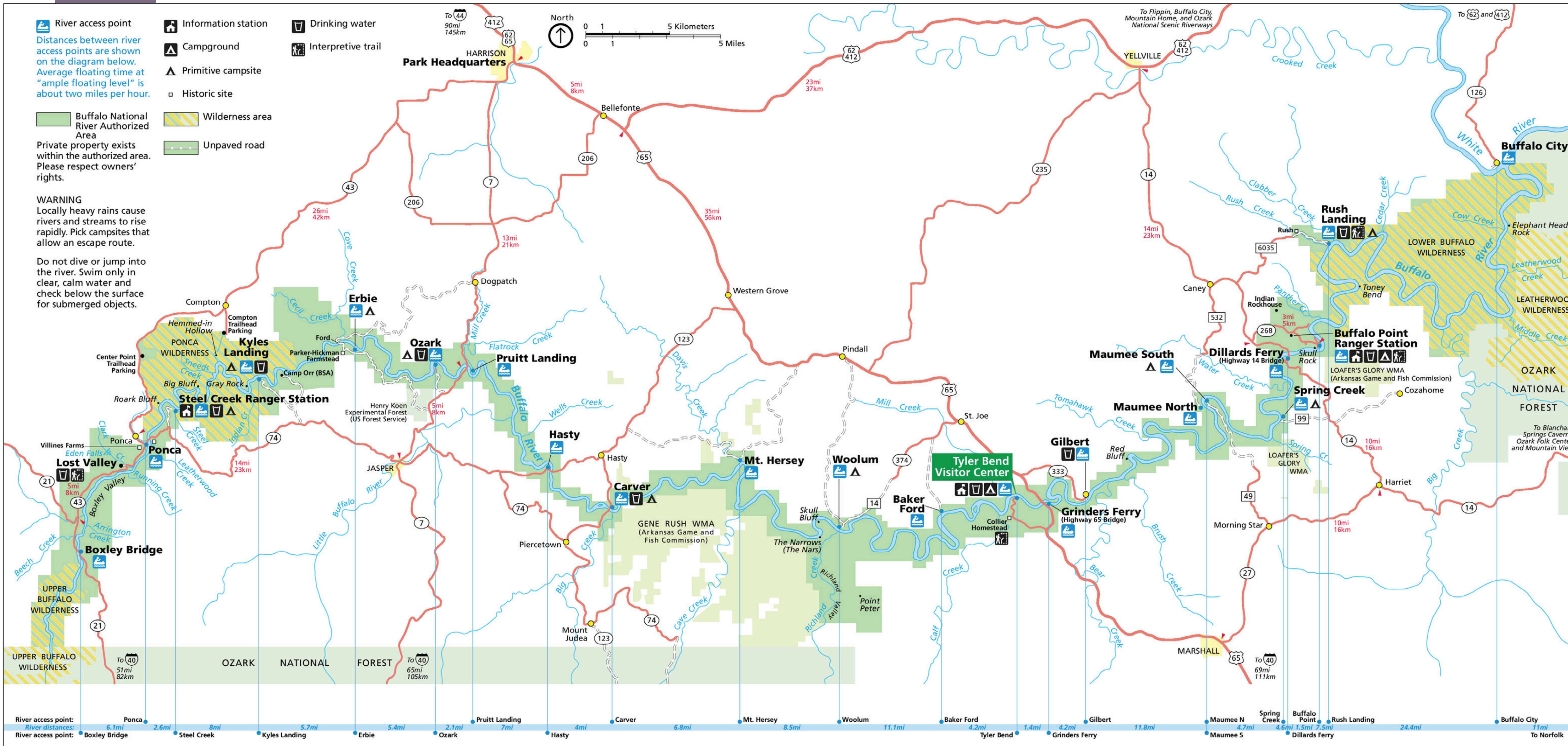
NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR

Foundation Document

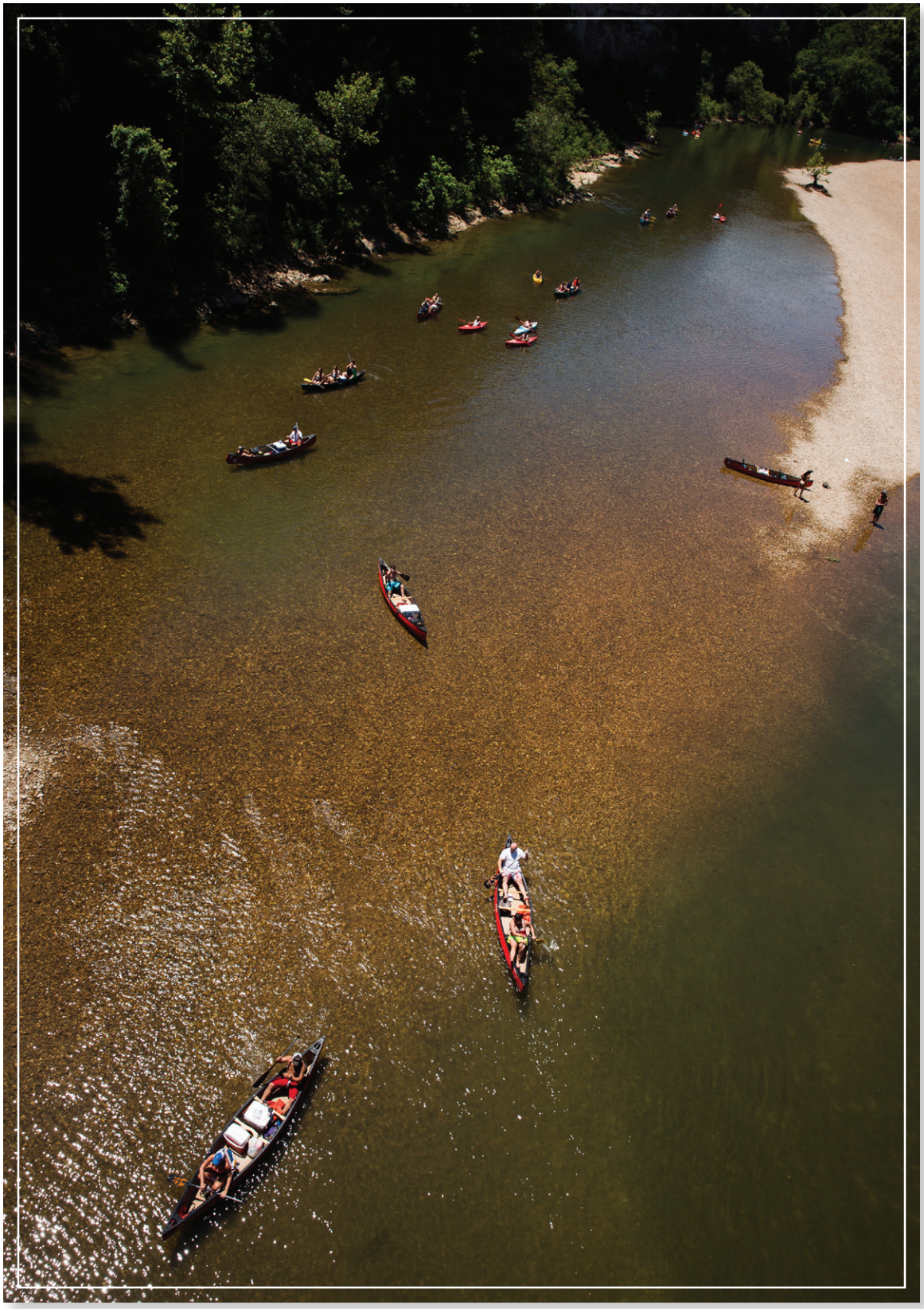
Buffalo National River

Arkansas

October 2018


River access point
Distances between river access points are shown on the diagram below. Average floating time at "ample floating level" is about two miles per hour.
Information station
Campground
Primitive campsite
Historic site
Drinking water
Interpretive trail
Buffalo National River Authorized Area
Private property exists within the authorized area. Please respect owners' rights.
Wilderness area
Unpaved road
WARNING
Locally heavy rains cause rivers and streams to rise rapidly. Pick campsites that allow an escape route.
Do not dive or jump into the river. Swim only in clear, calm water and check below the surface for submerged objects.
North
0 1 5 Kilometers
0 1 5 Miles
To 44 90mi 145km
HARRISON
Park Headquarters
5mi 8km
Bellefonte
23mi 37km
YELLVILLE
To Flippin, Buffalo City, Mountain Home, and Ozark National Scenic Riverways
Crooked Creek
To 62 and 412
White River
Buffalo City
26mi 42km
13mi 21km
35mi 56km
14mi 23km
Dogpatch
Western Grove
Compton
Compton Trailhead Parking
Hemmed-in Hollow
PONCA WILDERNESS
Kyles Landing
Center Point Trailhead Parking
Erbie
Ozark
Pruitt Landing
Ford
Parker-Hickman Farmstead
Camp Orr (BSA)
Big Bluff
Gray Rock
Roark Bluff
Steel Creek Ranger Station
Henry Koen Experimental Forest (US Forest Service)
5mi 8km
Villines Farms
Ponca
Eden Falls
Lost Valley
Boxley Valley
Boxley Bridge
UPPER BUFFALO WILDERNESS
JASPER
Buffalo River
Little Buffalo River
Hasty
Piercetown
Carver
GENE RUSH WMA (Arkansas Game and Fish Commission)
Mount Judea
Mt. Hersey
Woolum
Skull Bluff
The Narrows (The Nars)
Richland Valley
Point Peter
Pindall
St. Joe
Baker Ford
Tyler Bend Visitor Center
Collier Homestead
Gilbert
Red Bluff
Grinders Ferry (Highway 65 Bridge)
Maumee South
Maumee North
Dillards Ferry (Highway 14 Bridge)
Skull Rock
Buffalo Point Ranger Station
LOAFER'S GLORY WMA (Arkansas Game and Fish Commission)
Spring Creek
Cozahome
Rush
Rush Landing
Caney
Indian Rockhouse
3mi 5km
Toney Bend
Elephant Head Rock
LOWER BUFFALO WILDERNESS
LEATHERWOOD WILDERNESS
OZARK NATIONAL FOREST
To Blanchard Springs Caverns, Ozark Folk Center, and Mountain View
Harriet
10mi 16km
Morning Star
MARSHALL
To 40 69mi 111km
To 40 51mi 82km
To 40 65mi 105km
OZARK NATIONAL FOREST
River access point: Ponca, Pruitt Landing, Carver, Mt. Hersey, Woolum, Baker Ford, Gilbert, Maumee N, Spring Creek, Buffalo Point, Rush Landing, Buffalo City
River distances: 6.1mi 2.6mi 8mi 5.7mi 5.4mi 2.1mi 7mi 4mi 6.8mi 8.5mi 11.1mi 4.2mi 1.4mi 4.2mi 11.8mi 4.7mi 4.6mi 1.5mi 7.5mi 24.4mi 11mi
River access point: Boxley Bridge, Steel Creek, Kyles Landing, Erbie, Ozark, Hasty, Tyler Bend, Grinders Ferry, Maumee S, Dillards Ferry, To Norfolk

