Lost Valley


Eden Falls Cave Entrance

- **Planned Improvements** – Beginning at the end of the existing ADA compliant portion of the trail, approximately 0.25 mile from the parking lot, an additional 0.4 mile or less of the lower trail would be upgraded to make it compliant with standards set by the ADA (see Figure 6). These standards include a trail width of 60 inches and grades no greater than 12.5 percent for a distant no greater than 10 feet, 10 percent for a distance no greater than 30 feet, and 8.3 percent for 200 feet. For distances over 200 feet the grade should be no greater than 5.0 percent. Due to terrain and engineering constraints, ADA compliance could not be extended further up the trail.

  To make the trail surface ADA compliant, BNR would use a commercially available soil stabilant. This stabilant would be mixed with the existing trail soil and a crushed aggregate to provide a solid, relatively smooth surface. The color of the crushed aggregate would be chosen to match to the trail soil and a colorant may be added to the soil stabilant, if necessary, to more closely match the surrounding environment. BNR would test a variety of stabilants, aggregates, and colorants prior to beginning work on the trail and select the combination that best matches the existing trail while providing the required durability. The remaining trail, which leads beyond the falls to the cave and the return trail from the cave would be improved by the removal of trip hazards such as rocks and tree roots and grubbing and packing the trail smooth. Stone steps would be evened up and secured with mortar. The mortar would be hidden beneath the steps.


Lost Valley Trail


Natural Bridge at Lost Valley

  A handhold would be installed along the side of the entrance to the cave to reduce the number of accidents that occur each year when visitors slip and fall down the steep slope below the entrance. The handhold would be constructed of unpainted stainless steel that is sustainable and repaired easily when damaged. It would be anchored in place, using concrete or screw anchors, and all connections would be bolted to provide stability. Total working height of the handrail would be 42” per standard building code.

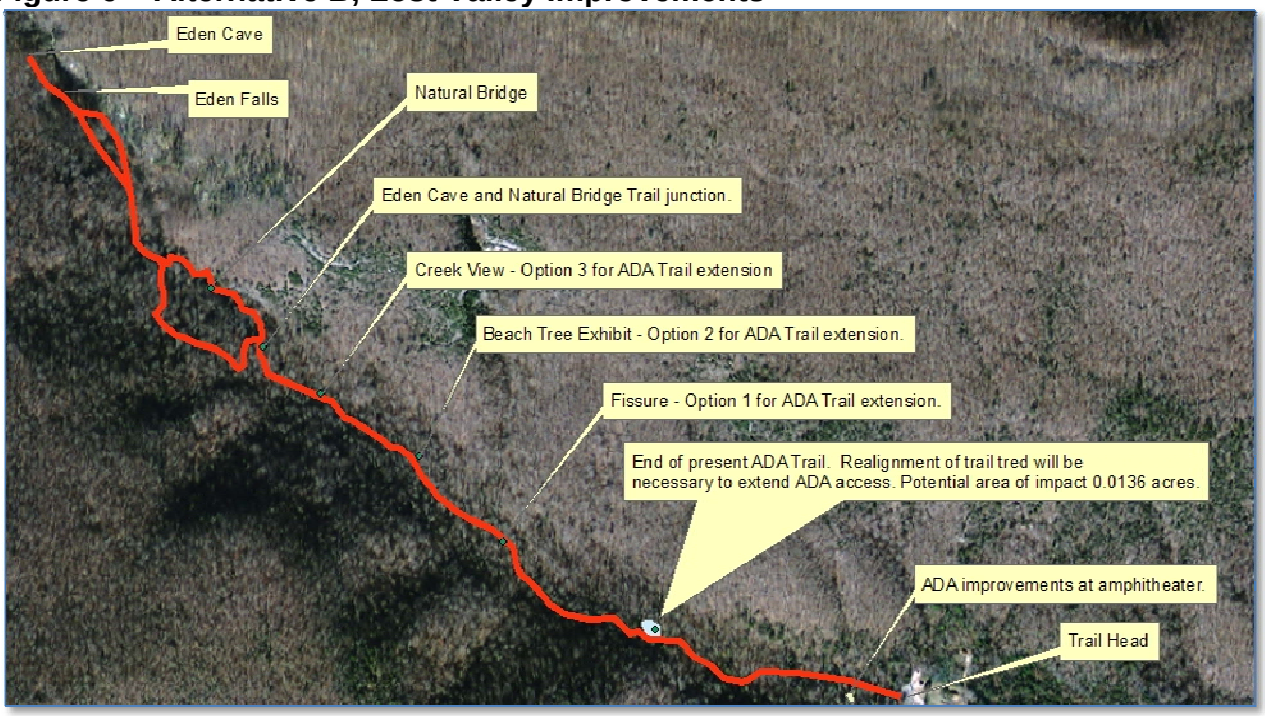
  Drainage crossings would be improved by the use of buried pipes or handmade stone culverts. If buried

pipes are used, they would be effectively covered and hidden from sight to maintain the appearance of the natural setting. Approximately 0.0136 acre would be disturbed at the end of the existing ADA-compliant portion of the trail in order to realign the trail tread in order to extend the ADA-compliant portion of the trail. The existing amphitheater located near the beginning of the trail would also be upgraded to ADA standards. A comprehensive description of the ADA standards for trails can be found at: http://www.access-board.gov/outdoor/index.htm.

- **Use/Operation of the Facility** – The improved facility would continue to be primarily for use by visitors. The ability of this facility to be used by disabled visitors would be expanded.
- **Utilities** – This facility would not require any utilities.
- **Access** – In addition to the existing level of access, disabled visitors would have increased access to the lower trail (below the natural bridge) and the amphitheater.
- **Parking** – No changes to the existing parking facility are proposed.
- **Revegetation** – All areas disturbed by construction of the improvements would be revegetated and recontoured to the style of the native landscape. Native vegetation, rocks, or other natural features would be used, as appropriate.
- **Construction Staging** – Material stockpiles would be located in a cordoned off section of the parking lot during construction. If this space is limited, then material would be brought in on an as-needed basis. The amphitheater and trail would be closed for brief periods during construction.

This alternative is based on preliminary designs and best information available at the time of this writing. Specific distances, areas, and layouts used to describe the alternative are only estimates and could change during final site design. If changes during final site design are inconsistent with the intent and effects of the selected alternative, then additional compliance would be completed, as appropriate.

Figure 6 – Alternative B, Lost Valley Improvements



Mitigation Measures

The following mitigation measures were developed to minimize the degree and/or severity of adverse effects and would be implemented during construction of the action alternative, as needed:

- To minimize the potential for flood damage during construction at Rush and Hasty Landings, grading activities would be scheduled for the fall months (September through December), which historically are periods when flooding is least likely to occur.
- Several soil stabilants would be tested with native soils from the Lost Valley trail area to ensure a good color match and ability to blend in with the natural environment. The soil stabilant selected would not contain any toxic substances that, once cured, could potentially contaminate the environment at Lost Valley.
- To minimize the amount of ground disturbance, staging and stockpiling areas would be sited in previously disturbed sites, away from visitor use areas to the extent possible. All staging and stockpiling areas would be returned to pre-construction conditions following construction.
- Construction zones would be identified and fenced with construction barrier fencing, or some similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.
- Revegetation and recontouring of disturbed areas would take place following construction and would be designed to minimize the visual intrusion of the improvements. Revegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species using native species. All disturbed areas would be restored as nearly as possible to pre-construction conditions shortly after construction activities are completed.

