Environmental Assessment

Trail Development Plan Phase One:
Through Park Connector; Northern Half, River Left

West Virginia
2013

Cover photo given to NPS by the Order of the Arrow, Boy Scouts of America.

Executive Summary

The National Park Service (NPS) proposes to develop new trails throughout areas of the northern half of the New River Gorge National River in accordance with decisions made in the park's approved General Management Plan (GMP; 2011). These trails will include trail segments of the Through Park Connector from McCreery almost to the northern park boundary on river left of the New River, as well as several trail segments that would connect the Through Park Connector to the rim, to the river and to other public trails that link to trailheads outside the park, nearby communities and regional points of interest. For proposed trail segments that would be developed for multiple user groups, including pedestrians and bicycles, an analysis of impacts of bicycle use on those trails must be done in order to promulgate a special rule in the Code of Federation Regulations that designates those trails as open to bicycle use.

This Environmental Assessment (EA) examines in detail two alternatives: Alternative A, the No Action Alternative, which proposes continuing current management direction, and Alternative B, the Trail Development Alternative, which proposes developing the trail segments of the Through Park Connector and outside links and implementing park protocols for current and future trail design and construction that would avoid and minimize adverse impacts to the park's natural and cultural resources. The Trail Development Alternative includes development of a trail connection to a climbing area, consistent with approved GMP decisions. Environmental impacts of the two alternatives are analyzed for:

- Vegetation: Including Common and Rare Plant Communities, Rare Plants, Threatened and Endangered Plant Species and Non-Native Invasive Plant Species
- Wildlife and Habitat: Including Threatened and Endangered Species and Species of Concern Related to the Actions Proposed
- Soil Conditions, Streamflow Characteristics and Water Quality
- Prehistoric and Historic Archeological Resources, Sites and Structures
- Visitor Use, Experience, Access and Safety
- Park Operations, Facilities and Maintenance

Public Review and Comment. This EA will be distributed for agency and public review for a minimum of 30 days. The EA may be viewed on or downloaded from the NPS Planning, Environment, and Public Comment (PEPC) web site (http://parkplanning.nps.gov/neri). If you wish to comment on the EA, the preferred method is to submit comments electronically through the PEPC web site. You may also mail written comments to:

NPS – New River Gorge National River
Attn: Superintendent; Comment on Trail Development EA
P.O. Box 246
Glen Jean, WV 25846-0246

Written comments must be postmarked by the due date posted on the PEPC web site. Comments will not be accepted by email or by fax. The NPS will consider all comments received, and if no substantive issues are identified, the NPS will select an alternative for implementation and prepare a Finding of No Significant Impact for signature by the Northeast Regional Director.

Notes to Reviewers and Respondents. Before including your address, phone number, e-mail address or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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1 PURPOSE OF AND NEED FOR ACTION

Chapter One of this EA describes the purpose of the proposed project and why it is needed. This chapter also summarizes the context for the project in the park and in a legal and policy framework.

This Trail Development Plan and Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), Council on Environmental Quality (CEQ) implementing regulations for NEPA [40 CFR 1500–1508], NPS Director's Order #12: Conservation Planning, Environmental Impact Analysis and Decision Making (DO-12, 2011) and its accompanying DO-12 Handbook (2001), as well as National Park Service (NPS) *Management Policies* (2006).

1.1 Purpose of Action

The purpose of the proposed action is to implement trail-related actions that were proposed and approved in the New River Gorge National River (NERI) General Management Plan (GMP) (2011), and in particular, those actions for which the planning can be accomplished within a short time frame and largely constructed with volunteer labor during the summer of 2013. The proposed action includes four components:

- Through Park Connector Trail Segments
- Bicycle Use on Through Park Connector Trail Segments
- Bridge Buttress Trail Extension
- Trail Connections to Non-Federal Lands

Each project component is described in detail below. The need for the proposed action is also discussed by project component in the sections below.

1.2 Through Park Connector Trail Segments

The NERI GMP approves a Through Park Connector, on which hikers and bicyclists can travel from end to end of the park along a combination of trails and scenic roads. "Over time, and as property and rights-of-way are acquired, NPS would seek to develop trails on both river right and river left, from the New River Parkway Bridge to Hawks Nest. These trails would connect and create a loop trail that would provide for several days of hiking in the park" (NPS 2010, p. 2-144, as amended by NPS 2011a). In addition to this "trail system expansion," development "would include new park trails to provide rim to river experiences and experiences in and around river gateways" (NPS 2010, p. 2-144, as amended by NPS 2011a).

The Through Park Connector Trail Segments project area covers the area on river left of the New River, from the area of the confluence of Piney Creek and the New River to a point close to the northern park boundary, which is the limit of the best on the ground knowledge of potential alignments for the Through Park Connector (see Figure 1-1). The individual trail segments proposed in this plan are not all contiguous, and will be addressed in this document by individual segment names. These more specific project areas are named and displayed in Figures 1-2 through 1-3 and Figures 2-1 through 2-5, organized from upstream and south to downstream and north.

Need. The proposed Through Park Connector trail segments are needed:

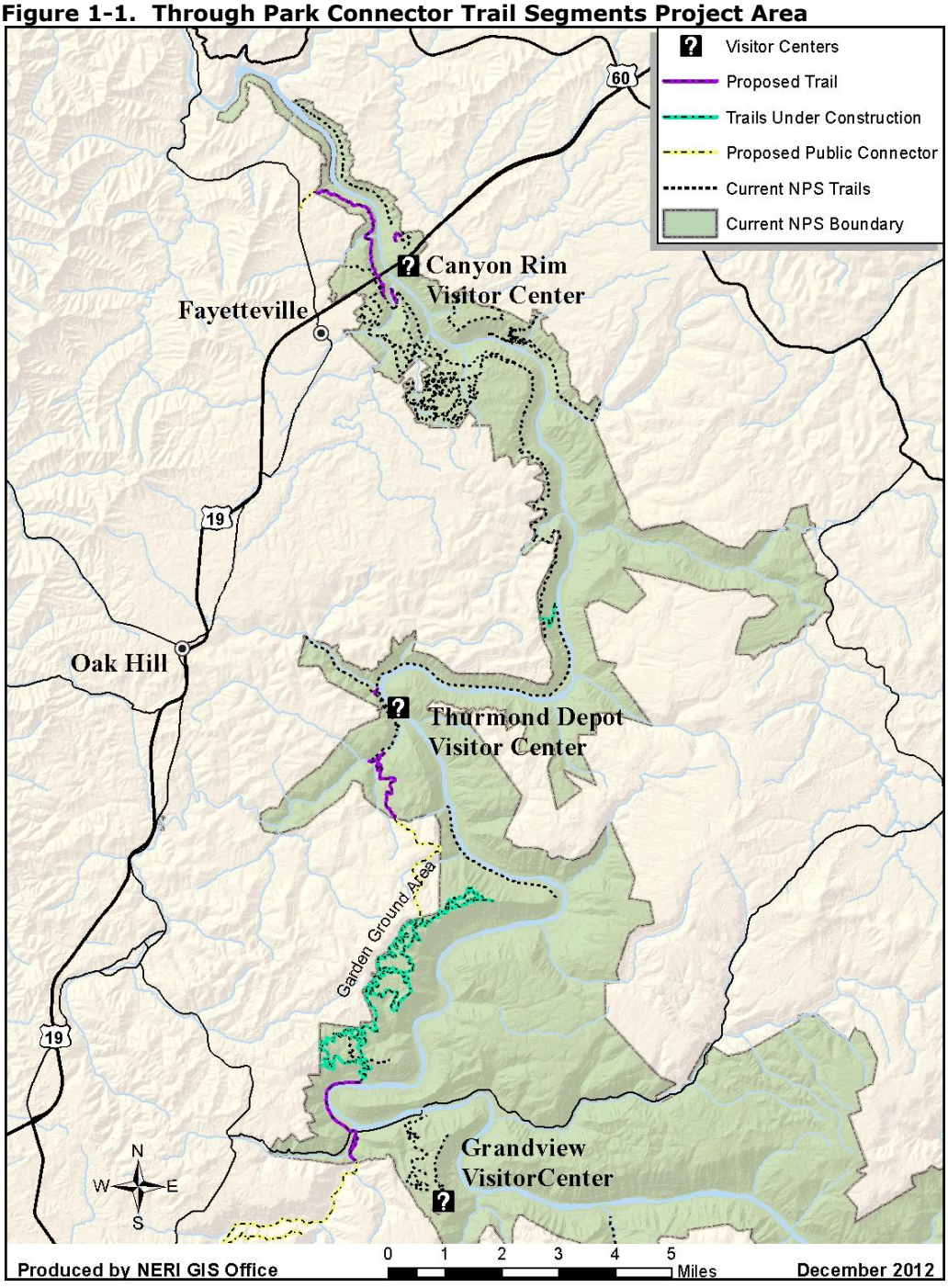
- to provide recreational experiences for the public that have been identified by park management as having a high priority and where proposed routes and project areas are reasonably well known and understood; and
- to develop trail connections between existing segments of trail on the Through Park Connector, as well as connections between Through Park Connector access and interest points along the rim and the river.

The proposed Through Park Connector trail segments are needed at this time in order to respond to a valuable opportunity of volunteer trail construction labor. The Boy Scouts of America (BSA), a park

partner who recently purchased land adjacent to the park, is developing the Summit Bechtel Family National Scout Reserve (Summit), at which they will host leadership camps and the National Scout Jamboree, held every four years. The first jamboree at this location will occur in July 2013, and the BSA has offered the NPS a large volunteer labor force for trail construction during this event.

The NPS will analyze the impacts of the proposed connector segments based on current knowledge of the project area and the standard operating procedures in Appendix A for determining the final flagged trail routes. Where an easement or other agreement with a property owner is needed in order to develop a given trail, resource surveys will not be performed nor will a final trail route be flagged until the necessary agreement has been executed between the NPS and the property owner.

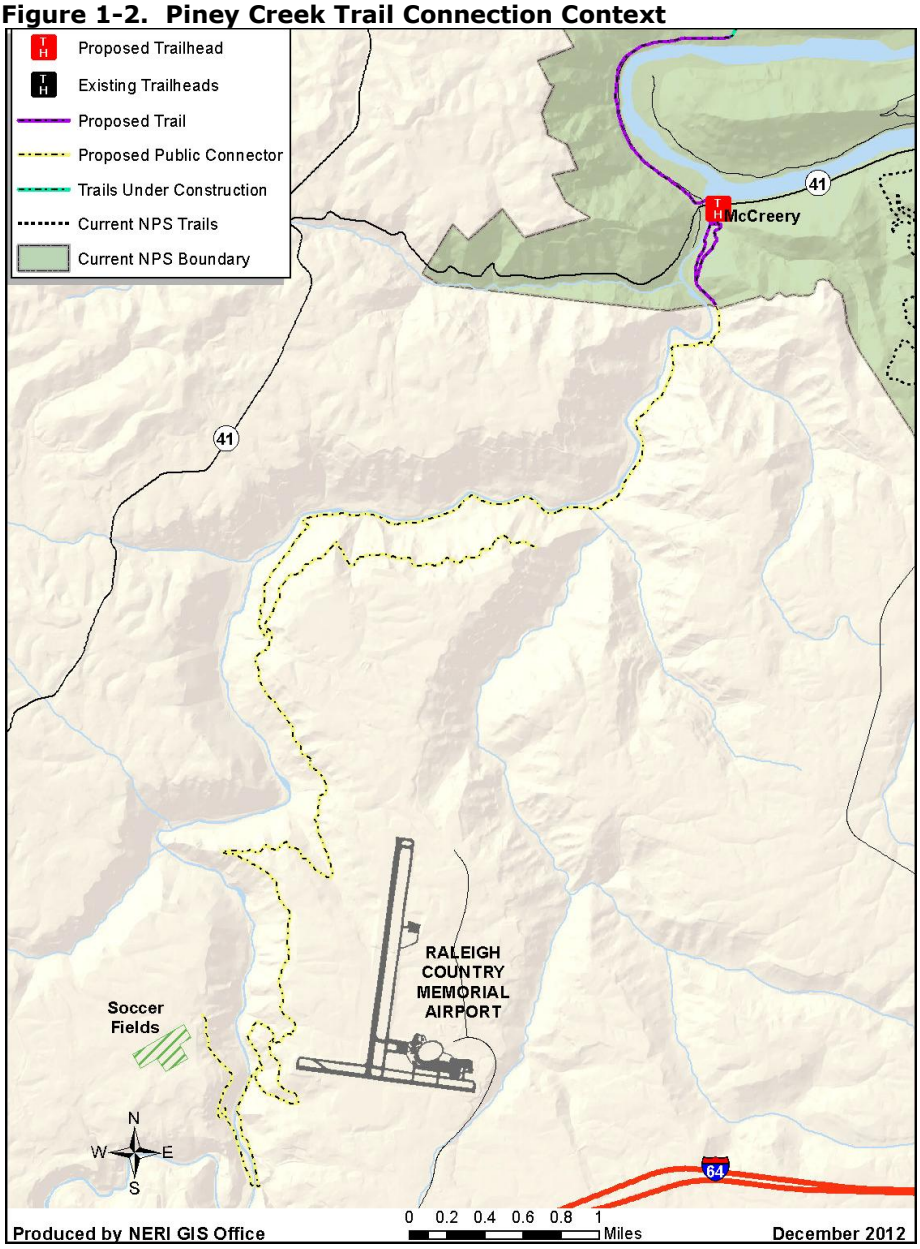
Figure 1-1. Through Park Connector Trail Segments Project Area



Piney Creek Trail. The Piney Creek Trail would connect the McCreery Trailhead with a public trail on private land, also called the Piney Creek Trail, that is expected to travel up the Piney Creek Gorge on creek right to the Raleigh County Memorial Airport (see Figures 1-2 and 2-1). From the airport, that trail will then cross Piney Creek and connect to the YMCA Paul Cline Memorial Youth Sports Complex, which has public parking and is used extensively by the public, particularly citizens of Beckley. These trails, both on and off NPS property, would serve as multi-use (hike and bike) trails.

Raleigh County, the Raleigh County Memorial Airport, the Piney Creek Watershed Association and other partners are working together to develop the non-NPS portion of the Piney Creek Trail by securing agreements with the private landowners along the Piney Creek Gorge. The partners have proposed a trail alignment on NPS land that meets their connection needs and the goals of the NPS. The NPS portion of the trail would primarily use abandoned mining and logging roads, and it would have to cross the CSX Piney Creek Spur rail line near the McCreery Trailhead. Either an at-grade crossing or some other way of getting trail users across the rail line must be acquired by NPS or a partner for public access.

Figure 1-2. Piney Creek Trail Connection Context

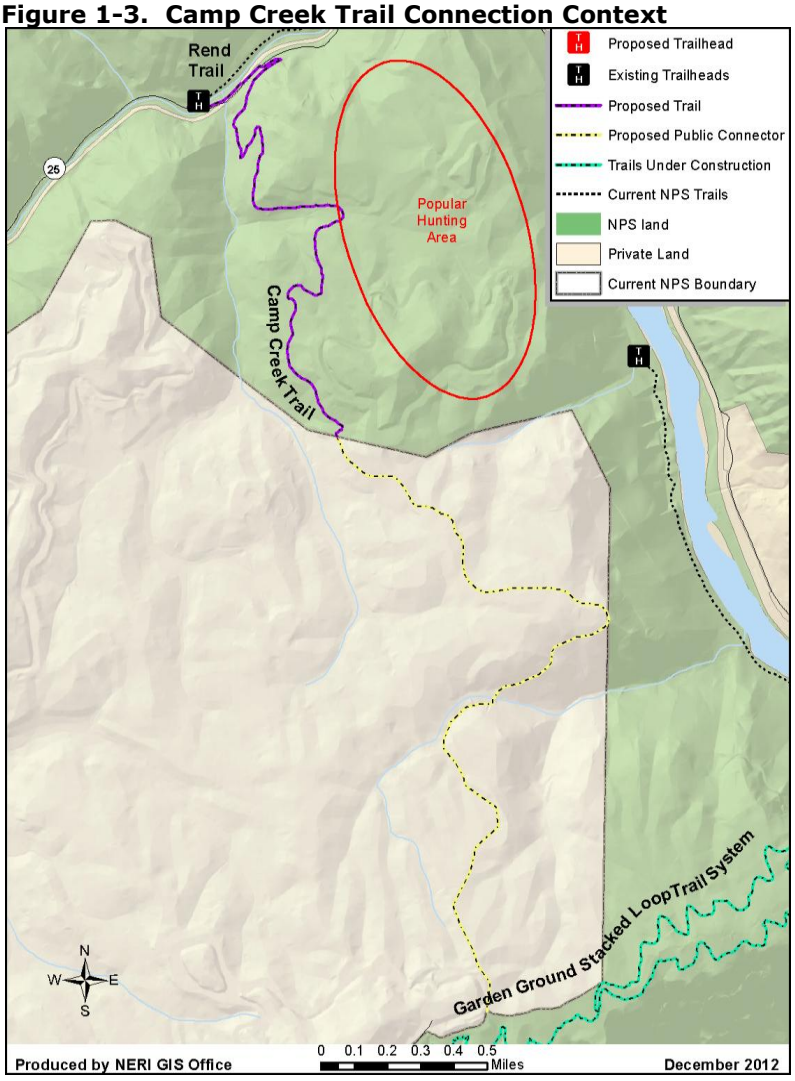


McCreery Trailhead. The proposed McCreery Trailhead would be located at an existing gravel parking area in McCreery along State Route 41 that is owned by the NPS and sometimes used by the public to park their vehicles and trailers after launching their boats at the river access, just across Route 41 (see Figure 2-1).

McCreery Trail. The proposed McCreery Trail would serve as a multi-use (hike and bike) trail connecting the McCreery Trailhead to Terry and the Garden Ground Stacked Loop Trail System by crossing State Route 41 from the trailhead and utilizing an abandoned railroad bridge that is currently owned by CSX, as well as an abandoned rail line, about half of which is owned by CSX and half by the NPS (see Figure 2-1). Because the NPS only owns a portion of this proposed trail, public access across these features must be granted, either through purchase or agreement.

Camp Creek Trail. The proposed Camp Creek Trail would serve as a multi-use (hike and bike) trail connecting Thurmond Road (County Route 25), just downstream of the existing Rend Trailhead along Dunloup Creek, up the Camp Creek drainage, along this segment of the Through Park Connector to the BSA Summit, pending an agreement for public trail access across this private property (see Figures 1-3 and 2-2). The BSA would develop a public trail across the Summit property that would connect to the Garden Ground Stacked Loop Trail System, as described in the 2011 Hike/Bike Trail Plan (NPS 2011b). This trail would also improve hunting access to Sewell Knob, a popular area of the park for hunting, as hunting is expected to increase due to displacement of hunters from the Summit lands as a result of purchase of that area by the BSA.

Figure 1-3. Camp Creek Trail Connection Context



Arbuckle Connector Trail Improvements. The NPS is pursuing an amendment to the Code of Federal Regulations (CFR) to designated trail segments of the Through Park Connector as open to bicycle use. Cyclists could ride, mostly on trails, from the Fayetteville area to Cunard, then along the Southside Trail almost to Dun Glen. Public access to Dun Glen, Thurmond Road and existing (Stone Cliff Trail), planned (Garden Ground Stacked Loop Trail System) and proposed (Camp Creek Trail) trails upstream is blocked because there is no legal crossing of the CSX RJ Corman rail line at the southern terminus of the Southside Trail. Because the Through Park Connector is being more fully developed through these upstream trails that would be designated for multiple uses, including bicycles, bicyclists need a legal way to access the upstream portions of the Through Park Connector (see Figure 2-3).

The Arbuckle Connector Trail is steep, narrow and rocky. Its grades and design would not sustain bicycle use as it is currently aligned. However, if an improved Arbuckle Connector Trail were designated for bicycle use (in addition to pedestrian use), bicyclists could connect the Southside Trail to the Rend Trail, then access the Stone Cliff Trail or proposed Camp Creek Trail and continue upstream.

Wolf Creek Trail. The proposed Wolf Creek Trail would provide a rim-to-river multi-use (hike and bike) trail connection in the Fayetteville and Fayette Station area (see Figure 2-4). Fayette Station is a popular point of interest to park visitors, and the only way to access the area currently is on Fayette Station Road (State Route 82). While bicyclists and pedestrians do often use this road to access Fayette Station, it is narrow with steep cliffs below the road surface, and it supports a high volume of traffic during the park's busy season, including large raft company busses and non-resident drivers unaccustomed to such extreme road engineering.

Whitney Trail. The proposed Whitney Trail would serve as a multi-use (hike and bike) trail connecting the Fayetteville Trail, uphill of the Wolf Creek Trailhead along Fayette Station Road to the proposed Pipers Branch Trail, using existing mine roads and benches (see Figure 2-5).

Whitney Trailhead. The Whitney Trailhead would be located in the footprint of the existing pull-out at the intersection of the proposed Whitney Trail and Fayette Station Road (see Figure 2-5). This trailhead would supplement the existing Wolf Creek Trailhead.

Pipers Branch Trail. The proposed Pipers Branch Trail would be a multi-use (hike and bike) trail connecting the Whitney Trail, as part of the Through Park Connector, to the top of the gorge where the public can access the NPS trail system through trails on private lands owned by the BSA who would provide public trail access and public parking on their property (see Figure 2-5).

1.3 Bicycle Use on Through Park Connector Trail Segments

The CFR [36 CFR 4.30] lays out procedural requirements for determining whether bicycle use on routes, including trails and administrative roads, on NPS lands is appropriate. It also lays out mechanisms by which to designate trails as open to bicycle use, depending on the circumstances of the routes being considered.

Need. Analysis of the impacts that bicycle use would have on park resources and operations is required in order to reach a determination of appropriateness of designating trail segments of the Through Park Connector that are proposed to support multiple uses as open to bicycle use. This plan/EA is needed to document that analysis and engage the public so that the NPS can make a determination about the appropriateness of bicycle use on the proposed trail segments, and, if appropriate, pursue the proper course of action to designate identified trails as open to that use. In the case of most proposed trail segments, this course is likely to be the promulgation of a special regulation that would amend the CFR for NERI.

1.4 Bridge Buttress Trail Extension

The GMP calls for the park to develop a campground in the Burnwood area that "would address the need for camping facilities in proximity to rock climbing areas… in the lower gorge" (NPS 2010, p. 2-

149, as amended by NPS 2011a). The park pursued initial feasibility studies for this, but in 2010, the American Alpine Club (AAC), Access Fund and the New River Alliance of Climbers (NRAC) partnered to purchase land adjacent to Burnwood for the purpose of developing a climbers' campground. Construction began in the summer of 2012, and camping with very few amenities was opened to the public (not solely the climbing community) in the fall of 2012 (American Alpine Club 2012). NRAC approached the park requesting that trails be developed to connect the campground to the Junkyard and Bridge climbing areas. Because the campground would also provide day-use parking for climbers, both day-visitors and campers could walk to these busy climbing areas, alleviating pressure on the extremely limited public parking the NPS is able to provide.

The existing Bridge Buttress Trail, as recognized and maintained by the NPS, starts at the wooden steps off of Fayette Station Road, just across from the parking area, and follows the trail, steps and belay areas around the base of the main Bridge Buttress crag within the Bridge climbing area. A well-used social trail exists, mostly along the cliff base, from Bridge Buttress to the Promised Area, where the social trail fades into several braided trail traces that connect with the First Strike Area and North Bridge Wall. The social trail has never been formally recognized as a trail by the NPS, although the NPS invites visitors to use it to access the climbs within the Bridge Area.

Need. Access to the Junkyard climbing area from the AAC/NRAC campground has already been determined, but a new hiking-only trail segment is needed to provide a connection between the campground and the Bridge climbing area (see Figure 2-6). The NPS recognizes that campers will want to hike from the campground to the climbing area, and would prefer to choose the best trail alignment for resource protection before social trails have the opportunity to develop. Because the campground was recently opened for public use, the NPS believes it is in the best interest of the public and park resources to pursue this proposed trail segment in this plan/EA. Further, the existing social trails must be evaluated and formalized to create a recognized and maintained trail system connecting the campground to the existing Bridge Buttress Trail.

1.5 Trail Connections to Non-Federal Lands

The approved GMP makes trail connectivity from NERI with attractions and communities around the region a priority for the park. This plan/EA proposes guidelines for the development of park trails that connect to trails on adjacent properties and addresses the criteria for those connections, particularly regarding public access on connecting trails.

Need. Because of land ownership and use patterns in and around NERI, developing trail connections between NERI and surrounding gateway communities and regional attractions necessitates having trails on both private lands and public lands administered by other agencies at various levels of government. Trails that cross both public and private lands must have a legal guarantee of public access in place in order to avoid the potential to create a problem of developing trails for exclusive use.

1.6 Relationship of the Project to Laws, Policies and Plans

New River Gorge National River General Management Plan, 2011. The Record of Decision approving the NERI GMP was signed by the NPS Northeast Regional Director on December 7, 2011. "The purpose of the GMP is to provide a decision-making framework that ensures that management decisions effectively and efficiently carry out the NPS mission at [NERI]" (NPS 2010, p. 1-1, as amended by NPS 2011a). That framework "will provide the guidance to make these management choices in a manner that is consistent with the purposes for which [NERI] was established by Congress as a unit of the national park system and that protects the park's fundamental and other important resources and values" (NPS 2010, p. 1-2, as amended by NPS 2011a).

The NERI GMP lays out general park development goals, and this plan/EA proposes to implement some of those goals related to park-wide trail planning and development, as discussed in Sections 1.2 through 1.5.

2011 Hike/Bike Trail Plan. The 2011 *Environmental Assessment: Design and Build Two Stacked Loop Hiking and Biking Trail Systems; Develop Three Trails on Existing Roads; Analyze Bike Use on Park Trails* (2011 Hike/Bike Trail Plan; NPS 2011b) proposed design and construction techniques, trail classifications (easiest, more difficult, most difficult), and methodologies and mitigation measures that provide protections for soils, streams and water resources, vegetation, wildlife and cultural resources when laying out, designing and constructing trails. These techniques, classifications, methodologies and mitigations proved effective in the implementation of the actions proposed in the 2011 Hike/Bike Trail Plan, and would be treated as standard operating procedures (SOPs) in the trail development process of this plan/EA. The park would adopt these SOPs as park-wide standards and protocols for trail development. As the SOPs are used and improved on the ground, NERI would utilize future EAs and other appropriate administrative and compliance procedures to refine them and incorporate any additional mitigations that would offer better protection for park resources during trail development. For the reader's benefit, these SOPs are reproduced in Appendix A.

Code of Federal Regulations, National Park Service, Bicycles [36 CFR 4.30]. Title 36, Part 4, Section 4.30 of the CFR establishes rules for the use of bicycles on NPS lands. For existing trails that require construction or significant modification to accommodate bicycles and for new trails outside of a developed area, the park superintendent must:

- "complete a park planning document that addresses bicycle use on the specific trail that includes an evaluation of:
  - The suitability of the trail surface and soil conditions for accommodating bicycle use. The evaluation must include any maintenance, minor rehabilitation or armoring that is necessary to upgrade [an existing] trail to sustainable condition; and
  - Life cycle maintenance costs, safety considerations, methods to prevent or minimize user conflict, methods to protect natural and cultural resources and mitigate impacts, and integration with commercial services and alternative transportation systems (if applicable)."
- "complete either an environmental assessment (EA) or an environmental impact statement (EIS) evaluating the effects of bicycle use in the park and on the specific trail. The superintendent must provide the public with notice of the availability of the EA and at least 30 days review and comment on an EA completed under this section."
- "complete a written determination stating that the addition of bicycle use on the existing hiking or horse trail is consistent with the protection of the park area's natural, scenic and aesthetic values, safety considerations and management objectives, and will not disturb wildlife or park resources."

The park superintendent must additionally obtain the Regional Director's written approval of the determination and promulgate a special regulation authorizing the bicycle use.

1.7 Issues and Impact Topics

The main issues surrounding trail planning and development at NERI are developing safe, enjoyable, and sustainable trails; avoiding and minimizing negative impacts on the park's natural and cultural resources, especially sensitive and/or rare resources; providing a variety of recreational opportunities related to trails; and minimizing user conflicts related to trails. Using these issues as a guide, and based on the staff's knowledge and expertise regarding visitor use, resource management and park operations, the following impact topics were selected for detailed analysis:

- Vegetation: Including Common and Rare Plant Communities, Rare Plants, Threatened and Endangered Plant Species and Non-Native Invasive Plant Species
- Wildlife and Habitat: Including Threatened and Endangered Species and Species of Concern Related to the Actions Proposed
- Soil Conditions, Streamflow Characteristics and Water Quality
- Prehistoric and Historic Archeological Resources, Sites and Structures
- Visitor Use, Experience, Access and Safety
- Park Operations, Facilities and Maintenance

A number of resource topics were initially considered but were then dismissed from detailed analysis. These are briefly described below with the reason for dismissal.

Cultural Landscapes. The NPS Cultural Resource Management Guidelines (1998, ch. 7) define a cultural landscape as "a reflection of human adaptation and use of natural resources [that] is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls and vegetation, and by use reflecting cultural values and traditions." A cultural landscape inventory of historic properties owned by the NPS was conducted in 2005, and identified 13 cultural landscapes, ten of which retain the integrity needed to convey their significance as cultural landscapes. None of the project areas are located within these landscapes. Therefore, the cultural landscapes impact topic was dismissed from detailed analysis.

Energy Resources. NPS Management Policies (NPS 2006) require the NPS to conduct its activities in ways that use energy wisely and economically. Management actions in all alternatives would comply with NPS sustainable energy design and energy management requirements. Any facility development must include improvements in energy efficiency and reduction in greenhouse gas emissions for both the building and mechanical systems that support the facility. In all alternatives the facilities, vehicles and equipment would be operated and managed to minimize consumption of energy, water and nonrenewable fuels. Because of these commitments to energy conservation and sustainability, the energy resources impact topic was dismissed from detailed analysis.

Environmental Justice. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental impacts of their programs and policies on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Revised Draft Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses (1997).

Minority and low-income populations as defined in E.O. 12891, reside in Fayette and Raleigh Counties in the vicinity of NERI. In Fayette County, 21.3 percent of persons live below the poverty level, as compared to a statewide percentage of 17.4 percent, and minorities constitute less than ten percent of the population (U.S. Census Bureau 2010). In Raleigh County, 17.5 percent of persons live below the poverty level, and minorities constitute barely more than ten percent of the population (U.S. Census Bureau 2010).

None of the alternatives under consideration for the project would have disproportionately high or adverse human health, economic, social or environmental impacts on minority or low-income populations residing in Fayette or Raleigh Counties. Potential long-term economic benefits could be realized as a result of the actions proposed though these benefits would not likely affect minority or low-income populations any differently than they would any other local groups or populations. Subsistence hunting by minority and low-income populations – an activity that occurs in some parts of the project areas– would continue and would be enhanced through better access to traditional hunting grounds. For these reasons, the environmental justice impact topic was dismissed from detailed analysis.

Floodplains. Executive Order 11988, "Floodplain Management," requires federal agencies to "take action to reduce the risk of flood loss, to minimized the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains" by, among other things, avoiding new developments within floodplains where practicable. No element of this project is proposed within a floodplain, therefore this impact topic was dismissed from detailed analysis.

Indian Sacred Sites. Executive Order 13007, "Indian Sacred Sites", requires managers of federal lands to avoid adversely affecting the physical integrity of Indian sacred sites. There are no Indian sacred sites as defined by E.O. 13007 within the project areas, nor are there any federally-recognized tribal affiliations within the park. Therefore, this topic was dismissed from detailed analysis.

Indian Trust Resources. Secretarial Order 3175 requires that any anticipated impacts to Indian Trust Resources from a proposed project or action by agencies of the Department of the Interior be explicitly addressed in environmental documents. There are no known Indian Trust Resources at

NERI. No land within the park is held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, the topic of Indian Trust Resources was dismissed from detailed analysis.

Prime and Unique Farmland Soils. CEQ NEPA Regulations (40 CFR 1508.27) require federal agencies to assess the impacts of their actions on soils classified by the U.S. Natural Resources Conservation Service as prime or unique farmland soils. No areas of prime farmland soils are within the area of impact associated with the project. There are no soils classified as unique within NERI. Therefore the topic of prime and unique farmland soils was dismissed from detailed analysis.

Wetlands. Executive Order 11990, "Protection of Wetlands," requires federal agencies to avoid, where possible, impacts to wetlands. The Clean Water Act, the Rivers and Harbors Appropriation Act of 1899 and the Freshwater Wetlands Protection Act also protect wetlands (NJSA 13:9-B-1 et seq). NPS Management Policies (NPS 2006) provide guidance on NPS activities regarding the management of wetlands, including a "no net loss" policy. There are no known wetlands within any of the project areas, and if any are encountered during alternative development, proposed new trails would avoid them. Therefore this impact topic has been dismissed from detailed analysis
.

2 DESCRIPTION OF ALTERNATIVES

Chapter Two of this EA describes the alternatives analyzed in this plan/EA, which include:

- **Alternative A** – No Action Alternative (Continuation of Current Management)
- **Alternative B** – New Trail Development Alternative (NPS Preferred Alternative)

The alternatives were developed based on internal scoping and publicly vetted decisions made through the GMP planning process. A detailed description of each alternative is provided below, followed by a summary table that compares the environmental consequences of the alternatives and identification of the environmentally preferable alternative. Also provided is a description of alternatives and elements of alternatives that were initially considered during scoping and alternative development, but were then dismissed from analysis, with the rationale for dismissal.

2.1 Alternative A – No Action Alternative (Continuation of Current Management)

Alternative A, the No Action Alternative, would continue current management of all project areas. The No Action Alternative does not fully meet the purpose and need to implement the approved GMP; however, it is included in the analysis because it provides a baseline against which the impacts of the action alternative can be compared (DO-12 Handbook, section 5.4D.5).

2.1.1 Through Park Connector Trail Segments and Bicycle Use

No new trail would be developed to implement the GMP-approved vision of the trail segments of the Through Park Connector. From the area of the confluence of Piney Creek and the New River to nearly the northern park boundary on river left, trail users would remain on existing park trails and use roads (see Figure 1-1) in order to connect between trails. Some components of the project area may only be accessible by cross country travel, or bushwhacking.

2.1.2 Bridge Buttress Trail Extension

No trail would be developed that would connect the new AAC/NRAC campground to the existing social trails that access the climbing in the Bridge area and connect to the existing, recognized Bridge Buttress Trail. Climbers would continue to access the area from the main Bridge Buttress parking area along Fayette Station Road, from social trails leading from a handful of roadside pull-offs large enough to accommodate one car, or from social trails leading from the Burnwood picnic shelters. The NPS would not, at this time, pursue any substantial changes to the existing social trails that access the climbing areas, although the development of new social trails would continue to be prohibited and enforced.