Contents



Mission of the National Park Service

The National Park Service (NPS) preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The National Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The NPS core values are a framework in which the National Park Service accomplishes its mission. They express the manner in which, both individually and collectively, the National Park Service pursues its mission. The NPS core values are:

- **Shared stewardship:** We share a commitment to resource stewardship with the global preservation community.
- **Excellence:** We strive continually to learn and improve so that we may achieve the highest ideals of public service.
- **Integrity:** We deal honestly and fairly with the public and one another.
- **Tradition:** We are proud of it; we learn from it; we are not bound by it.
- **Respect:** We embrace each other's differences so that we may enrich the well-being of everyone.

The National Park Service is a bureau within the Department of the Interior. While numerous national park system units were created prior to 1916, it was not until August 25, 1916, that President Woodrow Wilson signed the National Park Service Organic Act formally establishing the National Park Service.

The national park system continues to grow and comprises more than 400 park units covering more than 84 million acres in every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These units include, but are not limited to, national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, scenic rivers and trails, and the White House. The variety and diversity of park units throughout the nation require a strong commitment to resource stewardship and management to ensure both the protection and enjoyment of these resources for future generations.

The arrowhead was authorized as the official National Park Service emblem by the Secretary of the Interior on July 20, 1951. The sequoia tree and bison represent vegetation and wildlife, the mountains and water represent scenic and recreational values, and the arrowhead represents historical and archeological values.

Introduction

Every unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. The core components of a foundation document include a brief description of the park as well as the park's purpose, significance, fundamental resources and values, and interpretive themes. The foundation document also includes special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning. Along with the core components, the assessment provides a focus for park planning activities and establishes a baseline from which planning documents are developed.

A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park. The process of developing a foundation document begins with gathering and integrating information about the park. Next, this information is refined and focused to determine what the most important attributes of the park are. The process of preparing a foundation document aids park managers, staff, and the public in identifying and clearly stating in one document the essential information that is necessary for park management to consider when determining future planning efforts, outlining key planning issues, and protecting resources and values that are integral to park purpose and identity.

While not included in this document, a park atlas is also part of a foundation project. The atlas is a series of maps compiled from available geographic information system (GIS) data on natural and cultural resources, visitor use patterns, facilities, and other topics. It serves as a GIS-based support tool for planning and park operations. The atlas is published as a (hard copy) paper product and as geospatial data for use in a web mapping environment. The park atlas for Buffalo National River can be accessed online at: http://insideparkatlas.nps.gov/.

Part 1: Core Components

The core components of a foundation document include a brief description of the park, park purpose, significance statements, fundamental resources and values, and interpretive themes. These components are core because they typically do not change over time. Core components are expected to be used in future planning and management efforts.

Brief Description of the Park

Unique in the Ozarks and rare throughout the United States, the Buffalo River is completely undammed from the Boston Mountains to its confluence with the White River, 153 miles downstream. Buffalo National River—the country's first national river—is protected as a free-flowing stream for 135 of those miles within the park's boundaries. The remaining 18 miles of the river originate upstream from the park through lands administered by the United States Forest Service. Towering bluffs, waterfalls, canyons, caves, and historic sites provide an exceptional setting for discovery, solitude, and diverse recreational opportunities.

Public Law 92-237, which established the park as a unit of the national park system in 1972, highlights several of the park's exceptional qualities. A U.S. House of Representatives Committee Report (1972) described the justification for the establishment of Buffalo National River as "… not one single quality, but the combination of its size, its completeness, its wild qualities, and its associated natural, scenic, and historical resources that make the Buffalo worthy of national recognition." Establishment of the park also ensured that the upper Buffalo National River and surrounding tributaries would conserve the scenic, scientific, recreational, and fish and wildlife values present in the area for future generations.