- Strict invasive weed control Best Management Practices would be used, including, but not limited to, thoroughly pressure washing equipment before bringing it on site, would be implemented to minimize the introduction of noxious weeds.
- Employees and construction crews would be required to park their vehicles in locations that would minimize the inconvenience to visitors.
- Because disturbed soils are susceptible to erosion until revegetation takes place, standard erosion control measures such as silt fences and/or sand bags would be used where necessary to minimize any potential soil erosion.
- Fugitive dust generated by construction would be controlled by spraying water on the construction site, if necessary.
- To reduce noise and emissions, construction equipment would not be permitted to idle for long periods of time.
- To minimize possible petrochemical leaks from construction equipment, laborers would regularly monitor and check construction equipment to identify and repair any leaks. Additionally, all equipment would be parked on absorbent matting overnight and all leaks would be cleaned up immediately upon discovery. Any contaminated soils would be managed according to State and federal regulations.
- Construction workers and supervisors would be informed about special status species and poachable plants. Construction activities would be halted if a species were discovered in the project area until BNR staff re-evaluates the project. This would allow modification of the project for any protection measures determined necessary to protect the discovery.
- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the river would consult with the state historic preservation officer and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, *Post Review Discoveries*. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction.
- To minimize the potential for adverse effects to BNR visitors, variations on construction timing may be considered. One option includes conducting the majority of the work in the off-season (winter) or shoulder seasons. Another option includes implementing daily construction activity curfews such as not operating construction equipment between the hours of 6 PM to 7 AM in summer (May – September), and 6 PM to 8 AM in the winter (October – April). The NPS would determine this in consultation with the contractor.
- Construction workers and supervisors would be informed about the special sensitivity of BNR's values, regulations, and appropriate housekeeping.
- According to *Management Policies 2006*, the NPS would strive to construct the facilities improvements with sustainable designs and systems to minimize potential adverse environmental effects. Development would not compete with or dominate BNR features, or interfere with natural processes, such as the seasonal migration of wildlife or hydrologic activity associated with wetlands. To the extent possible, the design and management of facilities would emphasize environmental sensitivity in construction, use of nontoxic

materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. The NPS also reduces energy costs, eliminates waste, and conserves energy resources by using energy-efficient and cost-effective technology. Energy efficiency is incorporated into the decision-making process during the design and acquisition of buildings, facilities, and transportation systems that emphasize the use of renewable energy sources.

Alternatives Considered and Dismissed

The proposed improvements at the four facilities discussed in this EA have been under discussion by NPS staff at BNR headquarters for several years. During that time, the proposed improvements at each facility have evolved. The proposed improvements at each facility, as described in this EA, are a compilation of incremental requests that have been added over the years. The proposed action in this EA is, thus, the result of several years of accumulated refinements. Consequently, most of the other alternatives considered were reduced versions of the proposed action. Since the reduced versions did not meet the purpose and need for the various facilities, they were dismissed from further analysis. It was determined by BNR that a some of the alternative improvements, e.g., paving the road and parking lot at Hasty Landing, the development of equestrian facilities, and the conversion of overnight camping areas to day-use only, were beyond the scope of this EA and would be more appropriately discussed in the General Management Plan that is currently under development.

Alternative Summaries

Table 2 summarizes the major components of Alternatives A and B, and compares the ability of these alternatives to meet the project objectives (the objectives for this project are identified in the *Purpose and Need* chapter). As shown in the following table, Alternative B meets each of the objectives identified for this project, while the No Action Alternative meets almost none of the objectives.

Table 2 – Summary of Alternatives and How Each Alternative Meets Project Objectives

Alternative Elements	Alternative A – No Action	Alternative B – Construct Improvements
Expand and improve parking at Rush and Hasty landings.	The existing parking areas at Rush and Hasty Landings would remain as they are.	The existing parking areas at Rush and Hasty Landings would be expanded by squaring off the corners of the lots. Two trees in the parking lot at Hasty Landing would be removed. Construct additional parking area in powerline right-of-way.
Re-grade the parking lot at Rush and Hasty landings.	The existing slopes within the parking area at Hasty Landing would remain the same.	The slope of the parking area at Hasty Landing would be re-graded to direct stormwater runoff away from the main launch ramp in a manner that would prevent it from flowing directly into the river.
Widen access road to Bowman tract where necessary to allow two-way traffic flow.	One-way traffic flow on the road to the Bowman Tract at Rush Landing would remain.	The access road to the Bowman tract at Rush Landing would be widened where necessary only in order to allow two-way traffic.

Install new additional one-room Romtec restroom at Rush Landing and a new two-room restroom facility at Hasty Landing.	The current one-room restroom facilities would remain in place at Rush and Hasty Landings.	New modern-design restroom facilities with two rooms and improved ventilation would be installed in place of the existing restrooms at Rush and Hasty Landings.
Relocated restroom facility uphill, out of the floodplain at Hasty.	The existing restroom would remain in the same location it is in now.	The existing restroom would be removed and a new restroom would be installed uphill on the next topographic bench, outside of the floodplain.
Construct walking trails to the new restroom facilities at Rush and Hasty landings.	No walking trails to the restroom facilities would be constructed.	A new walking trail from the ramp would be constructed through the woods to the restroom facility at Rush. A new walking trail would be constructed at Hasty Landing through the woods on the same side of the entrance road as the restroom.
Stabilize ramp exit road and install drainage culverts at Rush landing.	No drainage improvements would be made at Rush Landing.	Corrugated metal pipe culverts would be installed at the top and bottom of the ramp exit road at Rush Landing.
New parking area at spring creek trailhead.	No new parking area would be constructed. Vehicles using Searcy CR 99 would continue to park along the side of the road.	Approximately 0.05 acre (2000 squared feet) of forest would be cleared and graveled in an area adjacent to Searcy CR 99 just inside the BNR boundary for four parking spaces. Bump blocks would be installed for each parking space. Large boulders would be set in place to define the boundary of the parking lot.
Reconstruction of river access ramp at Hasty landing.	The existing, steep, eroded slope that comprises the main river access ramp at Hasty Landing would remain the same.	The existing, steep, eroded slope that comprises the main access ramp at Hasty Landing would be stabilized and modified to make it more user-friendly.
Eliminate social trails at Hasty landing.	The existing social trails at Hasty Landing would remain as they are, although they could potentially be revegetated as part of ongoing facility maintenance.	Social trails that have developed over time at Hasty Landing would be revegetated and blocked off from future use to prevent their re-establishment.
Remove small rocks and roots from lost valley trail.	The trail would remain in the same condition it is currently in.	Small rocks and tree roots that are currently protruding from the surface of the trail would be hand removed and the surface re-graded and packed by hand labor.
Secure native stone steps on lost valley trail.	The existing native stone steps at various locations along the trail would remain as they are.	The existing native stone steps along the trail would be reset into place using mortar to secure them. The mortar would be placed beneath the stones, out of sight. The spacing between the stone steps would be evened up to the extent possible.

Install ADA compliant trail surface for amphitheater and portion of lost valley trail.	No improvements that would allow mobility impaired individuals to use the amphitheater or any portion of the trail beyond the bridge at the very beginning would be constructed.	The portion of the trail up to 0.4 mile would be resurfaced to a width of 60 inches with a soil stabilant to make it ADA compliant. This surface would extend into the amphitheater at the beginning of the trail. Two of the benches in the amphitheater would be replaced with shorter benches to provide room for wheelchairs.
Install drainage structures beneath the trail at drainage crossings.	Existing drainage crossings would remain the same, with possibly an occasional improvement made as a maintenance activity.	At each location where water is channelized and flows across the trail, some type of hidden culvert, PVC or metal pipe, or a bridged flagstone channel would be installed to direct runoff beneath the trail.
Install handhold at Eden Falls Cave entrance.	No handrail would be installed at the cave entrance where accidents happen most frequently.	Handrails would be installed at the entrance to the cave in locations where the most accidents typically occur.
Project objectives	**Meets Project Objectives?**	**Meets Project Objectives?**
Improve maneuverability of vehicles in parking areas at Rush and Hasty landings.	No. Vehicle maneuverability would remain the same.	Yes. Restoring the original footprint of the parking lot would create a slightly larger area in which to maneuver vehicles and trailers. Removal of the two trees in the parking lot at Hasty Landing would make it much easier for vehicles with trailers to maneuver in the parking lot.
Increase parking space at Rush and Hasty landings.	No. The corners of the existing lots at Rush or Hasty Landings would not be squared off and no additional parking areas would be developed at Rush Landing.	Squaring off the corners would eliminate wasted space and increase the number of parking spaces. The additional parking area at Rush Landing would reduce the demand for parking space in the existing lot.
Improve stormwater runoff drainage from the parking lot at Rush and Hasty landings by trapping sediments and other potential contaminants before they enter the river.	No. Stormwater would continue to run directly to the river through the main access ramp carrying sediments and other potential contaminants that might be found in the parking lot.	Yes. Stormwater would flow away from the main access ramp at Hasty Landing and indirectly into the river by means of drainage structures that would reduce the introduction of sediment and other contaminants entering the river.
Improve restroom facilities at Rush and Hasty landings.	No. The existing restrooms would remain in place.	Yes. The new restrooms would be of modern design with two rooms and improved ventilation.
Remove the existing restroom at Hasty from the floodplain.	No. The existing restroom would remain within the floodplain.	Yes. The new restroom would be relocated up and out of the floodplain.

