National Park Service
U.S. Department of the Interior

Mammoth Cave National Park

Finding of No Significant Impact (FONSI)

Comprehensive Trail Management Plan, Mammoth Cave National Park, Kentucky

FINDING OF NO SIGNIFICANT IMPACT

Comprehensive Trail Management Plan
Mammoth Cave National Park, Kentucky

INTRODUCTION

This Comprehensive Trail Management Plan (Plan) is as an overall framework for managing the surface front- and backcountry trails within Mammoth Cave National Park (park) over the next 10 years. Green River bisects the 52,830 acres of the park; frontcountry trails are located south of Green River and backcountry trails are located north of Green River.

Beginning with establishment of the park in 1941, there has been continued development, interest in, and use of park trails. A series of hiking and walking trails in the vicinity of the Historic Entrance to Mammoth Cave and the visitor center/hotel complex developed early in the history of the park, and gradually expanded to more than 5 miles. Officially sanctioned backcountry use began in 1974 when the first trails, campsites, and parking areas north of Green River were developed, which over time exceeded 50 miles in length. Since inception, the trail system has become a popular destination for hikers, backpackers, horseback riders, and recently bicyclists.

The park has a total of approximately 85 miles of trails. Park trails include some park administrative roads, which are open to hikers and bicyclists. While all trails are open to hiking, approximately 50 miles are open to horses, and approximately 28 miles are open to bikes, including a 9-mile graveled hiking and biking trail on the south side, following the general route of a historic railroad bed leading from the visitor center to Park City, Kentucky.

Increased trail use in the last 20 years, along with changes in the park's capacity to maintain trail conditions, have spurred park management to greatly expand Mammoth Cave's volunteer program. Together, the park and volunteers have completed a number of major projects aimed at improving overall conditions of the frontcountry and backcountry trails, decreasing recreational impacts, and increasing user satisfaction on trails.

Park trail users are represented by three primary organizations: the Mammoth Cave Equine Trail Riders Association, the Bowling Green League of Bicyclists, and the Mammoth Cave Chapter of the Sierra Club. In 2005, park management invited these three groups to form a single coalition, the Mammoth Cave Backcountry Summit Council (Council), to facilitate exchange of information directly with each other and the park.

In 2007, the park received 624,927 visitors; 379,098 of them came to the park to tour Mammoth Cave. 27,062 people used frontcountry trails for hiking or bicycling. Backcountry trails received a total of 16,926 visitors, by way of foot, horse, and bicycle.

In the spring of 2006, the Superintendent initiated creation of the Plan to develop an updated strategy for the management of the trail system in the park. While comprehensive, this Plan is not all inclusive. The 31 river miles (Green and Nolin) are not included as part of this Plan, nor are backcountry campsites. This Plan addresses most current trail management issues; however, park management recognizes the need to review and perhaps update the Plan if unacceptable resource damage or visitor use issues should arise.

VALUE ANALYSIS

To accurately represent all aspects of park operations and visitor interests, the park used a Value Analysis to assess the draft Plan's alternatives. The Value Analysis is a decision-making process and an objective tool that allows evaluation of the relationship between impacts, results, and costs; it identifies the alternative with the greatest value in accomplishing NPS goals and objectives.

The Value Analysis included five weighted factors:

- Factor 1: Protect Public and Employee Health, Safety and Welfare
- Factor 2: Protect Natural and Cultural Resources
- Factor 3: Provide for Visitor Enjoyment through Improved Education and Recreational Opportunities
- Factor 4: Improve Operational Efficiency, Reliability and Sustainability.
- Cost Estimates

A group of park staff representing each of the park's divisions (Interpretation, Law Enforcement/Emergency Services, Facility Management, Science/Resource Management, Administration, and the Superintendent's Office) was assembled to formulate the Value Analysis. They applied their own professional judgment and information gained from the scoping meeting and public and agency comments to the Value Analysis. The park's management team reviewed their work before it was finalized. In using the Value Analysis, all NPS laws, policies, regulations, and guidelines were consulted.

SELECTED ACTION

Alternative 5 was identified as the park's preferred alternative and the environmentally preferred alternative in the Draft Plan and accompanying Environmental Assessment (EA), prior to public review and comment. However, Alternative 4 has been selected for implementation as the Final Selected Action. Alternative 5 has not been selected because of the overwhelming number of public comments received which opposed it. Park management concluded that the slightly higher Value Analysis score for Alternative 5 does not out weigh the importance of selecting an alternative with a high level of public support that scored almost as high, as was the case for Alternative 4.