2.1.3 Trail Connections to Non-Federal Lands

Several connections from NPS trails in NERI to trails on non-federal lands beyond park boundaries or land ownership exist, all with different types and levels of agreements for access. These trail connections would continue under existing agreements, or potentially change in cases of land acquisitions and deed alterations. No park-wide system would be put in place to normalize such agreements with any applicable adjacent landowners.

2.2 Alternative B – Trail Development (NPS Preferred)

Alternative B would implement the decisions in the approved GMP regarding the northern half, river left, of the Through Park Connector and is the NPS Preferred Alternative.

2.2.1 Through Park Connector Trail Segments

The NPS would develop trail segments of the Through Park Connector, as proposed in the GMP, on river left of the New River, from the area of the confluence of Piney Creek and the New River to a point close to the northern park boundary, which is the limit of the best on the ground knowledge of potential alignments for the Through Park Connector. The individual trail segments proposed in this plan are not all contiguous, and are addressed in detail below by individual segment names.

All trail development proposed in this plan either has followed or would follow the SOPs in Appendix A for determining the final flagged trail route. They would also be built to the sustainable trail standards, as described in Appendix A.

Alternative B incorporates monitoring of trail construction by staff biologists and cultural resource specialists to avoid and minimize adverse impacts to natural and cultural resources in case of unexpected discoveries of rare plants, rare plant communities, archeological or historic artifacts, and other important resources discussed in this plan/EA. These resource specialists could temporarily halt construction in order to implement mitigation measures that could include, for example, documentation and collection of an artifact or a short reroute of the trail to avoid a rare plant.

Piney Creek Trail. The NPS would construct the Piney Creek Trail, from the proposed McCreery Trailhead, across the CSX Piney Creek Spur rail line, and along the side slope above Piney Creek, creek right, to where it would connect with the Piney Creek Trail segment being developed for public access on private property from the Raleigh County Memorial Airport and the YMCA Paul Cline Memorial Youth Sports Complex (see Figure 2-1). Most of the proposed Piney Creek Trail within the park would be developed along existing abandoned logging roads, although some segments of it would be brand new construction on the side slope of the Piney Creek Gorge.

Prior to specific on the ground trail design and construction, a legal, public crossing of the CSX railroad line would be acquired, either by the park or by park partners. Depending on the willingness of CSX to consider them, there may be two options for crossing the tracks. Impacts of both options are analyzed in this document; the NPS would pursue whichever option is approved by CSX. If CSX approves both options, the NPS would weigh costs and safety and choose the option that best fits the needs of the public.

Option one is an at-grade crossing of the rail line near mile post two of the line, only several hundred feet upstream of the McCreery boathouse. CSX has indicated that they would likely require flashing warning lights at the crossing for public and rail line safety. If flashing warning lights were required, the NPS would find the best way, in terms of resource protection, visitor experience and cost, to supply power to them, including considerations of solar panels and power cables buried from the McCreery boathouse, along the trail tread, to the crossing.

Option two would cross underneath the rail line, below a small train trestle that crosses Pack's Branch, a minor perennial tributary to Piney Creek. The height from the bottom of the rail trestle to the stream bed is approximately 14 feet, and the stream bed between the rock walls of the trestle is approximately eight feet wide. The NPS would construct a platform walkway through the trestle tunnel that would keep trail users out of the stream bed and minimize the need to dig support posts for the walkway. If any supports are placed in the streambed, the NPS would work with the West Virginia Department of Environmental Protection (WVDEP) to obtain appropriate permits and work through applicable procedures. Hand rails preventing exit of the platform into the stream bed would be included in the design, as would some form of canopy below the tracks that would prevent debris falling from the track level reaching visitors on the platform.

Before the Piney Creek Trail would be developed, two actions would need to be taken. First, acquisitions needed to develop the McCreery Trail would need to be in place, and second, a legal agreement would need to be in place ensuring public access to the segment of the Piney Creek Trail being developed on private property, outside of the NPS boundary. This agreement would comply with the guidelines proposed in Section 2.2.5.

McCreery Trailhead. The NPS would develop the McCreery Trailhead within the footprint of the disturbed area that is currently the public and administrative parking area around the McCreery Boathouse (see Figure 2-1). This parking lot may be expanded to accommodate more vehicles, and a barrier would be developed to clearly delineate the boundary of the parking area. Amenities that may be provided at this trailhead include restroom facilities, a kiosk with interpretive and directional signage, trash cans and picnic tables.

A pedestrian crossing over State Route 41 to the lower gravel area that serves as the river put-in at McCreery would be more clearly marked, and the NPS and its partners would work with the West Virginia Division of Highways (WVDOH) to provide additional and/or improved signage warning motorists of the pedestrian crossing.

McCreery Trail. The NPS would construct the McCreery Trail from the proposed McCreery Trailhead, across State Route 41 at the pedestrian crossing to the McCreery river put-in, from there to the abandoned CSX railroad bridge over Piney Creek, then following the abandoned CSX rail line from the bridge to the terminus of the abandoned rail line in Terry (see Figure 2-1). By using Terry Road (County Route 41/8) for a short distance, visitors would connect from the proposed McCreery Trail to the Garden Ground Stacked Loop Trail System

The NPS does not own the abandoned CSX railroad bridge or a portion of the abandoned CSX rail line between McCreery and Terry. Prior to trail development, these segments would need to be acquired either by the NPS or a partner who would allow for public access on them.

Camp Creek Trail. The NPS would construct the Camp Creek Trail from the Rend Trailhead along Thurmond Road and Dunloup Creek, up the Camp Creek drainage, along this segment of the Through Park Connector to the BSA Summit (see Figure 2-2).

From the Rend Trailhead, the NPS would ideally develop trail to Thurmond Road at the road bridge across Dunloup Creek immediately downstream of the trailhead. The NPS would work with WVDOH and develop an agreement for a pedestrian lane on the new bridge, as the current single-lane bridge is slated for replacement with a two-lane bridge. If an agreement cannot be reached, NPS would consider developing a pedestrian bridge across Dunloup Creek, immediately downstream of the road bridge, to which the proposed Camp Creek Trail would lead directly from the Rend Trailhead. In either case, the trail would continue along Dunloup Creek, crossing the small unnamed tributary via a small footbridge beneath the culvert that allows the tributary to flow underneath the road. The trail would continue along the creek until it reached a point just downstream of the railroad crossing light at the road. Steps would be constructed up the hill to the road, and the public would cross the railroad tracks by walking along the Thurmond Road for a few hundred feet until reaching the main segment of the proposed Camp Creek Trail on the other side of the road. This first segment of proposed trail would be a second phase of construction.

The main segment of the proposed Camp Creek Trail would be the first phase of construction, planned for summer of 2013, and would roughly follow the Camp Creek drainage up the hill, occasionally using abandoned road traces but consisting largely of newly constructed trail, to where it would connect in to BSA Summit property.

The BSA has verbally agreed to the NPS that it would develop a public trail across Summit property that would connect the Camp Creek Trail to the Garden Ground Stacked Loop Trail System. Prior to construction of the proposed Camp Creek Trail, an agreement for public access would need to be in place, according to the guidelines proposed in Section 2.2.5.

The intent is to construct the Camp Creek Trail for bicycle use; however, if the proposed segment of trail between the Rend Trailhead and the railroad crossing is constrained and narrow, or if there is not adequate room for cyclists to safely dismount their bicycles and carry them up the stairs, then bicycle use may be prohibited on just that portion of the proposed Camp Creek Trail. Cyclists would be asked to use the public road (Thurmond Road) from the Rend Trailhead to the portion of the Camp Creek Trail on the opposite side of the road, which would be designated for bicycle use in either case.

Arbuckle Connector Trail Improvements. The NPS would improve the existing Arbuckle Connector Trail to a sustainable trail standard that would support bicycle use, which would mean developing some reroutes and additional switchbacks for the trail (see Figure 2-3). An exact new route has not been flagged, but would be determined according to the SOPs in Appendix A.

Wolf Creek Trail. The NPS would construct the Wolf Creek Trail from Fayette Station Road just beyond the CSX railroad bridge over Fayette Station Road from the Fayette Station Visitor Area, up the Wolf Creek drainage to the existing Kaymoor Trail (see Figure 2-4). All of this trail would be newly constructed, as there are no abandoned road traces of any sort that could be followed up the Wolf Creek drainage. A short, steep section of elevation gain along the lower portion of the trail very near the road would require the construction of a set of steps that would be wide enough to accommodate visitors carrying, or portaging, their bikes. Signs would warn visitors of the portage, particularly above the steps, and adequate stopping distance and space for dismounting of bicycles would be provided. Cycling on the stairway would be prohibited. Trail switchbacks on steep slopes may require cribbing or small retaining walls to prevent sloughing.

Whitney Trail. The NPS would construct the Whitney Trail (see Figure 2-5) on an old mine bench from the Fayetteville Trail, uphill of the Wolf Creek Trailhead on Fayette Station Road, then crossing Fayette Station Road and continuing on a mine bench that was developed into a road. The trail would cross a giant culvert over Marr Branch and continue along the bench, almost to Pipers Branch.

In this phase of development, before Pipers Branch and immediately before reaching an unnamed ephemeral stream, the Whitney Trail would begin to climb the hill on an old siding road, rather than remain on the mine bench. After crossing the ephemeral stream on a small footbridge, and returning to the mine bench level, the Whitney Trail would intersect with the proposed Pipers Branch Trail.

In a future phase of development, the Whitney Trail would remain on the mine bench and cross the ephemeral stream on a large trail bridge, similar in size and construction to other trail bridges in the park, such as on the Kaymoor and Fayetteville Trails crossing Wolf Creek. At the Whitney Trail mine bench level, the ephemeral stream crossing is much wider and steeper than the crossing a few hundred yards uphill of the mine bench level. The NPS would pursue the second phase of development when funding is available to construct the large trail bridge and when the next downstream segment of trail for the Through Park Connector is aligned and in development. During the second phase of development, the two mine portals at the bench level for the Whitney Mine would be gated with gates that have bat-friendly designs.

Whitney Trailhead. The NPS would develop the Whitney Trailhead on the existing footprint of the current informal pull-off on the mine bench where the proposed Whitney Trail is located (see Figure 2-5). This would allow for parking of about two vehicles, and would serve as a supplement to the existing Wolf Creek Trailhead. The NPS would modify the metal gate on the proposed Whitney Trail to allow easy entry of trail users (pedestrians and cyclists) but to limit vehicular access.

Pipers Branch Trail. The NPS would construct the Pipers Branch Trail along an abandoned road trace from the Whitney Trail up the Pipers Branch drainage to a connection with a trail that would be developed on private property owned by the BSA (see Figure 2-5). That trail would connect to a parking area with public access for parking and trail use along Route 16 north of Fayetteville. The NPS would work with the BSA and the WVDOH to provide signage to the trailhead.

The BSA has verbally agreed to provide public access and parking for the Pipers Branch Trail, but an agreement for public access would need to be in place before trail construction that would follow the guidelines proposed in Section 2.2.5.

Figure 2-1. Proposed Piney Creek and McCreery Trails and McCreery Trailhead

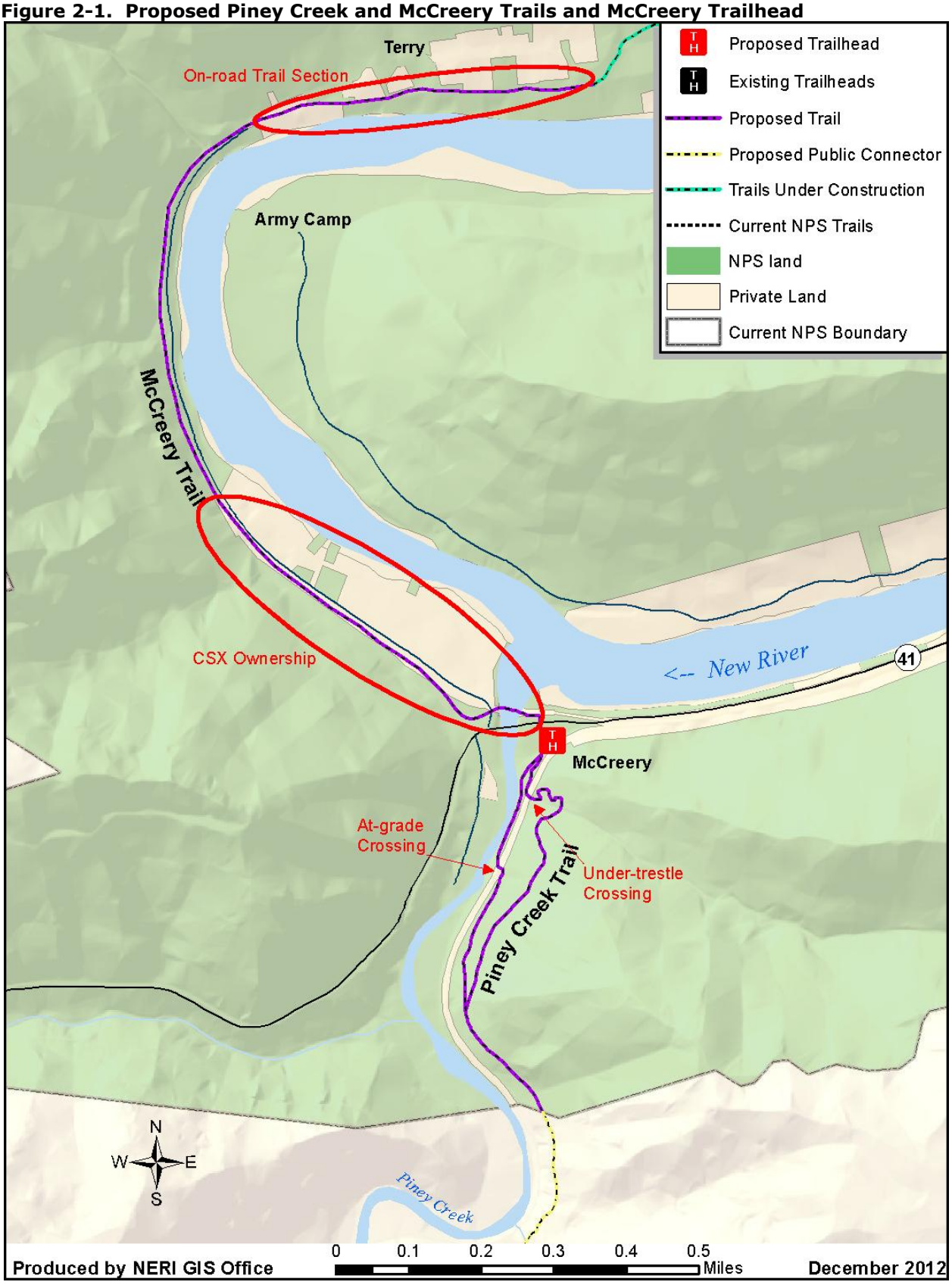


Figure 2-2. Proposed Camp Creek Trail

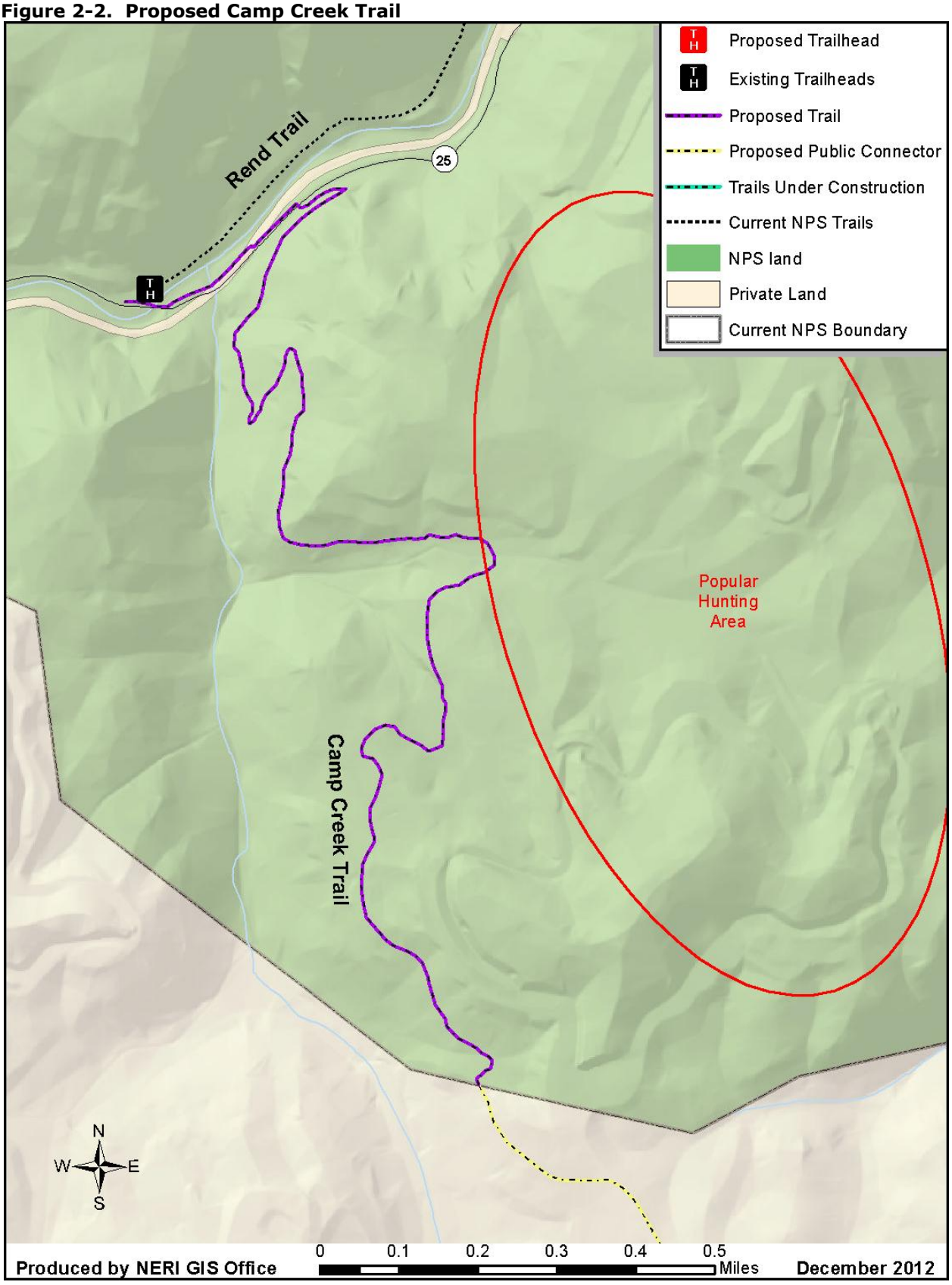


Figure 2-3. Proposed Arbuckle Connector Trail Improvements

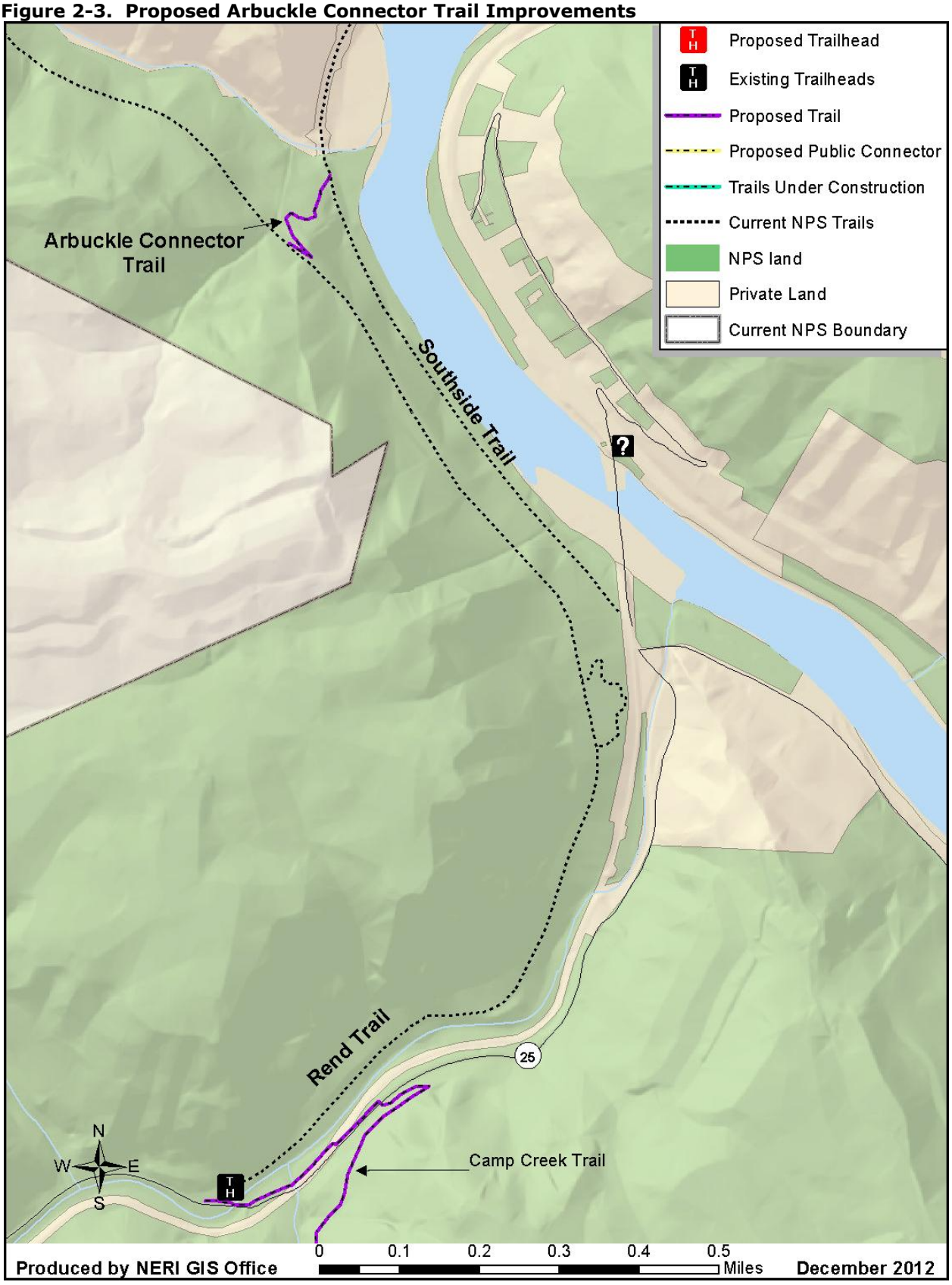


Figure 2-4. Proposed Wolf Creek Trail

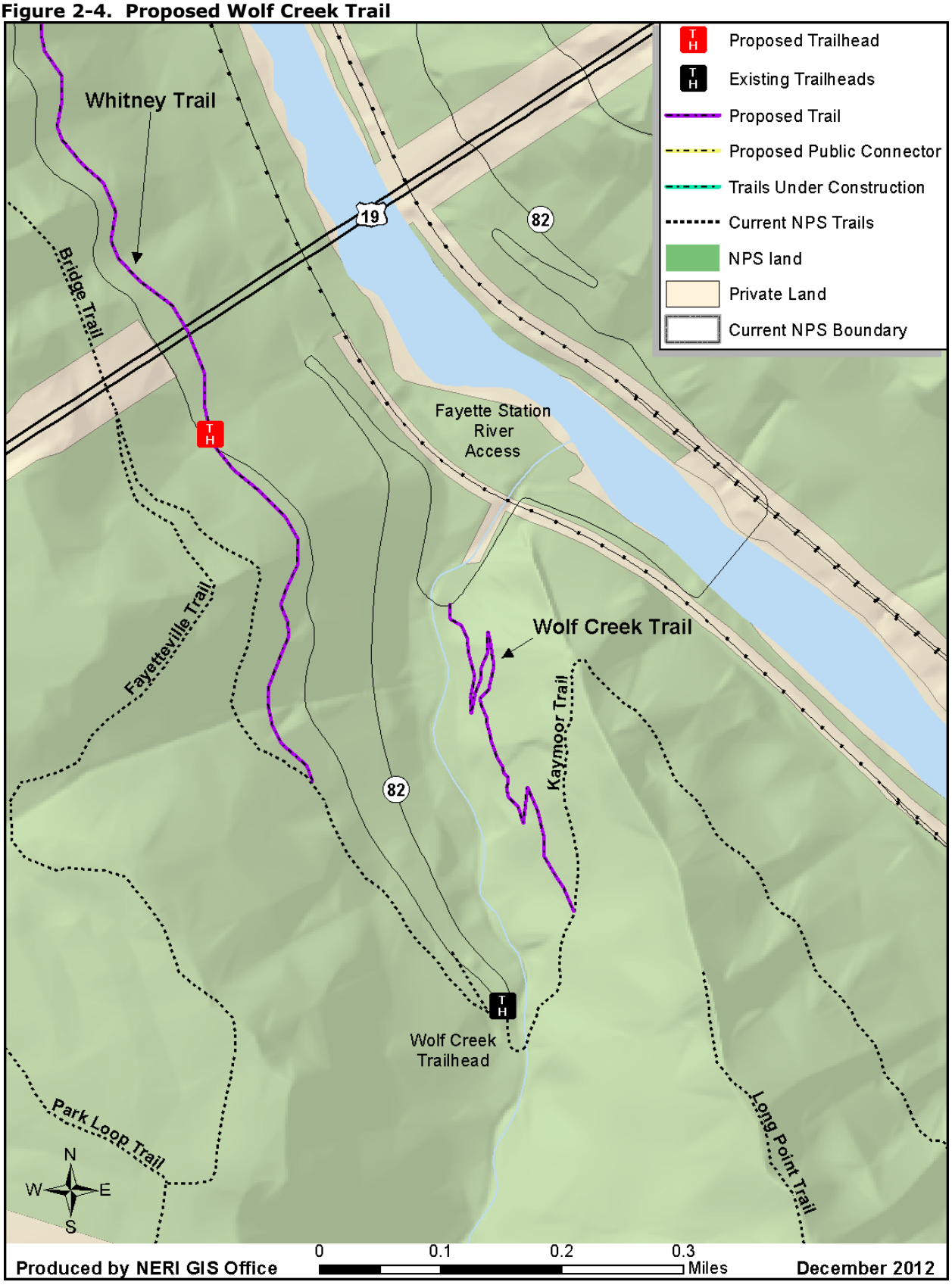
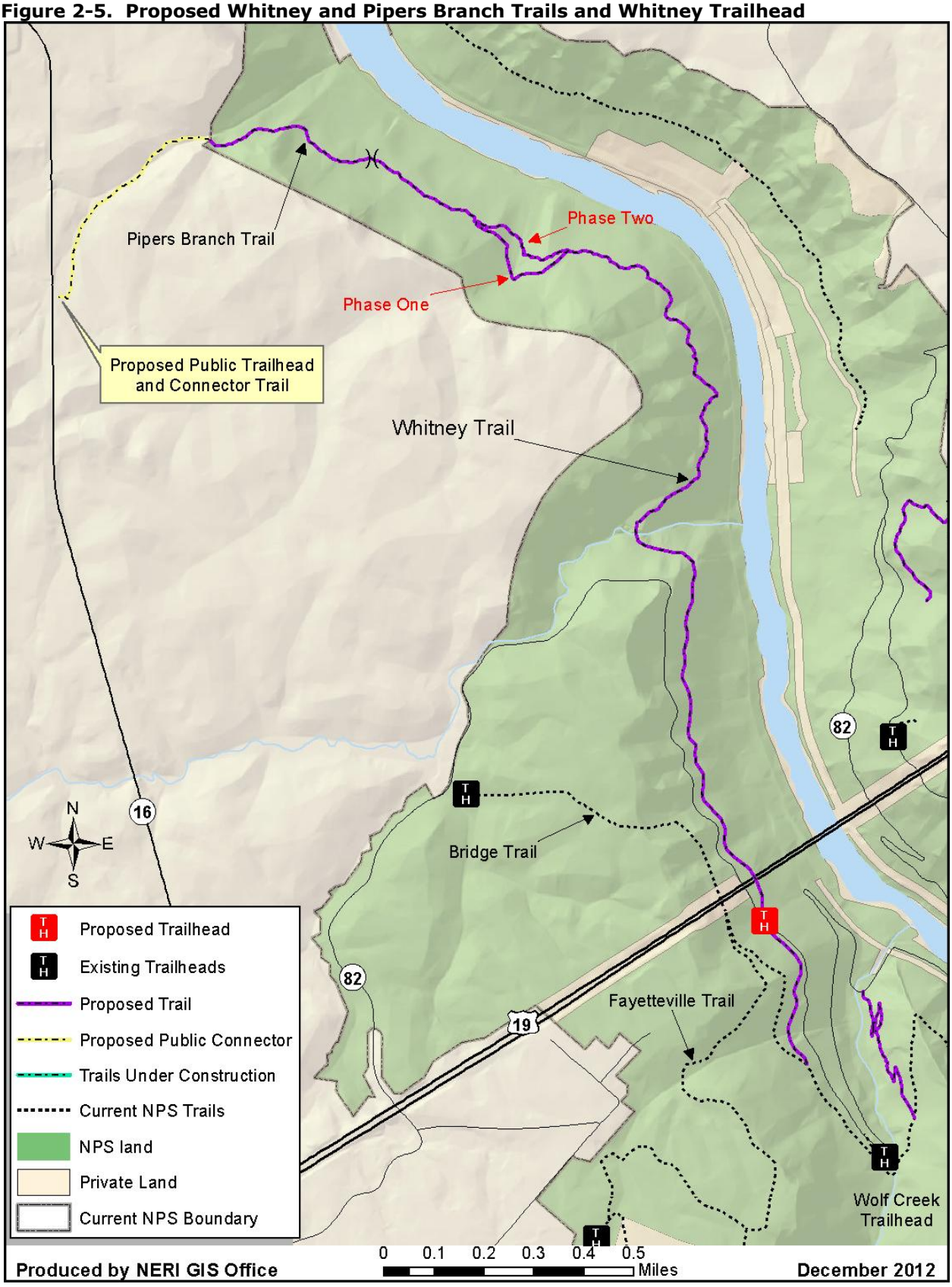


Figure 2-5. Proposed Whitney and Pipers Branch Trails and Whitney Trailhead

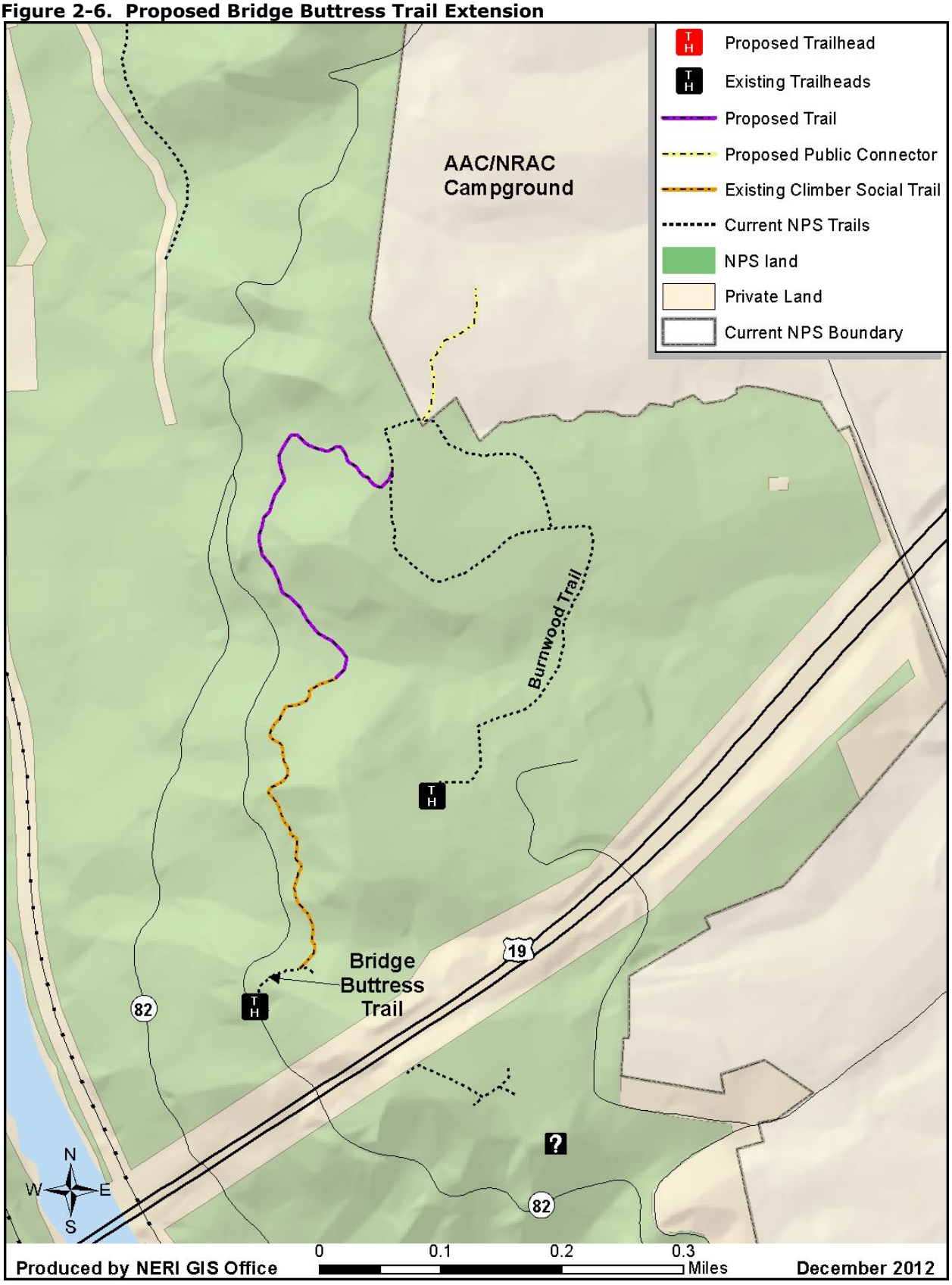


2.2.2 Bridge Buttress Trail Extension

The NPS would work in partnership with NRAC, the Access Fund and the AAC to develop a trail that connects the new AAC/NRAC campground to the Bridge climbing area and the existing Bridge Buttress Trail. Trail development would include a connection between the campground property and the existing Burnwood Trail, as well as the primary segment of new trail construction on a connection down a break in the cliff line from the Burnwood Trail to the area between the North Bridge Wall and the First Strike Area which avoids a stand of rhododendron located along the slope. It would connect, on the downhill end, with the existing social trails at the cliff bases that are used to access the rock climbing. A short ladder or set of steps would need to be constructed in order to scale a small (approximately four-foot) section of rock cliff at the bottom of the descent to the cliff base. Trail development in this area includes addressing an existing network of social trails, either by formalizing and designating social trails or by eliminating social trails that are in inappropriate locations and/or are causing resource damage. Where social trails are faint or braided, the preferred route along the cliff base for resource protection and recreational access would be determined according to the SOPs in Appendix A. The selected route would be developed between a boulder field that extends from the cliff line and a substantial rhododendron stand, avoiding traversing each of these sensitive habitat areas. The route may include the installation of a set of steps up a steep slope near the Promised Area in order to mitigate erosion concerns. Where social trails are heavily used and well-defined, the NPS would use the SOPs in Appendix A to assess the existing social route(s) and mitigate any concerns for resource protection as much as possible, while maintaining access to the existing climbing routes. Most of the obvious existing base-of-cliff social trail from the Promised Area to the existing Bridge Buttress Trail would likely remain in its existing location, it would just be brought officially into the NPS trail inventory (see Figure 2-6).