Eliminate pedestrian traffic from the roadways at Rush and Hasty landings.	No. Pedestrians would continue to use the road for access to the restroom at Rush Landing. There would be no need for a trail at Hasty Landing.	Yes. Pedestrian traffic would shift from the roadway at Rush to the new trail. The new trail at Hasty Landing would preclude the need for use of the roadway by pedestrians walking to the new restroom facility.
Improve drainage around the ramp exit road at Rush landing to reduce erosion.	No. Stormwater would continue to flow down the ramp exit road and directly into the river.	Yes. Stormwater would be channeled into culverts beneath the road.
Eliminate roadside parking and potential associated issues with safety and traffic flow on county road 99.	No. Vehicles would continue to park on the side of the road.	Yes. Unless the parking area fills up, vehicles would be able to park in the new parking area, thus allowing unfettered two-way traffic flow on Searcy CR 99 and offering improved safety to hikers while loading and unloading vehicles.
Make the river access ramp at Hasty landing more user friendly and stabilize the ramp to prevent further erosion.	No. The river access ramp would remain steep and unprotected from stormwater-caused erosion.	Yes. The new design for the ramp would make it easier for visitors to access the gravel bar and would not readily erode during rain storms.
Reduce erosion from social trails at Hasty landing.	No. Social trails would continue to erode and contribute to turbidity in the river.	Yes. Vegetation would hold the soil in place and barriers would prevent re-establishment of the trails.
Reduce safety hazards on the lost valley trail and at the Eden Falls Cave entrance.	Partially, if removal of rocks and roots from the trail and the securing of native stone steps were conducted as a regular maintenance activity. A handhold at the cave entrance would not be installed, so the safety hazard at this location would not be reduced.	Yes. Removal of small rocks and tree roots from the trail and repacking the trail to make it smooth would eliminate numerous trip hazards. Securing native stone steps would reduce the potential for falling if a step came loose while a hiker was standing on it.
Reduce trail erosion at drainage crossings.	Possibly, if the installation of subsurface culverts or stone channels is carried out as a maintenance activity.	Yes. Water would directed beneath the trail through devices designed to prevent erosion.
Make a portion of the lost valley trail and the amphitheater handicap accessible.	No. ADA access would continue to end at the end of the bridge at the parking lot.	Yes. The new trail surface and space for wheelchairs at the amphitheater would make it possible for mobility impaired individuals to access the amphitheater and a portion of the trail.

Table 3 summarizes the anticipated environmental effects for alternatives A and B. Only those impact topics that have been carried forward for further analysis are included in this table. The *Environmental Consequences* chapter provides a more detailed explanation of these effects.

Table 3 – Environmental Effects Summary by Alternative

Impact Topic	Alternative A – No Action	Alternative B – Preferable Alternative
Floodplains	There would be no immediate change to the existing condition of the floodplains at any of the proposed improvement locations. Erosion during storms and floods would continue to wear away at roads and trails at Rush and Hasty Landings and Lost Valley. If drainage crossings along the Lost Valley Trail are improved as regular maintenance, then erosion would be less of a problem at this location. The overall effects to floodplains would be direct, adverse, local, long-term, and negligible.	Grading and excavating activities present the greatest hazard to the floodplain should a heavy storm event occur during construction. To avoid severe erosion in the floodplain, construction activities would be carried out in the fall (September through December) when heavy storm events are rare, standard best management practices would be employed to control erosion, and ground-disturbing activities would be completed as quickly as possible. The overall effects of construction would be direct, adverse, local, short-term, and minor. The overall post-construction effects would be direct, beneficial, local, long-term, and negligible.
Water Resources	There would be no change to water quality at any of the proposed improvement locations described by the proposed action. Water quality degradation through increased turbidity in the Buffalo river as a result of erosion would continue to be a problem at Rush and Hasty Landings just as it is now. Clark Creek at Lost Valley, which ultimately drains into the Buffalo river, would continue to experience the same effect. If drainage crossings along the Lost Valley Trail are improved as regular maintenance, then erosion would be less of a problem at this location. The overall effects to water quality would be direct, adverse, very short-term, and minor.	Grading and excavating activities present the greatest hazard to water quality should a heavy storm event occur during construction. To avoid severe degradation of water quality in the river, construction activities would be carried out in the fall (September through December) when heavy storm events are rare, standard best management practices would be employed to control erosion, and ground-disturbing activities would be completed as quickly as possible. The overall effects of construction would be direct, adverse, local, very short-term, and minor. The overall post-construction effects to water quality would be direct, beneficial, long-term and negligible.
Special Status Species	There would be no immediate change to existing special status species at any of the proposed improvement locations described by the proposed action.	No effects would occur to State or federally protected species because there are none in the areas potentially affected by the proposed improvements. Two federal candidates occur near areas of potential effect; however, one could be avoided by marking its location and the potential effects to the other mitigated by the employment of standard best management practices to control potential erosion during storm events and carrying out ground-disturbing activities in the fall months (September through December) when the threat of heavy rainfall is lowest. Four sensitive plant species could be affected; however, simple avoidance measures would prevent any adverse effects to those species. No other protected or sensitive species or their habitats would be affected by the proposed improvements.

Impact Topic	Alternative A – No Action	Alternative B – Preferable Alternative
Archeological Resources	There would be no immediate change to existing archeological resources at any of the proposed improvement locations described by the proposed action; however, the long-term effects of erosion at Rush and Hasty Landings could potentially result in the permanent loss of some archeological data.	Rush and Hasty Landings are the only two locations in the area of potential effect that have potential for containing buried artifacts. Testing prior to construction would be conducted at Hasty by NPS archaeologists. Should it be determined from this testing that archeological resources would be affected by the proposed improvements here, the Arkansas State Historic Preservation Officer would be consulted to identify acceptable data recovery and mitigation measures. Grading and excavation activities at Rush would have the potential for direct, adverse, long-term, negligible effects to archeological resources because it is unlikely that important intact artifacts are present beneath the areas to be disturbed.
Visitor Use and Experience	There would be no change to visitor use or experience at any of the proposed improvement locations described by the proposed action.	Noise and dust from construction activities would adversely affect visitor use and experience; however all construction-related effects would be temporary and cease following construction activities. Construction activities would result in temporary inconveniences to visitors; however, there are no plans to close the areas for extended periods while construction is going on. The overall effects of construction would be direct, adverse, local, short-term, and minor. Most of the proposed improvements are driven by visitor needs, consequently, it is expected that the overall post-construction visitor use and experience would be direct, beneficial, local, long-term, and moderate.

Environmentally Preferable Alternative

The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

Alternative A, no-action, protects and preserves historic, cultural and natural resources insofar as no ground disturbing activities, other than the superficial trail maintenance activities at Lost Valley, would take place. Erosion occuring at Rush and Hasty Landings would continue to slowly degrade cultural resources at these two locations and the natural resource of river water quality.

Alternative B, construct facilities improvements, is the environmentally preferable alternative because the proposed ground disturbing activities, namely grading and improved stormwater runoff control, would result in improved river water quality and enhanced protection and preservation of historic and cultural resources, while potential adverse effects to historic and cultural resources would be mitigated prior to construction by archeological testing and data recovery in consultation with the Arkansas SHPO.

No new information came forward from public scoping or consultation with other agencies to necessitate the development of any new alternatives, other than those described and evaluated in this document. Because it meets the purpose and need for the project, the project objectives, and is the environmentally preferable alternative, Alternative B is also recommended as the NPS preferable alternative. For the remainder of the document, Alternative B will be referred to as the Preferable Alternative.

ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential environmental consequences, or effects, that would potentially occur as a result of implementing the proposed project. Topics analyzed in this chapter include paleontological resources, visitor use and experience, and BNR operations. Direct, indirect, and cumulative effects, as well as impairment are analyzed for each resource topic carried forward. Potential effects are described in terms of type, context, duration, and intensity. General definitions are defined as follows, while more specific impact thresholds are given for each resource at the beginning of each resource section.

- **Type** describes the classification of the impact as either beneficial or adverse, direct or indirect:
  - *Beneficial*: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
  - *Adverse*: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
  - *Direct*: An effect that is caused by an action and occurs in the same time and place.
  - *Indirect*: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.
- **Context** describes the area or location in which the impact will occur. Are the effects site-specific, local, regional, or even broader?
- **Duration** describes the length of time an effect will occur, either short-term or long-term:
  - *Short-term* effects generally last only during construction, and the resources resume their pre-construction conditions following construction.
  - *Long-term* effects last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.
- **Intensity** describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic analyzed in this environmental assessment.

Cumulative Impact Scenario

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), require assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined 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" (40 CFR 1508.7). Cumulative effects are considered for both the no-action and preferable alternative.

Cumulative effects were determined by combining the effects of the preferable alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at BNR and, if applicable, the surrounding region. Because the scope of this project is relatively small, the geographic and temporal scope of the cumulative analysis is similarly small. The geographic scope for this analysis includes actions within BNR’s boundaries, while the temporal scope includes projects within a range of approximately ten years. Given this, the following projects were identified for the purpose of conducting the cumulative effects analysis, listed from past to future:

- **Development of Fire Management Plan, 2003:** The fire management plan was completed in March 2003. One of the primary actions prescribed by the plan is the reduction of hazardous fuels and maintenance of ecosystem health and diversity through prescribed burning.
- **Buffalo River Trail, 2003 and ongoing:** This is a planned 26 mile extension of the Ozark Highland Trail with portions passing through BNR. This is currently designated as a pedestrian hiking trail only and there are no plans presently being considered to change this designation.
- **Development of a Water Resources Management Plan, 2004:** This plan presents a carefully laid out list of recommendations that includes, among others, recommendations to reduce erosion of streambanks and restore riparian areas at a total of 14 and 26 locations, respectively.
- **Development of a Streambank Management Plan, 2005:** This plan was developed as an outgrowth of the Water Resources Management Plan. It describes a preferable alternative for the stabilization of streambanks and restoration of riparian areas along the river.
- **Development of a General Management Plan, Ongoing:** Some topics that may be included in the GMP are vehicle launch ramps for johnboats, creating ADA access to the river at Hasty Landing, conversion of the campgrounds at Hasty Landing and Lost Valley to day-use only areas, development of an overflow parking lot at Hasty Landing at the top of the hill, and expanded horse trailer parking areas and campgrounds at various locations within BNR.
- **Improvements to the fishing ponds at Cedar Glade, 2011:** The trail to the first fishing pond at Cedar Glade would be upgraded to meet ADA compliance standards and a wheelchair accessible dock would be installed. Vegetation surrounding both ponds would be cleared to make room for children to fish without snagging their lines on tree branches.

Floodplains

Intensity Level Definitions

BNR was established to preserve and protect the river and the land adjacent to it for the benefit and enjoyment of the public. The methodology used for assessing the effects to floodplains is based on how the proposed improvements would affect the river floodplain and how the location of the proposed improvements within the river's floodplain would be affected by periodic flooding. A Statement of Findings has been prepared pursuant to Director's Order 77-2: Floodplain Management and is included in Appendix C. The thresholds for this assessment of effects are as follows:

Negligible: The action would result in effects that would be at or below the lower levels of detection, with no long-term consequences. No noticeable damage to the proposed improvements would occur from repeated flooding.

Minor: The action would result in effects that would be detectable and relatively small in terms of area and the nature of the change. Long-term consequences are unlikely. Over a period of 10 years, repeated flooding could result in some small amount of damage to the proposed improvements.

Moderate: The action would result in effects that would be would be readily apparent with possible long- term effects to function and value. Successful mitigation may prove difficult. Some elements of the proposed improvements could be damaged by over five to ten years of repeated flooding.

Major: The action would result in effects that would be observable over a relatively large area and would change the character of the floodplain substantially. Function and value could be permanently damaged, and mitigation would likely be unsuccessful. A single flood could completely destroy the proposed improvements.

Duration: Short-term – Recovers in less than 3 years.

Long-term – Takes more than 3 years to recover.

Effects of Alternative A (No-Action Alternative)

At Rush Landing: The effects of erosion during major flood events would continue to be a problem, particularly along the downstream side of the exit road from the launch ramp. These effects would be direct, adverse, local, long-term and could potentially be moderately adverse, should the road from the launch ramp become washed out and require reconstruction.

At Spring Creek Trailhead: There would be no effect to floodplains at this location under this alternative because it is not in or near a floodplain.

At Hasty Landing: The effects of erosion during major flood events would continue to be a problem, particularly for the pedestrian access ramps from the parking lot to the gravel bar. These effects would be direct, adverse, local, long-term and negligible. A major flood event could reach the portable restroom located just above the parking lot, which would likely result in damage to the restroom and the release of a small amount of sewage into the river. This would have a direct, local, negligible, short-term adverse effect on the river and floodplain.

At Lost Valley: The effects of erosion from major flood events on the trail at this location would continue to be direct, adverse, local, long-term and minor. Most of the adverse effects would stem from surface runoff during storms that released sufficient precipitation to flood the trail, prior to floodwaters actually covering the trail. Increased sediment loading and the resultant channel scouring of Clark Creek from this pre-flood erosion would be expected to have no more than a direct, adverse, local, short-term, negligible adverse effect on the floodplain and creek.

Cumulative Effects: The combination of the no action alternative with fuel reduction efforts in the floodplain, streambank stabilization, and riparian area restoration would have a net beneficial on floodplains in BNR. This effect would be direct, local, long-term, and potentially moderate.

Conclusion: There would be no immediate change to the existing condition of the floodplains at any of the proposed improvement locations. Erosion during storms and floods would continue to wear away at roads and trails at Rush and Hasty Landings and Lost Valley. If drainage crossings along the Lost Valley Trail are improved as regular maintenance, then erosion would be less of a problem at this location. The overall effects to floodplains would be direct, adverse, local, long-term, and negligible.

Effects of Alternative B (Preferable Alternative)

At Rush Landing: During construction the potential for soil erosion from grading and the installation of drainage control structures (culverts) exists should the area receive heavy rains before construction is complete. These effects would be direct, adverse, local, minor and short-term. The potential for erosion would be reduced by completing the construction activities during the late summer and fall, when heavy rain events are rare. The long-term effects would be direct, beneficial, local, and negligible because the improved grading would divert runoff away from natural, erodible surfaces and through vegetated areas where sediments would be filtered out before it reached the river.

At Spring Creek Trailhead: There would be no effect to floodplains at this location under this alternative because it is not in or near a floodplain.

At Hasty Landing: During construction the potential for soil erosion from grading, trail construction, and the installation of a permanent ramp structure from the parking lot down to the gravel bar exists should the area receive heavy rains before construction is complete. These effects would be direct, adverse, local, minor and short-term. The potential for erosion would be reduced by completing the construction activities during the late summer and fall, when heavy rain events are rare. The long-term effects would be direct, beneficial, local, and negligible because the improved grading would divert runoff away from natural, erodible surfaces and through vegetated areas where sediments would be filtered out before it reached the river.

If chosen, a major flood event could reach two of the proposed restroom facility sites, A or C, which would likely result in damage to the restroom and the release of a small amount of sewage into the river. This would have a direct, local, negligible, short-term adverse effect on the river and floodplain.

At Lost Valley: During construction, some potential exists for soil erosion during storm events; however, the proposed activities at this location are not directly located within a floodplain. Also, the improvements proposed for the trail and amphitheater are very low impact and would be constructed in short segments, thus exposing very little disturbed ground to the potential effects of a storm. The proposed improvements would be direct, beneficial, local, long-term, and negligible because the ADA portion of the trail would have stabilized soils that strongly resist erosion and drainage structures installed beneath the trail further would reduce trail erosion.