The selected action, implementation of Alternative 4, proposes a new 6-mile loop trail which will be constructed east of the Green River Ferry Road-North for bicycle and hiker use only. All other north side trails will be designated for hikers and horse-users. Specifically, the selected action addresses four key issues: 1) Visitor Use issues, 2) Facility Issues, 3) Maintenance Issues, and 4) Administrative Issues. The following actions will be implemented:

Visitor Use:

- Permit bicycle use and hiking on a proposed new 6-mile loop trail beginning at a new parking area and trailhead with access off of Green River Ferry Road-North. Horses will not be permitted on this trail. Under this alternative, bicycles will not be permitted on the Sal Hollow Trail, the Buffalo Trail, and portions of the Turnhole Bend Trail. These trails will revert to hiking and horse use only. Bicycles and hiking will be permitted on a new 6-mile, single-track loop trail which will be constructed east of the Green River Ferry Road-North and the ridge west of Big Hollow. Bicycle use will also be authorized on the proposed connector trail from this new trailhead to the Maple Springs Group Campground and to the Mammoth Cave International Center for Science and Learning. A special regulation will be promulgated to authorize bicycle use on these trails.

- Mountain bike use will be authorized on the White Oak Trail. The White Oak Trail consists of an Administrative Road located in the northeast section of the park and separate from the main trail system. This 2.4-mile road/trail is currently open to hiking and horseback riding, but gets comparatively little traffic by any users. The road ends at a backcountry campsite on the Green River. This road is wide, comparatively level, and is appropriate for multiple-use. White Oak Trail will remain open to hikers and horseback use, and will also be opened to bicycles. *(common to Alternatives 2, 3, 4, and 5)*.

- All other visitor uses of the park trail system will remain the same, as they are currently authorized. *(common to Alternatives 2, 3, 4, and 5)*.

Facility Issues:

- Construct a new multi-use parking lot/trailhead with access off Green River Ferry Road-North. Under this alternative, a new multi-use parking area will be constructed approximately halfway between the Maple Springs entrance roads, with direct access off of Green River Ferry Road-North. This lot will provide parking for 20 passenger vehicles as well as parking for 15 horse trailers. This proposed parking area/trailhead could be located on either the east or west side of Green River Ferry Road-North. Or it could be split into two lots; one on the west side for horse use and one on the east side for hiking and bicycle use. This alternative includes an option for developing limited restroom facilities at the site, similar to the ones at the Maple Springs Trailhead.

- Increase parking at Maple Springs Trailhead within the existing footprint. When road improvements were made to the Maple Springs Road in 2003, the parking area was improved, but overall parking spaces were reduced. (Maple Springs Trailhead currently has parking for six passenger vehicles and eight horse-trailers.) Adequate space is available between existing spaces to accommodate this expansion. Under this alternative, the existing parking area/trailhead will be improved on its existing footprint to provide 12 parking spaces for horse trailers and 10 parking spaces for passenger vehicles.

- Construct a connector trail (approximately 1.5 miles) in the Maple Springs Complex (Figure 5). This connector trail will improve access to the trail system and provide needed trail linkages among four existing facilities: the Maple Springs Trailhead, the Raymer Hollow Trailhead, the Maple Springs Group Campground, and the Mammoth Cave International Center for Science and Learning. This connector trail will be designed as a wide, hardened-gravel trail to facilitate heavy use and two-way traffic. *(common to Alternatives 2, 3, 4, and 5)*.

- Eliminate Trailhead and trail access from the Good Spring Baptist Church yard. The trailhead and trails emanating from Good Spring Baptist Church will be eliminated and road access to the church and cemetery will remain. This alternative includes the development of connector trails that will replace the trail access eliminated at the church. Trail access to Raymer Hollow Trail will be continued by use of a new connector trail from the Maple Springs Trailhead. Trail access to the Good Spring Trail will continue by use of the Buffalo Trail from the Maple Springs Trailhead. *(common to Alternatives 2, 3, 4, and 5)*.

- Improve the short connector trail between Lincoln Trailhead and Collie Ridge Trail. This short connector trail is narrow, deeply rutted, and eroded. Therefore, this trail will be widened to sustainable standards to accommodate the level of traffic it now receives. *(common to Alternatives 2, 3, 4, and 5)*.

- Implement modest improvements to the existing trailhead/parking area at Lincoln within the existing footprint. Currently, there are 10 horse trailer parking spaces at the Lincoln Trailhead. These parking spaces are used primarily by horse users, but occasionally are used by hikers. Under this alternative, the existing parking area/trailhead at Lincoln will be improved on its existing footprint to provide a total of 15 parking spaces for use by both horse trailers and passenger vehicles.

