect to other trail systems well outside of the park boundary, which are geographically distant from the park and out of scope for this plan. These trail systems include The River Line, Blankets Creek and other mountain biking areas, Bolton-area Parks (City of Atlanta), Sweetwater Creek State Park, Coweta County, and Heard County.

Johnson Ferry North to Hyde Farm Connection

Several commenters stated a desire for a connection from Johnson Ferry North to Hyde Farm. Before beginning the trails plan, park staff initiated a separate planning effort to explore trail connections between Johnson Ferry North and Hyde Farm in partnership with Cobb County. Park staff intends to maintain these projects as two separate planning efforts.

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CHATTAHOOCHEE RIVER NATIONAL RECREATION AREA

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