Prior to construction, an agreement would need to be developed with NRAC, the AAC, and/or the Access Fund according to the guidelines proposed in Section 2.2.5.

Figure 2-6. Proposed Bridge Buttress Trail Extension



2.2.3 Designated Uses of Proposed Trails

Bicycle use would be designated on the following trail segments through promulgation of a special regulation pursuant to 36 CFR 4.30:

- Piney Creek Trail
- McCreery Trail
- Camp Creek Trail
- Arbuckle Connector Trail
- Wolf Creek Trail
- Whitney Trail
- Pipers Branch Trail

The Bridge Buttress Trail Extension and associated trail network would be designated for pedestrian use, only.

Requests for special events, special uses, large groups and commercial activities using the proposed trails would be subject to review and approval according to existing NPS policies and regulations regarding their activities.

Equestrian use of these proposed new trails would be prohibited.

Hunting would continue to be allowed in the project areas, pursuant to existing state and federal regulations and NPS policies.

2.2.4 Trail Construction, Classifications, Signs and Information

Trails would be designed and constructed, as much as feasible, to the sustainable design standards described in Appendix A. These standards address ways to increase safety and decrease trail user conflicts, including long sight lines and features that slow trail users down in curves and where long sight lines are impossible. Signage and information for cyclist visitors that helps them understand the technical difficulty of a trail that is open to bicycles will be available so that visitors can best judge their skill level and ride trails appropriate for their personal safety.

Trails would be constructed within the trail standards for park frontcountry zones, as approved by the GMP and described in Appendix A. Trails proposed for bicycle use would be classified for difficulty once constructed, following specifications in Table 2-2 of the 2011 Hike/Bike Trail Plan (NPS 2011b, p. 35).

Signage and park brochures indicating trails designated for bicycle use and trail difficulty would be available to visitors. Additionally, cyclists would be warned well in advance of any necessary bicycle portages down short sections of steps, such as on the proposed Wolf Creek Trail, giving them time to stop safely. Visitors would also be encouraged to wash their bikes, shoes and other gear before and after using park trails in order to prevent the spread of invasive weeds along trail corridors.

An interpretive kiosk would be provided at the proposed McCreery Trailhead. Interpretive waysides may be provided at discovery sites along the proposed trails where visitors encounter points of interest, such as historic foundations or scenic views. The installation of any signs or waysides would require the digging of post holes, which would be subject to review and approval by park resource specialists, particularly the park archeologist, and as necessary, the park vegetation specialist and/or wildlife biologist.

2.2.5 Trail Connections to Non-Federal Lands

Development of trail connections between NERI and surrounding communities and attractions is a priority for the park, but in order to build a trail on NPS lands that connects to a trail on lands outside of NPS ownership, the NPS must ensure public access on the non-NPS trail in perpetuity.

In cases where a trail connects NPS property to adjacent property in public ownership (including federal, state, county or city governments), the NPS would enter into an agreement with the government entity, such as a cooperative agreement or memorandum of understanding, that would provide for consistent public trail access across land ownership boundaries. This would apply, for example, if the NPS were to develop trails that connect with trails in Babcock State Park.

In cases where a trail connects NPS property to adjacent property in non-public ownership (such as a private, corporate or non-profit landowner), legal evidence of public access in perpetuity would be required, and the NPS would enter into an agreement with the holder of that legal access. Cases that would apply include, for example:

- a county or city government develops a trail across the land of several private landowners in order to connect with a trail or trails inside NERI. That government entity would acquire and hold an easement or right-of-way from the private landowners guaranteeing public access to the trail on NPS land;
- a private or non-profit landowner whose property is outside the boundary of NERI is willing to allow public trail access across their land to connect with a trail inside the NERI boundary. A local government entity or non-profit would hold a document (permanent easement or right-of-way) that allows public access across that landowner's land to connect to the government trail;
- a private or non-profit landowner whose land is within the NERI boundary is willing to allow public trail access across their land to connect with a trail or trails inside NERI. The NPS would hold deed and title to an easement or right-of-way. The NPS could acquire the easement or right-of-way from the landowner through donation, purchase or other legal agreement. If the NPS were to hold the right-of-way, no additional agreement with the landowner, such as a memorandum of understanding or cooperative agreement, would be necessary.

Terms of an easement or right-of-way could allow for either a stationary easement or a floating easement, in which the trail location on the non-NPS property could change to accommodate landowner needs, but the endpoints to NPS trail or trails or other public access would remain intact.

Where a trail connection between NERI and a trail on non-NPS lands already exists, the NPS would work with the landowner or entity holding an easement or right-of-way in place as soon as possible. Where a trail connection does currently exist, the NPS would require that the appropriate legal public access and agreements be in place before a connecting trail on NPS land would be constructed.

The intent of this proposed action is to avoid development of a public trail on NPS lands for exclusive use of a private landowner, as well as to avoid development of a trail that might dead-end if an agreement for public trail access across private property were not legally binding in perpetuity.

2.3 Alternatives Considered but Dismissed from Detailed Analysis

McCreery Hollow Trail. The NPS considered developing the McCreery Hollow Trail. This trail would have started at the proposed McCreery Trailhead, crossed the CSX Piney Creek Spur rail line, followed the old McCreery Hollow Road toward the base of the hill below Grandview, then left the old road bed to climb a ridge line, pointed upstream along the New River, to the Bucklick Trail in Grandview. Management of this trail would have been proposed for pedestrian access only, as the grade up the ridge would be too steep to appropriately accommodate bicycle use.

The purpose of this trail would be to provide a pedestrian-only trail segment of the Through Park Connector that would connect the trails at Grandview to the trails north of Grandview on river left of the New River. Bicyclists would need to ride on State Route 41 from McCreery to Glade Creek Road and the Mud Turn Trail, which is approved, but not built (NPS 2011b), in order to access Grandview.

The NPS decided to dismiss this alternative from consideration at this time because park staff do not have enough knowledge of the area or the proposed route. To collect enough data to even propose the route for development under the condition that it be reviewed according to the SOPs in Appendix A before a final route alignment is chosen, more time would be required than park staff have available in

order to complete this plan/EA in time to take advantage of the many hours of volunteer trail construction labor being offered by the BSA in 2013.

The NPS may explore development of the McCreery Hollow Trail in a future trail development plan.

Camp Creek Trail First and Second Alignments. The NPS considered several alignments for the proposed Camp Creek Trail. The first proposed trail alignment followed the Camp Creek drainage up the creek left side through a large thicket of rhododendron.

The NPS dismissed this alignment alternative from consideration because the trail would run the length of the rhododendron thicket, rather than merely crossing it at a narrow point. Rhododendron provides important habitat for Swainson's warblers (*Limnothlypis swainsonii*) and other bird species that depend on large rhododendron stands for breeding habitat. In order to best protect wildlife resources, the NPS determined that a feasible alternate trail alignment could be found.

A second potential alignment was found for the proposed Camp Creek Trail, this one following the drainage on creek right of Camp Creek and on an old road trace through a rhododendron thicket and a stand of young hemlocks. The NPS dismissed this alignment because of its proximity to Camp Creek and to avoid impacting the hemlock and rhododendron communities on the road trace. The proposed trail alignment was moved upslope away from Camp Creek to be 50 meters or more away from a streamside bird survey transect that goes up the middle of the Camp Creek drainage. This survey is performed multiple times each year and is part of a long-term effort to monitor the ecosystem health of the watersheds within the park. Farther upslope, the proposed alignment was moved off the old road trace to get out of a rhododendron thicket, avoid cutting hemlock trees and minimize additional stresses on the hemlock trees with the intent of improving their chance for survival. Hemlocks in the park and elsewhere are threatened by the hemlock woolly adelgid, an exotic, aphid-like insect that kills hemlock trees; it can cause mortality within four to ten years of infestation. As one of the few evergreen tree species in the park, hemlocks are an important part of the park ecosystem and provide vital habitat to many animal species, including the Acadian flycatcher (*Empidonax virescens*).

Bachmann Trail. The NPS considered developing the Bachmann Trail, which would run from the intersection of the proposed Whitney and Pipers Branch Trails to the northern park boundary, by following the same mine bench as the Whitney Trail and other old roads to the area of the old town of McDougal, and then an unknown connection to the northern boundary. Management of this trail would have been for both pedestrian and bicycle use, pending promulgation of a special regulation.

The purpose of this trail would be to provide a trail segment of the Through Park Connector. The long term vision for this trail is that it would connect with a public trail beyond the NPS boundary that would cross the New River and eventually connect with the Hawks Nest Connector Trail on river right, creating a loop for the Through Park Connector that allows visitors to explore both sides of the New River.

The NPS decided to dismiss this alternative from consideration at this time because very little is known about potential trail routes on the steep side of the gorge that would serve the purpose of the trail. It would take a great deal of time to scout potential trail routes in this area, and that work could not be accomplished in time to complete this plan/EA to take advantage of the many hours of volunteer trail construction labor being offered by the BSA in 2013.

The NPS may explore development of the Bachmann Trail in a future trail development plan.

Bridge Area Connection Trail Alignment Proposed by NRAC. NRAC approached the NPS with a proposal of a trail connection between the AAC/NRAC campground and the Bridge climbing area. The route proposed by NRAC followed an unnamed drainage directly from the campground property to the base of the cliff, between The Pinnacle and North Bridge Wall. This proposed route would have come through sensitive and wet habitats important to rare plants and declining animal species, including Allegheny woodrats (*Neotoma magister*) and green salamanders (*Aneides aeneus*). Both the Allegheny woodrat and green salamander are listed by the West Virginia Division of Natural Resources (WVDNR), Nongame Wildlife and Natural Heritage Program (WVNHP) as species of special concern with a rank of S3 (vulnerable to extirpation in the state).

The NPS determined that an alternative route that serves the same purpose and need, as discussed in Section 1.4, yet offers better protection for park resources, could be located. This route is proposed in Section 2.2.2.

2.4 Environmentally Preferable Alternative

In accordance with the DO-12 Handbook, the NPS identifies the environmentally preferable alternative in its NEPA documents for public review and comment [Sect. 4.5 E(9)]. The environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and best protects, preserves and enhances historical, cultural and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative (43 CFR 46.30).

Alternative B, the Trail Development Alternative, was selected as the environmentally preferable alternative because it best protects park resources related to trail planning and development. Under Alternative A, Continuation of Current Management, visitors may continue to use and begin to develop social trails in inappropriate places that meet their needs for access and recreational activities. These needs were addressed conceptually in the GMP with proposals for development of trail segments of the Through Park Connector, trail connections outside of NPS boundaries and improvement of access to climbing areas, but until they are addressed on the ground, there will continue to be public demand for such trail development. It is when the NPS does not proactively address and manage visitor needs that social trails begin to appear, and visitors informally use old road traces and abandoned rail lines that might be inappropriate for use. These circumstances can increase the potential for resource damage, whereas Alternative B provides for the development of trails that address visitor needs and that would be designed and constructed so as to minimize resource impacts through appropriate routing, avoidance of key sites or sensitive areas and other mitigations. These trails would be more likely to encourage visitors to use the official and appropriately-designed trails, and similarly discourage people from creating social trails, thus avoiding resource damage.

2.5 Comparative Summary of Consequences

Table 2-1a. Comparative Summary of Consequences for Vegetation

	No Action Alternative (Alternative A)	**Trail Development Alternative (Alternative B)**
Piney Creek Trail	Minor adverse impacts to non-target plants would occur from herbicide treatments for invasive plants	Minor to moderate adverse impacts with solar-powered flashing lights for the CSX crossing
McCreery Trailhead	Minor, localized vegetation trampling from informal trailhead parking	Formalizing the parking lot by placing barriers and signage would beneficially reduce vegetation trampling and soil compaction
McCreery Trail	Minor increase in invasive species competition with native plants	Removing vegetation for trail tread is considered minor impact because area is already adversely impacted by anthropogenic influences
Camp Creek Trail	Soils and vegetation remain intact resulting in negligible impacts from invasive plants	Rare plants and communities are avoided but minor impacts could result from invasion of exotic plants
Arbuckle Connector Trail Improvements	Minor adverse impacts due to poor trail alignment on steep rocky slopes	Minor adverse impacts with realignment on steep slopes but benefits from avoidance of forest seeps, rare plants, and rare plant communities

Table 2-1b. Comparative Summary of Consequences for Vegetation

	No Action Alternative (Alternative A)	Trail Development Alternative (Alternative B)
Wolf Creek Trail	Negligible impacts from the occasional hunter or other recreational user	Minor adverse impacts with some removal of shrubs and small trees, but benefits from avoidance of rhododendron thickets, rare plants, and riparian corridor along creek.
Whitney Trail	Minor adverse impacts are expected from continued spread of invasive plants and trampling from occasional hikers	Consolidation of social trails, avoidance or bridging of wetlands, and utilization of the existing road trace would result in localized negligible impacts; overall benefits
Whitney Trailhead	Continued use of informal parking area would continue existing negligible impacts to vegetation	Negligible impacts because the parking lot footprint remains the same and no new areas of vegetation are disturbed
Pipers Branch Trail	Minor adverse impacts to vegetation from informal use along this steep road trace will continue	Beneficial results are expected from implementation of sustainable trail standards that should reduce erosion and potential for slope failure
Bridge Buttress Trail Extension	Moderate adverse impacts to globally rare plant communities are expected from rock climbers creating social trails from a planned campground on the park boundary	Minor adverse impacts are expected from constructing a new trail connector but overall benefits would result because the new trail avoids forest seeps and rare plant communities
Trail Connections to Non-NPS Lands	Minor to Moderate adverse impacts continue to occur from informal trails constructed without park knowledge through sensitive plant habitats or areas choked with invasive species	New trail connectors would be developed incorporating trail guidelines and standards, that avoid sensitive habitats and mitigate exotic species encroachment resulting in negligible impacts and overall benefits to resources

1

Table 2-2a. Comparative Summary of Consequences for Wildlife and Habitat

	No Action Alternative (Alternative A)	Trail Development Alternative (Alternative B)
Piney Creek Trail	No Effect	- Small risk of trail placement near a bat maternity tree causing disturbance to bats (negligible). - Trail is to avoid heart of Allegheny woodrat habitat (negligible). - Foot and bike traffic could cause direct and breeding amphibian mortality (minor). - Trail following land features should prevent fragmentation issues for birds (negligible).
McCreery Trailhead	No Effect	No Effect

2

Table 2-2b. Comparative Summary of Consequences for Wildlife and Habitat

	No Action Alternative (Alternative A)	Trail Development Alternative (Alternative B)
McCreery Trail	No Effect	- Small risk of trail placement near a bat maternity tree causing disturbance to bats (negligible). - No known Allegheny woodrat habitat (no effect). - Foot and bike traffic could cause direct amphibian mortality (negligible). - Trail following land features should prevent fragmentation issues for birds (negligible).
Camp Creek Trail	No Effect	- Small risk of trail placement near a bat maternity tree causing disturbance to bats (negligible). - Trail placement to avoid Allegheny woodrat habitat (negligible). - Foot and bike traffic could cause direct and breeding amphibian mortality (minor). - Trail could have fragmenting influence on forest interior birds (minor).
Arbuckle Connector Trail Improvements	No Additional Effects	- Extremely small risk of trail placement near a bat maternity tree causing disturbance to bats (negligible). - Placement of additional trail switchbacks to avoid Allegheny woodrat habitat (negligible). - Small increase in direct amphibian mortality from bike use (negligible). - Incremental additional disturbance to birds from bike use and incremental additions to fragmentation from addition of trail switchback extensions (negligible).
Wolf Creek Trail	No Effect	- Small risk of trail placement near a bat maternity tree causing disturbance to bats (negligible). - Trail placement to avoid Allegheny woodrat habitat (negligible). - Foot and bike traffic could cause direct amphibian mortality (negligible). - Trail could have fragmenting influence on forest interior birds over small area (negligible).

1

Table 2-2c. Comparative Summary of Consequences for Wildlife and Habitat

	No Action Alternative (Alternative A)	Trail Development Alternative (Alternative B)
Whitney Trail	No Effect	- Small risk of trail placement near a bat maternity tree causing disturbance to bats; mine portals to be gated before trail constructed in front of them (negligible). - Little suitable Allegheny woodrat habitat along this trail segment (negligible). - Foot and bike traffic could cause direct and breeding amphibian mortality (minor). - No additional fragmentation from trail - on existing mine bench (negligible).
Whitney Trailhead	No Effect	No Effect
Pipers Branch Trail	No Effect	- Small risk of trail placement near a bat maternity tree causing disturbance to bats (negligible). - Little suitable Allegheny woodrat habitat along this trail segment (negligible). - Foot and bike traffic could cause direct amphibian mortality (negligible). - Trail could have fragmenting influence on forest interior birds over small area (negligible).
Bridge Buttress Trail Extension	- Risk of social trails forming near a bat maternity tree causing disturbance to bats (negligible). - Social trails and their use through Allegheny woodrat habitat (minor). - Social trails and their use through green salamander habitat; high risk of direct salamander mortality (moderate). - Social trails as fragmenting influence on forest interior birds (negligible).	- Small risk of trail placement near a bat maternity tree causing disturbance to bats (negligible). - Avoidance of Allegheny woodrat habitat along this trail segment (negligible). - Foot traffic could cause direct amphibian mortality (negligible). - Trail could have fragmenting influence on forest interior birds over small area (negligible).
Trail Connections to Non-NPS Lands	No Effect	No Effect

1

Table 2-3. Comparative Summary of Consequences for Soil Conditions, Streamflow Characteristics and Water Quality

	No Action Alternative (Alternative A)	**Trail Development Alternative (Alternative B)**
Piney Creek Trail	Remnants of prior land uses, such as abandoned roads, that were not sustainably built, cause erosion in these areas and result in negligible adverse impacts	Short-term impacts from construction activity and long-term impacts from trail use would be negligible in all project areas except the Arbuckle Connector Trail project area, where improvements to the trail to make it more sustainable and would be beneficial. Minor adverse impacts could occur in the short term for Pack's Branch in the project area resulting from construction activities to install a platform for the under-trestle crossing if it is the preferred way to cross the CSX rail line.
McCreery Trailhead		
McCreery Trail		
Camp Creek Trail		
Arbuckle Connector Trail Improvements	The alignment of the existing trail causes some erosion, but adverse impacts are negligible.	
Wolf Creek Trail	The project area is previously undisturbed, so there would be no impacts from continuing current management.	
Whitney Trail	The mine bench captures water, causing puddles and channelization that increases erosion and can threaten the stability of the mine bench, resulting in minor adverse impacts.	
Whitney Trailhead	Remnants of prior land uses, such as abandoned roads, that were not sustainably built, cause erosion in these areas and result in negligible adverse impacts	
Pipers Branch Trail		
Bridge Buttress Trail Extension	Adverse impacts of soil erosion from existing social trails and soil compaction is negligible, but if a social trail develops in an inappropriate drainage between the campground and the climbing area, additional erosion would increase the adverse impacts, possibly to a level of minor.	Development of a new trail connecting the campground to the climbing area would result in some erosion, therefore negligible adverse impacts, but the new trail would be beneficial over a possible social trail in an inappropriate location. Erosion from existing trails would continue, perhaps slightly improved over the continuation of current management because of a reduction in trail braiding, but negligible adverse impacts would still occur.
Trail Connections to Non-NPS Lands	No impacts	No impacts

Table 2-4. Comparative Summary of Consequences for Prehistoric and Historic Archeological Resources, Sites and Structures

	No Action Alternative (Alternative A)	Trail Development Alternative (Alternative B)
Trail Segments of the Through Park Connector	Likely no adverse impacts, though potentially negligible adverse impacts, occurring from incidental encounters with sites or artifacts from informal visitor use. Some negligible impacts from the lower end of the existing Arbuckle Connector Trail, which is routed through historic features.	Likely no adverse impacts, though potentially negligible adverse impacts, occurring from accidental discovery of artifacts during construction. Mitigations would otherwise avoid archeological resources and structures. Rerouting the Arbuckle Connector Trail may be beneficial.
Bridge Buttress Trail Extension	Negligible	Negligible
Trail Connections to Non-NPS Lands	No Impacts	No Impacts

1

Table 2-5a. Comparative Summary of Consequences for Visitor Use, Experience, Access and Safety

	No Action Alternative (Alternative A)	Trail Development Alternative (Alternative B)
Piney Creek Trail	Trail development from Beckley outside of park boundaries would continue, but would dead end at the NPS boundary if no trail were built, causing moderate adverse impacts.	All proposed trail segments of the Through Park Connector would be beneficial for visitors by providing them with additional trails and the opportunity to travel long distances on trails through and between the project areas without the need to unsafely walk, run or bike on narrow, winding roads with fast-moving traffic. Designation of these trail segments as open to bicycle use would be consistent with the GMP's vision for the Through Park Connector and beneficial to visitors.
McCreery Trailhead	Unsafe conditions for crossing State Route 41 and a lack restroom facilities would result in moderate adverse impacts for visitors using this area to park for river access.	
McCreery Trail	Visitors trying to create a long-distance trail experience connecting the northern and southern halves of NERI would be forced onto roads that would be very unsafe for pedestrian and bicycle use, resulting in minor adverse impacts.	
Camp Creek Trail	Alternate opportunities exist that would meet the same needs as the proposed Camp Creek Trail, so adverse impacts would be negligible.	
Arbuckle Connector Trail Improvements	Moderate adverse impacts would result because legal access for bicycle use would be completely blocked between Dun Glen and the Southside Trail; visitors would be forced to drive a long way around in order to cycle in these areas.	
Wolf Creek Trail	Even though pedestrian and bicycle use of Fayette Station Road is extremely unsafe, few visitors connect Fayette Station to points uphill in or on top of the gorge by any method other than driving, resulting in negligible adverse impacts.	

1

Table 2-5b. Comparative Summary of Consequences for Visitor Use, Experience, Access and Safety

	No Action Alternative (Alternative A)	Trail Development Alternative (Alternative B)
Whitney Trail	Minor adverse impacts would result from continued informal use of the mine bench in an area where trail development is popular and use of the mine bench as a trail already occurs. Safety would be improved through trail development on the bench.	All proposed trail segments of the Through Park Connector would be beneficial for visitors by providing them with additional trails and the opportunity to travel long distances on trails through and between the project areas without the need to unsafely walk, run or bike on narrow, winding roads with fast-moving traffic. Designation of these trail segments as open to bicycle use would be consistent with the GMP's vision for the Through Park Connector and beneficial to visitors.
Whitney Trailhead	Visitors may be confused about the legality of using the existing pull-out and the lack of information about park trails, resulting in negligible adverse impacts.	
Pipers Branch Trail	Without the proposed Whitney Trail, there is little demand for the development of this trail or informal use of the project area, so adverse impacts would be negligible.	
Bridge Buttress Trail Extension	Minor adverse impacts would result because visitors would want a safe, off-road, pedestrian access connecting the campground and the climbing area.	Development of a trail that meets the needs of campground and park visitors and protects resources along the side of the gorge would be beneficial.
Trail Connections to Non-NPS Lands	Park-wide, moderate adverse impacts would result if there continued to be no requirement for legal public access for trails connecting lands inside and outside of NERI boundaries.	Park partners developing connecting trails may find the legal requirements onerous, but a guarantee of public access would benefit the park and the public in the long term.

2

Table 2-6. Comparative Summary of Consequences for Park Operations, Facilities and Maintenance

	No Action Alternative (Alternative A)	**Trail Development Alternative (Alternative B)**
Through Park Connector Trail Segements	There would be no new facilities to maintain or additional need for SAR response or VRP patrols, so there would be no change and no adverse impacts to park operations.	Minor adverse impacts to park operations would result from construction and maintenance of new facilities, as well as from an increased need for VRP patrols and SAR responses. These impacts could be lessened through volunteer participation in construction, maintenance and patrol of trails.
Bridge Buttress Trail Extension	With no new facilities to construct or maintain, and no increased need for patrols or SAR responses, there would be no change and no adverse impacts to park operations except in the case that a social trail might develop and cause resource damage in areas between the campground and the climbing area, which would result in negligible adverse impacts from staff time and park money for resource rehabilitation.	Construction and maintenance of new trail would cost money and staff time, resulting in negligible adverse impacts on park operations. These impacts could be lessened through volunteer participation in construction and maintenance.
Trail Connections to Non-NPS Lands	No impacts	No impacts

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter Three of this EA describes both the affected environment of the project areas and the environmental consequences of each of the alternatives. The affected environment includes the existing conditions for each impact topic analyzed for the project areas and summarizes relevant data and research collected to inform the impact analysis. Existing conditions are organized by the impact topics retained for analysis as outlined in Chapter 1.

General Methodology for Analyzing Impacts. In accordance with the CEQ regulations, direct, indirect and cumulative impacts are described (40 CFR 1502.16) and the intensity of the impacts is assessed in the context of the park's purpose and significance and any resource-specific context that may be applicable (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts are also described and incorporated into the evaluation of impacts. The specific methods used to assess impacts for each resource may vary; therefore, these methodologies are described under each impact topic. Overall, these impact analyses and conclusions are based on a review of existing literature and park studies, information provided by on-site experts and other agencies, professional judgment and park staff knowledge and insight.

Type Of Impact. Impacts are discussed by type, as follows:

Direct: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).

Indirect: Impacts that would occur as a result of the proposed action but later in time or farther in distance from the action (40 CFR 1508.8).

Adverse: An impact that causes an unfavorable result to the resource when compared to the existing conditions.

Beneficial: An impact that would result in a positive change to the resource when compared to the existing conditions.

Impact Intensity and Context. The impacts of the alternatives are assessed by considering the intensity of the impact and the context of the affected resource (40 CFR 1508.27).

Intensity – refers to the severity or magnitude of the impact. In this plan/EA, impact intensity is generally described as negligible, minor, moderate or major.

Context – refers to the affected environment within which an impact would occur, such as local, park-wide, regional, global, affected interests, society as a whole or any combination of these. Context also includes the park's purpose and significance and may also include laws, regulations and policies established to protect specific resources; for example, the Endangered Species Act provides a legal context for assessing the severity of potential impacts to federally-listed threatened and endangered animals. Context also includes consideration of the duration of an impact; i.e., long-term and short-term impacts.

Cumulative Impact Analysis Methodology. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts were determined for each impact topic analyzed by combining the impacts of each alternative with the impacts of other past, present and reasonably foreseeable actions on those same resources.

Table 3-1 summarizes the actions that could contribute to cumulative impacts on park resources analyzed as impact topics. Because some of these actions are in the early planning stages, the evaluation of the cumulative impact is based on a general description of the projects. These actions were identified through the internal and external project scoping processes.

Table 3-1. Actions Included in the Cumulative Impact Analysis

Actions	Summary Description	Timeline
NPS Actions	Mine Portal Gating – Gates were installed on ten mine portals to allow wildlife to pass in and out, but to prevent visitor access. This project was accomplished with one-time funding through the American Recovery and Reinvestment Act of 2009.	2010
	Treating Invasives – The NPS has been treating targeted areas of the park for invasive pests that threaten park vegetation, like the hemlock woolly adelgid, and for invasive plants, such as Japanese knotweed.	Past and continuing
	Vault Toilet Installation at Trailheads – The NPS is installing new vault toilets at many existing trailheads to replace the seasonal portable toilets usually provided.	In process
	New Trail Development – The GMP provides for development of as many trail segments as feasible for the Through Park Connector, a third stacked loop trail system and trails that connect to surrounding communities and public lands, most of which would likely have both hiking and bicycling use.	Current and continuing
Land Use	Mining – Much of the land within NPS boundaries has been deep mined and/or strip mined in the past 150 years. Erosion and chemical impacts on land and water still exist in some places.	Past through around the mid-20th century
	Logging – Much of the land within NPS boundaries has been logged within the past 150 years. Some logging continues on private land within the NPS boundary.	Past and continuing
	Water Pollution – Industrial chemicals, household and industrial waste and raw sewage have been discharged into the New River Watershed along the river and its tributaries.	Past and continuing
Development	Private Recreational Development – Adjacent landowners, Wild Rock and ACE Whitewater have constructed hiking and biking trails and anticipate the development of more of the same. Additionally, adjacent rafting company/resorts may develop other new recreational opportunities.	Past and continuing
	Campground – NRAC and the AAC are developing a public campground with amenities particular to rock climbers adjacent to the NPS boundary in the Burnwood area.	2012 through future
	The Summit – The BSA is developing nearly 10,000 acres adjacent to the Garden Ground Area of the park to host a year round high adventure camp and the BSA National Jamboree every four years. They are also purchasing and developing smaller parcels of land around NERI, mostly adjacent to park boundaries, to develop camping facilities for overnight trekking style trips when their high adventure camp opens.	2010 through future
Trails and Alternative Transportation System Developments	Communities around NERI are beginning to plan and develop trails across non-federal lands that would connect with the NERI trail system.	In process and future

3.1 Vegetation: Including Common and Rare Plant Communities, Rare Plants, Threatened and Endangered Plant Species and Non-Native Invasive Plant Species

Applicable Regulations and Guidelines. Federal laws, regulations and NPS policies related to vegetation management and plant communities include the following:

- Executive Order #13112 on Invasive Species
- Endangered Species Act of 1973, as amended
- Federal Insecticide Fungicide, and Rodenticide Act of 1972, as amended

NPS Management Policies (2006a):

- Section 4.4.2.3 Management of Rare, Threatened or Endangered Plants
- Section 4.4.1.3 Defining native and exotic species
- Section 4.4.4 Management of Exotic Species

Methodology and Assumptions. The potential to impact park flora and their associated plant communities are identified in relation to the proposed trails and their anticipated uses. Analysis focused on plant species known to occur in the park and known to use the vegetation community types (Vanderhorst et al 2007) that occur in the project areas. Vegetation studies within the park have identified the presence of specific rare species and globally rare plant communities that were analyzed. Potential impacts to these species and their communities are based on available scientific literature and the professional judgment of park staff.

An analysis is presented for individual plant communities and species where the analysis is based on the design and construction constraints described in Appendix A. Specific analysis of individual plants and vegetation communities is presented for an area where its circumstances are unique. The assignment of the anticipated impact designation is based on the assumption that identified mitigation measures and design constraints described in Appendix A would be adhered to.

Assumptions Regarding Bicycle Use. Vegetation concerns related to off-road bicycle use include trampling, erosion and soil disturbance that could change vegetation composition along the trail, and the spread of invasive plant species along trail vectors.

Unlike other user groups, there is very little use of mountain bikes off-trail. In fact, for the majority of the mountain bikers, the trail is likely the most desirable place to ride for safety and pleasure. Hikers are far more likely than cyclists wander off trail, regarding their own diffuse impact as negligible (Lathrop 2003). Research has demonstrated that both mountain biking and hiking impose fairly similar short-term damage from trampling and that vegetation recovers quickly once either use is halted (Thurston and Reader 2001). A more detailed discussion of data related to bicycle use and vegetation can be found in Section 3.3.5 of the 2011 Hike/Bike Trail Plan (NPS 2011b, p.63–64).

Erosion and soil disturbance are discussed in Section 3.3; where erosion and soil disturbance occur, it could change vegetation composition along the trail.

Affected Environment. Vegetation protection priorities in NERI include:

- Unfragmented forest blocks, which are "expanses of the park's forest [that] remain largely unfragmented by roads, trails, utility corridors or developed land uses" (NPS 2010, p. 3-15, as amended by NPS 2011a). These forest areas are habitat for diverse plant species and forest-interior birds.
- Rare, significant, unusual and severely threatened vegetation communities.
- Plant species of special concern as listed by the state of West Virginia and those federally listed as threatened, rare or endangered.

Non-native and invasive plant species are an additional concern, as invasive plants can spread along linear features, such as trails, via shoes, tires, clothing, outdoor gear and construction equipment.

3.1.1 Piney Creek Trail

Affected Environment. The Piney Creek Trail project area has not been ground surveyed for individual occurrences of rare plants but the rare species diversity of the project area is projected to be low because of past land practices and known infestations of exotic plants. The area contains substantial areas of disturbance, including a state highway, railroad and utility rights-of-way. These fragmenting features have contributed to overall degradation of the native forest. The proposed 0.7-mile trail would traverse this disturbed area before heading upslope through a deciduous sugar maple-buckeye-basswood forest. No known rare plant communities, sensitive riparian zones, or cliff habitats, are found in the project area.

Invasive plant species consist of a considerable population of Japanese knotweed along Piney Creek at the beginning of the proposed trail (near the proposed McCreery Trailhead) and a large population of English ivy near the railroad grade.

Environmental Consequences of the No Action Alternative. Since no new trail construction would occur, any plant communities (common plant communities, or as-yet-undiscovered rare plant communities) adjacent and upslope of the project area would be protected from increased visitor use and the spread of invasive plants along the new trail corridor. Continuation of current management would consist of periodic monitoring and treatment of substantial invasive plant populations, which have some potential for adverse impacts to rare plants that may exist in the project area but have not been discovered. However, these impacts would be considered minor because treatment areas would be localized and the result of treatment is an overall benefit to native vegetation by removal of competing invasives.

Environmental Consequences of the Trail Development Alternative. The construction of the proposed Piney Creek Trail would have adverse impacts on vegetation due to clearing and removal of trees and shrubs to create or expand trail corridors and some trampling of adjacent vegetation from trail use. There is also potential for invasive Japanese knotweed and English ivy to colonize disturbed areas along the newly constructed trail, which would have additional adverse impacts by excluding native vegetation. These adverse impacts would persist for the life of the trail. However, these impacts are considered minor because the area of disturbance is very small compared to the overall area of vegetation in the project area, and because mitigation measures would be implemented during construction to minimize impacts to rare and important vegetation. Because wet areas and forest seeps would be avoided, or bridged as a last resort, the proposed trail would not impact riparian plant communities. Because a staff biologist would do some monitoring during construction, unexpected encounters with rare plants and rare plant communities would be largely mitigated.