Cumulative Effects: While there are some potential adverse effects during and after construction, these effects would not be sufficiently negative to offset the benefits that would be gained from other current and planned projects in the floodplain. There would be a net beneficial effect on floodplains in BNR following construction of the preferable alternative when combined with the effects of fuel reduction efforts in the floodplain, streambank stabilization, and riparian area restoration. This effect would be direct, local, long-term, and potentially moderate.

Conclusion: Grading and excavating activities present the greatest hazard to the floodplain should a heavy storm event occur during construction. To avoid severe erosion in the floodplain, construction activities would be carried out in the fall when heavy storm events are rare, standard best management practices would be employed to control erosion, and ground-disturbing activities would be completed as quickly as possible. The overall effects of construction would be direct, adverse, local, short-term, and minor. The overall post-construction effects would be direct, negative and beneficial, local, long-term, and negligible.

Water Resources

Intensity Level Definitions

BNR was established to preserve and protect its most important resource, the river, for the benefit and enjoyment of the public. The methodology used for assessing effects to water quality is based on how the proposed improvements would affect the river's primary resource during construction and afterwards. Context is defined with the intensity as the two are directly related. The thresholds for this impact assessment are as follows:

Negligible: Changes to water quality would be either undetectable or, if detectable, would have effects that would be considered slight and short-term. If detectable, these changes would be undetectable beyond 0.25 mile downstream.

Minor: Changes in water quality would be measurable, although the changes would be small and undetectable at a distance of 0.5 mile downstream. No mitigation measure would be necessary.

Moderate: Changes in water quality would be measurable and apparent, but would be undetectable at a distance of one mile downstream. Mitigation measures would be necessary and the measures would likely be successful.

Major: Changes in water quality would be readily measurable, would have substantial and possibly permanent consequences, and would be noticed far downstream, well beyond a mile. Mitigation measures would be necessary and their success would not be guaranteed.

Duration: Very short-term – Recovers immediately following the end of the storm event and return of the river to its pre-storm level.

Short-term – Recovers in less than one year.

Long-term – Takes more than one year to recover.

Effects of Alternative A (No-Action Alternative)

At Rush Landing: Problems with erosion caused by poor control of surface water runoff from roads and the parking lot at this location would continue. This runoff would continue to run directly into the river causing increased sediment loading and thus turbidity during storm events. These effects would be direct, adverse, very short-term, and minor.

At Spring Creek Trailhead: There would be no effects to water quality because this location is far removed from the river or any of its tributaries. Runoff from storm events at this location must sheet flow for a relatively long distance through forest where sediments are filtered out before it reaches a drainage that leads to the river.

At Hasty Landing: Problems with erosion caused by poor control of surface water runoff from roads and the parking lot at this location would continue. This runoff would continue to run directly into the river causing increased sediment loading and thus turbidity during storm events. These effects would be direct, adverse, very short-term, and minor.

At Lost Valley: Clark Creek's contribution to water quality in the Buffalo river is likely beneficial despite the existing erosion problems along the trail because the valley is forested and overall, little sediment is transported by Clark Creek during storm events when compared to other tributaries that are surrounded by pastures and crop land. If safety hazards along the trail are corrected as part of trail maintenance, there would still be no more than a negligible effect to water quality in the river as a result.

Cumulative Effects: The combination of the no action alternative with fuel reduction efforts in the floodplain, streambank stabilization, and riparian area restoration would have a net beneficial on water quality in the river. This effect would be direct, local, long-term, and potentially moderate.

Conclusion: There would be no change to water quality at any of the proposed improvement locations described by the proposed action. Water quality degradation through increased turbidity in the Buffalo river as a result of erosion would continue to be a problem at Rush and Hasty Landings just as it is now. Clark Creek at Lost Valley, which ultimately drains into the Buffalo river, would continue to experience the same effect. If drainage crossings along the Lost Valley Trail are improved as regular maintenance, then erosion would be less of a problem at this location. The overall effects to water quality would be direct, adverse, very short-term, and minor.

Effects of Alternative B (Preferable Alternative)

At Rush Landing: Improved grading and runoff control would result in less sediment reaching the river. Improved erosion control and thus water quality in the river would be direct, beneficial, long-term, and negligible at this location. During construction and until the re-establishment of

vegetation in the area of embankment stabilization has occurred, the implementation of standard best management practices to control erosion during storm events and the completion of the work during the late summer and fall months when heavy rain events are rare would reduce the hazard of erosion and thus lower water quality from increased turbidity to direct, adverse, very short-term, and minor.

At Spring Creek Trailhead: There would be no effects to water quality because this location is far removed from the river or any of its tributaries. Runoff from storm events at this location must sheet flow for a relatively long distance through forest where sediments are filtered out before it reaches a drainage that leads to the river.

At Hasty Landing: Improved grading and runoff control would result in less sediment reaching the river. Improved erosion control and thus water quality in the river would be direct, beneficial, long-term, and negligible at this location. During construction, the implementation of standard best management practices to control erosion during storm events and the completion of the work during the late summer and fall months when heavy rain events are rare would reduce the hazard of erosion and thus lower water quality from increased turbidity to direct, adverse, very short-term, and minor.

At Lost Valley: There would be a very slight decrease in sediment transported into Clark Creek and thus ultimately into Buffalo River where it might affect water quality. This effect would be direct, beneficial, long-term, and negligible. Since construction activities would be conducted incrementally and little ground disturbance would occur at any given time before it was stabilized, the effects of construction would be direct, adverse, short-term, and negligible. Neither construction nor long-term use of the improvements proposed at this location would have any detectable effect on water quality in the river.

Cumulative Effects: While there are some potential adverse effects that could occur to water quality during construction, these effects would not be sufficiently negative to offset the benefits that would be gained from other current and planned projects in the floodplain. There would be a net beneficial effect on water quality in the river following construction of the preferable alternative when combined with the effects of fuel reduction efforts in the floodplain, streambank stabilization, and riparian area restoration. This effect would be direct, local, long-term, and potentially moderate.

Conclusion: Grading and excavating activities present the greatest hazard to water quality should a heavy storm event occur during construction. To avoid severe degradation of water quality in the river, construction activities would be carried out in the fall when heavy storm events are rare, standard best management practices would be employed to control erosion, and ground-disturbing activities would be completed as quickly as possible. The overall effects of construction would be direct, adverse, local, very short-term, and minor. The overall post-construction effects to water quality would be direct, beneficial, long-term and negligible.

Special Status Species

Intensity Level Definitions

Section 7 of the Endangered Species Act defines the responsibilities of federal agencies considering activities that have potential for adversely affecting federally protected or sensitive species. Agencies are required to determine if a proposed action may have an adverse effect on protected species and, if so, consult with the USFWS to identify appropriate mitigation. The State of Arkansas also maintains a list of State protected and sensitive species. The term, “sensitive species”, for the purposes of this EA refers to those species not specifically afforded protection by either the State or federal governments, but could potentially be protected in the near future, thus planning should include efforts to avoid adverse effects to these species in

order not to further contribute to their decline. The thresholds for this impact assessment are as follows:

Negligible: The action may result in a change to a population of a species or designated critical habitat, but the change would be so small that it would not result in a detectable adverse effect to the species.

Minor: The action may result in a change to a population of a species or designated critical habitat. The change would be measurable, but would not be likely to adversely affect the species.

Moderate: The action would result in some change to a population of a species or designated critical habitat. The change would be measurable and would be likely to adversely affect the species.

Major: The action would result in a noticeable change to a population of a species or designated critical habitat. The action would result in a take, as defined by the Endangered Species Act, of one or more individuals of the species. The change to the population would be measurable and would adversely affect the species.

Duration: Very short-term – the species would be expected to recover fully within a single breeding season.

Short-term – the species would be expected to recover fully within two years.

Long-term – the species would take longer than two years to fully recover, if at all.

Effects of Alternative A (No-Action Alternative)

At Rush Landing: There would be no effects to federally protected or sensitive species at this location because there are none immediately present and no changes to the location would occur under this alternative. If snuffbox mussels are present in the river nearby, they have succeeded in maintaining their presence despite the existing state of erosion from runoff that occurs at Rush Landing and would therefore be unlikely to be affected by a continuation of this circumstance. The one population of a State Inventory Element plant at this location would be expected to continue to maintain its presence here.