- Implement modest improvements to the existing trailhead/parking area at the First Creek Trailhead within the existing footprint. Currently, there are 10 horse trailer parking spaces at the First Creek Trailhead. Under this alternative, the parking area for this trailhead will be redesigned on the existing footprint to provide a total of 15 parking spaces for use by both horse trailers and passenger vehicles. *(common to Alternatives 2, 3, 4, and 5)*.

- Implement modest improvements to the existing trailhead/parking area at the Temple Hill Trailhead within the existing footprint. Currently, there are 10 horse trailer parking spaces at the Temple Hill Trailhead. Under this alternative, the parking area for this trailhead will be redesigned on the existing footprint to provide a total of 15 parking spaces for use by both horse trailers and passenger vehicles. *(common to Alternatives 2, 3, 4, and 5)*.

- Construct small parking areas at three locations: the start of Crystal Cave Road, the start of the Great Onyx Road, and at the White Oak Trailhead. Under this alternative simple, basic crushed aggregate parking areas will be built to provide parking for 2 to 3 cars at each site. A minimal amount of clearing/leveling will be needed to prepare the sites. *(common to Alternatives 2, 3, 4, and 5)*.

- Study the conceptual extension of the Mammoth Cave Railroad Bike and Hike Trail. Presently, the Mammoth Cave Railroad Bike and Hike Trail is 9-miles long. This trail was constructed from 2004 to 2007 and is open to hiking and biking. The Mammoth Cave Bike and Hike Trail begins at the Mammoth Cave Hotel and follows along the general route of a historic railroad bed to Park City. There is interest from the communities of Cave City and Brownsville to construct similar bike trails that will connect with the Mammoth Cave Railroad Bike and Hike Trail. This Plan recognizes the park's interest in studying the conceptual extension of this trail (and possibly other hike/bike trail connections) as future funding becomes available for planning and analysis. *(common to Alternatives 2, 3, 4, and 5)*.

OTHER ALTERNATIVES CONSIDERED

ALTERNATIVE 1: NO ACTION

A No-Action Alternative is required by the National Environmental Policy Act for the purposes of providing comparison to alternatives considered. In this trail Plan, the No-Action Alternative is not acceptable because this alternative would not provide the needed improvement in addressing backcountry trail management issues which include public safety and improved visitor experience and satisfaction. This alternative was not recommended since it did not meet the purpose and need for the Plan.

ALTERNATIVE 2:

This alternative would establish Sal Hollow, Turnhole Bend (north), and Buffalo trails as shared use trails on a year round basis. Hikers, bicyclists, and horse-users would share the use of these trails. All other north side trails would be designated for hikers and horse-users. This alternative includes elements listed as "common to Alternatives 2, 3, 4, and 5" as stated in the selected action. This alternative was not selected because it received a much lower value analysis score than other alternatives, particularly Factor 1: Protect Public and Employee Health, Safety and Welfare, Factor 3: Provide for Visitor Enjoyment through Improved Education and Recreational Opportunities, and Factor 4: Improve Operational Efficiency, Reliability and Sustainability. In addition, the public has consistently stated, from the scoping to public comment stages of this Plan, their concern regarding visitor use conflicts and safety concerns.

ALTERNATIVE 3:

This alternative would establish Sal Hollow, Turnhole Bend (north), and Buffalo trails as shared use trails on a seasonal basis; hikers and bicyclist would use the trails year round, and horses would be allowed on Sal Hollow Trail June 1 through October 31. All other north side trails would be designated for hikers and horse-users. This alternative includes elements listed as "common to Alternatives 2, 3, 4, and 5" as stated in the EA. This alternative was not selected because it received a much lower value analysis score than other alternatives, particularly Factor 1: Protect Public and Employee Health, Safety and Welfare, Factor 3: Provide for Visitor Enjoyment through Improved Education and Recreational Opportunities, and Factor 4: Improve Operational Efficiency, Reliability and Sustainability. In addition, the public has consistently stated, from the scoping to public comment stages of this Plan, their concern regarding visitor use conflicts and safety concerns.

ALTERNATIVE 5:

This alternative would establish First Creek Trail for bicyclist and hiker use only. All other north side trails would be designated for hikers and horse-users. Alternative 5 was the park's preferred alternative, and the environmentally preferred alternative in the EA, prior to public review and comment. This alternative includes elements listed as "common to Alternatives 2, 3, 4, and 5" as stated in the EA. This alternative was not

selected because of the overwhelming number of public comments received which opposed it. Park management concluded that the slightly higher value analysis score for this alternative did not out weigh the importance of selecting an alternative with a high level of public support that scored almost as high.

BASIS FOR DECISION

The Selected Action (Alternative 4) provides a strategic tool to plot the course of trail management over the next 10 years at the park, balancing resource protection with visitor use interests in accordance with the park's enabling legislation.