If the at-grade CSX crossing becomes the best option, and electricity is provided to flashing lights at the crossing via an underground line beneath the trail tread, no additional adverse impacts to vegetation would be expected beyond those of trail construction and use discussed in the previous paragraph. However, if solar panels are determined to be the best way to power flashing lights for the railroad crossing, and removal of some trees is required adjacent to the CSX right-of-way in order to allow sufficient sunlight to reach the panels, the intensity of the adverse impacts to the forest canopy could increase from minor to moderate because there would be a loss of some canopy in addition to loss of understory vegetation.

If the under-trestle CSX crossing becomes the best option, impacts to vegetation and around the stream bed would be minimized by keeping trail users on a platform walkway above the streambed, and equipping the platform with hand rails to prevent visitors from exiting the platform and trampling vegetation within the stream bed corridor. Construction of the platform for the under-trestle crossing would be considered minor because loss of vegetation through clearing would be localized, and impacts due to trampling would likely be reversed as the vegetation would be expected to recover relatively quickly.

Based on available research and assumptions, bicycle use on the proposed Piney Creek Trail would have roughly the same impacts as pedestrian use. Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.1.2 McCreery Trailhead

Affected Environment. The McCreery Trailhead project area has not been ground surveyed for rare plants, but like the adjacent Piney Creek Trail project area, there are no known rare plant communities. The project area is previously disturbed; therefore, rare species diversity is projected to be low, especially considering the preponderance of invasive plants at the site.

The McCreery Trailhead area receives regular recreational and administrative use, where the primary resource impacts are vegetation trampling, soil compaction and erosion. Bare ground areas are often colonized by non-native exotic plants.

Environmental Consequences of the No Action Alternative. Continued recreational and administrative use of this area, with vegetation trampling, soil compaction and erosion, would result in adverse impacts to vegetation. These are considered minor because impacts are localized to the area used for parking.

Environmental Consequences of the Trail Development Alternative. Because trailhead construction would formalize the parking lot by placing barriers from expansion and signage, the amount of off-road parking and subsequent trampling of vegetation would be reduced. Vegetation would be beneficially impacted in this project area.

3.1.3 McCreery Trail

Affected Environment. The McCreery Trail project area has not been ground surveyed for rare plants, but like the adjacent proposed Piney Creek Trail project area, there are no known rare plant communities. Therefore rare species diversity is projected to be low, especially considering the preponderance of invasive plants at the site. The project area itself is previously disturbed and infested with several species of exotic plants. The abandoned rail grade traverses a primary successional forest of young trees.

Environmental Consequences of the No Action Alternative. Because the rail corridor on which the proposed McCreery Trail would be developed is infested with several species of exotic plants, current management would result in minor adverse impacts due primarily to the continued presence of exotic plants and the potential for them to spread.

Environmental Consequences of the Trail Development Alternative. Due to the dominance of exotic plants in the disturbed habitat of the proposed McCreery Trail project area, it is unlikely that rare plants would be found during trail routing and construction. However, according to the SOPs in Appendix A, the area would be surveyed prior to construction and any rare plants discovered would be avoided. The primary impact to vegetation would be the removal of existing vegetation from the trail tread. This impact is permanent; however, it would be considered minor because vegetation in this area is already adversely impacted by trampling and the presence of invasive exotics. Removal of exotic vegetation would be of some benefit by reducing the potential for spread into adjacent areas.

Based on available research and assumptions, bicycle use on the proposed McCreery Trail would have roughly the same impacts as pedestrian use. Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.1.4 Camp Creek Trail

Affected Environment. Some aggressive invasive plant species, such as Japanese knotweed, are common along the main stem of Dunloup Creek. The vegetation in the Camp Creek drainage can be characterized as second or third growth mixed-deciduous forest, with the lower half of the proposed trail within the Camp Creek drainage traversing an eastern hemlock-sweet birch-tuliptree/great laurel forest, before transitioning to a dryer oak/hickory forest near the ridge tops. Rare plant communities do not occur in the project area, but in accordance with SOPs in Appendix A, a late summer survey for rare plants was conducted along the 200-foot trail corridor (about 100 feet on either side of the proposed trail route) and found no rare plants. A subsequent later spring survey of the same area is scheduled for 2013.

Environmental Consequences of the No Action Alternative. Under this alternative, no trails would be constructed in the Camp Creek drainage, preserving the closed canopy unfragmented forest habitat. The lower vegetative layer, consisting of shrubs, forbs, grasses and non-vascular plants, would remain as a continuous, unbroken vegetation community. The invasive plants along Dunloup Creek are unlikely to migrate upslope through the forested habitat while the Camp Creek drainage remains accessible only by backcountry travel. The area is infrequently used by the curious visitors and the occasional hunter, resulting in little disturbance to plants or soils. For these reasons, the impacts of continuing current management would be negligible.

Environmental Consequences of the Trail Development Alternative. The development of the segment of trail along Dunloup Creek would create a risk that Japanese knotweed along Dunloup Creek could spread up the Camp Creek drainage via trail users who could act as seed carriers.

The trail enters the Camp Creek drainage through a boulder field, a hemlock-birch forest and small stream crossing, which divides the moister lower half of the trail from the dryer and flatter oak-hickory forest covering the upper half of the trail. The trail was purposely routed to avoid the continuous hemlock/great laurel forests found in the bottom of the Camp Creek drainage. Further reroutes or bridging may be necessary to avoid impacts to forest seeps and intermittent drainages. Any rare plants discovered during the early 2013 summer survey would be avoided by trail construction.

Because the above mitigation measures would be implemented, in accordance with the SOPs described in Appendix A, and with continued monitoring and treatment to control the spread of invasive exotic plants, development of the Camp Creek Trail would result in minor adverse impacts on vegetation and forest seeps.

Based on available research and assumptions, bicycle use on the proposed Camp Creek Trail would have roughly the same impacts as pedestrian use. Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.1.5 Arbuckle Connector Trail Improvements

Affected Environment. The Arbuckle Connector Trail project area has not been ground surveyed for rare plants and plant species with respect to this project. There are no known occurrences of rare plant species, and the rare species diversity of the project area is expected to be low, based on prior studies completed for the development of the GMP.

Environmental Consequences of the No Action Alternative. Continuation of current management would result in continued pedestrian use of the existing trail tread, which is constructed on steep grades using rock steps and causes some small amounts of erosion. This alternative would result in minor adverse impacts on vegetation that are localized to the area of the trail tread.

Environmental Consequences of the Trail Development Alternative. Re-routing of the trail and development of a more sustainable alignment would result in the removal of vegetation along a trail route likely to be longer than the distance of the existing Arbuckle Connector Trail due to the need to develop switchbacks and create trail grades that are less steep. While more vegetation would be removed for the new trail tread, the improved sustainability of the design would result in a less erosive trail than the current route, which would be beneficial to vegetation located downhill of the trail. Because the SOPs in Appendix A would be followed, including rare plant surveys of proposed re-routes to the existing trail and avoidance of any rare plants, the adverse impacts to vegetation in the project area would be considered minor.

Re-routing the existing Arbuckle Connector Trail to a more sustainable route would provide a trail on which bicycle use would cause no or minimal erosion. Based on available research and assumptions, bicycle use on the improved Arbuckle Connector Trail would have roughly the same impacts as pedestrian use. Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.1.6 Wolf Creek Trail

Affected Environment. The vegetation within the project area of Wolf Creek is dominated by a very moist eastern hemlock-sweet birch-tuliptree/great laurel forest on the lower half of the trail, then graduating into a more mesic oak-hickory-sugar maple forest near the junction of the proposed Wolf Creek with the existing Kaymoor Trail. Rare plant communities are not known to occur in the project area, but in accordance with the SOPs in Appendix A, a late summer survey for rare plants was conducted along the 200-foot trail corridor (about 100 feet on either side of the proposed trail route) and found no rare plants. A subsequent late spring survey of the same area is scheduled for 2013.

Environmental Consequences of the No Action Alternative. Under this alternative, no trails would be constructed on the lower end of Wolf Creek, preserving the closed canopy unfragmented forest habitat. The lower vegetative layer consisting of shrubs, forbs, grasses and non-vascular plants, would remain as a continuous unbroken vegetation community. Soils would remain undisturbed, reducing the likelihood of exotic plant encroachment into the interior forest. The area is infrequently used by curious visitors and the occasional whitewater kayaker accessing Wolf Creek, resulting in little disturbance to plants or soils. For these reasons, the impacts of the No Action Alternative on existing vegetation would be considered negligible.

Environmental Consequences of the Trail Development Alternative. The proposed new trail would be constructed through a dense mixed-deciduous forest on a steep slope in the Wolf Creek drainage. The steps that would be needed for the steep segment of trail near Fayette Station Road would cut through a shrub layer of rhododendron, but further trail construction would avoid fragmentation of the rhododendron thickets in the Wolf Creek drainage. The proposed trail was purposely routed to avoid the continuous hemlock/great laurel forests found near the lower half of Wolf Creek. Further reroutes or bridging may be necessary to avoid impacts to forest seeps and intermittent drainages. Because trail development would follow the SOPs described in Appendix A, any rare plants discovered during the early summer survey would be avoided by trail construction. As a result of the incorporation of the above mitigation measures in the trail development process, the adverse impacts of construction and use of the proposed Wolf Creek Trail be considered minor.

Based on available research and assumptions, bicycle use on the proposed Wolf Creek Trail would have roughly the same impacts as pedestrian use. Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.1.7 Whitney Trail

Affected Environment. The vegetation community in the proposed Whitney Trail project area is predominately sugar maple-yellow buckeye-basswood, which is common on mid-slope areas of the park. However, the majority of this trail is located along an abandoned mine access road, which consists of mainly early successional plant species. There are road ruts and ditches present from the mining era that contain wetland species. Rare plant communities do not occur in the project area, but in accordance with the SOPs described in Appendix A, a late summer survey for rare plants was conducted along the 200-foot trail corridor (about 100 feet on either side of the proposed trail route) and found no rare plants. A subsequent later spring survey of the same area is scheduled for 2013.

Environmental Consequences of the No Action Alternative. The Whitney Trail area receives some informal hiking use that has resulted in vegetation trampling and minor erosion along the mine bench. The first mile of the bench traverses a reclaimed mine site (circa 1990s), which has been colonized by mostly non-native, exotic plants. The remainder of the mine bench travels through a mixed sugar maple-yellow buckeye-basswood forest. No known rare plant species occur in the project area. If current management is continued, then impacts to vegetation would be localized and minor from the likelihood of a continued spread of exotic plants.

Environmental Consequences of the Trail Development Alternative. Much of the proposed Whitney Trail would traverse a reclaimed mine site dating back to the late 1990s along an existing mine bench. Where the first phase of trail development moves uphill in order to cross a narrow section of the unnamed ephemeral stream, the trail would follow an old road trace through a mature second growth mixed hardwood forest with some scattered rhododendron and hemlocks. According to the SOPs described in Appendix A, rare plant communities would be avoided, while wetland habitat consisting of seeps and former road ditches will be bridged or avoided. No rare plants are currently known to exist in the project area, but any rare plants discovered during the spring 2013 survey would be avoided by trail construction. Because these mitigation measures would be incorporated into the trail development process, construction and use of the proposed Whitney Trail would result in localized, negligible adverse impacts to vegetation.

Based on available research and assumptions, bicycle use on the proposed Whitney Trail would have roughly the same impacts as pedestrian use. Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.1.8 Whitney Trailhead

Affected Environment. Located along the route of the proposed Whitney Trail, this proposed trailhead has been assessed in a late summer survey for rare plants (none were found) and is scheduled to be assessed in a late spring survey in 2013. The project area is mainly bare ground with compacted soil, gravel and asphalt remnants, where it has been used as an informal pull-out for visitors parking to access the mine bench.

Environmental Consequences of the No Action Alternative. Continued informal use of this small pull-out would continue existing adverse impacts to vegetation, which are considered negligible, but would not cause new adverse impacts to vegetation.

Environmental Consequences of the Trail Development Alternative. Developing this pull-out as a formal trailhead would not result in any substantial changes to the footprint or character of the project area. Similar negligible adverse impacts to vegetation would continue in this project area because the areas already impacted would be formalized by construction of the trailhead. No new areas of vegetation would be impacted by trailhead development.

3.1.9 Pipers Branch Trail

Affected Environment. The proposed Pipers Branch Trail project area leads upslope along an existing road trace for approximately one-half mile to property owned by the Boy Scouts. There is a visible trail in the old road trace that is currently used by backcountry hikers and the occasional hunter. A social trail tread beaten into the old road trace is approximately one to two feet wide, and exhibits problems associated with erosion along its entire route. Exotic plants are located within the disturbed area of the old road trace. The adjoining forest can be characterized as a second growth eastern hemlock-sweet birch-tuliptree/great laurel forest. There are no known rare plants or communities in the immediate project area.

Environmental Consequences of the No Action Alternative. Because informal use of the old road trace would continue and no official trail would be constructed, soil erosion would continue unabated, which could lead to failure of the former road grade. Exotic plants would continue to encroach along the disturbed road trace. Uncontrolled soil erosion, potential slope road failure, and encroachment of exotic plants would lead to long-term, minor, adverse impacts to vegetation and soils in the project area.

Environmental Consequences of the Trail Development Alternative. Construction of the proposed Pipers Branch Trail according to sustainable trail standards described in Appendix A would minimize continued soil erosion along the trail which should help stabilize the former road grade. Should any rare plants or communities be discovered during the anticipated spring 2013 rare plant survey, the trail would be rerouted to avoid these and other sensitive resources. Following implementation of mitigation measures mentioned above, including measures to help minimize the spread of exotics into undisturbed areas, the results of building this trail segment should prove to be beneficial in the long-term for vegetation.

Based on available research and assumptions, bicycle use on the proposed Pipers Branch Trail would have roughly the same impacts as pedestrian use. Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.1.10 Bridge Buttress Trail Extension

Affected Environment. The project area consists of approximately 50 acres of rimrock forest stretching from the cliff's intersection with the Burma Road (County Route 60/96) east approximately a half mile to the Bridge Buttress cliff face. Much of the cliff-top is covered with the globally rare cliff top Virginia pine forest, while the forest on the slopes below the cliff can be characterized as mature eastern hemlock-sweet birch-tuliptree/great rhododendron. There are a couple of intermittent streams and forest seeps that have created natural breaks in the cliff wall. One large forest seep forms a break in the cliff near the AAC/NRAC campground, which was eliminated from consideration as a trail access into the park (see Section 2.3). The new campground was recently constructed adjacent

the park boundary, fragmenting the otherwise closed canopy forest in the area. Portions of the project area are covered with dense stands of great laurel (*Rhododendron maximum*) and Catawba rhododendron (*Rhododendron catawbiense*). Approximately half the cliff face is frequented by rock climbers who have established bolted climbing routes and braided social trails along approximately half of the cliff bottom. Most of the cliff top, with the exception of the Bridge Buttress, remains in a relatively undisturbed condition.

The rare species diversity of the Bridge Buttress Trail Extension project area is expected to be low. A 50-acre area covering multiple locations where the proposed new segment of trail could potentially be located was surveyed for late summer plants in order to improve knowledge of the area and choose the best route that would address the need for the trail, while providing the best environmental protection. Within this area, two populations of special concern listed on the park's rare, threatened and endangered plant species list were discovered. One population of American panic grass (*Dichanthelium sabulorum var. thinium*), listed as S1, G5T5 by the WVDNR, WVNHP, was located in a cliff top area. One population of Rock skullcap (*Scutellaria saxatilis*), listed as S2, G3 by the WVNHP was located in a moist area below the cliffs. Rankings are explained in Table 3-2.

Table 3-2. Explanation of WVNHP Rankings

	Rank Code	Explanation
State Ranking	S1	Critically Imperiled – Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrences or very few remaining individuals (< 1000).
	S2	Imperiled – Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 occurrences or few individuals (1,000 to 3,000).
Global Ranking	G3	Vulnerable – Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
	G5	Secure – Common, widespread, and abundant (although it may be rare in parts of its range, particularly on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
	T5	T# - Rank of subspecies or variety.

This table contains only rank codes relevant to this document. The information in this table and additional information can be found at the WVNHP website (WVDNR 2012).

Environmental Consequences of the No Action Alternative. The Bridge Buttress climbing area and associated network of social trails would continue to be heavily used by climbing enthusiasts. Other climbing routes in the northern end (climber's left) of the project area are less used, but like Bridge Buttress, experience large areas of trampled vegetation and bare ground at the base of cliffs where climbing occurs and along social trails. There is potential for visitors staying at the new AAC/NRAC campground to create new social trails within the globally rare habitats to reach climbing routes or otherwise utilize the existing network of social trails. The additional adverse impacts to vegetation under no action, such as trampling and exposure to invasion by exotics, would be considered moderate because the impacts would be occurring in rare plant habitat, including forest seeps.

Environmental Consequences of the Trail Development Alternative. The quarter-mile segment of proposed new trail that would connect the Burnwood Trail, at the top of the gorge, with the base-of-cliff area would be established through a break in the cliffs identified by park biologists, and considered least likely to impact globally rare plant communities, rare plants, forest seeps or rhododendron thickets. A short wooden ladder would be constructed over a stone ledge that would prevent hikers/climbers from trampling and disturbing the forest seep in this area of the trail. Further trail braiding between the base of cliff below the ladder and the well-established social trail in the Promised Area would be eliminated by the selection and development of a single route that would also

avoid rare plant communities, rare plants, forest seeps and rhododendron thickets. The current adverse impacts to vegetation on the existing and well-used base-of-cliff social trails from the Promised Area to Bridge Buttress and the existing Bridge Buttress Trail would persist, but would be considered minor because the impacts would remain contained to the existing area of disturbance. The development of the Bridge Buttress Trail extension incorporating the above mitigation measures would result in some adverse impacts on vegetation that would persist for the life of the trail but would be considered minor. There may be some benefits to vegetation as a result of formalizing the route and directing visitor use away from sensitive plant communities and habitats.

3.1.11 Trail Connections to Non-Federal Lands

Affected Environment. Because the proposed guidelines for trail connections between NERI and non-federal lands are largely administrative, there the only concern related to vegetation may be the potential for the spread of invasive plant species within the park from sources outside the boundaries along trail corridors.

Environmental Consequences of the No Action Alternative. With very few trail connections in the park to trails beyond park boundaries, the main ways that invasive plant species enter the park from beyond park boundaries would be along road and stream corridors and carried by visitors on gear and vehicles. Overall, the adverse impacts to vegetation that exist under the No Action Alternative are considered minor because there are so few trail connections to the park; however, there may be potential for additional adverse impacts because new informal trail connections could be made without park knowledge and could occur in areas of sensitive plant communities and habitats with no controls or monitoring. Under this scenario, the adverse impacts of no action would be considered moderate.

Environmental Consequences of the Trail Development Alternative. By developing formal guidance on requirements for the development of connections between NPS and non-NPS trails, it is likely that more trail connections would be constructed over time. Development of trail connections would create additional vectors for the spread of invasive plant species, beyond just road and stream corridors. However, because trail connections would be developed with park input and in accordance with routing requirements and mitigation measures, including measures to monitor and control exotics, the additional impacts of these new vectors would be considered negligible.

3.1.12 Cumulative Impacts

Efforts are expected to continue among communities and private landowners surrounding NERI to develop trails, and to desire to develop trails that connect to trails within the NPS trail system. The public would likely continue to encourage NERI to develop trail segments of the Through Park Connector envisioned in the GMP, as well as connections between the Through Park Connector and intersecting rim-to-river trails and trails linking to other attractions and visitor use areas. These trail projects would impact vegetation around the region through vegetation removal along trail corridors and the potential for the spread of invasive plant species along vectors created by trail corridors. While treatment of populations of invasive plants continue, their proliferation around the region has not been halted.

Development of recreational facilities is expected to continue around the region, particularly as the rafting companies continue to develop new amenities and as the BSA continues to develop outdoor adventure opportunities on the Summit property and other smaller properties throughout the region. Vegetation removal and exotic species expansion would continue as a result of this development.

Erosion caused by past land uses within and beyond the NPS boundary, particularly mining and logging, continues to impact the health and viability of vegetation.

Cumulative Impacts of the No Action Alternative. As described above, continuation of current management would produce negligible to minor, localized, adverse impacts on vegetation in the individual project areas, which would contribute an imperceptible increase to the overall cumulative impacts on vegetation.

Cumulative Impacts of the Trail Development Alternative. Development of the trails proposed by this alternative would result in negligible to minor adverse, and in some cases beneficial, localized impacts to vegetation in the individual project areas. Whether adverse or beneficial, these impacts would contribute an imperceptible amount to the overall cumulative impacts on vegetation.

3.1.13 Conclusion

Environmental Consequences of the No Action Alternative. Continuation of current management in all project areas for the development of trail segments of the Through Park Connector would result in negligible to minor, localized, long-term adverse impacts to vegetation as a result of loss of vegetation due to trampling and compaction, and potential for spread of invasive exotic plants. For the proposed Bridge Buttress Trail Extension, continuation of current management would result in moderate, localized, long-term, adverse impacts to vegetation because of the potential for social trails to be created between the campground and the climbing area, which would travel through sensitive habitat. For continuation of current management regarding the development of trail connections to non-NPS lands, the adverse impacts to vegetation would be considered minor to moderate, primarily as a result of the spread of invasive plant species. Continuation of current management would contribute to an imperceptible increment to overall adverse cumulative impacts on vegetation.

Environmental Consequences of the Trail Development Alternative. Development of the proposed trail segments of the Though Park Connector would result in negligible to minor adverse impacts on vegetation that are mainly localized to the area immediately adjacent to the trail and would persist for the life of the trail. In the McCreery Trailhead and Pipers Branch project areas, the proposed actions would be beneficial by directing use away from rare plant communities and habitats. The proposed Bridge Buttress Trail Extension would result in minor, localized, adverse impacts to vegetation as a result of trail development; e.g., loss of vegetation from construction and small areas of trampling due to visitor use; but there would also be some potential for beneficial impacts by directing visitor use away from sensitive plant communities and habitats. Developing guidelines for the development of park trails that connect to trails on lands not owned by the NPS would result in negligible changes beyond existing adverse impacts of current management, associated with the spread of invasive plant species along trail vectors. Development of the proposed trails would contribute an imperceptible increment to overall cumulative impacts to vegetation in the park.

The recommended determination of the NPS (in accordance with Section 7 of the Endangered Species Act) for the proposed actions in the Trail Development Alternative is *No Effect* for federally listed plant species, Virginia spiraea (*Spiraea virginiana*) and Running buffalo clover (*Trifolium stoloniferum*), which are not known to occur in the project areas and, if found through pre-construction plant surveys, would be avoided.

3.2 Wildlife and Habitat: Including Threatened and Endangered Species and Species of Concern Related to the Actions Proposed

Applicable Regulations and Guidelines. Federal laws, regulations and NPS policies related to wildlife and its habitat include the following:

- Endangered Species Act of 1973, as amended
- Bald and Golden Eagle Protection Act
- Migratory Bird Treaty Act
- Lacey Act
- National Park Service Management Policies 2006

Methodology and Assumptions. Potential impacts to wildlife and its associated habitat are identified in relation to the proposed trails and their anticipated uses. The analysis is focused on species known to occur in the park and on species known to use the habitat types that occur in the project areas. Wildlife surveys within the park have identified the presence of specific species within the groups analyzed. Potential impacts to these species are based on available scientific literature and the professional judgment of park staff.

A general analysis is presented for applicable groups where the analysis is based on the following of certain design and construction constraints described in Appendix A. Specific group analysis is presented for an area where its circumstances are unique. The assessment of impacts assumes that the mitigation measures and design constraints described in Appendix A are incorporated.

Assumptions Regarding Bicycle Use. The effects that bicycle use on trails could have on birds and other wildlife in comparison to pedestrian use in the park is not clear. Existing scientific literature is not extensive or conclusive though it seems that, while cyclists may cover more ground per unit time, potentially increasing their disturbance of wildlife over the area of disturbance caused by a hiker (Taylor and Knight 2003), a hiker may be more likely to leave the trail and increase their disturbance of wildlife by approaching them as cyclists are more likely to remain on the trail (Papouchis et al. 2001). Otherwise, most disturbance of wildlife by cyclists versus hikers seems to be somewhat different in character, but generally quite similar in intensity (Pease et al. 2005; Gander and Ingold 1997; Naylor et al. 2009). A more detailed discussion of data related to bicycle use and wildlife can be found in Section 3.4.5 of the 2011 Hike/Bike Trail Plan (p.69–70).

Affected Environment. The wildlife species of greatest concern with regard to the proposed actions in this plan/EA are bats, Allegheny woodrats, amphibians and neotropical migratory birds.

Bats. A detailed discussion of information about bats can be found in Section 3.4 of the 2011 Hike/Bike Trail Plan (NPS 2011b, p. 64-65). Bat populations are threatened by a disease called white nose syndrome, which is decimating the populations of many of the bat species that use caves and mines, both in the park and in the eastern United States. All eleven bat species in the park use trees for some purpose, including for nursery colonies, hibernation, roosting or feeding.

Two bat species in the park are listed as federally endangered. The Indiana bat (*Myotis sodalist*) and the Virginia big-eared bat (*Cornynorhinus townsendii virginianus*) use abandoned mine portals as roosting sites and as hibernacula. The Indiana bat forms nursery colonies beneath loose bark in trees, especially on snags that are heated by sun exposure.

Trees that could serve best as Indiana bat nursery habitat are those that are greater than or equal to five inches diameter breast height (≥5" DBH). The NPS has adopted bat protection strategies of making every effort to limit any necessary cutting of trees ≥5" DBH for trail construction to the time between November 15 and March 31, when the trees are least likely to be in use by cave-hibernating bats and their removal would cause the least possible stress to local bat populations. Any trees ≥5" DBH that may need to be removed between April 1 and November 14 are inspected by park biologists to ensure that those trees are not in use by bats (see Appendix A).

Allegheny Woodrats. A detailed discussion of information about Allegheny woodrats (*Neotoma magister*) can be found in Section 3.4 of the 2011 Hike/Bike Trail Plan (NPS 2011b, p. 65). Allegheny woodrat populations are in decline throughout much of the woodrat's range in the eastern United States. Important habitat for the woodrat includes cliffs, boulder fields and abandoned mines. Trails can impact woodrats by increasing accessibility of predators to their habitat, attracting predators due to human use, and creating linear opens spaces in their habitats on which predators can more easily see and access them. Predators kill woodrats by direct depredation and by indirect parasite transfer.

Amphibians. Streams, seeps, wetlands, water holes and long-lasting puddles provide habitat and breeding habitat for amphibians in the park, including frogs, toads and salamanders. Often, such habitat features can be found on abandoned logging and mining roads in NERI where the natural flow of water has been blocked and captured by the road, creating large standing puddles.

Neotropical Migratory Birds. A detailed discussion of information about neotropical migratory birds can be found in Section 3.4 of the 2011 Hike/Bike Trail Plan (NPS 2011b, p. 66-67). Many neotropical migrants in NERI depend on unfragmented mixed deciduous forest for successful breeding. Some of these bird species are dependent on specific habitat types and features. Swainson's warblers (*Limnothlypis swainsonii*) need large areas of dense rhododendron, while Acadian flycatchers (*Empidonax virescens*) are positively associated with hemlock forest. The Louisiana waterthrush (*Parkesia motacilla*) establishes nesting territories along forest streams that

have hemlock and/or rhododendron components. In planning the routes for the proposed trails, consideration of bird species' habitat needs were considered so as to minimize possible adverse impacts.

3.2.1 Piney Creek Trail

Affected Environment. Habitats used by bats, Allegheny woodrats, amphibians and neotropical migratory birds should all be found in the Piney Creek Trail project area. There are no known mine portals there. Within the project area, there is one known area with a high density of boulders that could have value as Allegheny woodrat habitat. This area is on creek right of the unnamed perennial stream that crosses beneath the railroad trestle under which the under-trestle trail crossing of the CSX rail line could potentially be located. The density of boulders and value as woodrat habitat increases as the elevation increases and approaches the cliff outcrops well above the railroad grade.

Environmental Consequences of the No Action Alternative. Because this area does not contain a network of social trails, nor is there a likelihood of them being developed in this area, the No Action Alternative of no new trail construction would not affect wildlife.

Environmental Consequences of the Trail Development Alternative.

Bats. If the trail is inadvertently placed and constructed close enough to an Indiana bat nursery colony tree so as to disrupt the future use of the tree by Indiana bats (or other bat species), then the action could have adverse impacts on federally-listed threatened and endangered species, including non-listed bat species. More likely, the impacts of constructing a trail in areas likely used in some capacity by Indiana bats and other bat species would be negligible due to the implementation of the mitigation measures described above to avoid and minimize adverse impacts to bats and bat habitat.

Allegheny Woodrats. Because following the SOPs as described in Appendix A would result in a final trail alignment that stays low along the hillside and avoids, to the degree possible, the boulder field that might offer value as woodrat habitat, the proposed action would have negligible impacts on Allegheny woodrat populations in the area.

Amphibians. Because the proposed use of this trail includes both pedestrians and cyclists, some increase in amphibian mortality due to bicycle use over pedestrian use is expected. Though both pedestrians and cyclists may unintentionally step on or run over amphibians in the trail, the slower speeds of hikers give them more time to recognize and adjust so as to avoid the animals. If part of the proposed trail is constructed on old road traces, then any seeps, wetlands or existing water holes that can act as breeding pools for amphibians would be kept intact. Whereas hikers might walk around standing pools, cyclists are more likely to travel through them, thus causing more disturbance and increases in pre-adult amphibian mortality over hiking use only. These adverse impacts of the proposed action on amphibian populations would be considered minor.

Neotropical Migratory Birds. The approximately 0.7-mile trail would have some effect as a fragmenting force to forest-interior bird species. However, because the trail placement follows above and along the features of a railroad grade and Piney Creek, the proposed trail's effect on neotropical migratory birds should be minimized and would be considered negligible.

Based on available research and assumptions, bicycle use on the proposed Piney Creek Trail would have roughly the same impacts as pedestrian use on bats, Allegheny woodrats and neotropical migratory birds. Bicycle use would result in no additional adverse impacts on these species, as compared to pedestrian use of the trail. Some increases in amphibian mortality are expected compared to pedestrian use, but this impact is considered minor.

3.2.2 McCreery Trailhead

Affected Environment. This existing gravel lot does not serve as critical habitat for any species of concern in this project.

Environmental Consequences of the No Action Alternative. Continuation of this area as a gravel lot would have no effect on wildlife.

Environmental Consequences of the Trail Development Alternative. The upgrade of this area from a gravel lot to a parking lot and trailhead amenities would have no effect on wildlife.

3.2.3 McCreery Trail

Affected Environment. The proposed McCreery Trail segment would be constructed on an existing railroad bed on which small trees are growing in some sections, but most are<5" DBH. There is no known Allegheny woodrat habitat along the proposed route.

Environmental Consequences of the No Action Alternative. Continuation of the abandoned rail line as such would have no effect on wildlife.

Environmental Consequences of the Trail Development Alternative. Because the trail would be located predominantly on an abandoned rail line which already is a fragmenting feature to forest interior bird species and runs along a road and the river, the addition of the trail would not appreciably change existing conditions. However, because use of the trail would introduce pedestrians and cyclists into the area, the proposed action would likely have some adverse impacts on the area wildlife; e.g., amphibian mortality, as described above; however, these impacts would be considered negligible. There is some potential for disturbance of bats if suitable trees and/or habitat exist along the abandoned rail line. These impacts would be considered negligible due to the implementation of the park's bat protection strategies during trail construction. Bicycle use on the proposed McCreery Trail is expected to have roughly the same impacts as pedestrian use on wildlife.

3.2.4 Camp Creek Trail

Affected Environment. As described in Section 2.3, sensitive habitats in this area include the riparian habitat along Camp Creek, hemlock stands and rhododendron stands. In addition, there is a cliff and outcrop band that the proposed trail is routed adequately below to stay away from Allegheny woodrat populations. A large portion of this proposed trail would occur on former dirt road traces.

Environmental Consequences of the No Action Alternative. If no trail were constructed in this area, there would be no effect on wildlife.

Environmental Consequences of the Trail Development Alternative. The adverse impacts of the proposed Camp Creek Trail on bats, Allegheny woodrats and amphibians would be the same as described for the Piney Creek Trail above. The proposed two-mile trail and its use would have some effect as a fragmenting force to forest-interior bird species, greater than the other proposed trails because of the way it would penetrate into otherwise unfragmented forest and would not run along existing features. These adverse impacts on neotropical migratory birds would be considered minor because the proposed trail placement was chosen to stay at least 50 meters from Camp Creek and avoid rhododendron and hemlock stands.

Based on available research and assumptions, bicycle use on the proposed Camp Creek Trail would have roughly the same impacts as pedestrian use on bats, Allegheny woodrats and neotropical migratory birds. Bicycle use would result in no additional adverse impacts on these species, as compared to pedestrian use of the trail. Bicycle use may result in some additional mortality of amphibians because cyclists may not be able to see and avoid amphibians on the trail as readily as hikers and due to greater disturbance of breeding pools by bicycle use; however, this additional impact is considered to be minor.

3.2.5 Arbuckle Connector Trail Improvements

Affected Environment. The existing hiking trail is located on a steep grade in cove forest. Much of the trail consists of steps made from rocks. Near the top of the trail where it connects to the Rend Trail, there is a sizeable rock/boulder field rich in mosses on one side and a sparse- to medium-density rhododendron thicket on the other.

Environmental Consequences of the No Action Alternative. If the trail were not modified to enable biking, there would be no additional effects on wildlife.

Environmental Consequences of the Trail Development Alternative. Modifying the trail to accommodate biking would involve creating new trail as switchbacks that allow more gradual trail slopes. By implementing the trail route development SOPs described in Appendix A, the new trail would avoid the rock/boulder field which could act as Allegheny woodrat habitat. Because the rhododendron thicket is not dense or large in size, any adverse impacts to birds by placing new trail in this area would be considered negligible. Because of the steep slope, existing trail seems to drain well; hence standing water for amphibian breeding would not occur on the trail. The effects on amphibians from biking would be expected to be those from the increased speeds of bicycles compared to hiking in increasing mortality due to lack of avoidance. Given that the hiking trail already exists, the likelihood of trail extensions for switchbacks to adversely affect bat maternity trees is extremely low. Any fragmenting influences that the trail has on neotropical migratory birds should not be noticeably increased by the addition of biking. For these reasons, the proposed trail construction would have negligible impacts on the area wildlife.

3.2.6 Wolf Creek Trail

Affected Environment. The proposed route of the Wolf Creek Trail crosses perpendicularly through a 15-20 foot band of rhododendron that runs along Fayette Station Road. There are scattered rhododendron shrubs and hemlock trees in the steep area that the proposed trail would traverse. Where the trail tops out at an intersection with the existing Kaymoor Trail, the area is previously disturbed by human activity and rather open, with an abundance of poison ivy.