Recognized for its distinctive ecology at local, national, and global levels, Buffalo National River showcases diverse ecosystems as well as refugium of critical habitats sustaining high biological diversity, including many rare species. Thousands of sinkholes, sinking streams, springs, and other natural features related to karst processes are found throughout the park. In the driest parts of the year, sections of the river may run underground for long distances. Outstanding examples of faulting, landslides, and ore mineralization are evident across the park's topography, and significant fossil deposits have formed in ancient layers through its long geologic history.

The park's 94,293 acres are divided into three management districts—the upper, middle, and lower districts, respectively. Park headquarters are located in Harrison (Boone County), Arkansas, just north of the upper and middle districts. Park visitation has averaged more than 1.3 million visitors per year (2006 to 2016). In addition to water-based activities with multiple launch points along the river, the park offers more than 100 miles of hiking trails and designated trails for horseback riding. Designated wilderness represents over one-third of the park's total acreage. Because there are few roads that parallel the river and few accessible overlooks, river and trail trips are among the best ways to experience the park. Similarly, Buffalo National River's abundant nooks and crannies provide opportunities for visitors to experience some of the darkest night skies in the region, as well as natural sounds.

Complementing the park's outstanding natural qualities, Buffalo National River embraces the story of Ozarks settlement and history from the first inhabitants as early as 12,000 years ago to today's rural community of Boxley Valley. The park consults with 10 American Indian tribes who are traditionally associated with the park and the resources therein.

Buffalo National River was established in large part to protect one of the nation's last remaining unspoiled landscapes in the Ozark Plateau. The park plays a valuable role in fostering a continual awareness of humanity's relationship to the earth, instilling appreciation, and educating the public about the need to protect wild places like the one at Buffalo National River.

Park Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular park. The purpose statement for Buffalo National River was drafted through a careful analysis of its enabling legislation and the legislative history that influenced its development. The park was established when the enabling legislation adopted by Congress was signed into law on March 1, 1972 (see appendix A for enabling legislation and legislative acts). The purpose statement lays the foundation for understanding what is most important about the park.

The purpose of Buffalo National River is to preserve a free-flowing river and to conserve and interpret the combination of natural, scenic, cultural, and scientific features characterized by deep valleys, towering bluffs, wilderness, and landscapes of the Ozark Mountains.

Park Significance

Significance statements express why a park's resources and values are important enough to merit designation as a unit of the national park system. These statements are linked to the purpose of Buffalo National River, and are supported by data, research, and consensus. Statements of significance describe the distinctive nature of the park and why an area is important within a global, national, regional, and systemwide context. They focus on the most important resources and values that will assist in park planning and management.

The following significance statements have been identified for Buffalo National River. (Please note that the sequence of the statements does not reflect the level of significance.)

1. Buffalo River is an exceptional example of a free-flowing Ozark mountain river. Undammed, it is the only river protected for its entire length within the Ozark Plateau.

2. The topographical diversity and geographic setting of Buffalo National River, combined with the convergence of northern, southern, and western ecosystems, form the park's ecological backbone, highlighted by rare glades and relic species (e.g., beech forests and goat prairie communities).

3. Buffalo National River contains a dense array of karst features, including hundreds of caves and thousands of sinkholes, sinking streams, springs, and other natural features formed by the complex interplay of groundwater and surface water. The park exhibits outstanding examples of faulting, ancient river terraces, landslides, ore mineralization, and extensive fossil deposits.

4. Buffalo National River features a mosaic of cultural landscapes that conveys the story of Ozarks settlement and history spanning the first prehistoric inhabitants to the present-day Boxley Valley community—providing opportunities to study and interpret cultural, environmental, technological, and social adaptations.

5. Buffalo National River's spectacular waterfalls, towering bluffs, clear water, wooded canyons, caves, historic sites, wilderness qualities, and intact and undeveloped riparian corridor provide an exceptional, year-round setting for discovery, solitude, and diverse recreational opportunities.