Park staff and the Superintendent have determined that maintaining the status quo is unacceptable because it would not satisfactorily address the park's backcountry trail management issues including poor trail conditions, public safety and concerns with visitor experience and satisfaction. This determination has been supported by frequent dissatisfied comments from backcountry visitors and public comments received during this planning process.

With this planning process, the park pursued a new trail management plan that would:

- ensure a board level of protection for park natural and cultural resources;
- employ sustainable design and maintenance methods;
- resolve visitor conflicts by providing equitable park experiences for all visitors through a wide range of recreational opportunities;
- improve trail conditions, visitor services/facilities, and interpretive opportunities; and
- promote trail stewardship through volunteerism, leave no trace principles, and responsible trail use.

Resource protection/sustainable design: The core purpose of this Plan, as well as all park management, must be protection of park resources. The landforms, plants, animals, and archeological resources have an intrinsic value; they are treasures in their own right, merely because they exist. The park managers and staff are entrusted with protecting and preserving these treasured resources because of their national and international significance.

Park resources also need to be protected on human terms, as curiosities, quiet glades, and beautiful places to experience and enjoy. If backcountry use causes undesirable impacts to these features, there will be little reason for people to go there. The park is actively using sustainable design in ongoing trail system maintenance work to address problems with trail tread conditions, and concerns with soil erosion.

Recreational opportunities: The Superintendent acknowledges the interests of all user groups. Appropriate uses of the park trails and related facilities are identified in the Plan as hiking, horseback riding, bicycling (recreational and mountain biking), cross-country skiing and snow-shoeing (as weather permits) as valid park user groups.

Up until recent years, the park had supported the concept of multiple-use trails, as can be found on many public lands. However, at the June 2006 scoping meeting and from comments received, the park trail users clearly expressed their interest in separating

horse and bicycle use for the purposes of safety and visitor use conflicts. No reports reflecting a safety problem have been recorded, yet the park acknowledges that a large number of users have strong feelings and perceptions of a safety concern with multiple use trails.

The park is seeking to balance the needs and interests of different user groups. Under the selected action, horse use and bike use will be separated, with the exception of the White Oak Trail. Use of the new trail will be limited to bicyclists and hikers; hiking and horse use will be allowed on all other backcountry trails. The new trail provides hikers with a route free of horse impacts.

The park will promulgate a special regulation for use of mountain bikes on trails during the implementation of the approved Plan. The special regulation to formalize the use of bikes on backcountry trails will be specific to defined trail locations.

Trail conditions: In the draft Plan and EA, the park proposed a different use-configuration of the existing 85 miles of park trails, but public comment did not favor this alternative. The selected action (Alternative 4) adds approximately 7.5 miles of new trail (6-mile bike trail and 1.5 miles of new connector trails), an 8 percent increase to the 85-mile park trail system.

Park management will require specific implementation actions to ensure that the trail system and other park resources are protected. A formal trail monitoring program will be established as part of the implementation of the Plan. The implementation of a monitoring program will be essential to better understand and address resource impacts. Sound information on trail use and trail use impacts gathered through monitoring is needed for making responsible management decisions. Should trail conditions deteriorate, the park will employ various management options (hardening of trail treads, rehabilitation of trails, rerouting trail segments, requiring permits, trail closures, etc.) to ensure that unacceptable impacts to park resources do not occur. The park will engage the public as appropriate in any future decision-making process and will ensure that these actions are compliant with NEPA and other applicable laws.

Trail stewardship: To work toward a sustainable trail system, the park will call upon all trail users to use the trails in a responsible manner, and to volunteer their time and effort to maintain, rehabilitate, and/or construct park trail system facilities. The park will seek formal agreements with all trail users groups to encourage responsible use of trails and volunteer assistance in building and maintaining the trails.

Through the selected action, the park will encourage all trail users to adhere to the leave no trace environmental ethic principles and practice responsible use of trails.

THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that would best promote the national environmental policy expressed in the National Environmental Policy Act (NEPA) § 101 (b). The environmentally preferred alternative would cause the least damage to the biological and physical environment, and would best protect, preserve, and enhance historical, cultural, and natural resources.