Environmental Consequences of the No Action Alternative. If no trail were constructed in this area, there would be no effect on wildlife.

Environmental Consequences of the Trail Development Alternative. Development of the proposed Wolf Creek Trail has a negligible potential for adverse impacts to wildlife because the trail would be routed and constructed in accordance with the standards to protect bats, Allegheny woodrats, and birds. A negligible impact to amphibians is expected due to direct amphibian mortality caused by hikers and cyclists. Amphibian breeding losses from trail use are not anticipated as the proposed Wolf Creek Trail would be constructed on a sloped hillside and standing water is not expected to occur to the degree needed to form breeding pools for amphibians. The half-mile trail and its use would have some effect as a fragmenting force to forest-interior bird species; however, any impacts would be considered negligible as part of the proposed trail would be constructed in a rather open area, reducing any fragmenting influence. Also, the proposed route for the Wolf Creek Trail was chosen to minimize its impact on birds making use of the rhododendron stand.

Based on available research and assumptions, bicycle use on the proposed Wolf Creek Trail would have roughly the same impacts as pedestrian use on bats, Allegheny woodrats and neotropical migratory birds. Bicycle use would result in no additional adverse impacts on these species, as compared to pedestrian use of the trail. A negligible incremental increase in direct amphibian mortality from bike use is expected over pedestrian only use of the trail.

3.2.7 Whitney Trail

Affected Environment. Because the proposed route of the Whitney Trail follows an existing mine bench, there is likely to be some amphibian habitat in long-lasting puddles that have formed as a result of the capture of runoff created by the human-created bench feature. Very little high wall exists along this mine bench and there is a general lack of suitable Allegheny woodrat habitat in the immediate vicinity.

Regarding bat habitat, there are few trees on the bench itself that are ≥5" DBH; however, there are many large trees on either side of the mine bench. The two open portals of the Whitney Mine are known to be used by bats, and they are currently not gated.

Environmental Consequences of the No Action Alternative. If no trail were constructed in this area, there would be no effect on wildlife.

Environmental Consequences of the Trail Development Alternative. Construction of the trail will not require any tree felling, but there is the small potential that a bat maternity tree near the bench could be disturbed by use of the proposed trail. The trail route for the first phase of construction for the proposed Whitney Trail would avoid the mine portals, and the second phase of construction, in which the trail would pass by the portals, includes the caveat that the mines first be gated for bat protection and human safety; therefore, no adverse impacts would be anticipated for bats using the portals for construction or use of the trail, including pedestrian and cyclist use. There is little or no potential for adverse impacts on Allegheny woodrat populations in the area because of the lack of suitable habitat along the trail route. There is potential for adverse impacts to amphibians because the proposed use of this trail includes both pedestrians and cyclists, which may cause direct amphibian mortality by stepping on or running over amphibians in the trail, as well as disturbances to amphibian breeding pools. These potential adverse impacts on amphibian populations in the proposed trail area would be considered minor. The proposed three-mile trail would have negligible impacts on neotropical migratory birds because the trail would be routed along an existing mine bench, which itself already acts as a fragmenting feature; there would be no additional impacts on birds as a result of bicycle use on the trail as compared to pedestrian use.

3.2.8 Whitney Trailhead

Affected Environment. This existing pull-out along the side of Fayette Station Road and located on the mine bench does not serve as critical habitat for any species of concern in this project.

Environmental Consequences of the No Action Alternative. Continuation of this area as a small, informally-used pullout would have no effect on wildlife.

Environmental Consequences of the Trail Development Alternative. The upgrade of this pullout on the existing mine bench to a more formalized parking area and trailhead of the same size as the existing disturbed area would have no effect on wildlife.

3.2.9 Pipers Branch Trail

Affected Environment. The proposed trail route follows an existing foot path from the mine bench, climbing the slope to the rim of the gorge at a moderate incline, ending just before reaching Pipers Branch. Small isolated rock outcrops occur along the path, but no obvious Allegheny woodrat habitat occurs.

Environmental Consequences of the No Action Alternative. If no trail were constructed in this area, there would be no effect on wildlife.

Environmental Consequences of the Trail Development Alternative. The proposed trail would have negligible impacts on Allegheny woodrats as there is little suitable woodrat habitat along the trail route. Impacts for amphibians are expected to be negligible because the trail should drain well and hence prevent breeding pools from forming; negligible direct amphibian mortality from pedestrian and cyclist use is expected. There is a small potential for the trail to be inadvertently constructed close enough to an Indiana bat nursery colony tree so as to disrupt the future use of the tree by Indiana bats (or other bat species); tree felling during trail construction would not be required. The 0.2-mile trail and its use would have some effect as a fragmenting influence to forest-interior bird species; however, any adverse impact would be considered negligible due to the short length of the trail. There would be no additional impacts on wildlife as a result of bicycle use on the trail as compared to pedestrian use.

3.2.10 Bridge Buttress Trail Extension

Affected Environment. Between the Burnwood Trail and the base of cliff area, there is a stand of rhododendron that serves as key habitat for forest interior bird species. Along the base of the cliff, in an area where faint, braided social trails vaguely connect the First Strike Area and the Promised Area,

there is a boulder field extending from the cliff that would be habitat for Allegheny woodrats, and downhill of that is a substantial stand of rhododendron. In the area of the well-used, existing social trails at the base of the cliff from the Promised Area to the existing Bridge Buttress Trail and Bridge Buttress, any potential habitat at the base of the cliff is already impacted by climbing use, including a varying-width open area of soil compaction that runs along the cliff base where climbers stage and belay.

Environmental Consequences of the No Action Alternative. If the trail were not constructed, it is expected that unapproved social trails would form as visitors from the newly constructed AAC/NRAC campground found their own way down to the base of the crags. Of particular concern is that visitors would travel from the AAC/NRAC campground along an unnamed stream located in the drainage to climber's left of the segment of proposed new trail that connects the rim of the gorge to the cliff base. Located along this drainage is the route that was proposed by NRAC (see Section 2.3), which was not included in this plan/EA as a proposed trail because of its value as habitat for Allegheny woodrats and green salamanders. The wet creviced cliff face and ledges in the immediate area of this route form the type of habitat in which green salamanders have been found within the park. The risk of direct mortality to green salamanders by being stepped on in this habitat would be high. Due to the occurrence of suitable habitat and potential for disturbance and loss of habitat from creation of social trails through these sensitive areas, the No Action Alternative would be expected to have moderate adverse impacts on amphibians, minor adverse impacts on Allegheny woodrats, and negligible impacts on other wildlife species.

Environmental Consequences of the Trail Development Alternative. There is a small chance that the trail would be placed near an existing bat maternity tree, but no tree felling is expected for the trail construction; hence impacts on bats would be negligible. The proposed trail development would have negligible impacts on Allegheny woodrats because the trail would be routed away from suitable woodrat habitat. As the proposed segment of new trail would be constructed on a sloped hillside, standing water is not expected to the degree needed to form breeding pools for amphibians; further, the proposed use of this trail is hiking only; therefore, any adverse impacts on amphibian populations in the proposed trail area would be considered negligible. The proposed trail extension, including new trail construction and incorporation of the existing social trail into the NPS trail inventory, and use of the extended Bridge Buttress Trail would have some effect as a fragmenting influence to forest-interior bird species. Rhododendron stands would be avoided however, and any adverse impacts on neotropical migratory birds would be considered negligible.

3.2.11 Trail Connections to Non-Federal Lands

Because the proposed guidelines for trail connections between NERI and non-federal lands are largely administrative, there are no related concerns about wildlife protection and there would be no impacts to wildlife as a result of this component of the proposed action under either the No Action Alternative or the Trail Development Alternative.

3.2.12 Cumulative Impacts

Trail development is expected to continue both in and outside of NERI boundaries. Nearby landowners and communities anticipate not only developing trails on non-NPS public and private property, but also trails that connect with the NPS trail system. The public would likely continue to encourage NERI to develop trail segments of the Through Park Connector envisioned in the GMP, as well as rim-to-river trails and trails linking to other attractions and visitor use areas. The park is currently implementing the 2011 Hike/Bike Trail Plan, having constructed one stacked loop trail system and beginning to construct a second, as well as pursuing an amendment to the CFR to designated many existing and planned park trails as open to bicycle use.

NPS efforts to install bat-friendly gates on mine portals continues as funding becomes available. Priority is given to mine portals in or near visitor use areas, particularly along park trails.

Bats. White nose syndrome is expected to continue to spread throughout the region and decimate populations of many bat species. As trail development occurs within NPS boundary, the SOPs that NERI has adopted include provisions that protect bat habitat, including the

gating of mine portals when they cannot be avoided and the avoidance potential bat maternity trees, thus minimizing the stress of trail projects on bat populations. Trail development, as well as other recreational, residential or commercial development, beyond NPS boundaries is not subject to the same SOPs protecting bats.

Allegheny Woodrats. Similar to bats, protections for woodrats are built into NPS SOPs for trail development, but any development beyond NPS boundaries is not subject to the same restrictions that would protect woodrat habitat.

Amphibians. As more trails are developed in and around the park, adverse impacts on amphibians are expected to increase from both pedestrian and bicycle use. The anticipated impacts to amphibians come from direct mortality from being stepped on or run over and from decreased breeding success due to breeding pools with eggs being run through by bikes.

Neotropical Migratory Birds. As more trails are developed in the park, the use of these trails can cumulatively act as fragmenting features to the breeding success of neotropical migratory birds, in particular area-sensitive interior species. Stacked loop trail systems in particular can exert this fragmenting influence due to their density and configuration. In many cases, existing trail segments of the Through Park Connector, as well as future segments envisioned by the GMP, tend to follow landmarks, such as rivers or railroads, which already break up the forest. Thus, new trail segments of the Through Park Connector would have less incremental, adverse impacts on bird populations. Trail segments that link to the Through Park Connector, including those from points outside the NPS boundary and the intersecting rim-to-river trail connections, may have fragmenting influences, but tend to be distributed throughout the park, thus lessening their adverse impacts.

Cumulative Impacts of the No Action Alternative. Continuation of current management would produce no effect on wildlife in the individual project areas, with the exception of the potential for moderate, localized, adverse impacts on amphibians, minor adverse impacts on woodrats and negligible adverse impacts on other wildlife in the Bridge Buttress Trail Extension project area, which would contribute an imperceptible increment to the overall cumulative impacts on wildlife.

Cumulative Impacts of the Trail Development Alternative.

Bats and Allegheny Woodrats. Use of mine benches within the park introduces disturbance of bats and woodrats within their habitats; both bats and woodrats utilize abandoned mine portals, and woodrats use suitable high walls and boulder fields along the mine benches. Furthermore, human activity within woodrat habitat leads to higher incidence of woodrat depredation and disease introduction. Mine gating of open portals has helped to reduce disturbances to these species. However, existing trails and their use along mine benches that provide good woodrat habitat continue to pose adverse impacts on woodrats. New trail development within the last few years within the park has focused on avoiding woodrat habitat, securing open mine portals and implementing measures to protect maternity bat colonies and their roost trees. The clearing of large tracts of land adjacent to the park on the Summit property has most likely adversely affected potential maternity roosting habitat for bats, but may eventually provide possible foraging areas. Because the proposed Trail Development Alternative incorporates protection measures for both types of animal, and because the proposed trails are such a small proportion of the existing and planned trail inventory for the park and surrounding areas, the development of these trails would contribute an imperceptible increment to the overall cumulative adverse impacts on bats and Allegheny woodrats.

Amphibians. In addition to the disturbance and mortality exerted on amphibian populations from the use of existing trails within the park, amphibians are often stressed from the water pollution within the park's tributaries. Many of these trails are currently situated on existing mine benches and road traces where breeding pools form; the trail use however introduces disturbance to these breeding pools, thus lowering amphibians reproductive success. Although an appreciable amount of the proposed trails in this action would be developed on existing benches or road traces where breeding pools ephemerally form, the Trail

Development Alternative represents a very small proportion of the trail inventory (existing and planned); hence this proposed trail development is expected to contribute an imperceptible increment to the overall cumulative adverse impacts on amphibians.

Neotropical Migratory Birds. Of the trails within the park, those forming stacked loops have the greatest potential to adversely affect forest interior birds. Many of the longer trails within the park tend to follow features such as the river, streams, on mine benches or railroad tracks and thus do not introduce fragmenting influences. A large amount of logging activity on the Summit property has had an adverse impact on forest interior birds. Because measures would be implemented to mitigate or avoid impacts on forest interior birds, and because the proposed trails would be such a small proportion of the trail inventory, the impacts from the actions proposed in this alternative are expected to contribute an imperceptible increase in adverse impacts to the cumulative impacts on neotropical migratory birds.

3.2.13 Conclusion

Environmental Consequences of the No Action Alternative. Continuation of current management would result in no effect on wildlife in the individual project areas related to proposed trail segments of the Through Park Connector. In the Bridge Buttress Trail Extension project area, localized, long-term moderate adverse impacts would be expected for amphibians, minor adverse impacts for Allegheny woodrats and negligible adverse impacts for all other wildlife.

Environmental Consequences of the Trail Development Alternative.

Bats. The proposed action to develop trails is expected to have negligible impacts on any bats, including federally-listed threatened and endangered species, primarily because of adherence to standards for trail routing and construction that would avoid and minimize adverse impacts to bats. There may be some potential for minor adverse impacts if any trails are inadvertently placed and constructed close enough to an Indiana bat nursery colony tree, so as to disrupt the future use of the tree by Indiana bats (or other bat species). The incremental impacts from this action on the overall cumulative impacts should be imperceptible.

Allegheny Woodrats. Because trails would be routed so as to avoid habitat types that Allegheny woodrats typically inhabit, the proposed action is expected to have negligible impacts on Allegheny woodrat populations and the cumulative incremental impact should be imperceptible.

Amphibians. Proposed trails that would be routed on existing features such as mine benches and road traces where standing water can act as breeding pools for amphibians (Piney Creek, Camp Creek and Whitney Trails) are expected to have minor adverse impacts on amphibian populations that would be localized and would not affect amphibian populations as a whole. The adverse impacts of the other proposed trails would be negligible. The incremental impact of the proposed action to the overall cumulative impacts on amphibians is expected to be imperceptible.

Neotropical Migratory Birds. The proposed Camp Creek Trail would have minor adverse impacts on neotropical migratory birds due to its length and intrusion into relatively unfragmented forest. The other proposed trails should have negligible impacts. The incremental impact of the proposed action to the overall cumulative impacts on neotropical migratory birds should be imperceptible.

The recommended determination of the NPS (in accordance with Section 7 of the Endangered Species Act) for the proposed actions in the Trail Development Alternative is *May Affect, But Not Likely To Adversely Affect* for federally listed Indiana and Virginia big-eared bats, allowing for any potential inadvertent indirect impacts if roosting bats were undetected along the proposed trail routes.

3.3 Soil Conditions, Streamflow Characteristics and Water Quality

Applicable Regulations and Guidelines. Management Policies (NPS 2006, Sec. 4.6.6) guide the NPS to "minimize human-caused disturbance to the natural upland processes that deliver water, sediment and woody debris to streams", including "runoff, erosion, and disturbance to vegetation and soil caused by fire, insects, meteorological events and mass movements." Achieving and maintaining clean water are governed nationwide by the Clean Water Act, as administered by the U.S. Environmental Protection Agency. In West Virginia, specific oversight responsibility is delegated to the WVDEP.

Methodology and Assumptions. Evaluation of impacts is based on existing soil, streamflow characteristics and water quality information, where available, and best professional judgment of park staff based on similar local areas where information is not available. Potential impacts are limited to increased sedimentation resulting from erosion.

Assumptions Regarding Bicycle Use. A more detailed discussion of data related to bicycle use and soil conditions, streamflow characteristics and water quality can be found in Sections 3.1.5 and 3.2.5 of the 2011 Hike/Bike EA (NPS 2011b, p. 54 and 55). Soil erosion is the greatest concern with regard to bicycle use, as erosive patterns affect the way water flows across the landscape and sedimentation of eroded soils in streams can impact water quality. Research indicates that, on a sustainably designed and constructed trail, which minimizes the need for sudden stopping and the steepness of any hills on which a cyclist might ride his brakes or need to apply too much shearing force to a tire to ride uphill, impacts of cycling are roughly the same intensity as impacts of hiking. The character of the impact is different – a hiker would cause more erosion hiking down a steep hill, while a cyclist would cause more erosion hiking up that same hill – but the amount of soil sheared from the trail surface is similar in both cases. On a trail that is not sustainably designed to move water out of the trail tread, cyclists could create channels in mud with their tires, while pedestrians would create water pockets with their shoes (Cessford 1995, Goeft and Alder 2001, Keller 1990, Marion and Olive 2006, Thurston and Reader 2001, White et al. 2006, Wilson and Seney 1994.

Sustainable trails are designed to combat erosion by building in trail features that manage trail users, water and gravity (Webber 2007, p. 112). These features include long sight lines and speed-limiting designs that prepare trail users for any abrupt change in direction or grade and allow them to see other oncoming trail users. Other features can include incorporating switchbacks with sweeping turns and mellow grades along steep side hills so that ascending trail users do not experience wheel slip and descending trail users can easily maintain a slow speed, reducing their potential to cause soil compaction from hiking downward or braking their bikes for speed control or to make sharp turns.

Affected Environment. Erosion of soils is the greatest concern regarding soil conditions, water quality and streamflow characteristics for this project. Erosion can be caused by trail use, such as friction between soil and a shoe or a wheel, or by movement of water. When water movement is dispersed along a gradually-graded side slope, it is less likely to cause erosion than when it is concentrated and fast-moving. This concentration of water movement is typically an issue with abandoned mining and logging roads and mine benches, where water runoff comes down the hillside in a sheet, then hits the flat, linear feature of the abandoned road and no longer flows in a dispersed sheet down the hillside, but is captured in the old road, running along it in a channel until the water is able to exit the feature and continue downhill. This channelization (concentration of water in one location) increases the amount and speed of water in the channel, as compared to when it is dispersed along the hillside, which gives the water more power to remove soils from the channel in the old road bed and wherever it exits the road bed and runs downhill. That soil is carried into the drainage, causing sedimentation in the downhill waterway. Additionally, the channelization along the old road bed can weaken the structure of the feature and, in extreme cases of destabilization, can result in a landslide that originates at the abandoned road bed or mine bench.

3.3.1 Piney Creek Trail

Affected Environment. The proposed Piney Creek Trail project area traverses a hillside above, and running parallel along, Piney Creek, potentially incorporating the use of some abandoned logging or mining roads into the trail design. These features could be impacting the natural flow of water down

the hillside, potentially resulting in capture and channelization of runoff. Pack's Branch, a small perennial stream, runs through the project area, across the proposed route of the trail and underneath a railroad trestle along the Piney Creek CSX Spur rail line.

According to the Lower New River State of the Watershed Report, water quality in Piney Creek is poor as a result of "insufficient sewage and wastewater infrastructure and the impacts of abandoned mines" (New River Clean Water Alliance 2011, p. 51).

Environmental Consequences of the No Action Alternative. Where abandoned logging or mining roads traverse the project area, they could potentially be the cause of small amounts of soil erosion and sedimentation in Piney Creek. These roads within the project area have been reclaimed by vegetation to a large degree, which provides improved soil stability. Impacts of the continuation of current management would cause no additional disturbance to soils, resulting in continued negligible adverse impacts to soils, streamflow characteristics and water quality that come from the aforementioned prior uses of the project area.

Environmental Consequences of the Trail Development Alternative. Development of the proposed Piney Creek Trail would incorporate mitigations to minimize erosion, including improvements to the flow of water across the sections of existing abandoned road that would be re-developed as trail. Mitigation of any channelization taking place on the abandoned roads through redevelopment as a trail would be beneficial to soil conditions, streamflow characteristics and water quality. In the short term, trail construction would cause localized, negligible adverse impacts to soils and water quality from disturbance of soils. In the long term, the trail and its use would cause less impact than construction, though adverse impacts resulting from some small, uncontrollable amount of erosion associated with any trail use would continue, but be negligible.

If crossing the CSX rail line is accomplished by the proposed potential at-grade crossing, then Pack's Branch would be bridged below the railroad trestle, resulting in possible short-term negligible adverse impacts to the stream as a result of bridge construction and the associated soil disturbance, and no long-term impacts.

If the CSX crossing is accomplished by the proposed potential under-trestle crossing, then the action would be subject to notification requirements under Nationwide Permit #42 for Recreational Facilities, pursuant to Section 404 of the Clean Water Act, prior to construction, and the NPS would need to obtain a Section 401 Water Quality Certification from the WVDEP. Because development of the under-trestle crossing would seek to avoid placement of any part of the platform structure in the stream bed, but it would be necessary for workers to stand in and around the stream bed in order to complete the structure, short-term impacts would occur for Pack's Branch, but they would likely be negligible, although possibly minor in the short-term, and only during construction activities. Long-term adverse impacts would be negligible, as trail use would occur above the stream bed, and only occasional facility assessments and maintenance would necessitate the use of the stream bed by inspectors and workers. In addition, the platform of the under-trestle crossing would be developed in such a way as to minimize the potential for debris to create a dam on the upstream end of the platform during extreme high water events.

Based on available research and assumptions, bicycle use on the proposed Piney Creek Trail would have roughly the same intensity of impacts as pedestrian use, although slightly different in character where potential to cause erosion or hold water in a trail tread is created by different actions (for example, shearing force while traveling downhill hiking versus shearing force while traveling uphill bicycling). Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.3.2 McCreery Trailhead

Affected Environment. The proposed McCreery Trailhead is located in a previously disturbed gravel parking lot where current drainage is adequate. Some soil disturbance occurs along the edge of the parking area, where vehicles drive into the grass.

Environmental Consequences of the No Action Alternative. Negligible adverse impacts to soils and water quality in the project area would result from the continuation of current management as a result of the soil disturbance around the edge of the gravel parking area created when people park or drive beyond the gravel and because small amounts of gravel and dirt may flush across State Route 41 and into the New River during heavy rain events.

Environmental Consequences of the Trail Development Alternative. Because development of the McCreery Trailhead would involve the placement of barriers that would keep cars in the existing gravel parking area, rather than allowing them to drive or park in the surrounding grass and soil, there would be some benefit to soil conditions and water quality. However, runoff would continue to occur from the parking lot during high water events, thus resulting in some continued negligible adverse impacts to soil and water quality.

3.3.3 McCreery Trail

Affected Environment. The abandoned rail grade that makes up the bulk of the proposed McCreery Trail project area is a flat, linear feature along the gradual slope of the hillside at the base of the New River Gorge. Thus the rail grade could be causing some capture and channelization of water as it flows downhill, but most likely, the intrusion of the human-created feature on the landscape is creating standing puddles, as the gradient of the hillside this low in the gorge is not especially steep, and runoff is moving more slowly here than in other project areas.

Environmental Consequences of the No Action Alternative. Continuation of current management would result in negligible adverse impacts to soil conditions, streamflow characteristics and water quality because of the minor capture of runoff and small amount of pooling (puddles) that likely occurs on the flat linear feature of the rail grade.

Environmental Consequences of the Trail Development Alternative. Development of the proposed McCreery Trail would incorporate mitigations that would decrease erosion and improve streamflow characteristics along the existing rail grade, providing some imperceptible benefits to the local environment. In the short term, construction activities, and in the long term, trail maintenance and use would result in negligible adverse impacts to soil conditions, streamflow characteristics and water quality in the project area as a result of the small amount of uncontrollable erosion that occurs from trail use and that would occur on the reasonably wide and exposed trail tread during heavy rain events.

Based on available research and assumptions, bicycle use on the proposed McCreery Trail would have roughly the same intensity of impacts as pedestrian use, although slightly different in character where potential to cause erosion or hold water in a trail tread is created by different actions (for example, shearing force while traveling downhill hiking versus shearing force while traveling uphill bicycling). Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.3.4 Camp Creek Trail

Affected Environment. The proposed Camp Creek Trail project area includes several abandoned logging or mining roads at different elevations along the same hillside within the Camp Creek drainage, which could be a concern for soil conditions, streamflow characteristics and water quality as a result of the possible capture and channelization of runoff coming down the hill. Water quality in Camp Creek is unknown, although it could be impacted by previous mining activities near its upstream end on Garden Ground Mountain, outside of the NPS boundary.

Environmental Consequences of the No Action Alternative. Where abandoned logging or mining roads traverse the project area, they could potentially be the cause of small amounts of soil erosion and sedimentation in Camp Creek. These roads within the project area have been reclaimed by vegetation to some degree, which provides improved soil stability. Impacts of the continuation of current management would cause no additional disturbance to soils, resulting in continued negligible adverse impacts to soils, streamflow characteristics and water quality that come from the aforementioned past uses of the land.

Environmental Consequences of the Trail Development Alternative. Development of the proposed Camp Creek Trail would incorporate mitigations to minimize erosion, including improvements to the flow of water across the sections of existing abandoned road that would be re-developed as trail. Mitigation of any channelization taking place on the abandoned roads through redevelopment as a trail would be beneficial to soil conditions, streamflow characteristics and water quality. In the short term, trail construction would cause localized, negligible adverse impacts to soils and water quality from soil disturbance along the trail tread. In the long term, the trail and its use would cause less impact than construction, though negligible adverse impacts would continue as a result of the small amount of erosion associated with trail use.

Based on available research and assumptions, bicycle use on the proposed Camp Creek Trail would have roughly the same intensity of impacts as pedestrian use, although slightly different in character where potential to cause erosion or hold water in a trail tread is created by different actions (for example, shearing force while traveling downhill hiking versus shearing force while traveling uphill bicycling). Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.3.5 Arbuckle Connector Trail Improvements

Affected Environment. The existing Arbuckle Connector Trail is steep and rocky, built largely of rock steps. The lower end of the trail crosses a small intermittent stream on a narrow footbridge. Water quality in Arbuckle Creek, just adjacent to the project area, is poor, "impaired by fecal coliform and the creek is also listed as impaired for iron and poor biological conditions" (New River Clean Water Alliance 2011, p. 59).

Environmental Consequences of the No Action Alternative. Because of the steepness of the trail, runoff is somewhat channeled along and off of the trail tread. This causes some erosion and alters the natural flow of runoff in the area, though it is unclear if any sediment caused by this altered drainage actually reaches the New River. The adverse impacts of continuing current management would be negligible because, though some small amount of erosion occurs from the trail, it does not likely impact any waterway.

Environmental Consequences of the Trail Development Alternative. Re-routing the trail along a more sustainable alignment that incorporates improved drainage and more mild grades would be beneficial for soil conditions and streamflow characteristics in the project area because the design would incorporate mitigations that minimize erosion.

Designating the re-routed Arbuckle Connector Trail as open to bicycle use, in addition to pedestrian use, would result in roughly the same intensity of impacts as pedestrian use, although slightly different in character where potential to cause erosion or hold water in a trail tread is created by different actions (for example, shearing force while traveling downhill hiking versus shearing force while traveling uphill bicycling). Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.3.6 Wolf Creek Trail

Affected Environment. The proposed Wolf Creek Trail project area is located on a steep hillside along the Wolf Creek drainage and below the existing Kaymoor Trail, which uses an existing mine bench. There are no abandoned roads or rail lines within the project area.

Water quality in Wolf Creek is very poor. According to the New River Clean Water Alliance report, "the entire main stem of Wolf Creek remains impaired with iron and aluminum from acid mine drainage and streambank erosion. About one-third of the stream miles in the Wolf Creek watershed are impaired by at least one pollutant. Over 90 percent of impaired streams are impaired by fecal coliform" (2011, p. 55).

Environmental Consequences of the No Action Alternative. There may be some erosion or alternations to the natural flow of water runoff within the project area resulting from the design of the mine bench uphill of the project area, but the project area itself largely lacks intrusion from human

uses. No known point sources of pollution for Wolf Creek originate from the project area. Continuation of current management should have no impacts on soil conditions, streamflow characteristics or water quality in the project area.

Environmental Consequences of the Trail Development Alternative. The proposed Wolf Creek Trail would be entirely newly developed, not using any existing road features. This creates new soil-related impacts in the project area, but also means that the new trail can be designed on the most sustainable possible route from the beginning, as opposed to the use of an existing feature like an abandoned road that may have been developed without soil sustainability in mind. Construction of an entirely new trail would result in short-term (during the period of trail construction) adverse impacts on soil conditions that would be negligible to minor, by virtue of the fact that soils would need to be removed from the trail bench in order to create a sustainable and usable tread. Because mitigations and design elements would be incorporated to minimize erosion and move water effectively and appropriately without capturing streams or runoff, the long-term adverse impacts of the trail on soil conditions, streamflow characteristics and water quality would be localized and negligible.

Based on available research and assumptions, bicycle use on the proposed Wolf Creek Trail would have roughly the same intensity of impacts as pedestrian use, although slightly different in character where potential to cause erosion or hold water in a trail tread is created by different actions (for example, shearing force while traveling downhill hiking versus shearing force while traveling uphill bicycling). Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.3.7 Whitney Trail

Affected Environment. The proposed Whitney Trail project area is located primarily along a mine bench, also incorporating some existing abandoned siding roads. The mine bench has altered natural streamflow characteristics by capturing runoff from the hillside and channeling it along the bench where, in some locations, it forms standing puddles, and in others, it escapes the downhill side of the bench. Where this occurs, it happens in two different ways. In some locations, it flows in a channel across the surface of the mine bench and creates a channel that behaves as a new ephemeral stream flowing down the hill. In other locations, the water flows into a hole on the uphill side of the mine bench, then exits the feature from underneath the bench, which destabilizes that section of the bench. The channels along and across the mine bench carry water and pull sediment from the bench, creating downhill sedimentation in streams and the river.

Environmental Consequences of the No Action Alternative. Continuation of current management would result in no changes or improvements to the mine bench and the drainage issues it creates. The existing erosive conditions, unmitigated, would result in continued minor adverse impacts on soil conditions, streamflow characteristics and water quality in the project area and below the mine bench.

Environmental Consequences of the Trail Development Alternative. Development of the proposed Whitney Trail would include some mitigations to improve drainage and water movement along and across the mine bench that would bring the bench up to sustainable trail standards. While large standing puddles would be retained outside of the trail tread to protect amphibian habitat, channelized water crossing above or below the bench would be mitigated, thus benefiting soil conditions, streamflow characteristics and water quality in the project area. The long-term result of these improvements would be negligible adverse impacts to these resources because trail development would not resolve all erosive issues that come from the structure of the mine bench, and continued monitoring and maintenance would be necessary to prevent remaining erosion concerns from becoming worse.

Based on available research and assumptions, bicycle use on the proposed Whitney Trail would have roughly the same intensity of impacts as pedestrian use, although slightly different in character where potential to cause erosion or hold water in a trail tread is created by different actions (for example, shearing force while traveling downhill hiking versus shearing force while traveling uphill bicycling). Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.3.8 Whitney Trailhead

Affected Environment. The proposed Whitney Trailhead project area is a small section of the existing mine bench, just along Fayette Station Road, that has been paved and hardened from use. The soil is compacted and the small area is relatively flat. The area is occasionally used informally for parking.

Environmental Consequences of the No Action Alternative. Continuation of current management would result in continued informal use of the area for parking. Because the surface is hardened, some small amount erosion resulting from the use would continue, but not a substantial amount. Any adverse impacts would be localized and negligible.

Environmental Consequences of the Trail Development Alternative. Developing the project area as a formal trailhead would result in little to no change in soil conditions from the continuation of current management. Any adverse impacts resulting from erosion from the hardened surface of the proposed trailhead would be negligible.

3.3.9 Pipers Branch Trail

Affected Environment. The proposed Pipers Branch Trail project area includes an existing path up the moderately-steep hillside above the mine bench to the rim of the gorge. Pipers Branch skirts the edge of the project area, but in the proposed Trail Development Alternative, the trail would not cross Pipers Branch.

Environmental Consequences of the No Action Alternative. The existing footpath up the side of the gorge may create some capture and channelization of runoff coming down the hillside, as it would not have been developed with sustainable trail design in mind. Any adverse impacts from erosion created from the tread of the social trail would be negligible, as it receives little use and is surrounded by vegetation, which would help with soil stability.

Environmental Consequences of the Trail Development Alternative. Applying sustainable trail design concepts and features to the existing footpath to create the proposed Pipers Branch Trail would improve its movement of water to avoid channelization and mitigate erosion as much as possible. Short-term adverse impacts from soil disturbance during trail construction would be greater than the long-term impacts of the trail and its use, which would necessarily result in a small amount of erosion from the trail tread. However, all impacts to soil conditions, streamflow characteristics and water quality would be negligible.

Based on available research and assumptions, bicycle use on the proposed Pipers Branch Trail would have roughly the same intensity of impacts as pedestrian use, although slightly different in character where potential to cause erosion or hold water in a trail tread is created by different actions (for example, shearing force while traveling downhill hiking versus shearing force while traveling uphill bicycling). Bicycle use would result in no additional adverse impacts, as compared to pedestrian use of the trail.

3.3.10 Bridge Buttress Trail Extension

Affected Environment. The existing and officially recognized section of the Bridge Buttress Trail includes large areas of compacted soil at the cliff base from heavy climbing use. Most of this area is corralled with fences to prevent the further spread of vegetation trampling and soil compaction. The existing social trail from Bridge Buttress to the Promised Area is less heavily used, but much of it serves as both trail and base-of-cliff belay area, so the soil along that route is compacted, but because of the lower amount of use on these crags as compared to Bridge Buttress, corralling fences have not been built, and the compacted area does not tend to spread. Between Bridge Buttress and the Maranatha Area, the existing social trail crosses a small intermittent stream. Climbers' left of the Promised Land, there are some faint braided trails where soil has been minimally compacted by climbers using this route as access to the First Strike Area and North Bridge Wall. The braided trails cross a small intermittent stream. The next drainage climbers' left, between North Bridge Wall and

The Pinnacle, also supports an intermittent stream, this one with a greater concentration of rhododendron and other vegetation.

Environmental Consequences of the No Action Alternative. Use and soil compaction would continue along the existing Bridge Buttress Trail and the existing obvious social trail from Bridge Buttress to the Promised Area. Though the compacted area would not likely get any wider, erosion of the compacted soil would occur and continue, causing sedimentation in runoff and in the intermittent streams in the project area. The low amount of use of the faint braided social trails between the Promised Area and the First Strike Area would continue, and potentially increase somewhat as climbers staying at the new AAC/NRAC campground find social routes from the campground to the base of the crags and from the North Bridge Wall/First Strike Area toward the Promised Area and climbs further to climbers' right. The adverse impacts to soil conditions, streamflow characteristics and water quality resulting from the existing social trails and soil compaction would be negligible.