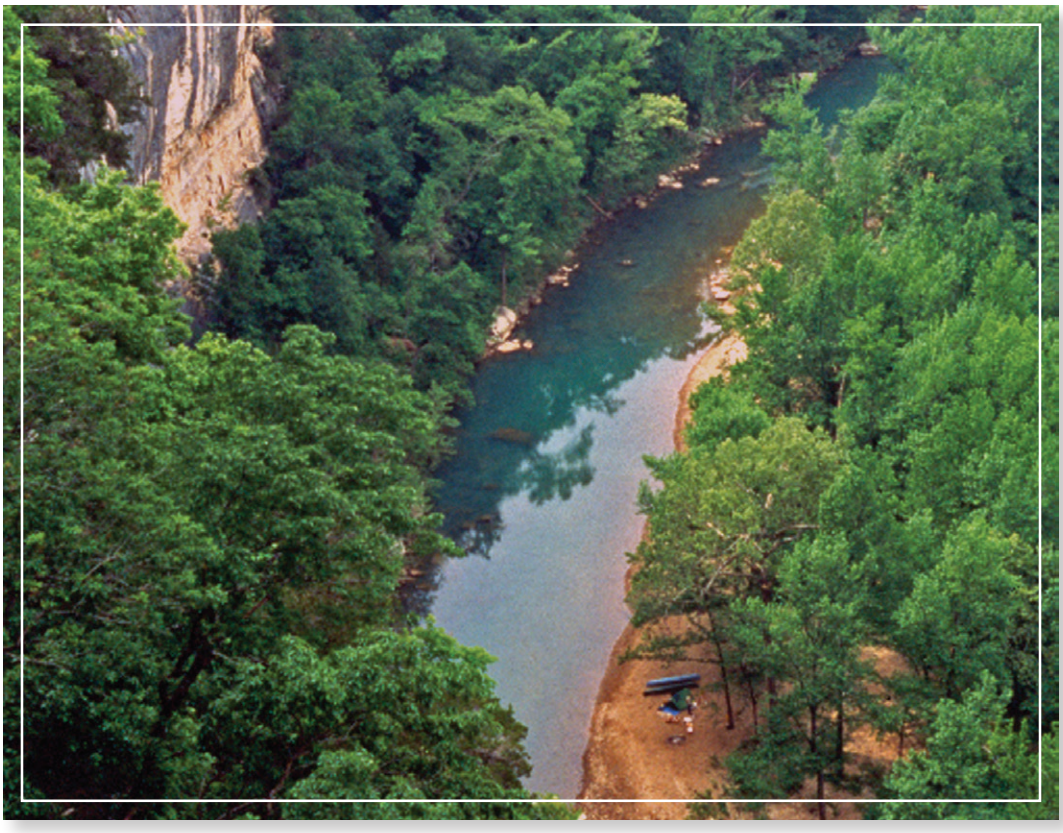
Fundamental Resources and Values

Fundamental resources and values (FRVs) are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance. Fundamental resources and values are closely related to a park's legislative purpose and are more specific than significance statements.

Fundamental resources and values help focus planning and management efforts on what is truly significant about the park. One of the most important responsibilities of NPS managers is to ensure the conservation and public enjoyment of those qualities that are essential (fundamental) to achieving the purpose of the park and maintaining its significance. If fundamental resources and values are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

The following fundamental resources and values have been identified for Buffalo National River:

- **Clean, Free-Flowing River.** The park's enabling legislation directs the National Park Service to "preserve a free-flowing river. . .," Buffalo National River is the only river protected for its entire length within the Ozark Plateau and traverses some of the most scenic country in the Lower Midwest. Diverse in character, upper sections of the river abut cliff walls up to 500 feet high; some stretches flow underground, while long, placid segments wind through portions of the middle and lower river along the waterway's easterly course. One of the few remaining undammed rivers in the lower 48 states, Buffalo National River provides excellent connectivity between upstream and downstream reaches, creating stable substrates for aquatic life as well as a variety of recreational uses the park was created to support. Although water quality degradation from external land uses and certain NPS management activities impact the river's notably clean waters, Buffalo National River provides an exceptional regional example of a functional, free-flowing river.



- **Physical and Biological Processes.** The Buffalo River has sculpted a dynamic physical environment characterized by a diversity of channels meandering through narrow alluvial bottomlands and swift running rapids that cut deeply through bedrock. As the river continues its endless downcutting through the region's complex sedimentary layers, it rearranges natural features such as gravel bars and islands as well as quiet pools separated by short riffles. The river and its tributaries have eroded through approximately 1,000 feet of sandstone, shale, limestone, and dolomite, resulting in towering bluffs, waterfalls, steep-sided valleys, and ancient river terraces. These ever-changing natural processes support regional forests, woodlands, wetlands, and savannas, as well as unusually rare botanical communities and diverse wildlife populations.

- **Aquatic and Riparian Habitat.** Shaped by free-flowing, clean water, the park's biological communities and natural features offer exceptional opportunities for scientific discoveries and advances in aquatic and riparian ecosystem management and restoration. Examples of innovative projects include the restoration of native river cane community and the reintroduction of fish species to provide hosts to support the recovery of rare freshwater mussels. The park serves as a laboratory for future discovery and understanding of ecosystem management and restoration.

- **Geologic Resources.** Buffalo National River flows through a karst-dominated watershed with a dense array of interconnected karst features such as sinkholes, springs, caves, and losing streams, which has developed over several million years. The greatest density of karst features are related to structures such as faults and folds within the Paleozoic strata. Many million years of geologic processes have resulted in the deposition of lead and zinc ores and associated gangue minerals in several distinct mining districts. The processes have also resulted in the deposition of gypsum cave formations such as needles, angel hair, crystalline pendants, mirabilite needles, and calcium carbonate in the forms of calcite and aragonite flowstone, dripstone, rimstone dams, cave rafts, cave popcorn, and cave coral. The caves, mines, bluffs, and canyons preserve records of geologic processes in the forms of dissolution features, erosion features, sediments, and paleontological deposits.