At Spring Creek Trailhead: The one federal candidate species at this location would not be affected because no changes to the area would occur under this alternative.

At Hasty Landing: There would be no effects to State or federally protected or sensitive species at this location because, with the exception of foraging habitat for the Gray and Indiana bats, there are none present and no changes to the location would occur under this alternative.

At Lost Valley: There would be no effects to federally protected or sensitive species at this location because there are none immediately present and, with the exception of some minor trail maintenance, no changes to the location would occur under this alternative. The lack of construction activities beyond regular trail maintenance would preclude the opportunity for any adverse effects to the three State Inventory Element plant species at this location.

Cumulative Effects: Because most of the other current and planned activities at BNR are designed to improve ecological health within BNR, combination of the no action alternative with these other activities would likely result in a net beneficial effect to special status species. This effect would be direct and indirect, local and regional, potentially long-term, and potentially moderate.

Conclusion: There would be no immediate change to existing special status species at any of the proposed improvement locations described by the proposed action.

Effects of Alternative B (Preferable Alternative)

At Rush Landing: There would be a negligible adverse effect to three federally protected bat species at this location due to disruption of the riparian foraging habitat. The one State Inventory Element plant population at this location would be avoided by construction crews during construction and would not be affected. Increased turbidity downstream in the river as a result of stormwater runoff from a storm event during construction could potentially adversely affect snuffbox mussels; however, the employment of standard best management practices to control erosion during construction, the short duration of the construction period, and the timing of construction during the late summer and fall months when heavy rain events are rare would reduce the potential for adversely affecting this species to direct, local, short-term, and minor.

At Spring Creek Trailhead: The one federal candidate species at this location would not be affected because it is just outside the area where the new parking facility would be constructed and it would be marked by the BNR biologist just prior to construction and the construction crew would be informed of its presence, location, and the importance of not disturbing it. There are no other protected or sensitive species at this location.

At Hasty Landing: There would be a direct, adverse, local, short-term, negligible, effect to Gray bat riparian foraging habitat. There would be no effects to other State or federally protected or sensitive species at this location because there are none present. There would be no changes to the potential Indiana bat habitat surrounding this location under this alternative. Swainson's warbler, which could potentially nest in the canebrake along the river, would be through nesting by the time construction activities at this location take place in the fall months.

At Lost Valley: There would be no effects to federally protected or sensitive species at this location because there are none present. Construction crews would be trained to identify the three State Inventory Element plants in the area and would be shown their locations along the trail by the BNR botanist prior to the initiation of construction activities. The BNR botanist would be available for consultation should any issues arise during construction regarding avoidance of these species. There is potential for a direct, local, adverse, short-term, negligible effect on the foraging habitat of Gray, Indiana, and Eastern small-footed bats in this area.

Cumulative Effects: Because most of the other current and planned activities at BNR are designed to improve ecological health within BNR and the preferable alternative would have no adverse effect to special status species, combination of the preferable alternative with these other activities would likely result in a net beneficial effect to special status species. This effect would be direct and indirect, local and regional, potentially long-term, and potentially moderate.

Conclusion: No effects would occur to State or federally protected species because there are none in the areas potentially affected by the proposed improvements. Two federal candidates occur near areas of potential effect; however, one could be avoided by marking its location and the potential effects to the other mitigated by the employment of standard best management practices to control potential erosion during storm events and carrying out ground-disturbing activities in the fall months when the threat of heavy rainfall is lowest. Four sensitive plant species could be affected; however, simple avoidance measures would prevent any adverse effects to those species. No other protected or sensitive species or their habitats would be affected by the proposed improvements.

Archeological Resources

Intensity Level Definitions

The National Historic Preservation Act of 1966 (PL 89-665, 80 Stat 915-919, 16 USC 470 et seq.) established a federal historic preservation program. It authorized the Secretary of the Interior to (1) expand and maintain a national register of districts, sites, buildings, structures,

and objects significant in American history; (2) establish a program of matching grants-in-aid to states for historical preservation; and (3) establish a program of matching grants-in-aid to the National Trust for Historic Preservation. The act also established the Advisory Council on Historic Preservation (ACHP). The Director of the NPS or his or her designee is to be the Executive Director of the Council. A 1980 amendment to this act places specific responsibilities on federal agencies in terms of historic preservation and the conducting of their own programs, planning, and projects (Section 110).

Section 106 of the National Historic Preservation Act or NHPA requires federal agencies to conduct surveys to determine the location of: potentially historic or prehistoric sites; districts; structures; buildings; or objects that may be eligible for nomination to the Federal Register. The surveys are to be completed prior to initiating any actions that could produce adverse impacts to those resources. If resources are detected by surveys, the land agency must prepare an Assessment of Effect Form and a statement describing any mitigation that would be needed to document the site or otherwise protect it from adverse impacts. The assessment of significance and proposed mitigation must be submitted to the State Historic Preservation Officer (SHPO), ACHP, and affiliated Tribes for consultation and comment before the initiation of the project. In the context of the preferable alternative, the requirements of NHPA, Section 106, dictate that BNR must conduct cultural resource surveys prior to ground disturbing activities and submit the results of those surveys along with any Assessment of Effect Forms and proposed mitigation to the SHPO, ACHP, and Tribes for review and consultation. The thresholds for this impact assessment are as follows:

Negligible: The activity would affect archeological resources, National Register of Historic Places, and cultural landscapes at the lowest levels of detection—barely perceptible and not measurable.

Minor: The activity would affect an archeological site(s) with modest data potential. The effect does not alter the character defining features of a National Register of Historic Places eligible or listed structure, district, or cultural landscape.

Moderate: The activity would affect an archeological site(s) with high data potential. For a National Register eligible or listed structure, district, or cultural landscape, the effect changes a character defining feature(s) of the resource, but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.

Major: The activity would affect an archeological site(s) with exceptional data potential. For a National Register eligible or listed structure, district, or cultural landscape, the effect changes a character defining feature(s) of the resource, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register.

Duration: Short term – Effects on the natural elements of a cultural landscape may be short- term (e.g., three to five years until new vegetation grows or historic plantings are restored, etc.)

Long term – Most cultural resources are nonrenewable, so effects would be long term.

Effects of Alternative A (No-Action Alternative)

At Rush Landing: There would be no adverse effects to archeological resources from ground-disturbing construction activities at this location; however, long-term erosion could potentially result in the permanent loss of some archeological data.

At Spring Creek Trailhead: There would be no adverse effects to archeological resources because there would be no ground-disturbing construction activities at this location and no archeological resources are present.

At Hasty Landing: There would be no adverse effects to archeological resources from ground-disturbing construction activities at this location; however, long-term erosion could potentially result in the permanent loss of some archeological data.

At Lost Valley: There would be no adverse effects to archeological resources because there would be no ground-disturbing construction activities beyond regular trail maintenance and archeological resources are unlikely to be found there.

Cumulative Effects: Other current and planned projects at BNR would not be likely to incur greater than negligible adverse effects to archeological resources. When combined with the no action alternative, which would have no short-term effects to archeological resources and only a potentially negligible long-term adverse effect from continued excessive erosion at Rush and Hasty Landings, the cumulative effects to these resources would be no greater than direct, adverse, local, long-term and negligible.

Conclusion: There would be no immediate change to existing archeological resources at any of the proposed improvement locations described by the proposed action; however, the long-term effects of erosion at Rush and Hasty Landings could potentially result in the permanent loss of some archeological data.

Effects of Alternative B (Preferable Alternative)

At Rush Landing: Grading and excavation activities would be expected to have a potential direct, adverse, long-term, negligible effect to archeological resources at this location. Should grading or excavation activities result in the discovery of archeological resources, all such work would stop until the BNR archaeologist completed consultation with the SHPO to determine appropriate mitigation measures and those measures have been completed. No adverse effects to cultural landscapes or historic structures would be expected at this location.