Because no new trail connection would be designated to connect the AAC/NRAC campground to the Bridge Area, it is expected that climbers might develop their own social trails to meet that need in order to avoid driving and struggling to find parking spaces to climb in the Bridge Area. The most direct connecting route follows the narrow drainage of the intermittent stream between The Pinnacle and North Bridge Wall. Social trail development along this drainage may involve some damage or removal to the thick vegetation, thus not only would soil disturbance and erosion occur from use of the slope of the drainage as a trail, but the disturbance of vegetation would further loosen the soils, thus causing more erosion. If an informal social trail develops connecting the AAC/NRAC campground to the Bridge Area, additionally increasing use and foot traffic in area of the Pinnacle, North Bridge Wall and First Strike Areas, then adverse impacts of the continuation of current management would increase, potentially resulting in overall negligible to minor adverse impacts to soil conditions, streamflow characteristics and water quality in the project area because of the erosion that would come off of the new segment of social trail and the increased erosion from the less-used existing social trails and associated soil compaction.

Environmental Consequences of the Trail Development Alternative. Development of a new section of trail that connects the AAC/NRAC campground to the Bridge Area via the Burnwood Trail would cause negligible adverse impacts on soil conditions and streamflow characteristics in the short-term as a result of construction activities causing soil disturbance along the steep hillside and some erosion and sedimentation. In the long term, development of this section of trail would have negligible adverse impacts from the small amount of erosion that would inevitably occur from visitor use of the areas, but would prove to be beneficial over the possible development of a social trail down the more narrow and vegetated drainage to climbers' left.

Selection and development of a route connecting the First Strike area and the Promised Area, with the inclusion of a set of steps that would prevent erosion of soils on the short, steep slope of the drainage to climbers' left of the Promised Area would cause negligible short-term (from construction activity) and long-term (from use) adverse impacts. Continued use of the existing and well-used social trail from Bridge Buttress to the Promised Area and the existing, officially-recognized Bridge Buttress Trail would remain negligibly adverse, as with the continuation of current management.

3.3.11 Trail Connections to Non-Federal Lands

Because the proposed guidelines for trail connections between NERI and non-federal lands are largely administrative, there are no related concerns about soil conditions, streamflow characteristics or water quality, and there would be no impacts to these resources as a result of this component of the proposed action under either the No Action Alternative or the Trail Development Alternative.

3.3.12 Cumulative Impacts

Trail development in and around the park is expected to continue and accelerate as park neighbors, communities, partners and stakeholders push for the NPS to build more trail segments of the Through Park Connector envisioned by the GMP and communities and adjacent landowners construct trails to connect the surrounding public into the NPS trail system. Trail development would include small areas of soil disturbance to create useful trail treads and positive trail user experiences. Development of

both small- and large-scale recreational facilities around the park is also expected to continue, including the massive movement of earth occurring in the development of the BSA Summit, adjacent to the NPS boundary and the proposed Camp Creek Trail project area.

The effects of land use history in and around the New River Gorge would continue to adversely impact soil conditions, streamflow characteristics and water quality to a substantial degree. Abandoned mining and logging roads would continue to capture and channelize water, causing sedimentation. Where mine benches, particularly, are sufficiently destabilized as a result of poor drainage of runoff, landslides could easily occur during major rain and water events. While efforts are underway to improve sewage treatment options around the watershed, they are costly and slow. Water quality would continue to be adversely impacted by industrial and household chemicals, sewage and other pollutants.

Cumulative Impacts of the No Action Alternative. Continuation of current management would result in negligible to minor adverse impacts on soil conditions, streamflow characteristics and water quality in the individual project areas because of existing erosive factors and streamflow changes that come from past land uses. Because movement of soils and impacts to water quality from other land use activities in the region are so substantial, the impacts from the No Action Alternative would contribute an imperceptible increment to the overall cumulative impacts on these resources.

Cumulative Impacts of the Trail Development Alternative. Development of the trails proposed by this alternative would produce negligible adverse impacts to soil conditions, streamflow characteristics and water quality in the individual project areas from short-term soil disturbance associated with construction activities and long-term use of the trail, which inevitably results in small amounts of erosion of soils from the trail tread. Two exceptions to these impacts would be the benefits realized for these resources in the Arbuckle Connector Trail project area where trail improvements would create more sustainable trail grades that mitigate some existing erosion problems, and in the Piney Creek Trail project area, where short-term minor adverse impacts to Pack's Branch are possible if the NPS constructs a platform for an under-trestle crossing of the CSX Piney Creek Spur rail line. Because movement of soils and impacts to water quality from other land use activities in the region are so substantial, the impacts from the proposed actions would contribute an imperceptible increment to the overall cumulative impacts on these resources.

3.3.13 Conclusion

Environmental Consequences of the No Action Alternative. Continuation of current management in all project areas for the development of trail segments of the Through Park Connector would result in primarily negligible adverse impacts to soil conditions, streamflow characteristics and water quality resulting largely from erosion and changes to the flow of water that come from past land uses in the project areas. For the proposed Whitney Trail project area, continuation of current management along the mine bench would result in minor adverse impacts because of the propensity of the mine bench to capture and channelize runoff, thus creating standing pools on the bench and channels that behave like ephemeral stream, causing erosion and threatening the stability of the bench on the hillside. For the proposed Bridge Buttress Trail Extension project area, continuation of current management would likely result in negligible adverse impacts from continued erosion along the existing social trails where soil is compacted, but if a new social trail develops from the AAC/NRAC campground along the drainage between The Pinnacle and North Bridge Wall, those impacts would be greater, possibly still negligible, although potentially entering the range of minor because of the erosion that would be caused from the removal of vegetation, loosening soils, and pedestrian use of the steep hillside. Continuation of current management would contribute an imperceptible increment to the overall cumulative impacts on soil conditions, streamflow characteristics and water quality in the park.

Environmental Consequences of the Trail Development Alternative. Development of the proposed trail segments of the Though Park Connector would result mostly in negligible short-term (from construction activities) and long-term (from use of the trail treads) adverse impacts to soil conditions, streamflow characteristics and water quality in the individual project areas. Improvements to the Arbuckle Connector Trail would be beneficial for soils and water because more sustainable trail grades would cause less erosion than existing ones. If the under-trestle crossing is the best way to

get the proposed Piney Creek Trail across the CSX Piney Creek Spur rail line, then construction of the crossing could result in short-term, minor adverse impacts to Pack's Branch during construction, which is a small tributary to Piney Creek. Development of the proposed trails would contribute an imperceptible increment to overall cumulative impacts on soil conditions, streamflow characteristics and water quality in the park.

3.4 Prehistoric and Historic Archeological Resources, Sites and Structures

Applicable Regulations and Guidelines. Federal laws, regulations and NPS policies related to cultural resources include the following:

- 36 CFR 79 – Curation of Federally Owned and Administered Archeological Collections
- Advisory Council on Historic Preservation implementing regulations regarding the "Protection of Historic Properties" (36 CFR Part 800)
- Archeological Resources Protection Act of 1979, as amended
- National Historic Preservation Act of 1966, as amended
- Native American Graves Protection and Repatriation Act of 1990
- Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (1966)
- Directors Order 28 – Cultural Resources Management Guidelines
- NPS 28 – Cultural Resources Management Guideline Release No. 5
- NPS 2006 Management Policies

Methodology and Assumptions. Known sites in the project areas have been identified, and trail alignment decisions would be based on avoidance of known sites. Many of the proposed trail routes have been surveyed, and the remainder would be surveyed prior to construction. Based on survey results, proposed trails would be rerouted to avoid any damage to known and discovered sites, as described in the SOPs in Appendix A. Rock shelters are the most threatened archeological site type in the park, and surveys and mitigations would special attention to avoidance of these sites.

Assumptions Regarding Bicycle Use. Cultural resource concerns regarding trail use by cyclists are more related to trail construction than they are to the type of use permitted on the trail surface. Once a trail is constructed, cultural resources within the construction corridor are either adversely impacted from ground disturbance, or they are protected through the hardening of the surface above them. Cultural sites along the trail corridor could be impacted, such as through vandalism, by visitors no matter what their form of transportation. Trail users on bicycles can cover more distance per unit time than hikers, so cyclists may encounter more cultural sites than hikers, though that circumstance does not relate to site impacts. It may well result in more opportunities for bicycling visitors to learn about the history of the New River Gorge.

Affected Environment. Prehistoric and historic archeological resources, sites and structures are scattered throughout the entire park, including in and around the project areas. Most prehistoric resources in the project areas are sites with scatters of items, such as projectile points, and rock shelters. Most historic resources in the project areas are associated with the coal and railroad history of the area, although there may be some structures or items associated with farms and homesteading in the area that occurred prior to the mining boom.

3.4.1 Through Park Connector Trail Segments

Affected Environment. There are cultural resources in and around each of the individual project areas of the proposed Through Park Connector trail segments. For example, a cemetery and the ruins of the Dun Glen Coal Mine are located in the general Camp Creek Trail project area, although well away from the proposed trail route. As another example, along the proposed Whitney Trail project area, no prehistoric resources were found in a survey of the trail corridor, but historic resources and landscape features have been located, including a crudely built stone wall, a bridge abutment and historic mine benches and roads.

Proposed trail routes in some of the project areas have been surveyed for archeological resources, including the Camp Creek, Wolf Creek, Whitney and Pipers Branch Trails. In the proposed Camp Creek Trail project area, five potential archeological sites were discovered. Shovel testing of three of those sites did not produce artifacts (the remaining two potential sites had not been shovel tested at the time of publication of this document). Within the proposed Wolf Creek Trail project area, one potential archeological site was located, although well away from the proposed trail route. The resources given as examples above were located along the proposed Whitney Trail project area, and no cultural resources were found in the proposed Pipers Branch Trail project area.

Proposed trail segments that have not yet been surveyed include the Piney Creek and McCreery Trails, as well as the project area for the proposed Arbuckle Connector Trail improvements. The lower portion of the existing Arbuckle Connector Trail goes through numerous cultural features, primarily historic ones, and there are more sites associated with a small coal mining community in the immediate surrounding area.

The proposed McCreery and Whitney Trailheads are located within the footprint of previously disturbed areas.

Environmental Consequences of the No Action Alternative. Informal and infrequent use of the project areas would continue, and people hiking in the woods or along abandoned roads or mine benches could potentially encounter prehistoric or historic structures or archeological sites or artifacts. Continuation of current management could therefore result in unintended disturbance of these cultural resources in the project areas as a result of chance encounters, but adverse impacts from this alternative would be unlikely, probably resulting in no adverse impacts on these resources, or potentially negligible adverse impacts.

Environmental Consequences of the Trail Development Alternative. Development of all the proposed trails would include mitigations that would avoid archeological resources and structures through surveys of, and alterations to, the proposed routes. Therefore, impacts to known or discovered prehistoric or historic archeological resources, sites, artifacts and structures would be avoided. Accidental discovery of sites or artifacts during construction is possible, and mitigations would be included in construction plans to catalog and protect those resources to the best degree possible (see Appendix A).

Because the corridors of the proposed Camp Creek, Wolf Creek, Whitney and Pipers Branch Trails have already been surveyed for cultural resources, the on-the-ground layout of the proposed routes have already been altered to avoid the sites and potential sites discovered during the surveys. The same process would take place for the proposed Piney Creek and McCreery Trails, as well as the proposed new route for the Arbuckle Connector Trail improvements. The actions proposed would have negligible adverse impacts on prehistoric and historic archeological resources, sites and structures because the mitigations built into the trail development process would avoid any known or discovered resources, and the only potential impacts to these resources would result from incidental discovery during construction. Even that would be mitigated, at least somewhat, by the presence of a park archeologist roaming the project areas during trail construction and training for trail builders on protection of these resources, so that any found items would be cataloged and recorded in context.

In the case of the proposed improvements to the Arbuckle Connector Trail, the proposed reroute should be somewhat beneficial for archeological resources and structures, since the existing trail is routed through historic sites. Any damage to those sites would not be undone, but further impacts to those sites resulting from erosion along the trail tread or pedestrians stepping off of the trail tread to avoid water or other pedestrians would be avoided.

The proposed McCreery and Whitney Trailheads are located within the footprint of previously disturbed areas, and very little ground disturbance, all occurring within the existing disturbance footprint, would be anticipated for construction. Thus there should be no impacts on archeological resources in those individual project areas.

Because impacts to archeological resources tend to result from ground disturbance, which would happen during construction, and the trail tread would provide a hardened surface to protect any

potential cultural sites or artifacts buried beneath the trails, the use of bicycles on the trail would have no adverse impacts on cultural resources and no impacts different from those caused by pedestrians using the trails.

3.4.2 Bridge Buttress Trail Extension

Affected Environment. The project area for the proposed extension to the existing Bridge Buttress Trail is not known to have any prehistoric or historic archeological resources, sites or artifacts, or any structures, although one geologic/physiographic setting in which prehistoric sites tend to be found is the "cliff-forming Raleigh and Nuttall sandstone members of the New River Formation" (NPS 2010, p. 3-35, as amended by NPS 2011a), which characterizes the Bridge Area climbing area.

Environmental Consequences of the No Action Alternative. Use of the existing, obvious social trail along the base of the cliff between Bridge Buttress and the Promised Area would continue. It is possible that the development of other informal social trails would increase to climbers' left of the Promised Area and through one or more breaks in the cliff line between the AAC/NRAC campground and the base of the cliff in the area of The Pinnacle, North Bridge Wall and the First Strike area. Social trail development, if it happens, could result in unintended disturbance of archeological resources through chance encounters if there are any in the project area, but overall the continuation of current management would probably result in no adverse impacts on these resources, or potentially negligible adverse impacts.

Environmental Consequences of the Trail Development Alternative. Because trail development would include archeological resource surveys along the proposed trail corridor, and the proposed alignment would be re-routed to avoid any sites or artifacts discovered, prehistoric and historic archeological resources, sites, artifacts and structures would only be impacted as a result of accidental discovery during trail construction. Mitigations would be included in construction plans to catalog and protect those resources to the best degree possible (see Appendix A). As a result of the mitigations built into the trail development process, any adverse impacts to archeological resources would be negligible.

3.4.3 Trail Connections to Non-Federal Lands

Because the proposed guidelines for trail connections between NERI and non-federal lands are largely administrative, there are no related concerns about cultural resource protection and there would be no impacts to archeological resources as a result of this component of the proposed action under either the No Action Alternative or the Trail Development Alternative.

3.4.4 Cumulative Impacts

Trail development in and around the park is expected to continue and accelerate as park neighbors, communities, partners and stakeholders push for the NPS to build more trail segments of the Through Park Connector envisioned by the GMP and communities and adjacent landowners construct trails to connect the surrounding public into the NPS trail system. Trail development would include small areas of soil disturbance to create useful trail treads and positive trail user experiences. Development of both small- and large-scale recreational facilities around the park is also expected to continue, including the massive movement of earth occurring in the development of the BSA Summit, adjacent to the NPS boundary and the proposed Camp Creek Trail project area. Much of the area of the BSA Summit was previously strip mined, so cultural resources there may have already been impacted prior to this new phase of land use.

Cumulative Impacts of the No Action Alternative. Continuation of current management would likely result in no adverse impacts on prehistoric or historic archeological resources, although potentially negligible adverse impacts, in the individual project areas, which would contribute an imperceptible increase to the overall cumulative impacts on these resources.

Cumulative Impacts of the Trail Development Alternative. Development of the trails proposed by this alternative would likely result in no adverse impacts on prehistoric or historic archeological

resources, although potentially negligible adverse impacts, in the individual project areas, which would contribute an imperceptible increase to the overall cumulative impacts on these resources.

3.4.5 Conclusion

Environmental Consequences of the No Action Alternative. Continuation of current management would likely result in no adverse impacts on prehistoric or historic archeological resources, although potentially negligible adverse impacts, in all of the project areas. Impacts would occur largely from incidental encounters with sites or artifacts from informal visitor use of the areas, with the exception of the existing Arbuckle Connector Trail, the lower end of which is routed through several historic features. These impacts would contribute an imperceptible increase to the overall cumulative impacts on cultural resources.

Environmental Consequences of the Trail Development Alternative. Development of the proposed trails would include mitigations to route the trails away from known cultural sites and from those discovered through trail corridor surveys prior to construction. Any impacts to sites would occur as a result of accidental discovery during construction, and mitigation procedures would be followed to catalog and protect those resources, as well. Developing a more sustainable route to improve the Arbuckle Connector Trail would be beneficial for historic resources in that project area. Actions proposed in the Trail Development Alternative would likely result in no adverse impacts on prehistoric or historic archeological resources, although potentially negligible adverse impacts, in all of the project areas. These impacts would contribute an imperceptible increase to the overall cumulative impacts on cultural resources.

3.5 Visitor Use, Experience, Access and Safety

Applicable Regulations and Guidelines.

- The NPS Organic Act of 1916, which directs the U.S. Department of the Interior and the NPS to manage units "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations" (16 USC § 1).
- NPS Management Policies 2006

Methodology and Assumptions. Evaluation of impacts is based on existing data, where available, public input and best professional judgment of visitor use, experience, access and safety in the park and surrounding region and how those elements of visitor's experience in the park may be impacted by changes in the park's physical conditions and its management.

Affected Environment. All project areas are located within park Frontcountry Zones, which are large blocks of contiguous forest that the GMP says will be protected with some minor, site-specific forest fragmentation. Visitor use will be moderate, with moderate-impact recreation occurring that would have negligible to minor impacts on overall forest values. Trails in a frontcountry zone will accommodate a moderate intensity of use by a broad range of users, have a maximum width of 30 to 36 inches and may have uneven surfaces (NPS 2011a).

Visitor use of park trails is increasing and expected to continue to increase, especially as new visitors come to the area as a result of the BSA Summit development. Commercial use occurs on trails in the park, as do special events, such as races. Special event permit requests have been slowly increasing in recent years. Large group use occurs on park trails, and the number of large groups and large group permit requests increased substantially in 2012; further increases are anticipated. Many of the group permit requests have sought opportunities for long hikes and multi-day hikes on trails within the park.

NERI proposed an amendment to the CFR on August 27, 2012, in the Federal Register, to designate nearly 105 miles of planned and existing trails within the park as open to bicycle use. The GMP envisions that the park will pursue further special regulations for bicycle use on future trail segments of the Through Park Connector. No proposed bicycle use of trails is exclusive; all trails proposed for bicycle use are multi-use trails, generally for pedestrians and cyclists, and in rare cases, for

pedestrians, cyclists and equestrians, though equestrian and bicycle use are separated as much as possible.

Mountain biking is popular in the New River Gorge Region among a wide variety of people. The area is known for its extreme sports offerings, primarily whitewater boating and rock climbing, so many dedicated mountain bikers enjoy trail use in the area. Families are equally interested in less extreme bicycling experiences; they enjoy opportunities to spend time together outdoors and access to popular natural and cultural sites that they consider too far from a road or trailhead to hike. Many of the public comments submitted to NERI in response to the 2011 Hike/Bike Trail Plan (NPS 2011b) and the proposed rule for bicycle use came from people expressing how eager they were for opportunities to visit the park and bike with their families, and to share the beauty and enjoyment of NERI with their children while bicycling on park trails.

There is no record of visitor conflicts in the park as a result of bicycle use on park trails, which occurred for many years with little enforcement, despite the NPS prohibition on the activity. One highly effective way to promote trail user safety and minimize the potential for visitor conflicts is to incorporate design features into trails that allow for long sight lines, trail grades that are not particularly steep and do not allow for cyclists or trail runners to gain speed, and features that control speed in places where only short lines of sight are available or a change of direction lies ahead, such as a series of small, slight turns that force a gradual decrease in speed. Another effective way to promote trail user safety and minimize conflict is to provide good information about trails and their use, particularly how technically difficult or physically straining a trail would be to hike, bike or run, as well as what other user groups a trail user can expect to see on a trail.

Another safety consideration includes emergency services response if a trail user is injured; this is discussed in more detail in Section 3.6. Additionally, hunting in the project areas can become a concern for both safety and potential conflicts with other trail users.

Environmental Consequences of the No Action Alternative. Because trail use is increasing at NERI, a higher concentration of trail users can be expected to encounter one another on existing park trails. This would produce a greater potential for conflicts between user groups and possibly also greater safety risks, particularly on popular trails. The potential for user conflict and safety issues would increase further as large groups request use of the trails, causing bottlenecks, again, particularly on popular trails.

Because the park's GMP approves the idea of developing a Through Park Connector with as many trail segments as possible, and because visitors who hike, bicycle or run long distances are already linking trails together for long single-day excursions around the park, visitors want and expect to have a safe experience out of their trail visits, and prefer to be off of roads as much as possible. Use of many public roads within the park can be very dangerous to pedestrians and cyclists. As visitor use increases, and as more individuals and permit holders for group hikes and special events undertake these longer trail adventures, more visitors would be exposed to the dangers of sharing the narrow public roads between trails with vehicular traffic.

In general, adverse impacts to visitor use, experience, access and safety from the continuation of current management would be negligible to minor. NERI would continue to offer park uses and visitor experiences for trail users and the public, and would continue to make improvements to visitor access and visitor safety as much as possible, but visitors and the public would be disappointed by a failure to move forward on implementation of popular trail development concepts approved by the GMP. Trail users creating linked long-distance trail experiences would continue to be exposed to the safety risks of sharing the narrow roads in NERI with vehicular traffic.

Environmental Consequences of the Trail Development Alternative. Developing the proposed trail segments of the Through Park Connector would disperse trail use in the northern area of the park, along river left, and provide safer opportunities for long distance hiking, bicycling and running. Visitors would be less likely to encounter large crowds of other visitors along trails with the addition of more trails into the system and dispersal of trail use. Visitors seeking long-distance trail experiences would have opportunities to remain on trails and minimize their time and distance on public roads with vehicular traffic.

Because the GMP approves the development of "a continuous trail open to biking from end to end of the park (the through park connector)" and "development of new trail connections [for multiple uses, including bicycling] between the three national park units, state parks, rail trails, and other attractions in the region," designating the proposed trail segments of the Through Park Connector as open to bicycle use would be a benefit to visitors and their experiences in the park (NPS 2010, p. 2-169, as amended by NPS 2011a). Public support for bicycling on these trails was very high during the development of the GMP. Visitors would enjoy new opportunities, via bicycling on the proposed trails, to spend time together as families and friends and to enjoy the resources in the park.

In general, impacts to visitor use, experience, access and safety from the proposed Trail Development Alternative would be beneficial.

3.5.1 Piney Creek Trail

Affected Environment. There is very little existing use of the project area for the proposed Piney Creek Trail; some hunting occurs there, as does some fishing. Legal access to the area for park visitors is currently extremely limited, as the CSX Piney Creek Spur rail line blocks access to the area from State Route 41, privately owned land blocks public access to the south end of the project area and a steep hillside with no trail makes access to this area from the Grandview area of the park very difficult.

Environmental Consequences of the No Action Alternative. Some hunters would likely continue to access the Piney Creek Trail project area for hunting. The Piney Creek Watershed Association, Raleigh County and others partnering to develop the Piney Creek Trail on private lands from the YMCA Paul Cline Memorial Youth Sports Complex and Raleigh County Airport may continue to pursue this trail development, but would be extremely disappointed to be unable to meet the community need to connect to NPS trails; this would likely damage the park's relationship with these valuable partners. Park visitors seeking to connect to Beckley from the McCreery area of the park would be forced to travel along the narrow public roads in Raleigh County, causing a very unsafe condition for drivers, pedestrians and cyclists alike.

Largely because development of the section of the Piney Creek Trail outside of NPS boundaries would continue and could potentially dead-end at the NPS boundary, if current management were to continue and no NPS trail were built in the Piney Creek project area, it would result in moderate adverse impacts to visitor use, experience and access, although likely no impacts to visitor safety.

Environmental Consequences of the Trail Development Alternative. Development of the proposed Piney Creek Trail would promote positive and effective relationships with park partners in Raleigh County, particularly those working on the development of the private-lands portion of the Piney Creek Trail. Provision of recreational trail access for pedestrians and cyclists from Beckley into NERI would be a boon to the community for public health, fitness, recreational opportunities and tourism development. Additionally, the proposed trail connection would promote awareness of NERI as a unit of the National Park System among citizens of Beckley and Raleigh County, many of whom do not necessarily recognize the park's designation or its significance to their community.

Acquiring the railroad crossing over the CSX Piney Creek Spur rail line would be a key acquisition, not only for the proposed Piney Creek Trail, but also in support of the whole concept of developing trail segments of the Through Park Connector. This line currently blocks public off-road access from Grandview and the southern portions of the park to the northern park district, which has a better developed trail infrastructure. The flashing warning lights proposed for the at-grade railroad crossing would detract from the experience of enjoying a woodland trail, however the increased level of safety gained by ensuring visitor awareness of a railroad crossing would be of greater value.

Visitors to the park would have the opportunity to connect to public trails on private lands within the Piney Creek Gorge, a remote and beautiful area that is very difficult to access. Piney Creek is a favorite fishery of the handful of people fishing for trout who are willing to find a way down to the creek; this use could potentially increase if people seeking fishing opportunities had improved access to the waterway. Historic structures associated with the history of Beckley and coal mining are

located in the gorge, and visitors would have a chance to explore them and learn more about Raleigh County's early beginnings.

Safety risks could be associated with the crossing of the CSX Piney Creek Spur rail line. If CSX prefers that the NPS pursue the at-grade crossing, it would be wide and well marked by signs on the trail and flashing warning lights, and visitors would have long sight lines in either direction. Train use of the rail line occurs at low frequency and low speed. If CSX prefers that the NPS pursue the under-trestle crossing, safety hazards from debris falling from the track level would be minimized by the proposed canopy. Visitors running or cycling would need to reduce their speeds or walk to safely navigate the sharp turns onto and off of the platform that would be necessary to accommodate the under-trestle crossing.

For the above reasons, development of the proposed Piney Creek Trail would be beneficial to visitor use, experience, access and safety.

Bicycle use on the proposed Piney Creek Trail would be beneficial for visitor use and experience. Visitors would have the opportunity, once the private-land portion of the Piney Creek Trail is also developed, to bicycle between the park trail system and the city of Beckley. This trail would provide residents and visitors with the chance to explore the Piney Creek Gorge, an area that has previously had very little access to it. A hike through the whole Piney Creek Gorge might take too long or be too far for some visitors to travel, but they would have the opportunity to experience the gorge by bicycle, where they could learn about the natural and historic resources in this important watershed.

3.5.2 McCreery Trailhead

Affected Environment. The area of the proposed McCreery Trailhead is a gravel parking lot that is currently used for public parking to access the river put-in across State Route 41 and for administrative park use. No visitor facilities or amenities are provided.

Environmental Consequences of the No Action Alternative. Park visitors would continue to park in the existing gravel parking area at the proposed McCreery Trailhead when using the river put-in across State Route 41 from the parking area. The safety of pedestrians crossing the road would continue to be a minor concern, but because use of that put-in is low, the chance of any incidents is also low. As no visitor facilities or amenities are provided, visitors tend to create their own restrooms behind the McCreery Boathouse and in the small patch of woods between State Route 41 and the river at the put-in site. Due to the low use of the area, these conditions have not and likely would not result in major problems or complaints, but continuation of current management would be result in moderate adverse impacts to those who would use the area.

Environmental Consequences of the Trail Development Alternative. Development of the proposed McCreery Trailhead, particularly once facilities, such as restrooms, and amenities, such as an informational kiosk, are made available in the project area, would be a benefit to all park visitors in this area, including trail users, fishermen and boaters. Use of the narrow bands of woods as restrooms would decrease.

Inviting more cars to park at this trailhead could create a safety hazard for visitors while still in their vehicles, slowing to turn off of State Route 41 unless ample signage is available to warn visitors and drivers behind them to slow down as they approach the trailhead. Pedestrians and cyclists using the proposed Piney Creek and McCreery Trails could also be at greater risk for incidents when crossing State Route 41 as use of the proposed trailhead and trails increases.

Overall, and particularly with the proposed actions to improve safety, developing the McCreery Trailhead – especially providing facilities and amenities – would be beneficial to visitor use, experience, access and safety.

3.5.3 McCreery Trail

Affected Environment. The proposed McCreery Trail project area may receive some informal visitor use, including possible hunting activity and nearby access to the river. Visitors are using the river

put-in across State Route 41 from the proposed McCreery Trailhead. The project area is highly accessible, as most of it is located very near and parallel to Terry Road.

Safety considerations for the proposed McCreery Trail include the need for trail users to cross State Route 41, and also to cross the less-used Terry Road. Visitors should also be aware and respectful of private properties and residents in the town of Terry.

Plans are already approved (NPS 2011b) and the early phases of construction have begun for the Garden Ground Stacked Loop Trail System, approximately 33 miles of multi-use (pedestrian and bicycle) trail in the area both uphill and downstream of the town of Terry.

Environmental Consequences of the No Action Alternative. Visitors would continue to use the McCreery river put-in, and dispersed access to the river near the project area would continue to be used for fishing and camping. The small amount of dispersed use of the project area for hiking or hunting would likely continue.

Visitors seeking a Through Park Connector experience on trail segments between the northern and southern areas of the park would be forced to use Terry Road, State Route 41 (a high-speed traffic road) and Glade Creek Road, to connect the Garden Ground Stacked Loop Trail System to the Glade Creek Trail and other upstream recreational opportunities. This would compromise visitor safety, and the experience of traveling on foot or bicycle along State Route 41 would be uncomfortable, at best.

Continuation of current management in the proposed McCreery Trail project area would result in minor adverse impacts, mainly for visitors linking trail segments between the northern and southern ends of the park and being forced to use the roads in order to do so.

Environmental Consequences of the Trail Development Alternative. Trail users would still have the safety concern of crossing both State Route 41 and Terry Road, but they would have the opportunity to travel on a trail between McCreery and Terry, allowing them to connect the Garden Ground Stacked Loop Trail System to proposed and existing trails upstream more safely and easily than by using Terry Road, State Route 41 and Glade Creek Road. Most importantly for safety, visitors would have a way to cross Piney Creek – on the abandoned rail trestle – that would remain closed to motorized traffic, as opposed to sharing the road bridge on State Route 41 with fast-moving traffic.

Because of the development of trails on both sides of the town of Terry (the Garden Ground Stacked Loop Trail System and the proposed McCreery Trail), and because of the anticipated continued increase of trail users in the park, residents of the town would encounter more park visitors in town limits and near their private property. This has the potential to cause some conflicts.

Overall, development of the proposed McCreery Trail, and especially installation of additional safety features for the pedestrian crossing on State Route 41, would be beneficial to visitor use, experience, access and safety because it would provide a key trail connection for the Through Park Connector between the northern and southern halves of the park.

Bicycle use on the proposed McCreery Trail would be beneficial for visitors and visitor experience because it would serve as a key trail component of the Through Park Connector, which is, according to the GMP, intended for bicycle use in as many segments as possible. The proposed trail, as an abandoned rail grade, would be wide and flat with long sight lines, so no conflicts or safety concerns between pedestrians and cyclists would be anticipated. The trail could potentially become attractive for off-highway vehicle (OHV) users in the area, which, if it occurred, could compromise the safety of legitimate trail users.

3.5.4 Camp Creek Trail

Affected Environment. The proposed Camp Creek Trail project area currently has a limited degree of accessibility; no trails are located in this area, and visitors who go there must travel cross country, often using abandoned road traces. The area does not receive a great deal of year-round use, though Sewell Knob along the top of the project area is popular for hunting in the fall, and a small number of visitors may hike to the cemetery located nearby.

Environmental Consequences of the No Action Alternative. This area would continue to be used by hunters and people traveling on abandoned road traces and cross country to access the cemetery. Visitors seeking a Through Park Connector experience on trail segments from the Southside and Rend Trails to the Garden Ground Stacked Loop Trail System would be able to use Thurmond Road and McKendree Road (both County Route 25) to connect to the Stone Cliff Trail. Thurmond Road is narrow with poor sight lines, and sharing that road between vehicular, bicycle and pedestrian traffic would be dangerous for visitors on the Through Park Connector, especially during the tourist season when fishing, boating, camping and residential traffic as well as raft company bus traffic are all using the road. McKendree Road is also narrow, but sight lines are longer and the shoulder of the road is slightly wider in most places than on Thurmond Road; this road would be somewhat dangerous for park visitors on the Through Park Connector. Adverse impacts to visitors resulting from the continuation of current management would be negligible because alternate opportunities exist that serve a similar purpose to the proposed Camp Creek Trail. While these opportunities are not ideal, they are not particularly threatening to visitor experience or safety.

Environmental Consequences of the Trail Development Alternative. Visitors would use the proposed Camp Creek Trail to experience the Through Park Connector concept along a trail segment that connects the Rend Trail to the Garden Ground Stacked Loop Trail System without the need to travel a long distance on any public roads within the park. Access to the proposed Camp Creek Trail would be primarily available from the existing Rend Trailhead, where visitors are provided with a vault toilet and an information kiosk. Hunting access to the proposed Camp Creek Trail project area would be improved through the provision of the trail, though hunters would still have plenty of opportunity to get off the trail and hunt in the woods around Sewell Knob. Similarly, access to the cemetery would be somewhat improved, though some cross-country travel would still be required. For these reasons, development of the proposed Camp Creek Trail would be beneficial to visitor use, experience, access and safety, not only for trail enthusiasts, but also for hunters seeking easier access to a popular hunting area.

Bicycle use on the proposed Camp Creek Trail would be beneficial for visitors and visitor experience because it would serve as a component of the Through Park Connector, allowing cyclists to connect the Garden Ground Stacked Loop Trail System, a trail system that was designed for multiple uses with cyclists and is expected to be a primary draw for mountain bikers to visit NERI, via trail, as opposed to road, to the Rend Trail and the park trail network north on river left.

3.5.5 Arbuckle Connector Trail Improvements

Affected Environment. The Arbuckle Connector Trail is currently used by hikers to connect the Rend Trail and the Southside Trail, which are the only two access points without traveling cross-country through the woods. It receives a low to moderate amount of use throughout the year. In sections, it is narrow, wet and slippery due to a wet climate and some stream capture.

Environmental Consequences of the No Action Alternative. Pedestrians would continue to use the Arbuckle Connector Trail to connect the Rend and Southside Trails. Trail maintenance would likely remain at its current level, and water problems along the existing trail route would continue, making the trail narrow and slippery in some places.