- **Cultural and Historic Resources.** Hundreds of recorded prehistoric and historic sites (such as Cob Cave and Indian Rockhouse) provide evidence of the rich history of American Indian tribes and later, European American traditions and land uses, still evident on the landscape. The architectural and engineering legacy of structures and landscapes (such as Boxley Valley, the Parker-Hickman homestead, Civilian Conservation Corps [CCC] structures, and the Rush Historic District), objects, roads, and trails provide visitors with a physical connection to Ozark history and a laboratory for research.

- **Wilderness Character.** The Buffalo National River Wilderness includes three separate units spanning 36,000 acres that provide visitors opportunities to experience solitude, physical challenges, and spiritual enrichment. Designated by Congress in 1978, the Upper Buffalo unit (2,200 acres), Ponca unit (11,300 acres), and Lower Buffalo unit (22,500 acres) encompass portions of the river environment that carve its path through an ancient seabed, revealing bands of sandstone, limestone, and dolomite formations forming the backdrop for numerous caves and bluffs. Comprising 38 percent of the park's lands, the wilderness units represent the heart of Ozarks wildness in northwestern Arkansas. In addition to its natural beauty, numerous cultural sites exist in wilderness, ranging from bluff shelters once occupied by Archaic Period native inhabitants to 1870's homesteads.

- **Recreational Opportunities.** Each year, more than a million visitors experience a diverse range of recreational experiences at Buffalo National River, from kayaking, boating, swimming, and other popular river-based activities, to exploring a lifetime's worth of "hidden" waterfalls, springs, and caves. Adding to the park's magnificent scenery and sense of discovery, Buffalo National River protects public access to some of the most valued recreational resources and river corridors in the region. Among the karst-studded landscape, visitors can also experience some of the darkest night skies around—complemented by opportunities to become immersed in the natural soundscape. Such opportunities are plentiful in social or solitary settings. Other popular recreational activities include fishing, hunting, horseback riding, hiking, rock climbing, and camping.

Interpretive Themes

Interpretive themes are often described as the key stories or concepts that visitors should understand after visiting a park—they define the most important ideas or concepts communicated to visitors about a park unit. Themes are derived from, and should reflect, park purpose, significance, resources, and values. The set of interpretive themes is complete when it provides the structure necessary for park staff to develop opportunities for visitors to explore and relate to all park significance statements and fundamental resources and values.

Interpretive themes are an organizational tool that reveal and clarify meaning, concepts, contexts, and values represented by park resources. Sound themes are accurate and reflect current scholarship and science. They encourage exploration of the context in which events or natural processes occurred and the effects of those events and processes. Interpretive themes go beyond a mere description of the event or process to foster multiple opportunities to experience and consider the park and its resources. These themes help explain why a park story is relevant to people who may otherwise be unaware of connections they have to an event, time, or place associated with the park.

The following interpretive themes have been identified for Buffalo National River (Long-Range Interpretive Plan, 2015):

- **First Impressions: Perceptions of Place.** The Buffalo River landscape reveals awe-inspiring scenery and a collective wealth of nature and illustrates a rich heritage of traditional values and lifeways that have sustained generations of people.
- **Motivations and Incentives: Why Visitors Come Here.** The Buffalo River offers opportunities for visitors to be challenged intellectually and physically, find renewal and inspiration in wilderness and examine their relationship to the natural world, develop a greater sense of self and community, and create lasting memories through a diversity of recreational and educational experiences.
- **People and Place.** Generations of people have found their needs for physical, economic, and spiritual survival met within the Buffalo River landscape, which bears witness to the people who came before and their ability to adapt and to preserve traditional ways of life.
- **Science and Education.** A dynamic outdoor classroom and diverse living laboratory, Buffalo National River encourages people to learn about and appreciate the rich ecological relationships that nurture and sustain our civilization and to understand how today's decisions will affect the lives of future generations.
- **A Beautiful River Preserved.** Both the effort to establish a park and continued vigilance to protect the river's integrity illustrate the ability of people to work together to balance ongoing changes in land use, recreation, and conservation, and to ensure this free-flowing river exists for future generations.

Part 2: Dynamic Components

The dynamic components of a foundation document include special mandates and administrative commitments and an assessment of planning and data needs. These components are dynamic because they will change over time. New special mandates can be established and new administrative commitments made. As conditions and trends of fundamental resources and values change over time, the analysis of planning and data needs will need to be revisited and revised, along with key issues. Therefore, this part of the foundation document will be updated accordingly.

Special Mandates and Administrative Commitments

Many management decisions for a park unit are directed or influenced by special mandates and administrative commitments with other federal agencies, state and local governments, utility companies, partnering organizations, and other entities. Special mandates are requirements specific to a park that must be fulfilled. Mandates can be expressed in enabling legislation, in separate legislation following the establishment of the park, or through a judicial process. They may expand on park purpose or introduce elements unrelated to the purpose of the park. Administrative commitments are, in general, agreements that have been reached through formal, documented processes, often through memorandums of agreement. Examples include easements, rights-of-way, arrangements for emergency service responses, etc. Special mandates and administrative commitments can support, in many cases, a network of partnerships that help fulfill the objectives of the park and facilitate working relationships with other organizations. They are an essential component of managing and planning for Buffalo National River.