Identification of the "environmentally preferred alternative" is based on evaluation of the direct, indirect, and cumulative impacts on park resources. Cost is not a factor in the selection of the environmentally preferred alternative. Section 101(b) of NEPA identifies six criteria to help determine the environmentally preferred alternative. The act directs that Federal plans should:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The NPS determined that Alternative 5 is the environmentally preferred alternative. Alternative 5 satisfied each of the six criteria and is best or equal to other alternatives at satisfying the six criteria. Alternative 5 rated higher than any other alternative indicating the greatest level of goal achievement. Generally, Alternative 5 was selected as the environmentally preferred alternative due to several factors. This alternative would eliminate horse impacts (water quality impacts, increased tread wear, and introduction of exotic species) to backcountry trails within the First Creek drainage basin. Alternative 5 would require only a small amount of additional trail construction/re-routing work and would involve the least new development of previously undisturbed areas. Alternative 5 only requires modest improvements of existing parking areas, almost exclusively within the footprint of existing parking areas. These factors influenced many of the six criteria for the selection of the environmentally preferred alternative. In summary, Alternative 5 is identified as the environmentally preferred alternative because it is the alternative that best attains "the widest range of beneficial

uses of the environment without degradation, risk of health or safety or other undesirable and unintended consequences."

Although Alternative 5 was identified as the Environmentally Preferred Alternative, it was not selected as the Final Selected Action because of the overwhelming number of public comments received which opposed it. Park management concluded that the slightly higher Value Analysis score for this alternative did not out weigh the importance of selecting an alternative with a high level of public support that scored almost as high.

Alternative 4 is not the Environmentally Preferred Alternative because it is not "the alternative which would cause the least damage to the biological and physical environment, and best protect, preserve, and enhance historical, cultural and natural resources." However, based on the evaluation of the impacts on park resources it does contribute to meeting the NEPA criteria for determining the environmentally preferred alternative. Among the five alternatives evaluated, Alternative 4 received the second highest score. Alternative 4 was equal to the Environmentally Preferred Alternative in three of the criteria and second best for two others. This alternative would not introduce horse use impacts (water quality impacts, increased tread wear, and introduction of exotic species) within the area of the new trail development. The new trail will incorporate sustainable design and the construction will be completed with minimum impact techniques. Alternative 4 has several common elements with Alternative 5, including that it only requires modest improvements of existing parking areas, almost exclusively within the footprint of existing parking areas.

Therefore, the park has elected to implement Alternative 4 as the Final Selected Action. Additional environmental and cultural compliance will be completed specifically for the new trail development.

WHY THE SELECTED ACTION (ALTERNATIVE 4) WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

No major/significant adverse impacts were identified that would require analysis in an EIS. The following is a summary of the impact assessment for the selected action:

- No impacts to ecologically critical areas, flood plains, wetlands, land use, paleontology resources, soundscape, hazardous or solid waste, environmental justice, cultural resources, and Native American religious concerns were identified.
- Negligible impacts to climate and air quality, and sensitive resources, and socio-economic resources were identified.
- No effect or not likely to adversely affect threatened and endangered species.
- Minor adverse impacts to terrestrial and aquatic resources, migratory birds, and hydrology resources (long term) were identified.
- Minor to Moderate adverse impacts to vegetation resources (long term) were identified.
- Moderate adverse impacts to geology, soils and minerals (long term), aesthetics, visual and recreation resources (long term) were identified.
- Moderate beneficial impacts to public health and safety (long term), geology, soils and minerals (long term), aesthetics, visual and recreation resources (long term) were identified.
- Minor to moderate beneficial impacts to vegetation resources (long term) were identified.
- Minor beneficial impacts to hydrology resources (long term), terrestrial and aquatic resources, migratory birds (long term) were identified.
- Negligible to minor beneficial impacts to socio-economic resources (long term) were identified.
- Negligible beneficial impacts to threatened, endangered and sensitive resources (long term) were identified.

Degree of effect on public health or safety:

Under the selected action the quality of the trails will be improved through implementing sustainable design in construction and maintenance practices, and through updated trail use monitoring programs which will reduce poor trail conditions

and associated safety hazards. The overall capacity of trailheads and parking areas will be increased and access around the Maple Springs complex will be improved. Updated signage and the installation of additional facilities at key trail areas will also enhance conditions. The development of new trails, parking and restroom facilities will provide general improvement to public health and safety. The new trails developed for bicycles and hikers only will eliminate safety concerns with interactions between bicycles and horses. These impacts will be minor, beneficial and long term. During construction work areas will be off limits to the general public. Construction impacts will be adverse, but minor and short term.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

As described in the draft Plan and EA, the selected action will not affect prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. All of the actions to be implemented will be within the boundaries of the park land and will only have minimal affects on any current uses in the park. The selected action is intended to benefit park visitors utilizing the backcountry trails by improving trail conditions, recreation opportunities, visitor experience and enjoyment.