At Spring Creek Trailhead: There would be no adverse effects to archeological resources because there are no archeological resources are present. In the unlikely event that clearing, grubbing, or grading activities result in the discovery of archeological resources, all such work would stop until the BNR archaeologist completed consultation with the SHPO to determine appropriate data recovery and mitigation measures and those measures have been completed.

At Hasty Landing: Additional testing by NPS archaeologists at this location would be conducted prior to ground-disturbing activities, a report prepared, and if any archeological resources are discovered, the SHPO would be consulted and appropriate data recovery and mitigation measures would be developed and completed prior to resumption of such ground-disturbing activities.

At Lost Valley: The proposed construction activities at this location are so minor that if they would be unlikely to damage any potential archeological resources in the area. Since no archeological resources are anticipated here, no adverse effects to this resource are expected. In the highly unlikely event that any of the activities proposed at this location result in the discovery of archeological resources, all such work in that exact location would stop until the BNR archaeologist completed consultation with the SHPO to determine appropriate data recovery and mitigation measures and those measures have been completed.

Cumulative Effects: The potential adverse effects to archeological resources as a result of the preferable alternative would be sufficiently mitigated by testing and, if necessary, data recovery, that when combined with the negligible adverse potential effects of the other current and planned projects at BNR, the cumulative adverse effects would be direct, local, long-term and negligible.

Conclusion: Rush and Hasty Landings are the only two locations in the area of potential effect that have potential for containing buried artifacts. Testing prior to construction would be conducted at Hasty by the BNR archaeologist. Should it be determined from this testing that archeological resources would be affected by the proposed improvements here, the Arkansas State Historic Preservation Officer would be consulted to identify acceptable data recovery and mitigation measures. Grading and excavation activities at Rush would have the potential for direct, adverse, long-term, negligible effects to archeological resources because it is unlikely that important intact artifacts are present beneath the areas to be disturbed.

Visitor Use and Experience

Intensity Level Definitions

BNR was established to preserve and protect the river for the benefit and enjoyment of the public. The methodology used for assessing effects to visitor use and experience is based on how the proposed improvements at each location would affect the visitor, particularly with regards to the visitors' use and enjoyment of the river and natural environment. The thresholds for this impact assessment are as follows:

Negligible: Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.

Minor: Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.

Moderate: Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative, and would likely be able to express an opinion about the changes.

Major: Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative, and would likely express a strong opinion about the changes.

Duration: Short-term – the effects would not be noticeable and visitors would be unlikely to express an unsolicited opinion after one year.

Long-term – the effects would continue to be noticeable and visitors would be likely to express an unsolicited opinion after one year.

Effects of Alternative A (No-Action Alternative)

At Rush Landing: Increased parking space, improved traffic flow, and a pedestrian trail from the ramp to the restroom facility and parking area are all improvements driven by the need to improve visitor use and experience at this location. Since none of these improvements would be made under this alternative, the effects would be direct, adverse, local, long-term, and minor.

At Spring Creek Trailhead: The development of a formal parking space and trailhead facility is driven entirely by visitor use and experience at this location. Since none of these improvements would be made under this alternative, the effects would be direct, local, adverse, long-term, and minor.

At Hasty Landing: More efficient use of parking space and improved maneuverability during heavy use, as well as the need for an improved restroom and access ramps are driven, as with the other locations, by the need to improve visitor use and experience at this location. Since none of these improvements would be made under this alternative, the effects would be direct, adverse, local, long-term, and minor.

At Lost Valley: Although regular trail maintenance would likely alleviate most of the safety hazards posed by the existing trail, no handrails at Eden Falls Cave and no upgrades to the lower trail for the mobility impaired would occur under this alternative; thus, people would likely continue to sustain injuries at the entrance to Eden Falls Cave and along the final approach to the cave and the mobility impaired would continue to be limited to the first quarter mile of the trail from the parking lot. These effects would be direct, adverse, local, long-term, at least moderate and potentially major if someone ever sustains a life-threatening injury at the cave.

Cumulative Effects: The short-term effects to visitor use and experience of prescribed burning could potentially be adverse and moderate as a result of smoke in the air and those areas being burned being closed to visitor access. The long-term effects of prescribed burning would be beneficial to visitor use and experience as fuel loads would be reduced and forest health would be improved. The development of the Ozark Highland Trail extension would certainly have a beneficial effect on visitor use and experience. Streambank stabilization and riparian restoration projects would have a beneficial effect on visitor use and experience. Most of the goals set by the GMP would likely be beneficial to visitor use and experience as would the improvements proposed at Cedar Glade. The combination of these projects with the no action alternative would most certainly be overall effects to visitor use and experience that are direct, beneficial, regional (throughout BNR), and moderate.

Conclusion: There would be no change to visitor use or experience at any of the proposed improvement locations described by the proposed action.

Effects of Alternative B (Preferable Alternative)

At Rush Landing: Increased parking space, improved traffic flow, and a pedestrian trail from the ramp to the restroom facility and parking area are all improvements that would improve visitor use and experience at this location. The effects of these improvements to visitor use and experience would be direct, beneficial, local, long-term, and moderate. Noise and dust from construction activities would adversely affect visitor use and experience; however all construction-related effects would be temporary and cease following construction activities. Construction activities would result in temporary inconveniences to visitors using Rush Landing; however, there are no plans to close the area while construction is going on. The effects of construction would be direct, adverse, local, short-term, and minor.

At Spring Creek Trailhead: The development of a formal parking space and trailhead facility are improvements that would be direct, beneficial, local, long-term, and moderate. During construction, hikers would continue to park their vehicles along the road as they do now. Noise and dust from construction activities would adversely affect visitor use and experience; however all construction-related effects would be temporary and cease following construction activities.

At Hasty Landing: More efficient use of parking space and improved maneuverability during heavy use, as well as an improved restroom and access ramps are all changes that would result in direct, beneficial, local, long-term, and moderate effects to visitor use and experience. Noise and dust from construction activities would adversely affect visitor use and experience; however all construction-related effects would be temporary and cease following construction activities.

At Lost Valley: Temporary closure of Eden Falls Cave while handrails are installed would cause a minor inconvenience to some visitors. BNR would attempt to keep the trail open throughout construction routing hikers around daily work areas; however, some closures may be necessary. These closures would be kept as short as possible. The effects of construction would be direct, adverse, local, short-term, and negligible. Upon completion, the improvements at Lost Valley would reduce the number of injuries from existing safety hazards and expand the percentage of the trail that can be enjoyed by the mobility impaired. The use of a natural or nontoxic soil stabilant instead of concrete or asphalt for the ADA compliance improvements would make it possible to maintain the natural character of the area and the trail. These effects

to visitor use and experience would be direct, beneficial, local, long-term, and minor. Handholds in the entrance to Eden Falls Cave would detract from the natural setting and have direct, adverse, local, long-term, and minor effects on the visitor experience.

Cumulative Effects: The effects to visitor use and experience from other current and planned projects at BNR would be the same as described under the cumulative effects discussion for the no action alternative. The combination of these projects with the post-construction condition of the preferable alternative would most certainly be overall effects to visitor use and experience that are direct, beneficial, regional (throughout BNR), long-term and moderate. The overall net effect of the combination of the effects of other current and planned projects at BNR with the effects of construction activities associated with the preferable alternative would still be beneficial and at least minor to potentially moderate.

Conclusion: Noise and dust from construction activities would adversely affect visitor use and experience; however all construction-related effects would be temporary and cease following construction activities. Construction activities would result in temporary inconveniences to visitors; however, there are no plans to close the areas while construction is going on. The overall effects of construction would be direct, adverse, local, short-term, and minor. Most of the proposed improvements are driven by visitor needs, consequently, it is expected that the overall post-construction visitor use and experience would be direct, beneficial, local, long-term, and moderate.