If the proposed regulation designating trails in NERI as open to bicycle use is approved, the Southside Rend Trails would both be designated as open to bicycle use. However, the upstream, or southern end, of the Southside Trail is blocked from legal public access by the CSX Corman rail line. Cyclists hoping to connect the downstream trails in the Fayetteville, Kaymoor and Cunard areas to upstream trails, particularly the Garden Ground Stacked Loop Trail System, would be unable to legally reach Thurmond Road, as they could not cross the CSX rail line, nor could they bike up the Arbuckle Connector Trail. Similarly, cyclists on the Garden Ground Stacked Loop Trail System could ride Thurmond Road to the Rend Trail, but the furthest north or downstream they could go would be Minden without being able to use the Arbuckle Connector Trail. Cycling visitors seeking a Through Park Connector experience would be disappointed at the need to return in the direction they had come to reach the Arbuckle Connector Trail project area, get in their car, and drive to their upstream or downstream goal. Because of the major block to legal public access for cyclists and the long drive to be able to bike in areas in the park on either side of the CSX Corman rail line (pending promulgation

of the final rule in the CFR for the trails proposed for designation for bicycle use by the 2011 Hike/Bike Trail Plan), cyclists seeking a Through Park Connector experience would experience moderate adverse impacts under the continuation of current management. Pedestrians seeking a Through Park Connector experience would also experience moderate adverse impacts from continuation of current management, but these impacts would be largely a safety concern of crossing the CSX Corman rail line on Thurmond Road and walking along Thurmond Road to connect the Dun Glen area to the Southside Trail via the road, the Rend Trail and the Arbuckle Connector Trail.

Environmental Consequences of the Trail Development Alternative. The proposed improvements to the Arbuckle Connector Trail would benefit pedestrian and cycling visitors. A higher quality trail experience with fewer water problems would be available to all visitors. Additionally, designating the improved Arbuckle Connector Trail as open to bicycle use would create an opportunity for Through Park Connector trail experiences for cyclists, as they could connect the Southside Trail to the Rend Trail, via the Arbuckle Connector Trail, and then reach the Stone Cliff or proposed Camp Creek Trails in the upstream direction, or Cunard and the Kaymoor Trail in the downstream direction. Without this connection, cyclists would be unable to use the Through Park Connector trail segments without driving between the Rend Trailhead and other trailheads north of Rend on river left. No reasonable on-road alternative exists for cyclists.

3.5.6 Wolf Creek Trail

Affected Environment. The proposed Wolf Creek Trail project area does not receive much use. Occasionally in winter and spring, a handful of elite kayakers hike up and down the creek to access the whitewater opportunities. Access to the project area is available from Fayette Station Road and from the Kaymoor Trail.

Environmental Consequences of the No Action Alternative. Park visitors wishing to connect the Kaymoor Trail and Fayette Station by hiking or bicycling would continue to use the dangerous, narrow, one-way Fayette Station Road, which, during tourist seasons, they would be sharing with sightseers driving in the gorge, private whitewater boaters accessing the Fayette Station take-out and raft company busses. This would continue to be a very unsafe situation for drivers, pedestrians and cyclists, and would become more dangerous as trail use in the area increases and more visitors want to access Fayette Station in a non-motorized manner. Continuation of current management would result in negligible adverse impacts to visitor use, experience, access and safety because, while the experience of walking, running or cycling on Fayette Station Road during the busy season is extremely unsafe, there are very few visitors who connect Fayette Station to uphill points in or above the gorge by any method other than driving a motorized vehicle.

Environmental Consequences of the Trail Development Alternative. Because the proposed Wolf Creek Trail would enable visitors on foot or bicycle to avoid most of Fayette Station Road, and certainly to avoid the most dangerous parts of it, when connecting Fayette Station with the Kaymoor Trail and the rest of the park trail system to which the Kaymoor Trail connects, visitor safety would be substantially improved. Fayette Station is a popular visitor use area, and most visitors currently access it by car; development of the proposed Wolf Creek Trail could alleviate some traffic on Fayette Station Road and some parking problems by offering visitors a safe opportunity to hike or bike to Fayette Station, rather than to drive. Development of the proposed Wolf Creek Trail would be beneficial to visitor use, experience, access and safety.

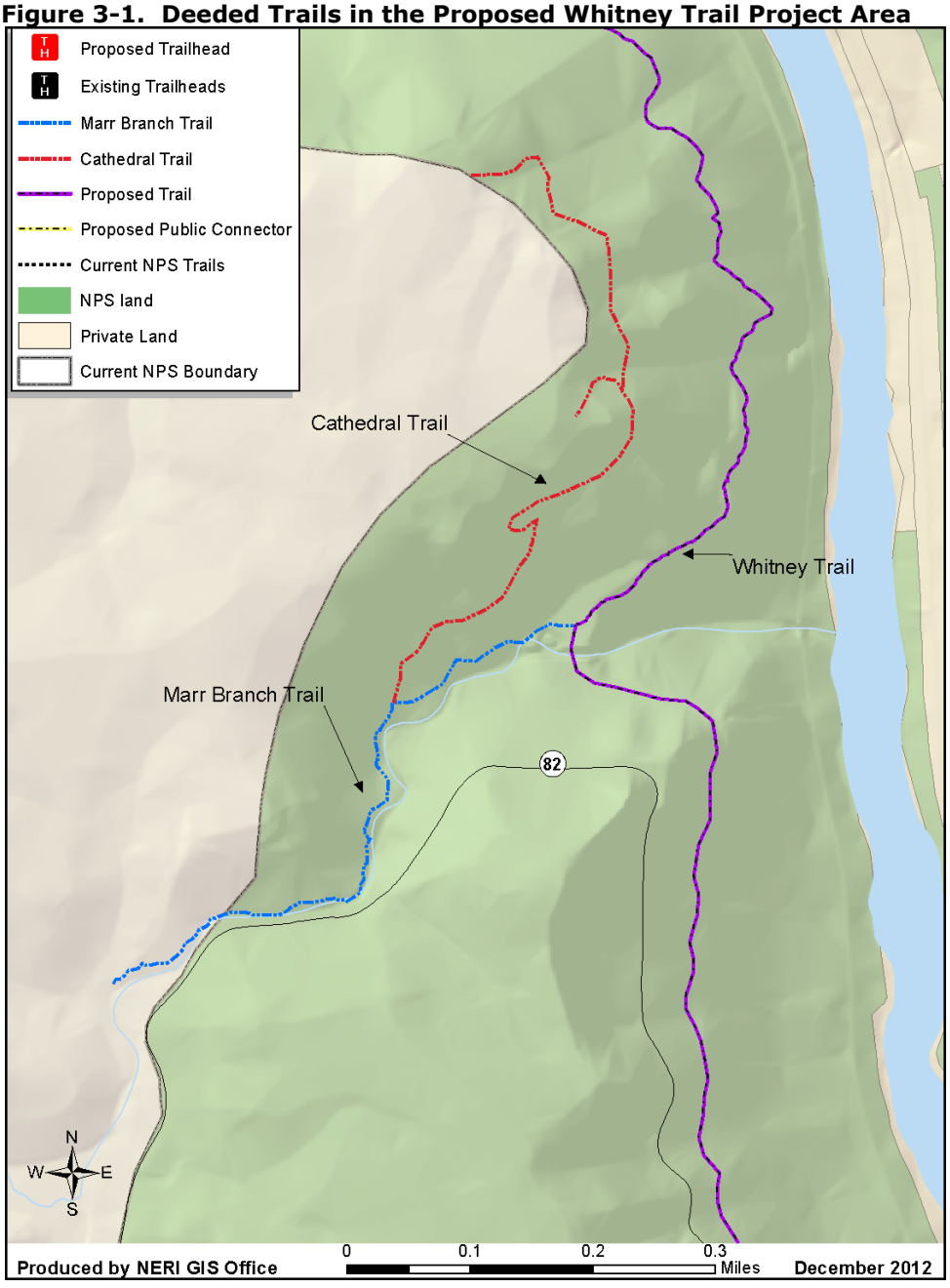
Bicycle use on the proposed Wolf Creek Trail would be beneficial for visitors and visitor experience by providing a much safer alternative to Fayette Station Road for cyclists connecting Fayette Station to the rim of the gorge and to the Kaymoor Trail at the mine bench level. The steps at the bottom of the proposed trail – the bicycle portage – would not be the ideal cycling visitor experience, but the hillside is so steep for that short segment that carrying bikes up a set of steps offers a safer alternative to developing a steep segment of trail. With signage and plenty of space to safely slow, stop and dismount at the top of the steps, and signage at the bottom of the steps, along with a stairway design that allows space to safely carry a bicycle, the portage would be safe and acceptable to visitors.

3.5.7 Whitney Trail

Affected Environment. The proposed Whitney Trail project area is used infrequently by hikers, as the mine bench on which it is located is accessible from Fayette Station Road, and from private property in the Bridgeview Estates at the New River Gorge Preserve resort community.

When the NPS purchased the property on which the proposed Whitney Trail would be located, the prior landowner, who owns the New River Gorge Preserve, retained a deeded right to use and maintain an existing trail network in this area, which includes the Marr Branch and Cathedral Trails. Use of these trails is solely for non-motorized, non-commercial recreational use, and is to be non-exclusive. Trails shall remain unpaved, be built in accordance with NERI trail standards and be less than three feet wide. The deeded Marr Branch Trail intersects with the proposed Whitney Trail (see Figure 3-1).

Figure 3-1. Deeded Trails in the Proposed Whitney Trail Project Area



Environmental Consequences of the No Action Alternative. Some visitors would continue to hike along the mine bench, accessing it from Fayette Station Road. The vision of this project area supporting a trail segment of the Through Park Connector would remain a goal of the park as approved through the GMP in order to connect the Fayetteville area trail system to areas to the north. Minor adverse impacts to visitor use, experience, access and safety would result from continuation of current management because the public would expect the park to move forward on the trail concepts approved through the GMP and would be dissatisfied with the experience of the informal use of the mine bench as a social trail when it could be improved and brought up to a standard for safe and environmentally sound trail use.

Environmental Consequences of the Trail Development Alternative. Visitors would have the opportunity to continue on trail downstream of the Kaymoor Trail and Fayette Station Road on the river left side of the New River. The proposed Whitney Trail would afford visitors the opportunity to enjoy scenic views from downstream of the New River Gorge Bridge, where many of the scenic vistas that are accessible are located on private land and unavailable to the public. Development of the proposed Whitney Trail would be beneficial to visitor use, experience, access and safety.

Bicycle use on the proposed Whitney Trail would be beneficial to visitors and visitor use because it would serve as a key trail component of the Through Park Connector, which is, according to the GMP, intended for bicycle use in as many segments as possible.

3.5.8 Whitney Trailhead

Affected Environment. The proposed Whitney Trailhead project area is an existing pull-out that is infrequently used for parking by visitors walking on the mine bench. The area is small, and the surface is hardened and unmarked.

Environmental Consequences of the No Action Alternative. Informal use of this pull-out would continue, and since it is not in high demand, conflicts over parking would not be anticipated in the small area. Continuation of current management in this project area would result in negligible adverse impacts mainly from visitor confusion as to whether or not the pull-out would be available for parking and a lack of information provided about visitor opportunities available from the pull-out.

Environmental Consequences of the Trail Development Alternative. This trailhead would supplement the existing Wolf Creek Trailhead and signage may be provided. With the development of the proposed Whitney Trail, use of the McCreery Trailhead would increase beyond the informal use it currently receives, but conflicts over the small parking area would not be anticipated. Development of the proposed McCreery Trailhead would be beneficial to visitor use, experience, access and safety.

3.5.9 Pipers Branch Trail

Affected Environment. The proposed Pipers Branch Trail project area is used very little, if at all, by park visitors. Access to the project area is limited by cross-country travel through private property and the steep slope of the gorge. The area can be accessed using the existing mine bench on which the proposed Whitney Trail is located.

Environmental Consequences of the No Action Alternative. The proposed Pipers Branch Trail project area would continue to receive little to no visitor use, and because there is also little demand for use of this project area, continuation of current management would result in negligible adverse impacts to visitor use, experience, access and safety.

Environmental Consequences of the Trail Development Alternative. The proposed Pipers Branch Trail and its connection to a public trail on BSA property leading to a trailhead would allow trail users to disperse their use along more trails in this region of the gorge, as well as to disperse their parking and access to the trails among an additional trailhead. Further, trail users would have an additional opportunity to connect the rim of the gorge to part of the Through Park Connector. Development of the proposed Pipers Branch Trail would be beneficial to visitor use, experience, access and safety.

Bicycle use on the proposed Pipers Branch Trail would be beneficial to visitors and visitor experience by providing a connection from the proposed Whitney Trail, a segment of the Through Park Connector, to the rim of the gorge and to a trailhead where visitors would have the opportunity to enter or exit the park trail system. Additionally, cyclists on the proposed Whitney Trail would not be forced to turn around and ride an out-and-back ride once they arrived at Pipers Branch; they would be able to continue on the proposed Pipers Branch Trail to a trailhead where they could set a shuttle or ride public roads south to create a loop ride from their starting point.

3.5.10 Bridge Buttress Trail Extension

Affected Environment. The Bridge Area climbing area, and particularly Bridge Buttress, is one of the most heavily used areas in the park, and the existing Bridge Buttress Trail is frequently used, often by a high volume of people. Bridge Buttress is the easiest crag to access in NERI, and is popular with both private climbers and large groups, including commercial services. The existing, obvious social trail from Bridge Buttress toward climbers' left along the base of the cliff to the Promised Area is popular with private climbers, although less popular with large groups than Bridge Buttress. The climbing area and social trail are heavily used, though not nearly so much as Bridge Buttress and the officially recognized trail. Parking is available along Fayette Station Road, just in front of Bridge Buttress, in an expanded pull-out that can serve up to about 20 vehicles.

The Pinnacle, North Bridge Wall and the First Strike area are considerably less used than the crags to climbers' right in the Bridge Area, although their use is slowly increasing. The area is most popular with small groups, and most climbers in this area park in one of two pull-outs along Fayette Station Road and Burma Road, each large enough to accommodate one vehicle. Climbers then use short social trails to access the base of the crags. In rare cases, climbers hike in between the First Strike area and the Promised Area, resulting in a series of faint braided social trails across the drainage between the two crags.

No access, formal or informal, from the rim of the gorge – either the AAC/NRAC campground or the Burnwood Trail – to the Pinnacle/North Bridge/First Strike crags has been developed.

The AAC/NRAC campground, nearly adjacent to the project area, is in development. They had a soft opening for public use in the fall of 2012 for free camping with no amenities, and are slated to continue construction, possibly to be fully functional for public camping in 2013.

Environmental Consequences of the No Action Alternative. As the new private campground develops facilities and opens more use and amenities to the public, park visitors', probably mostly rock climbers, use of the campground will likely increase quickly. The climbers who stay there would like a safe and short-distance pedestrian route to access the nearby climbing areas. To access the North Bridge Buttress climbing area, campers could either drive across Highway 19 and take Fayette Station Road approximately three miles, in order to park in a narrow pull-off located less than 2,000 feet below the campground, or they could choose to walk down the extremely narrow and steep Burma Road to access the cliff base. An increasing demand for North Bridge Buttress access would quickly overwhelm the available parking, and hiking along the narrow Burma and Fayette Station Roads would be extremely unsafe. Because climbers tend to want the most direct route from a trailhead or campground to a climbing area, campers may begin to develop social trails that access the North Bridge Buttress, which, due to the terrain, could be steep and slick in some places, providing an unsafe and undesirable experience that would, nevertheless, reach the goal of quickly moving between the climbing area and the campground.

Use of Bridge Buttress and the existing Bridge Buttress Trail would remain high, and use of the crags climbers' left of Bridge Buttress to the Promised Area would remain popular. Climbers staying at the AAC/NRAC campground may prefer to walk between the campground and these crags rather than drive a large circuit around to the Bridge Buttress parking area, which would result in additional use of and impacts to the braided social trails between the First Strike Area and the Promised Area.

Because of a lack of a short, safe, off-road pedestrian route between the new campground and the Bridge Area, visitors would resort to driving a circuitous route to the limited parking at the base of the crags, or they would rough in their own social trail to serve the purpose of connecting the campground

and the climbing area, which would create minor adverse impacts to visitor use, experience, access and safety.

Environmental Consequences of the Trail Development Alternative. Extending the existing Bridge Buttress Trail to incorporate the heavily used social trail along the base of the crags from Bridge Buttress to the Promised Area would bring this section of trail into the NPS trail inventory, which would allow for better maintenance of the trail, improving both environmental conditions and visitor experience. Developing a preferred route between the Promised Area and the First Strike area would provide clear access between the crags for climbers, it could disperse use from the more popular area to the less-climbed areas, and it would increase available parking for the Pinnacle/North Bridge/First Strike crags by making it more possible to park in the main Bridge Buttress parking area or at the AAC/NRAC campground. Development of a small set of steps up the steep drainage just climbers' left of the Promised Area would provide a safer and more enjoyable alternative to slipping down the steep hillside.

Extending the Bridge Buttress Trail all the way up the hill to the Burnwood Trail and therefore also the AAC/NRAC campground along the proposed route would be slightly longer and less direct a route from the campground in comparison to the original trail route proposed by NRAC (see Section 2.3). However, it would allow climbers to avoid Burma and Fayette Station Roads and access the crag without driving, thereby meeting the needs of visitors and the resource protection goals of park managers. Overall, the proposed trail would be a benefit to visitor use, experience, access and safety for creating access between the campground and the climbing areas.

3.5.11 Trail Connections to Non-Federal Lands

Affected Environment. The NERI GMP envisions connections between NPS trails and publicly accessible trails outside of the park leading to communities, state parks, and other areas of interest, eventually creating a regional trail network that connects the three NPS units. Some of these areas of interest include private lands, such as the resorts associated with local rafting companies that allow public use of their trail systems, or trails across private lands via agreements with landowners that would access other public lands or publicly-owned trails.

Opportunities for these trail connections are beginning to increase. The BSA is working with the NPS via verbal agreements to provide public access on and across their lands for trails that would contribute to the Through Park Connector vision. Communities, such as Beckley and Ansted, are actively working with the park to develop trails that would create connections across lands under state or private ownership.

Currently, only a handful of formal agreements exist between the NPS and adjacent landowners that provide for trail connections, though some of those do not necessarily guarantee public access to and from the NPS trails in perpetuity. Most of these agreements came about through issues associated with deeds during land acquisition procedures or other legal arrangements.

Environmental Consequences of the No Action Alternative. Continuation of current management would result in two primary possible scenarios. In one scenario, the NPS could pursue trail connections beyond NERI property boundaries, and use a variety of agreements or assumptions to provide for public access between the trails constructed with federal funds inside the NPS boundaries and trails developed on adjacent, non-federal properties. However, this scenario would not necessarily guarantee public access to those connecting trails in perpetuity, and, for example, a private landowner could decide at any given time to remove the connecting trail or to deem the trail on the private property for exclusive use to access the NPS, not allowing the public onto the trail on the private land. Because it would be inappropriate for the NPS to spend the public's money to build trails to other properties without a guarantee of public access and use in perpetuity, the second scenario would be for the NPS to adopt a policy of no new development of trails connecting to adjacent non-federal lands.

Because there is high demand and substantial public support for the development of trail connections outside of NPS boundaries and a regional public trail network, and because the terrain of the gorge and the land ownership patterns within and around it make it extremely difficult to develop the GMP's

vision of the Through Park Connector concept on mostly off-road trail segments along both sides of the river without developing agreements for trail access with adjacent landowners, continuation of current management would result in park-wide moderate adverse impacts to visitor use, experience, access and safety.

Environmental Consequences of the Trail Development Alternative. While park partners may find the process of developing a right-of-way easement for trail connections to NPS lands somewhat onerous, requiring the use of an easement to ensure public access in perpetuity would be the best way to protect the public's interest and provide trail connections between NPS trails and communities and points of interest outside of NERI. Additionally, local organizations pursuing trail development across privately owned lands would be protecting their own and their community's interests with this legal assurance of public access. Further, many grant programs available to communities and non-profit organizations working with private landowners require that easements be in place in order to receive funding. Overall, this requirement would be beneficial for visitor use, experience, access and safety, because it would avoid the kinds of inappropriate situations addressed in the analysis of Environmental Consequences of the No Action Alternative, above.

3.5.12 Cumulative Impacts

The NPS would continue to pursue the vision laid out in the GMP for recreational development, including improvement of park facilities, additional camping opportunities, and especially new trail development, with a focus on developing trail segments of the Through Park Connector. The NPS would continue to work on visitor safety and access, as envisioned in the GMP, by pursuing legal crossings of CSX rail lines in the park, among other actions. Recreational development is expected to continue and increase on lands surrounding the park, some on private lands such as housing development and raft company resort property, as well as public land holdings for the development of new trails that connect communities with the NPS and with one another. Particularly with the development of the BSA Summit, visitation to the area is expected to increase, largely as a result of large groups of scouts from Summit programs using park facilities, though also from their families exploring NERI and the surrounding region. Additionally, the development of the Arrowhead Trails and, in future, the Garden Ground Stacked Loop Trail System, is expected to attract mountain bikers from around the mid-Atlantic region. So while recreational facilities and opportunities are expected to increase and improve around the park and the region, so is the volume of visitor use, which could result in crowding in popular areas.

Cumulative Impacts of the No Action Alternative. Continuation of current management, resulting in negligible to moderate, adverse impacts in the individual project areas and, in the case of Trail Connections to Non-Federal Lands, park-wide, moderate adverse impacts, would contribute a noticeable adverse impact to the overall cumulative impacts of past and continuing park and regional recreational development. Visitation and demand for recreational facilities and opportunities, especially trails and bicycle use, would increase, and if the NPS were not working to meet those demands, particularly in light of the vision the NPS offered based on public input for the GMP of developing trail segments of the Through Park Connector, then visitors to the park would notice the adverse impacts on use, experience, access and safety. This could be especially problematic with several trail projects under way beyond NPS boundaries, each with the goal of connecting with the NPS trail system. The impact of the surrounding communities and partners developing these trails and being unable to connect with the NPS trail system would be particularly adverse for NPS relationships with communities and the recreational community.

Cumulative Impacts of the Trail Development Alternative. The proposed actions in the Trail Development Alternative would contribute a noticeable benefit to the overall benefits from recreational projects already in development for visitor use, experience, access and safety in and around NERI. Park trail users would have additional trails for dispersed use, particularly including trails connecting to locations and opportunities outside of the park, such as the proposed Piney Creek and Pipers Branch Trails.

3.5.13 Conclusion

Environmental Consequences of the No Action Alternative. Continuation of current management would result in negligible to moderate adverse impacts in the individual project areas and moderate adverse impacts park-wide with regard to Trail Connections to Non-Federal Lands for visitor use, experience, access and safety. These impacts would partly be the result of a lack of safety for visitors trying to create a long-distance trail experience in the park and being forced to walk, bike or run on narrow roads with fast-moving traffic. They would also result from the lack of demonstration on the part of NERI to implement the popular trail concepts approved through the GMP. Continuation of current management would create noticeable adverse effects on the total cumulative impacts of recreational development and local recreational trends.

Environmental Consequences of the Trail Development Alternative. Implementation of the proposed Trail Development Alternative would be beneficial to visitor use, experience, access and safety in all project areas and park-wide with regard to the proposed requirements for development of Trail Connections to Non-Federal Lands. The benefits would be derived from the implementation of popular trail concepts approved in the GMP and the provision of safe and enjoyable visitor experiences on trails that would meet the goals of the Through Park Connector concept in the northern half of the park. The proposed Trail Development Alternative would contribute noticeable benefits to the total cumulative impacts of recreational development and local recreational trends.

3.6 Park Operations, Facilities and Maintenance

Applicable Regulations and Guidelines.

- The NPS Organic Act of 1916, which directs the U.S. Department of the Interior and the NPS to manage units "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations" (16 USC § 1).
- NPS Management Policies 2006

Methodology and Assumptions. Evaluation of impacts is based on existing data on park facilities and operations, where available, public input and best professional judgment of park facilities and operations, as well as how those elements affect a visitor's experience in the park.

3.6.1 Through Park Connector Trail Segments

Affected Environment. In the individual projects areas of proposed Through Park Connector trail segments, the NPS currently only manages and maintains facilities at the proposed McCreery Trailhead and on the existing Arbuckle Connector Trail. The proposed McCreery Trailhead project area is maintained as a parking lot available for administrative use and for NPS staff to access the equipment stored in the McCreery Boathouse, as well as for public use for parking to support the river put-in that is located just on the other side of State Route 41. The Arbuckle Connector Trail is maintained as a hiking only trail.

Patrols by NPS Visitor and Resource Protection (VRP) staff occur regularly at the proposed McCreery Trailhead project area as part of routine patrols of the Terry and Prince region of NERI. Trail patrols of the Arbuckle Connector Trail occur infrequently. VRP patrols of the area around the proposed McCreery and Wolf Creek Trail project areas and the upstream half of the proposed Whitney Trail project area occur with some frequency as a result of the project areas' proximity to roads and trails that are regularly patrolled. VRP patrols of the remaining project areas (Piney Creek, Camp Creek, the downstream half of Whitney and Pipers Branch Trails) do not tend to occur. Search and Rescue (SAR) responses are not often called for in any of the individual project areas.

Park management is working with the local bicycle club, New River Bicycle Union (NRBU), to develop volunteer agreements for trail maintenance and trail patrols by NRBU members. Additionally, numerous volunteer requests are made to the park each year by groups hoping to perform trail maintenance activities.

Environmental Consequences of the No Action Alternative. Continuation of current management would result in no construction or maintenance needs or costs in any of the proposed new trail segment project areas. Maintenance would continue on the existing Arbuckle Connector Trail. VRP patrols of the project area would continue as described in the Affected Environment, and the NRBU volunteer trail patrol would support park staff through a volunteer agreement. SAR responses in the project areas would continue to be rare. Project areas near roads and existing park trails would generally receive faster and more efficient responses should an emergency occur, though responders would be slowed by the lack of a maintained trail to access each project area. For example, if a kayaker had an incident while kayaking Wolf Creek, it would be slow and difficult for SAR responders to reach the patient in the proposed Wolf Creek Trail project area on the steep hillside and through the thick vegetation. Because there would be no new facilities to maintain or additional need for SAR response or VRP patrols from the continuation of current management, the No Action Alternative would result in no change and no adverse impacts to park operations, facilities or maintenance.

Environmental Consequences of the Trail Development Alternative. Based on cost estimations for construction and maintenance of existing trails within NERI, estimations of construction and life cycle maintenance costs for the proposed trail segments are shown in Table 3-3. The cost of constructing trails to sustainable trail standards that would support multiple uses (pedestrian and bicycle) is approximately $2.40 per square foot. Note that this estimation is generalized for construction of an average trail in NERI, not specific to the terrain or features of each individual project area. Therefore, actual costs may vary somewhat from trail to trail. For example, the estimate for the proposed McCreery Trail does not take into account the fact that most of the route of the proposed McCreery Trail is on an existing rail grade that would mainly require vegetation clearing, resurfacing and some drainage improvements, where the average cost estimate of trail construction in the park incorporates development of brand new trails as well as trails that use existing features, such as roads or railroad beds. Similarly, however, the estimate does not take into account the fact that the proposed McCreery Trail would include improvements to an abandoned railroad trestle over Piney Creek that would make it safe and appropriate for pedestrian and bicycle use. Estimations for proposed improvements to the existing Arbuckle Connector Trail assume that an entirely new route would be developed, as opposed to using some sections of the existing trail and improving others. Table 3-3 shows estimations for trails constructed at a two-foot width and a three-foot width in order to demonstrate the range of possible estimated construction costs, depending upon how wide the final trail tread of each proposed trail segment would be. In most cases, construction costs would be covered by project funds, rather than funds for base operations, and with volunteer assistance, impacts to park operations could be minimized. Because staff time is still necessary to lay out trails and work with volunteers, trail construction would result in minor adverse impacts to park operations, but the funding and work required would also serve the NPS mission to provide for resource protection as well as visitor use and enjoyment.

Table 3-3 also shows estimated life cycle maintenance cost estimates, which cover daily operations, routine maintenance and preventative maintenance. Life cycle maintenance cost estimates are based on cost-per-mile comparisons for life cycle maintenance on existing park trails, incorporating information about both multi-use (pedestrian and bicycle) and pedestrian-only trails. Some of these costs may be eased by NRBU and the many other groups volunteering to perform trail maintenance work in the park each year. Money for trail maintenance tends to come out of base operations funding and largely be associated with staff time to perform necessary work on both trails and trail support facilities, such as trailhead vault toilets and information kiosks. Volunteer groups performing trail maintenance could minimize impacts to park operations, but because staff time and park funds would still be necessary to both perform maintenance and work with volunteers, trail maintenance would result in minor adverse impacts to park operations. As with trail construction, however, the funding and work required to maintain trails and related facilities would serve the NPS mission to provide for resource protection and visitor use and enjoyment.

Table 3-3. Construction and Life Cycle Maintenance Cost Estimates for Proposed Trail Segments of the Through Park Connector

	Construction		
	Two-Foot Width	Three-Foot Width	Life Cycle Maintenance
Piney Creek Trail	$ 12,672	$ 19,008	$ 3,819
McCreery Trail	$ 25,344	$ 38,016	$ 7,638
Camp Creek Trail	$ 50,688	$ 76,032	$ 15,276
Arbuckle Connector Trail Improvements	$ 8,448	$ 12,672	$ 2,546
Wolf Creek Trail	$ 12,672	$ 19,008	$ 3,819
Whitney Trail	$ 76,032	$ 114,048	$ 22,914
Pipers Branch Trail	$ 12,672	$ 19,008	$ 3,819

VRP patrols of the proposed trails would be added to the trail patrol workload of the VRP staff, although some of this burden on staff time could be relieved when NRBU is able to begin supporting the NPS by providing volunteer trail patrols through a volunteer agreement. SAR responses in the proposed trail project areas could increase slightly, although they would be expected to continue to be rare. These responses could involve varying degrees of timeliness, efficiency and difficulty, depending on the remoteness of each project area. All of these project areas are relatively close to roads, and the existence of the proposed trails would give responders an avenue by which to begin searches or reach injury victims. The ability of first responders to use bicycles on these proposed trails would improve response times over hiking, and allow for patient stabilization quickly as additional responders make their way to a patient on foot. The additional work load on VRP staff to patrol trails and respond for SARs would result in minor adverse impacts to park operations, although volunteer support would minimize the need for additional patrols except in cases when an incident that requires patrol by a law enforcement officer arise. As with trail construction and maintenance, while these needs add a burden to park operations for staff time and funding, the patrols and responses are also key to both visitor and resource protection, which is an important part of the mission of the NPS.

3.6.2 Bridge Buttress Trail Extension

Affected Environment. The NPS currently maintains the existing, officially recognized Bridge Buttress Trail that begins at the steps up from Fayette Station Road and follows the base of Bridge Buttress around climbers' left to the rock steps to the top-of-cliff access gully. What trail maintenance occurs on the obvious social trail along the base of the cliff between Bridge Buttress and the Promised Area is performed, mostly informally, by the climbing community.

VRP patrols of Bridge Buttress occur with some regularity, patrols of the rest of the Bridge Area are considerably less frequent. SAR responses have occurred at Bridge Buttress.

Environmental Consequences of the No Action Alternative. Continuation of current management would result in continued NPS maintenance of the existing Bridge Buttress Trail and informal maintenance performed by the climbing community on the existing social trail between Bridge Buttress and the Promised Area. If a social trail between the AAC/NRAC campground and the Pinnacle/North Bridge/First Strike crags area develops, particularly in the inappropriate drainage where NRAC proposed to develop this trail connection (see Section 2.3), which was dismissed from consideration by the NPS because of the damage it would cause to sensitive resources, then staff time and park money would likely be spent to rehabilitate the drainage.

VRP patrols would continue, and if use in the crags to climbers' left of Bridge Buttress increases as anticipated as a result of the development of the AAC/NRAC campground, then there is potential for more SAR responses to be needed at those crags. They are relatively close to the road and easy to reach, but The Pinnacle, North Bridge Wall and the First Strike Area do not have well-maintained, obvious trails for responder access.

Because there would be no new facilities to maintain or additional need for SAR response or VRP patrols from the continuation of current management, the No Action Alternative would result in no change to park operations or facility maintenance. This means that there would be no impacts, or there could potentially be negligible adverse impacts if a social trail develops between the campground and the climbing area in an inappropriate location; staff time and park money would be spent on rehabilitating resource damage that might occur in that situation.

Environmental Consequences of the Trail Development Alternative. Bringing the existing social trail at the base of the cliff between Bridge Buttress and the Promised Area into the NPS trail inventory would not incur any construction costs, although maintenance costs would increase slightly for this segment as compared to only maintaining the existing Bridge Buttress Trail. Improvements to the existing social trail that would protect resources by reducing trail braiding and construction of the extension of trail that would connect the Promised Area to the First Strike area, and up to the Burnwood Trail may cost the park a rough estimation of about $10,000, based on estimations given for new trail construction for the proposed trail segments of the Through Park Connector. It is possible that the NPS could work with NRAC to support both construction and maintenance of these trails with volunteer labor. Whether or not the park develops this trail with volunteer assistance from NRAC, adverse impacts to park operations, facilities and maintenance would be negligible.

VRP patrols of the Bridge Area would continue, perhaps increasing slightly. SAR responses to the crags climbers' left of Bridge Buttress could be improved by provision of a more obvious trail, depending on where the best road location is for responders to park to reach a patient the most quickly and efficiently. Substantial increases to the need for VRP patrols or SAR responses in the project area would be extremely unlikely, resulting in no impacts to potentially negligible adverse impacts to park operations.

3.6.3 Trail Connections to Non-Federal Lands

Because the proposed guidelines for trail connections between NERI and non-federal lands are largely administrative, there are no related concerns about park operations, facilities and maintenance, and there would be no impacts to these resources as a result of this component of the proposed action under either the No Action Alternative or the Trail Development Alternative.

3.6.4 Cumulative Impacts

NERI is a relatively new park within the NPS system, and is still considered to be in its developmental phase, ramping up provision of facilities, services and opportunities for park visitors. The park has been developing and taking on new facilities since it was established in 1978, all of which require maintenance and protection. The GMP calls for further development of park facilities and services, as well as continuing to improve efforts toward visitor and resource protection. Visitation is expected to increase, due in large part to the development of the BSA Summit and the groups of scouts that will visit the park through Summit programming, as well as their families and other tourists attracted by the Summit and by the publicity it is bringing for the New River Gorge region. With increased visitation would come more crowding, more use of existing park facilities, more demand for expanded and additional park facilities, greater need and demand for more visitor and resource protection, and also more need to launch SAR responses. The NPS may find it increasingly more difficult to respond to the needs of park visitors because budgets are declining, with the possibility of dropping of sharply. Staffing the park and maintaining facilities, new and old, could prove challenging.

Cumulative Impacts of the No Action Alternative. Continuation of current management would have no impacts on park operations, facilities and maintenance in the project areas because no new facilities would be added that need to be maintained or patrolled. The increased visitation anticipated at the park, however, would add additional burdens to existing park facilities, particularly creating the potential for crowding on existing trails, which would lead to higher maintenance costs. Continuation of current management would result in no change to the overall cumulative impacts on park operations, facilities and maintenance would be imperceptible.