Minimal adverse affects are anticipated or likely on cultural resources. Current trails impact a few archeological sites as visitor travel leaves the designated trails and as existing trails erode; the park will work to mitigate these impacts. As sustainable design and practices are implemented erosion will be reduced; as the condition of the trail system improves the frequency of users traveling off of the designated trails will decrease.

The trailhead and trails emanating from Good Spring United Baptist Church will be eliminated when the connector trails are complete in the Maple Springs Complex area. Good Spring United Baptist Church and Cemetery are important cultural resources and existing conditions do not adequately protect or provide respectful solitude for these resources. Ground disturbance will take place for new trail and parking lot development, however, all new construction sites, trail routes and reroutes, will be surveyed for archeological resources prior to construction. Locations will be adjusted to avoid adverse impacts if any archeological materials or features are discovered. Archeological compliance will be completed prior to construction. The effects are expected to be direct and indirect, beneficial and adverse, no effect to no adverse effect and long term for cultural resources.

The degree to which the effects on the quality of the human environment are likely to be highly controversial:

The public has shown a keen interest and has been fully engaged in the development of the Plan and EA. Through scoping and public comments periods, the park has heard the concerns of trail users and has responded. Park management concluded that the slightly higher Value Analysis score for draft Preferred Alternative 5 did not out weigh the importance of selecting an alternative (Alternative 4) with a high level of public support that scored almost as high.
None of the letters received during the scoping meeting or the EA public review period raised issues that would suggest that the effects on the quality of the human environment of this selected action would be highly controversial.

The degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks:

There are no effects on the quality of the human environment that are either highly uncertain or that involve unique or unknown risks.

The degree to which the action may establish a precedent for future actions with significant effects, or represents a decision in principle about a future consideration:

The selected action neither establishes a NPS precedent for future actions with significant effects nor represents a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts. Cumulative impact is defined by the Council on Environmental Quality regulations in 40 C.F.R. Section 1508.7 as:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The selected action (Alternative 4) will result in a small increase in the total development foot print within the park and add to the other development actions which occurred in the past because it will require new construction and development of previously undisturbed resources within the park as follows: construction of approximately 6 miles of new trails open to bicycles and hikers only, rerouting of approximately 1 mile of the First Creek Trail, construction of approximately 1.5 miles of connector trails, improvement of the short connector trail from Lincoln Trailhead to Collie Ridge, and improvements to or installation of parking areas.

The selected action includes the implementation of sustainable trail design in the construction, rehabilitation and maintenance of all trails, and developing and implementing a resource monitoring program during the next 5 years which will help mitigate impacts. Therefore, total cumulative impacts for some resources should actually be reduced over time. Some increase in backcountry visitation will likely occur as the selected action is implemented and trail conditions improve. The increased visitation will also add to the past and current impacts. The areas of impact will be negligible to minor in context of the park as a whole.

The following cumulative impact effects have been identified:

- No cumulative effects to wetlands or floodplains, geology and mineral resources are anticipated.
- The cumulative effects to air quality resources, terrestrial and aquatic resources, migratory birds, cultural and archeological resources, are expected to be negligible.
- The cumulative effects to vegetation resources are expected to be adverse, minor and long term.
- The cumulative effects to threatened, endangered, and sensitive species are expected to be negligible and not likely to adversely affect.
- The cumulative effects on aesthetics and recreation resources will be minor, beneficial and long term.
- The overall cumulative effects to socio-economic resources will be minimal and long term.
- The overall cumulative effects to public health and safety will be beneficial, direct and indirect, moderate and long term.

The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP) or may cause loss or destruction of significant scientific, cultural, or historical resources:

Surveys to identify cultural resources that might be affected by an undertaking are required before completing the requirements under Section 106 of the National Historic Preservation Act. A survey for historic properties has already been completed for the Area of Potential Effect. A preliminary review by the Kentucky State Historic Preservation Officer (SHPO) and park Cultural Resource Specialist concludes that implementation of the selected action will have no adverse effect on historic or cultural landscape resources eligible for or listed in the NHRP.

Surveys for archeological resources will be completed for all new trail routes, reroutes, and new parking areas prior to construction and locations will be adjusted to avoid adverse impacts if any archeological materials or features are discovered. Newly identified resources will not be disturbed. The application of 36 CFR Part 800 of the Advisory Council on Historic Preservation (ACHP) will be completed in consultation

with the Kentucky SHPO for each applicable element of the selected action prior to its construction.

There are no Indian Trust resources in the park and the park retains no records or other information related to Indian Trust resources.