Unacceptable Impacts

As described in *Purpose and Need*, the NPS must prevent any activities that would impair BNR resources and values. The impact threshold at which impairment occurs is not always readily apparent. Therefore, NPS will apply a standard that offers greater assurance that impairment will not occur. NPS will do this by avoiding effects that it determines to be unacceptable. These are effects that fall short of impairment, but are still not acceptable within a particular park's environment. Park managers must not allow uses that would cause unacceptable effects; they must evaluate existing or proposed uses and determine whether the associated effects on park resources and values are acceptable. Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. To determine if unacceptable effects could occur to the resources and values of the parks, the effects of proposed actions in this environmental assessment were evaluated based on monitoring information, published research, and professional expertise, and compared to the guidance on unacceptable effects provided in *Management Policies* 1.4.7.1 that defines unacceptable effects as effects that, individually or cumulatively, would:

- Be inconsistent with a park's purposes or values, or
- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- Create an unsafe or unhealthful environment for visitors or employees, or
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or
- Unreasonably interfere with:
  - Park programs or activities, or
  - An appropriate use, or
  - The atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.

- NPS concessioner or contractor operations or services.

By preventing unacceptable effects, park managers also ensure that the proposed use of park resources will not conflict with the conservation of those resources. In this manner, the park managers ensure compliance with the Organic Act's separate mandate to conserve park resources and values. Using the guidance above (see bullets), the following text analyzes the potential for unacceptable effects for all alternatives carried forward in this Environmental Assessment.

- Both alternatives are consistent with the river's purposes and values. The river was established:

  "…for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free flowing stream and important segment of the Buffalo River in Arkansas for the benefit and enjoyment of present and future generations…"

  Under both the no action alternative and the preferable alternative, there would be no change to the river's purposes or values. The preferable alternative would not alter scientific features or the flow of the river. Upgrades to the Lost Valley Trail to ADA compliance, as described in the preferable alternative, would not change the unique scenic features of this area.

- Neither alternative impedes the attainment of the parks' desired future conditions for natural and cultural resources as this project is consistent with previous planning efforts and represents only slight changes to existing conditions at the four proposed improvement locations.

- Under the no action alternative the existing condition of crowded landings with vehicle and pedestrian traffic comingling in a way that could eventually lead to injury. The unprotected entrance to Eden Falls Cave would continue to contribute to accidents causing injury to BNR visitors. These safety issues along with trip hazards along the Lost Valley trail would reduced by the preferable alternative.

- Under either alternative, visitors would continue to have opportunities to enjoy, learn about, or be inspired by BNR resources and values. Neither alternative would change the overall opportunities available to visitors including interpretive talks, evening programs, hours of operation, scenic drives, or access to facilities. The no action alternative would maintain visitor use and experience exactly as it is now. The preferable alternative would result in some small, short-term inconveniences to BNR visitors during construction, but in the long-term would enhance and improve visitor enjoyment.

- Both alternatives provide for facilities that do not unreasonably interfere with BNR programs, an appropriate use, the natural atmosphere, or concessioner activities. Except for possible trail maintenance activities at Lost Valley, the no action alternative would not involve construction-related activities, and thereby maintain the existing conveniences and current atmosphere. During construction of the improvements proposed under the preferable alternative there would be short-term, temporary disturbances to visitors as a result of noise, dust, limited parking, trail construction activities, and construction equipment; however, these inconveniences would be limited to the construction period only and would not interfere with BNR programs, activities, appropriate uses, the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural or historic locations within BNR. Concessioners would experience some small inconveniences during construction, but generally support the improvements because of the increased access they will have at Rush and Hasty Landings once construction is complete.

Overall, the analysis of effects on resources, BNR operations, and employee and visitor health

and safety indicated that there are no major adverse effects under either alternative; effects were analyzed as negligible to moderate. Based on this, and the above analysis, there would be no unacceptable effects from either alternative.

Impairment

NPS's *Management Policies, 2006* require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the NPS the management discretion to allow adverse effects to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain effects within a park, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment, but an impact would be more likely to constitute an impairment when there is a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be an impairment is based on whether an action would have major (or significant) effects. This EA identifies less than major effects for all resource topics. Guided by this analysis and the Superintendent's professional judgment, there would be no impairment of BNR resources and values from implementation of either alternative. A thorough and complete impairment determination has been prepared and is included in Appendix C of this EA.

CONSULTATION AND COORDINATION

Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from BNR. Interdisciplinary team members met during the week of May 10, 2010 to discuss the purpose and need for the project; various alternatives; potential environmental effects; past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. The team also gathered background information and discussed public outreach for the project. Over the course of the project, team members have conducted individual site visits to view and evaluate the proposed construction site. The results of the May 2010 meetings are documented in this environmental assessment.

External Scoping

External scoping was conducted to inform the public about the proposal to construct facilities improvements at BNR and to generate input on the preparation of this environmental assessment. This effort was initiated with the distribution of a scoping letter, which was bulk-mailed to over 150 residents in the northern Arkansas region including landowners adjacent to the river. In addition, the scoping letter was mailed to various federal and State agencies, affiliated Native American tribes, local governments, and local news organizations. Scoping information was also posted on the BNR website. With this press release, the public was given 30 days to comment on the project.

During the scoping period, 13 responses were received from the public through mailed letters and online comments. Three comments expressed direct support of the proposed improvements at Rush Landing, Spring Creek Trailhead, and Hasty Landing. Two comments expressed direct support for the proposed safety improvements at Lost Valley. Two comments expressed a desire to see traffic and parking signs in the proposed project locations. Other comments ranged from water quality issues in the river from stormwater runoff through parking areas to the desire to see more equestrian facilities and the conversion of some campgrounds to day-use only areas. Five comments expressed a desire to see the existing character of the Lost Valley Trail retained and were concerned that an ADA compliant trail all the way to Eden Falls would significantly change the character of the trail in an adverse way. Most of these comments were not opposed to some portion of the trail being upgraded to comply with ADA standards and in fact expressed support for such an improvement. Many comments were concerned with issues that are beyond the scope of this EA and the proposed improvements it analyzes. These issues are more suited to being addressed in the General Management Plan currently being prepared by BNR.

Agency Consultation

In accordance with the Endangered Species Act, the NPS contacted the U.S. Fish and Wildlife Service with regards to federally listed special status species, and in accordance with NPS policy, the river also contacted the Arkansas Game and Fish Commission with regards to state-listed species. The results of these consultations are described in the *Special Status Species* section in the *Purpose and Need* chapter.

In accordance with Section 106 of the National Historic Preservation Act, the NPS sent a letter providing the Arkansas Historic Preservation Program State Historic Preservation Officer an opportunity to comment on the effects of this project. The results of this consultation are described in the *Cultural Resources* section in the *Environmental Consequences* chapter.

Native American Consultation

Ten Native American tribes were contacted at the beginning of this project to determine if there were any ethnographic resources in the project area and if they wanted to be involved in the environmental compliance process, including:

- Absentee Shawnee
- Caddo Indian Tribe of Oklahoma
- Cherokee Nation of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Osage Tribe of Oklahoma
- Quapaw Tribe of Oklahoma
- The Shawnee Tribe
- Tunica-Biloxi Tribe
- United Keetoowah Band of the Cherokee Indian Nation
- Wichita and Affiliated Tribes

None of these tribes responded.

Environmental Assessment Review and List of Recipients

The environmental assessment will be released for public review in August 2010. To inform the public of the availability of the environmental assessment, the NPS will publish and distribute a letter to various agencies, tribes, and members of the public on BNR's mailing list, as well as publish a press release in local and regional newspapers. Copies of the environmental assessment will be provided to interested individuals, upon request. Copies of the document will also be available for review at the BNR Headquarters in Harrison, Arkansas and on the internet at http://parkplanning.nps.gov/buff.

The environmental assessment is subject to a 30-day public comment period. During this time, the public is encouraged to submit their written comments to the NPS address provided at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed, prior to the release of a decision document. The NPS will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the environmental assessment, as needed.

List of Preparers

From the NPS, BNR, Arkansas:

- Kevin Cheri, Superintendent
- Barbara Wilson, Chief, Fire and Resources
- Cavin Clark, Chief, Interpretation
- Mark Foster, Chief, Facilities Maintenance
- John Deming, Supervisor, Roads and Trails
- Carl David Scott, Botanist
- Faron Usrey, Hydrologist/Aquatic Ecologist
- Chuck Bitting, Geologist/NEPA Specialist
- Shawn Hodges, Fisheries Biologist
- Becky Brock, Concessions Specialist
- Lee Buschkowsky, Upper District Ranger

with Devin Kennemore, Environmental Project Manager, Pathfinder Environmental LLC.

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