Cumulative Impacts of the Trail Development Alternative. Development of the proposed new trails would have minor adverse impacts on park operations, facilities and maintenance in the project

areas for proposed trail segments of the Through Park Connector and negligible adverse impacts in the proposed Bridge Buttress Trail Extension project area. These impacts would result largely from the costs of construction and maintenance, and they would contribute an imperceptible increment to the overall cumulative impacts on park operations, facilities and maintenance. With visitation expected to increase, demands for additional park facilities as well as demands to maintain existing facilities to a high standard in a time of decreasing budgets and potentially decreasing park staff, the impacts to the park of developing the proposed new trails would not be noticeable.

3.6.5 Conclusion

Environmental Consequences of the No Action Alternative. Continuation of current management would have no impacts to negligible adverse impacts on park operations, facilities and maintenance in the project areas because no new facilities would be added that need to be maintained or patrolled. Continuation of current management would result in no change to the overall cumulative impacts on visitor needs, provision of park services and budgets.

Environmental Consequences of the Trail Development Alternative. Development of the proposed new trails would have minor adverse impacts on park operations, facilities and maintenance in the project areas for proposed trail segments of the Through Park Connector and negligible adverse impacts in the proposed Bridge Buttress Trail Extension project area. The proposed Trail Development Alternative would contribute an imperceptible increase to the overall cumulative impacts on visitor needs, provision of park services and budgets.

4 CONSULTATION AND COORDINATION

4.1 Public Involvement

No public scoping was conducted for this plan/EA because it is meant to implement the details of management decisions made by the park's GMP. Those decisions were publicly vetted numerous times throughout the process of developing the GMP, and the public showed overwhelming support for them.

The public comment period for this plan/EA will be at least 30 days, the required minimum for an EA level of impact analysis. During this period, the NPS will conduct at least one public meeting or open house. The comment period and the public meeting or open house will both be announced through local media, including newspapers. The plan/EA will be posted on the NPS Planning, Environment and Public Comment (PEPC) website with a project description and other information. The public is invited to comment on the plan through PEPC, the preferred method, or by sending a letter addressed to:

NPS – New River Gorge National River
Attn: Superintendent; Comment on Trail Development Plan/EA
P.O. Box 246
Glen Jean, WV 25846-0246

Additional opportunities for public involvement will be available with regards to the appropriateness of the proposed bicycle use on trails described in this plan/EA. The rulemaking process offers an opportunity for public comment on a proposed amendment to the park's special regulation.

4.2 Public Agencies Consulted During the Planning Process

Section 106 Consultation. The NPS initiated consultation for Section 106 of the National Historic Preservation Act of 1966, as amended, with the State Historic Preservation Officer (SHPO) for the State of West Virginia on September 17, 2012 (the letter is attached in Appendix B). The NPS will provide the SHPO with a copy of this plan/EA for review and comment, as well as the NPS Finding of Assessment and Effects, to seek SHPO concurrence.

Section 7 Consultation. The NPS initiated consultation for Section 7 of the Endangered Species Act of 1973, as amended, with the U.S. Fish and Wildlife Service (USFWS) on September 17, 2012 with the letter attached in Appendix B. This plan/EA with the park's finding on potential impacts to federally-listed species and their habitat will be sent to the USFWS for review and comment/concurrence.

Notification for Native American Tribes. The NPS initiated consultation with Native American tribes for this project through the GMP, which proposed the ideas that this plan/EA would implement. No additional consultation letters were sent specific to this plan/EA, but the NPS will send a project introduction letter and a copy of the document to all potentially-interested tribes. There are no federally-recognized tribal affiliations with the park.

Consultation with the West Virginia Division of Natural Resources. The NPS initiated informal consultation with the WVDNR on September 17, 2012. The WVDNR responded by email on October 4, 2012 by requesting to send GIS shapefiles to the NPS for Rare, Threatened or Endangered species and habitat in the NERI area. This plan/EA will be sent to the WVDNR with the park's findings for impacts on wildlife and habitat for WVDNR's review and comment.

4.3 Internal Coordination

Internal scoping for this plan/EA began with an interdisciplinary team (IDT) meeting on February 29, 2012. An additional IDT meeting was held on September 24, 2012. Numerous field visits were conducted by IDT members and many individual meetings were held between planners, designers and

resource specialists after the initial IDT meeting. These meetings covered project scoping, development of the proposed action and alternatives and analysis of environmental impacts.

List of Preparers.

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ACRONYMS

≥5" DBH Greater than or equal to five inches diameter breast height

AAC American Alpine Club

BSA Boy Scouts of America

CEQ Council on Environmental Quality

CFR Code of Federal Regulations

DO-12 NPS Directors Order #13: Conservation Planning, Environmental Impact Analysis and Decision Making

EA Environmental Assessment

GIS Geographical Information Systems

GMP General Management Plan

IDT Interdisciplinary Team

NEPA National Environmental Policy Act of 1969, as amended

NERI New River Gorge National River

NPS National Park Service

NRAC New River Alliance of Climbers

OHV Off-Highway Vehicle

PEPC NPS Planning, Environment, and Public Comment web site

SAR Search and Rescue

SHPO State Historic Preservation Officer

SOP Standard Operating Procedure

Summit Summit Bechtel Family National Scout Reserve

USFWS United States Fish and Wildlife Service

VRP Visitor and Resource Protection

WVDEP West Virginia Department of Environmental Protection

WVDNR West Virginia Division of Natural Resources

WVDOH West Virginia Division of Highways

WVNHP WVDNR, Nongame Wildlife and Natural Heritage Program

APPENDICES

Appendix A: Standard Operating Procedures for Trail Development

Appendix B: Compliance Coordination

Appendix A. Standard Operating Procedures for Trail Development

The 2011 Hike/Bike Trail Plan (NPS 2011b) proposed design and construction techniques, trail classifications (easiest, more difficult, most difficult), and methodologies and mitigation measures that provide protections for soils, streams and water resources, vegetation, wildlife and cultural resources when laying out, designing and constructing trails. These techniques, classifications, methodologies and mitigations proved effective in the implementation of the actions proposed in the 2011 Hike/Bike Trail Plan, and would be treated as standard operating procedures (SOPs) in this plan/EA. The park would adopt these SOPs as park-wide standards and protocols for trail development. As the SOPs are used and improved on the ground, NERI would utilize future EAs and other appropriate administrative and compliance procedures to refine them and incorporate any additional mitigations that would offer better protection for park resources during trail development.

This appendix is a reproduction of those procedures for the reader's benefit. Specific proposed actions regarding individual trails in the 2011 Hike/Bike Trail Plan have been deleted from this reproduction.

Procedure for Determining the Best Trail Route From pages 35 – 38 of the 2011 Hike/Bike Trail Plan

For all proposed new trails, routes would be flagged on the ground, and resource surveys would be conducted along a corridor of within about 100 feet on either side of the proposed trail, creating about a 200-foot survey corridor.

Mitigations to Protect Soils, Streams and Water Resources

Riparian areas and ruts in old road traces that have filled with water and serve as habitats for wetland plants and amphibians would be avoided during design and construction of proposed new trails. Where trails must cross perennial and intermittent streams, a bridge or bottomless culvert would be used to reduce the possibilities of erosion and interference with aquatic invertebrates. Crossings of ephemeral channels would be minimized, and where they are necessary, the trail should cross perpendicular to the channel direction.

During construction, some side casting of soils would be appropriate where there are no streams. On steep slopes, side casting would be limited, as it could create a future hazard for erosion and possibly safety. Construction occurring near streams would include measures that minimize or prevent loose soils from entering the waterways. Additionally, as much as possible, the duff layer removed to construct the trail tread would be preserved intact and replaced on any areas where soils have been cast. Often, plants in the duff layer are able to continue growing in their new location, reducing the opportunity for side-cast soils to erode and mitigating the visual effects of trail construction.

Where trail alignments use existing road and railroad traces or mine benches, hydrology could be improved through trail construction. In many places, streams have been captured by ruts in the roads and benches, and rerouted from their natural course. On benches in particular, streams that have been captured and rerouted threaten the structural integrity of the bench, and flood events can often cause these sections of mine bench to slough off the hill as landslides. Where these situations exist along trail alignments, a component of trail construction would be to restore the streams to their original flow locations, or to develop features that route water downward rather than along a contour line, reducing landslide hazards and improving the structural integrity of the trail.

Mitigations to Protect Vegetation

Rare Plants. Known rare plants would be avoided during design and construction of proposed new trails. Once proposed trail routes are flagged, rare plant surveys would be conducted within the survey corridors. If surveys reveal that the proposed trail route encounters a rare plant or plants, the trail would be moved to a different location, preferably within the survey corridor, as other resource surveys would occur within a similar corridor. If a reroute beyond the survey corridor is necessary to

avoid rare plants, concurrence among resource specialists for vegetation, wildlife and cultural resources would be needed to approve the new altered route.

Where possible, rare plant surveys would occur in both the early and late phases of the growing season, roughly in June and August. To conduct two seasonal surveys would be preferred because the vegetative stages of the many plants growing in West Virginia differ greatly over time, resulting from variables such as species, elevation, aspect and moisture gradient. For example, August survey work might identify sunflowers that are not visible in May or early June, while many species of the lily family are growing during a short period in the spring and would not be detectable in August. All proposed trails would, at a minimum, be surveyed during one of the recommended seasons.

Rare Plant Communities. Known rare plant communities would generally be avoided in the design of proposed new trails. These communities include forest seeps and riparian communities, as well as both the top and the bottom of cliffs, as cliff ecosystems tend to support globally rare vegetation communities. Generally, no trail would be placed closer than about 200 feet from any boundary of a mapped Cliff Top Virginia Pine Forest. Exceptions to avoidance of cliff top vegetation communities would be made for a limited number of vistas comprising short trail segments running out and back from overlooks, but not running parallel to cliff edges through cliff top vegetation communities.

Non-Native and Invasive Plant Species. Invasive plants within a 50-foot corridor on either side of the center line of proposed trails would be treated during construction using mechanical methods to control the further spread of exotic plants. Depending upon the season of trail construction, greater care may need to be taken with certain species to avoid seed dispersion during removal.

Mitigations to Protect Wildlife

Wildlife surveys targeting key habitat of species of concern would be conducted by the park wildlife biologist within the survey corridors. If surveys reveal that the proposed trail route encounters key habitat, especially for bats and Allegheny woodrats, the trail would be moved to a different location, preferably within the survey corridor, as other resource surveys would occur within a similar corridor. If a reroute beyond the survey corridor is necessary to avoid these habitats, concurrence among resource specialists for vegetation, wildlife and cultural resources would be needed to approve the new altered route.

Bats. Protected bat habitat includes abandoned mines, trees and snags (dead standing trees). For both protection of bat habitat and for visitor safety, the NPS would seek to route proposed trails away from mine portals. Where the best option for a trail is a location near a mine opening, the portal would be gated with a bat-friendly design.

Because trees, including snags, of a size greater than or equal to five inches diameter breast height (≥5" DBH) could serve as bat habitat, particularly those with exfoliating bark, hollows or crevices, the NPS would design trails so as to minimize the need to remove them, avoiding these trees where it is feasible. The project areas are forested, and the NPS predicts that an estimated ten of these trees per mile of new trail would need to be removed to accommodate sustainable trail alignments. Prior to the removal of these trees, they would be inspected and approved for removal, on a tree by tree basis, by resource specialists, regardless what time of year they would be removed. Trees ≥5" DBH that need to be felled for trail construction would be removed between November 15 and March 31. The park adopted these dates for tree clearing so as to coincide with Indiana bat hibernation. The dates and tree size specifications originated from guidance for surface mining activities and are the tree clearing dates required for areas with underground mines where Indiana bats have been recorded (USFWS et al. 2009). Cutting during this time reduces the impact to all locally-present bat species and breeding birds.

Allegheny Woodrats. Allegheny woodrat habitat includes boulder fields, cliff bases (including bases of mining high walls) and mine portals. Trails going to or through woodrat habitat facilitate mammalian predator movement into woodrat home ranges, exposing them to increased predator pressure and pathogen exposure. Trails in woodrat habitat also create areas denuded of vegetation that further increase their vulnerability to predation when traversing the area. For these reasons, the NPS would design trails to avoid, as much as possible, Allegheny woodrat habitat. Where the best

option for a trail is a location in or near woodrat habitat, the NPS would take actions to protect woodrats as much as possible, such as gating mine portals with bat-friendly designs, which are also woodrat-friendly, or building raised features through unavoidable boulder fields, under which woodrats would be protected from view of predators.

Birds. The Swainson's warbler (*Limnothlypis swainsonii*) is listed by the West Virginia Natural Heritage Program (2007) with a ranking of S3B, meaning that it occurs in the state during breeding, and may be somewhat vulnerable to extirpation. The Swainson's warbler is a confirmed breeding resident of the park and is also listed by the park as a species of management concern. In the Appalachian Mountains, Swainson's warblers establish breeding territories in dense rhododendron thickets. Any trail through a rhododendron thicket could fragment the habitat and open it to increased predation pressures, therefore the NPS would design trails to avoid, as much as possible, rhododendron thickets.

Amphibians. Riparian areas and ruts in old road traces that have filled with water and serve as habitats for wetland plants and amphibians would be avoided during design and construction of proposed new trails.

Mitigations to Protect Cultural Resources

Known archeological and historic sites would be avoided when during trail design.

Archeological and historic resource surveys would be conducted by the park's cultural resource staff within the survey corridors. The assessment of proposed new trail routes would be based on archival research, pedestrian survey including visits to known archeological sites, and targeted shovel testing of upland landforms that have a higher potential for archeological sites (Bodor and Torp 2008, Dowdy Creek). The findings from the field work would be documented in a Phase One archeological survey report that includes restricted site location maps and state site registration forms. The pre-report findings would also be used to coordinate the avoidance of all known and potential archeological sites and to interpret historic resources. Digital data would be entered into NPS GIS databases for future planning actions. Any Native American artifacts recovered during the surveys would be accessioned and cataloged into the park's museum collection.

If surveys reveal that the proposed trail route encounters an archeological or historic site, the trail would be moved to a different location, preferably within the survey corridor, as other resource surveys would occur within a similar corridor. If a reroute beyond the survey corridor is necessary to avoid these habitats, concurrence among resource specialists for vegetation, wildlife and cultural resources would be needed to approve the new altered route.

Prior to construction, trail crews would be trained for how to recognize archeological and historic sites inadvertently discovered during construction and what to do to protect the sites. A cultural resource specialist would be roving and available during trail construction in order to mitigate any potential impacts to sites and resources discovered at that time.

Sustainable Trail Design Concepts
From page 34 of the 2011 Hike/Bike Trail Plan

Sustainable trail design minimizes trail use impacts on the environment, especially as a result of erosion, and leads to a trail that requires relatively little maintenance. It also meets the needs of its users, providing fun and challenging opportunities and experiences and, through design, managing the manner of their use and the expectations with which they approach the trail. In this way, sustainable trails also manage visitor conflicts.

Trails designed and constructed to manage the physical and social impacts of multiple user groups are the most sustainable. The ten principles or elements of sustainable trails would be incorporated into the design and construction of all proposed new trails. Trail features that mitigate for social impacts

may include long sight lines so that trail users are not surprised and attributes that would slow trail users down as they approach turns and other areas where long sight lines are unavailable.

Where there is a history of OHV use in the project areas of the proposed new trails, the NPS would develop trail features that could deter or prevent this inappropriate use. Constricting features and barricades to OHV access would be constructed along the proposed trails and their access points where OHV users may illegally enter the area and use the trails, damaging the other features and designs that make the trails sustainable. These constricting features and barricades would blend in with the landscape as much as possible.

When constructing trails within previously-disturbed areas of existing informal routes, such as abandoned logging and mining roads and user-created OHV routes, it is ideal to do this on alignments and grades that inherently lend themselves to sustainable trail design principles. When these informal routes exist in locations that would not lend themselves to sustainable trail development (such as flat areas that hold water, fall lines, steep side slopes or informal routes that capture and divert water from its natural course), construction of sustainable or near-sustainable trail becomes highly resource-, material-, labor- and cost-intensive. Where proposed new trails are constructed on existing informal routes, the NPS would make every effort to incorporate the design and features necessary to make the trails as sustainable as possible.

Ten Elements of Sustainable Trail Design and Construction From Appendix A, pages 169 – 170, of the 2011 Hike/Bike Trail Plan

A rolling contour trail is the most sustainable trail design, and it follows ten main principles that manage both erosion and visitor experience.

1. **Trail Location** – The most sustainable trails are located along sidehills, which makes water drainage easier than it is for trails located on flat ground. Trails on sidehills also keep users on the trail and prevents trail widening.

2. **Trail Alignment** – Sustainable trails traverse slopes rather than directly ascending a hill side. A trail following the shortest route up a hill is called a fall-line trail, and such trails create pathways for water that result in erosive gullies through the tread of the trail. A trail traversing a slope allows for sheet runoff of water, which is more diffuse and causes considerably less erosion and no creation of gullies.

3. **The Half Rule** – At almost no time should the grade of the trail exceed half of the grade of the sidehill on which it is located. When the trail grade is greater than this figure, the easiest path for water to follow will be along the trail tread, causing gullies, rather than running off the side of the trail tread in a more diffuse sheet. Exceptions to the half rule occur, particularly 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. Also, except in rare situations, the grade of a trail should never exceed 15 percent.

4. **Sustainable Grade** – For an entire uphill section of trail, the overall average grade of the trail should generally be ten percent or less. This number can fluctuate somewhat, depending on local conditions and needs, but applying this limitation to trail grade can slow both water and trail users, thereby decreasing the impacts of erosion and the potential for trail user conflicts, as well as increasing trail user safety.

5. **Grade Reversals** – A grade reversal, also known as a grade dip or drainage dip, is a brief change in elevation where the trail drops subtly before rising again. Frequent grade reversals create miniature watersheds along the trail that encourage water to exit the trail at low points before it can gain speed and momentum, thereby causing erosion. These small watersheds also mean that problems on one part of the trail are unlikely to affect any other part of the trail. Grade reversals also make a trail more interesting to trail users, breaking up long uphill climbs, slowing long descents and providing variety and fun elements, like whoop-de-dos.

6. **Outslope** – Sustainable trails should be built, as much as possible, with a slight tilt (about five percent) of the trail tread toward the low side of the trail. This ensures that water runs in diffuse sheets off the trail and down the sidehill. Where outslope is difficult to maintain (often due to loose soils) or intentionally constructed otherwise (such as with banked turns, which are insloped), frequent grade reversals become more critical in order to prevent water from flowing long distances along the trail.

7. **Adaptation to Soil Texture** – Sustainable trails are designed with the local soils in mind. Develop the trail and its features based on the soils' qualities of drainage, cohesion and durability.

8. **Minimization of User-Caused Soil Displacement** – Soil shifts on any trail from use, but can be more substantially displaced in poorly-designed sections of trail, such as abrupt corners and sharp hills where trail users are making fast adjustments in speed and force. Designing a trail with consistent flow that prepares trail users for what is ahead of them, insloped turns that help trail users to maintain their speed and stay on the trail tread, and tread hardening where a trail might be especially susceptible to damage will all minimize soil displacement. Additionally, these features provide for a more fun and safe trail experience while keeping users within the intended trail tread.

9. **Prevention of User-Created Trails** – Sustainable trails provide a more desirable user experience than user-created routes or traveling off-trail. Such trails have a stable and predictable surface, stay away from areas in need of protection, go to appealing destinations and provide a sought-after experience.

10. **Maintenance** – Sustainable trails require considerably less maintenance than trails that are not designed following sustainable design principles. However, they do require some maintenance, the goals of which remain the same as the initial design and construction: keep users on the trail, move water off of it.

Developed from *Managing Mountain Biking: IMBA's Guide to Providing Great Riding* (Webber 2007)

Trail Classifications
From pages 34 – 35 of the 2011 Hike/Bike Trail Plan

Proposed new and existing trails would be assessed and signed for classifications that alert users to the difficulty of the trail. Table A-1 describes general guidelines for how these classification determinations would be made. New trails would be designed and signed so that trail users could expect alignments, grades features and challenges that are consistent throughout a particular segment of trail that they enter from an intersection or trailhead. Because the specifications for trail classifications are considered guidance rather than restrictions, it is possible, for example, that a backcountry area may have an Easiest trail segment, provided that the segment is built in accordance with backcountry trail standards and the terrain and route naturally lend themselves to the skill level of a novice trail user.

Table A-1. Trail Classification Specifications

	Easiest	More Difficult	Most Difficult
Symbol	Green Circle	Blue Square	Black Diamond
Active Tread Width	30-36 in.	20-24 in.	12-18 in.
Unavoidable Natural Obstacles	2 in. tall or less	8 in. tall or less	15 in. tall or less
Trail Features	Firm trail surface. May include rock surfaced sections.	May also include steps, stairs and steep/exposed sections.	May also include steps, stairs and significantly steep/exposed sections.
Average Trail Grade	5% or less	10% or less	15% or less
Maximum Trail Grade	10% or less	15% or less	15% or more
Suitable Location	Frontcountry only	Frontcountry or Backcountry	Frontcountry or Backcountry

Appendix B. Compliance Coordination

Consultation Letter for Section 106 of the National Historic Preservation Act with the State Historic Preservation Officer

Consultation Letter for Section 7 of the Endangered Species Act with the U.S. Fish and Wildlife Service

Consultation Letter with the West Virginia Division of Natural Resources

Maps Enclosed with all Consultation Letters

United States Department of the Interior
NATIONAL PARK SERVICE
NEW RIVER GORGE NATIONAL RIVER
GAULEY RIVER NATIONAL RECREATION AREA
BLUESTONE NATIONAL SCENIC RIVER
104 Main Street
P.O. Box 246
Glen Jean, West Virginia 25846

IN REPLY REFER TO:

September 17, 2012

Admin Central Files

D18(NERI)

Ms. Susan M. Pierce
Deputy State Historic Preservation Officer
Department of Culture and History
Cultural Center
Capitol Complex
Charleston, WV 25305

Dear Ms. Pierce:

We are writing to inform you that the National Park Service (NPS) at New River Gorge National River is initiating planning for a Trail Development Plan that will implement many of the visitor access and trail ideas approved in its recently completed General Management Plan (GMP). The GMP calls for the construction of a north-south through park connector and other trails linking to gateway communities. Through partnerships, the trails would offer visitors an opportunity to hike or bike within and to and from the park. The Trail Development Plan will identify specific new trail segments in the areas of Beckley, Thurmond, and Fayetteville (see enclosed maps). The NPS plans to utilize the Boy Scouts and other volunteer groups to build these trails beginning in the summer of 2013.

The draft Trail Development Plan and Environmental Assessment will be submitted to your office for review and comment. This information is submitted in accordance with Section 106 of the National Historic Preservation Act and 36 CFR 800, Protection of Historic and Cultural Properties. If you have any questions on this matter, please contact Deborah Darden at (304) 465-6509 or deborah_darden@nps.gov.

Sincerely,

Deborah A. Darden

for Don Striker
Superintendent

Enclosures (2 maps)

TAKE PRIDE IN AMERICA

United States Department of the Interior
NATIONAL PARK SERVICE
NEW RIVER GORGE NATIONAL RIVER
GAULEY RIVER NATIONAL RECREATION AREA
BLUESTONE NATIONAL SCENIC RIVER
104 Main Street
P.O. Box 246
Glen Jean, West Virginia 25846

IN REPLY REFER TO:

September 17, 2012

D18(NERI)

Admin
Central Files

Deborah Carter
U.S. Fish and Wildlife Service
West Virginia Field Office
694 Beverly Pike
Elkins, WV 26241

Re: Section 7, Informal Consultation for Rare, Threatened, or Endangered Species for the New River Gorge National River, *Trail Development Plan and Environmental Assessment*

Dear Ms. Carter:

The purpose of this letter is to notify you that the National Park Service (NPS) at New River Gorge National River is initiating planning for a Trail Development Plan that will implement many of the visitor access and trail ideas approved in its recently completed General Management Plan (GMP). The GMP calls for the construction of a north-south through park connector and other trails linking to gateway communities. Through partnerships, the trails would offer visitors an opportunity to hike or bike within and to and from the park. The Trail Development Plan will identify specific new trail segments in the areas of Beckley, Thurmond, and Fayetteville (see enclosed maps). The NPS plans to utilize the Boy Scouts and other volunteer groups to build these trails beginning in the summer of 2013.

This letter serves as notification that we have begun the National Environmental Policy Act process and are proposing to have a draft Trail Development Plan and Environmental Assessment available for public and regulatory review early next year. In addition, this letter serves as a record that the NPS is initiating informal consultation with your agency pursuant to the requirements of the 1973 Endangered Species Act, as amended. In order to comply, the NPS requests any information your office has regarding federally listed threatened or endangered species, species of concern, or critical habitat that may be affected within the areas of the New River Gorge as depicted on the enclosed maps.

The draft Trail Development Plan and Environmental Assessment will be submitted to your office for review and comment. If you have any questions on this matter, please contact Deborah Darden at (304) 465-6509 or deborah_darden@nps.gov.

Sincerely,

Deborah A. Darden

for Don Striker
Superintendent

Enclosures (2 maps)

TAKE PRIDE IN AMERICA

United States Department of the Interior
NATIONAL PARK SERVICE
NEW RIVER GORGE NATIONAL RIVER
GAULEY RIVER NATIONAL RECREATION AREA
BLUESTONE NATIONAL SCENIC RIVER
104 Main Street
P.O. Box 246
Glen Jean, West Virginia 25846

IN REPLY REFER TO:

September 17, 2012

D18(NERI)

Admin
Central Files

Roger Anderson
Division of Natural Resources
Environmental Resources Coordinator
P.O. Box 67, Ward Rd.
Elkins, WV 26241

Re: Consultation for Rare, Threatened, or Endangered Species for the New River Gorge National River, *Trail Development Plan and Environmental Assessment*

Dear Mr. Anderson:

The purpose of this letter is to notify you that the National Park Service (NPS) at New River Gorge National River is initiating planning for a Trail Development Plan that will implement many of the visitor access and trail ideas approved in its recently completed General Management Plan (GMP). The GMP calls for the construction of a north-south through park connector and other trails linking to gateway communities. Through partnerships, the trails would offer visitors an opportunity to hike or bike within and to and from the park. The Trail Development Plan will identify specific new trail segments in the areas of Beckley, Thurmond, and Fayetteville (see enclosed maps). The NPS plans to utilize the Boy Scouts and other volunteer groups to build these trails beginning in the summer of 2013.

The NPS requests any of the most current information your office has regarding federally listed threatened or endangered species, species of concern, or critical habitat that may be affected within the areas of the New River Gorge as depicted on the enclosed maps.

The draft Trail Development Plan and Environmental Assessment will be submitted to your office for review and comment. If you have any questions on this matter, please contact Deputy Superintendent Deborah Darden of my staff at (304) 465-6509 or deborah_darden@nps.gov.

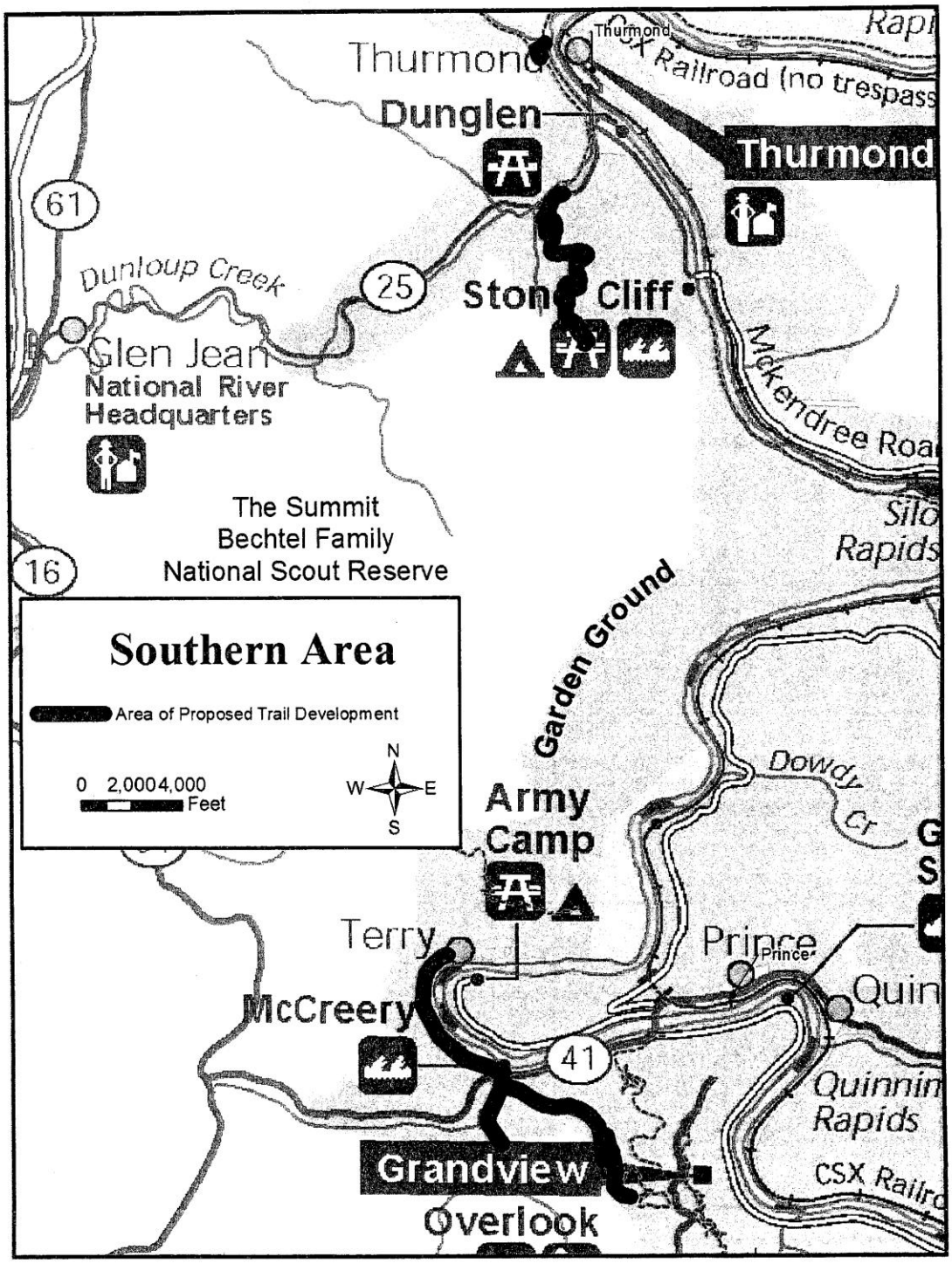
Sincerely,

Deborah A. Darden

for Don Striker
Superintendent

Enclosures (2 maps)

TAKE PRIDE IN AMERICA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Dunloup Creek
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Stone Cliff
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Mckendree Road
The Summit
Bechtel Family
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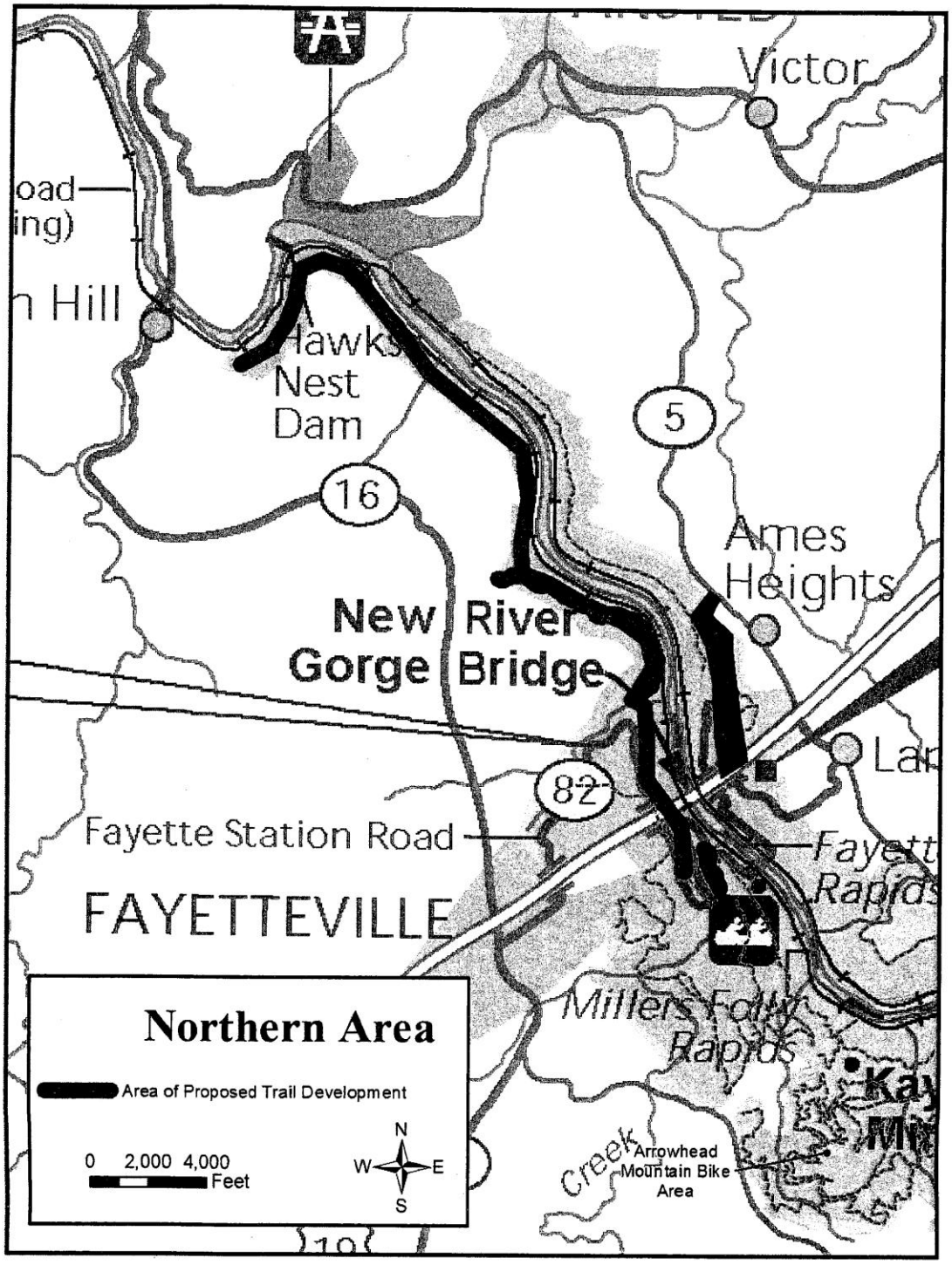
Victor
Hawks Nest Dam
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Ames Heights
New River Gorge Bridge
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Fayette Station Road
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Miller's Falls Rapids
Arrowhead Mountain Bike Area
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