The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973:

The primary effect from implementation of the selected action (Alternative 4) will be a slight increase in the potential for impacts to threatened, endangered and sensitive species due to the increased development footprint into previously undeveloped areas. Indiana and Gray bats (endangered) are likely to forage in the project area, and Indiana bats may roost in trees in or near the sites from April 1 through November 15 annually. Both bats hibernate in park caves. Vegetation and tree removal identified in the selected action will be performed under the guidelines in the "Biological Opinion for the Effects of the Hazard Tree Removal and Vegetation Management Program to the Indiana Bat at Mammoth Cave National Park, Kentucky" which was developed in consultation with the U.S. Fish and Wildlife Service (USFWS). The proposal is not likely to adversely affect Indiana or Gray bats.

The Kentucky Cave Shrimp (endangered) is currently known to inhabit two caves located north of the Green River. Drainage from the area of the proposed new trail development can be presumed to reach some portion of cave that may contain cave shrimp. The potential effects are primarily from runoff from sites during construction. Adequate controls need to be taken to prevent erosion and sedimentation. It is expected that standard erosion control methods will be installed early in the construction period, which will reduce the chances of sediments or hazardous materials entering the groundwater from the sites. The effects of implementing the selected action are expected to be "not likely to adversely affect," direct and indirect, beneficial and adverse and long term for the Kentucky Cave Shrimp.

At least seven endangered species of mussels are known to be present in the Green River within the park. These mussels are found in the free-flowing segment of the river upstream of the majority of the trail system and the proposed new trail development. The proposal is not likely to have adverse effects on endangered mussel species.

The Surprising Cave Beetle (candidate species) is located in caves which are more than one-half mile from the nearest backcountry trail and the new trail development area. The selected action will have no affect on the Surprising Cave Beetle.

The Bald Eagle is occasionally seen from existing backcountry trails and has a transient presence in all alternative sites. Implementing the selected action is not likely to adversely affect the Bald Eagle.

Informal consultation with the USFWS has been completed pursuant to Section 7 of the Endangered Species Act. The USFWS concurred with the Park that implementation of the Plan is not likely to adversely affect threatened and endangered species. Effects will be negligible and temporary.

Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment:

The selected action violates no Federal, State, or local environmental protection laws.

IMPAIRMENT OF PARK RESOURCES OR VALUES

The meaning of impairment is spelled out in the National Park Service Organic Act of 1916 (16 USC 1); the National Park Service General Authorities Act of 1970, including amendments in 1978 (16 USC 1a-1); and the National Park Service *Management Policies 2006* (Section 1.4.5). Impairment means impact(s)

> that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

The selected action is not expected to result in impairment of park resources. In addition to reviewing the list of significance criteria, the NPS and the park determined that implementation of the selected action would not constitute an impairment of the park's resources and values. This conclusion is based on a thorough analysis of the impacts described in the EA, the agency and public comments received, and the professional judgment of the decision-maker in accordance with the NPS's *Management Policies*, *2006* (U.S. Department of the Interior, National Park Service). As described in the EA, implementation of the selected action would not result in major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's General Management Plan or other relevant NPS planning documents. Overall, the plan would result in benefits to park resources and values as well as opportunities for their enjoyment, and it would not result in their impairment.

SUMMARY OF MITIGATING ACTIONS

The following is a list of the mitigating actions of the likely environmental consequences of the proposal. These are the important conditions that will be utilized to limit the potential for unexpected adverse consequences.

1. Tree removal for the selected action is expected to be minimal; any tree removal required will conform to the park "Hazard Tree Management Plan" (approved June 20, 2000). The park completed formal consultation with the USFWS before approval of that plan. The primary issue is protection of Indiana Bats. Tree removal will be completed when Indiana Bats are hibernating in caves (November 16 to March 31) and therefore are unlikely to be roosting in trees.
2. During any construction, dust will be controlled.
3. Erosion and sedimentation control measures should be placed to prevent movement of soils from construction sites into water resources and the cave system.
4. Location of proposed facilities will be adjusted to avoid archeological resources if any are found. Mitigation actions will be under taken within the current trail system to reduce the impacts of visitor travel off designated trails and trail erosion where there are identified impacts to archeological sites.
5. Effective construction management and supervision should be provided to insure that public safety and other concerns related to construction are properly addressed, and that any contractors perform as specified.
6. The selected action includes a management objective of developing and implementing a visitor-use and trail resource impact and monitoring program within 5 years which should improve the park's ability to identify any potential future impacts and formulate effective management responses.

PUBLIC INVOLVEMENT

In 2005, park management invited each of the three primary backcountry user groups (the Mammoth Cave Equestrian Trail Riders Association, the Bowling Green League of Bicyclists, and the Mammoth Cave Chapter of the Sierra Club) to form a single coalition, the Council, in order to facilitate communication and exchange information directly with each other and the park regarding backcountry issues.