Special Mandates

- **Public Law 92-237, Sections 2, 3, and 4, March 1, 1972.**

  - Provides direction related to future land acquisition within and outside of the park, as well as rights of use associated with owners of improved property within the park used solely for noncommercial residential or agricultural purposes. Total acreage the United States can own is limited to 95,730 acres.

  - The Secretary shall permit hunting and fishing on lands and waters under his jurisdiction within the boundaries of the Buffalo National River in accordance with applicable Federal and State laws, except that he may designate zones where and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, fish or wildlife management, or public use and enjoyment. Except in emergencies, any rules and regulations of the Secretary pursuant to this section shall be put into effect only after consultation with the Arkansas Fish and Game Commission.

  - The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (41 Stat. 1063), as amended (16 U.S.C. 791a et seq.), on or directly affecting the Buffalo National River and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river is established, as determined by the Secretary. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above the Buffalo National River or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of this Act.

- The Secretary shall administer, protect, and develop the Buffalo National River in accordance with the provisions of the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1 et seq.), as amended and supplemented; except that any other statutory authority available to the Secretary for the conservation and management of natural resources may be utilized to the extent he finds such authority will further the purposes of this Act.

- **Public Law 94-178, October 21, 1976.** Congress provided an increase in the park's appropriation ceiling from $16,115,000 to $30,071,500.

- **Public Law 95-625, November 10, 1978. SF.c. 401.** The following lands are hereby designated as wilderness in accordance with section 3(c) of the Wilderness Act (78 Stat. 890; 16 U.S.C. 1132 (c)), and shall be administered by the Secretary in accordance with the applicable provisions of the Wilderness Act: (1) Buffalo National River, Arkansas, wilderness comprising approximately ten thousand five hundred and twenty-nine acres and potential wilderness additions comprising approximately twenty-five thousand four hundred and seventy-one acres depicted on a map entitled "Wilderness Plan, Buffalo National River, Arkansas," numbered 173-20,036-B and dated March 1975, to be known as the Buffalo National River Wilderness.

- **Public Law 102-258, March 19, 1992.** A termination of use and occupancy was provided to Harold and Margaret Hedges, who had conveyed approximately 711 acres to the park in 1979. Upon destruction of the Hedges home by fire in 1991 that ended their ability to use the remaining term of occupancy, they were refunded the value of the unused term of their reservation.

Administrative Commitments

For more information about the existing administrative commitments for Buffalo National River, please see appendix B.

Assessment of Planning and Data Needs

Once the core components of part 1 of the foundation document have been identified, it is important to gather and evaluate existing information about the park's fundamental and other important resources and values, and develop a full assessment of the park's planning and data needs. The assessment of planning and data needs section presents planning issues, the planning projects that will address these issues, and the associated information requirements for planning, such as resource inventories and data collection, including GIS data.

There are three sections in the assessment of planning and data needs:

- analysis of fundamental resources and values
- identification of key issues and associated planning and data needs
- identification of planning and data needs (including spatial mapping activities or GIS maps)

The analysis of fundamental resources and values and identification of key issues leads up to and supports the identification of planning and data collection needs.

Analysis of Fundamental Resources and Values

The fundamental resource or value analysis table includes current conditions, potential threats and opportunities, planning and data needs, and selected laws and NPS policies related to management of the identified resource or value.

Fundamental Resource or Value	Clean, Free-Flowing River
Related Significance Statements	Significance statements 1, 2, 3, and 5.
Current Conditions and Trends	**Conditions** • No dams exist—the free-flowing river spans 135 wild and scenic miles within the park's linear boundaries and 18 miles through U.S. Forest Service-administered lands. • Widening and shallowing of river channel has occurred in some areas. • Increased channel braiding and lateral channel migration in some areas. • Park has experienced increased flooding frequency and severity. **Trends** • Decreasing water quality due to a lack of best management practices concerning factors throughout the watershed such as overuse of fertilizer, no use of riparian buffers, cattle wading into stream channels, and alteration of stream channels. • Increasing channel instability due to poor gravel road maintenance in the watershed as well as poor stream and pasture management. • Confined swine and poultry operations are becoming larger and more numerous in the surrounding watershed. • Nutrient levels in the river continue to increase. • Some streams now have low enough levels of dissolved oxygen to significantly hinder natural processes. • Increasing water temperatures have been documented over time. • Low river flows in the summer correspond with higher temperatures. • Increasing sediment loading (particularly gravel and sand) originating outside boundaries of federally managed lands within the watershed.
Threats and Opportunities	**Threats** • External impacts to water and air quality (i.e., municipal wastewater, septic systems, agriculture, vehicle exhaust, coal-fired power plants, external development). • Streambank erosion throughout the park increases sediment loading, affecting floodplain structure and resiliency. An increase in extreme storm events may exacerbate these threats. • When stream banks erode, fill material can cause unnaturally shallow pools along park rivers and streams, impacting flora, fauna, and natural geologic processes (land management issues outside the park contribute to these impacts). • Widening river channels and loss of shade in some areas create larger areas of algae blooms. • Concentrated animal feeding operations outside the park present a high risk of polluting park surface water, groundwater, and air quality, which have numerous impacts on biological processes, in particular by adding to nutrient loading within the Buffalo River watershed. • Water quality at risk for harmful effects from air pollution due to nutrient enrichment from excess deposition and runoff of nitrogen, and mercury contamination. • Vehicular use of gravel bars can destroy sensitive habitat and add to petroleum loading in the watershed. **Opportunities** • Minimize development of park infrastructure within floodplains and riparian corridors (e.g., move restroom facilities out of these areas). • Partner with The Nature Conservancy and local counties on incorporating best management practices for gravel road maintenance. • Partner with The Nature Conservancy on streambank restoration activities.