Later in 2005, the park announced the possibility of opening some administrative roads to bikes under a new NPS-wide agreement between the NPS and the International Mountain Bike Association. During a public comment period for this proposal, the horseback riding community submitted approximately 700 comments in opposition to opening any administrative roads which would be shared by horses and bikes, citing safety concerns posed by sharing trails. The biking community submitted less than a dozen responses in favor of the proposal during this period. The park's action on this matter was to open four administrative roads to bicycles on the south side of the river, where horse use is not permitted, but none on the north side, pending the completion of a Plan.

As part of its efforts to comply with NEPA, the park held a scoping meeting the evening of June 29, 2006, at the park's training center. The scoping meeting was attended by more than 100 citizens and interested groups and 94 written comments were received. An open house was held the evening of February 7, 2008, at the Mammoth Cave Hotel. The open house was attended by 48 citizens and interested groups. The draft Plan and accompanying EA was published for public review in the Planning, Environment and Public Comment (PEPC) system on January 23, 2008, for a period of 60 days ending on March 24, 2008. The draft EA was also posted on the website. In addition, the public was notified of the availability of the documents by a newsletter and press release that was printed by newspapers with local and regional circulation. The notice also was broadcast on a local radio station. The park received 2,905 written comments from individuals, groups, and government entities. Comments were generally supportive of the overall Plan; however a vast majority were unsupportive and/or opposed of the park's preferred alternative (Alternative 5) and voiced their support of Alternative 4. After further review of the alternatives and consideration of the comments received, the park selected Alternative 4 as the selected action.

Responses to the substantive public comments are provided in the Errata Sheet attached to this document. All comments received in response to the scoping meeting, open house and the EA have been duly considered and will remain in the project administrative record.

CONSULTATION

Informal consultation with the USFWS has been completed. The USFWS concurred that the proposed project will not likely adversely affect listed or candidate species known to be present at the park. A copy of the correspondence received from the USFWS is attached.

The park completed initial compliance with the NHPA under the terms of the draft servicewide NPS programmatic agreement with the Kentucky SHPO and the Advisory Council. A preliminary review by the Kentucky SHPO and park Cultural Resource Specialist concludes that implementation of the selected action would have no adverse effect on historic or cultural landscape resources eligible for or listed in the NRHP.

Surveys to identify cultural resources that might be affected by an undertaking are required before completing the requirements under Section 106 of the NHPA. A survey for historic properties has already been completed for the Area of Potential Effect. Surveys for archeological resources will be completed for all new trail routes, reroutes, and new parking areas prior to construction and locations will be adjusted to avoid adverse impacts if any archeological materials or features are discovered. Newly identified resources will not be disturbed. The application of 36 CFR Part 800 of the ACHP will be completed in consultation with the Kentucky SHPO for each applicable element of the selected action prior to its construction. A copy of the correspondence received from the Kentucky SHPO is attached.

Review copies of the draft Plan and EA were also sent to the Kentucky State Clearinghouse. The Kentucky State Clearinghouse is located within the Natural Resources and Environmental Protection Cabinet and the review by Kentucky State Agencies is coordinated by the Commissioner's Office in the Department for Environmental Protection. The following State agencies routinely receive copies distributed by the clearinghouse: Division of Water, Division of Waste Management, Division for Air Quality, Department of Health Services, Economic Development Cabinet, Division of Forestry, Department of Surface Mining Reclamation and Enforcement, Department of Parks, Department of Agriculture, Nature Preserves Commission, Kentucky Heritage Council, Division of Conservation, Department for Natural Resources, Department of Fish and Wildlife Resources, Transportation Cabinet, and Department for Military Affairs. No comments were received from these agencies.

Finding of No Significant Impact (FONSI)

Comprehensive Trail Management Plan
Mammoth Cave National Park, Kentucky

The selected action (Alternative 4) does not constitute an action that normally requires preparation of an Environmental Impact Statement. The selected action would not have a significant effect on the human environment. Adverse environmental impacts that could occur are negligible, minor or moderate in intensity. There are no significant impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action would not violate any Federal, State, or local environmental protection law.

Based on the foregoing, I find that the proposal does not constitute a major Federal action that would significantly affect the quality of the human environment. Therefore, in accordance with the National Environmental Policy Act of 1969 (Public Law 91-190, 83 Stat. 953) and regulations of the Council on Environmental Quality (40 CFR 1508.9), an Environmental Impact Statement will not be prepared for this project.

Recommended: _____ 9 December 2008

Patrick H. Reed — Date

Superintendent, Mammoth Cave National Park

Approved: _____ 12-17-08

David Vela — Date

Director, Southeast Region