Fundamental Resource or Value	Clean, Free-Flowing River
Threats and Opportunities	**Opportunities (continued)** • Continue to implement the Buffalo River Watershed Plan in partnership with the Arkansas Natural Resource Commission. • Continue gravel bar closures to vehicular traffic (to maintain research and education opportunities and minimize resource impacts). • Enlarge the riparian buffer between hayfields and the river and tributaries to increase hydraulic roughness, encourage riparian forest development, and increase infiltration. • Convert bottomland fields to species of grass which require less fertilization, lowering the potential for nutrient enrichment by NPS actions. • Pursue partnerships with Natural Resources Conservation Service for watershed management as well as U.S. Department of Agriculture programs. • Partner with the Arkansas Governor's Beautiful Buffalo River Action Committee to protect the Buffalo River through their conservation plan and developed strategies to protect the watershed.
Data and/or GIS Needs	• Comprehensive Buffalo River watershed study. • Additional water quality sampling. • Update vegetation map using LiDAR. • Comprehensive streambank erosion mapping. • Dye tracing on Big Creek and microbial source tracking on Big Creek and along the main stem of the Buffalo River.
Planning Needs	• Comprehensive river use management plan (cross-referenced with other FRV planning needs in this document). • Water quality monitoring plan. • Planning for adaptation to climate change.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Water Act, as amended • Clean Air Act (42 USC 7401 et seq.) • National Environmental Policy Act of 1969, as amended • Executive Order 11988, "Floodplain Management" • Executive Order 11514, "Protection and Enhancement of Environmental Quality" • Executive Order 11990, "Protection of Wetlands" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Natural and Cultural Resources" • NPS Buffalo National River Superintendent's Compendium **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006* (§1.6) "Cooperative Conservation Beyond Park Boundaries" • NPS *Management Policies 2006* (chapter 4) "Natural Resource Management" • Director's Order 11D: *Records and Electronic Information Management* • Director's Order 46: *Wild and Scenic Rivers* • Director's Order 77-1: *Wetland Protection* • Director's Order 77-2: *Floodplain Management* • NPS *Natural Resource Management Reference Manual 77* • *NPS-77: Natural Resource Guidelines* • Director's Policy Memorandum 12-02, "Applying National Park Service Management Policies in the Context of Climate Change"

Fundamental Resource or Value	Physical and Biological Processes
Related Significance Statements	Significance statements 1 and 2.
Current Conditions and Trends	**Conditions** • Resource impacts on and along trails from equestrian uses remain stable due to relatively low trail ride numbers compared to other state and federal lands in the Ozark region. However, trails continue to widen at a sustained rate due to the ongoing levels of use. • Widening and shallowing of river channel in some areas. • Increased channel braiding and lateral channel migration in some areas. • Park has experienced increased flooding frequency and severity. • Increased algal production has been documented in some areas of the river. **Trends** • Increasing channel instability due to poor gravel road maintenance in the watershed as well as poor stream and pasture management. • Dramatic increase in backcountry camping as more sites are being used and expanded by visitors using machetes, hatchets, and axes. • Increased graffiti on bluffs. • Increasing number of dogs resulting in more frequent disturbance to wildlife and visitors. • Equestrian use is stable, but trails continue to widen from use (including wilderness areas). • Adjacent landowners create unauthorized access points to park lands. • Increasing external development at the edges of park boundaries (i.e., houses, cabins, roads, and powerlines). • Confined swine and poultry operations are becoming larger and more numerous in the surrounding watershed. • Nutrient levels in the river continue to increase. • Some streams now have low enough levels of dissolved oxygen to significantly hinder natural processes. • Loss or extirpation of species that are poorly adapted to rapid changes in stream morphology, or those adapted to lower nutrient levels, lower water temperatures, and higher dissolved oxygen conditions. • Projected effects of climate change may increase and exacerbate the impacts of extreme heat events, drought, and wildfire, as well as extreme storm events and flooding, increases in invasive species, and a northward shift in native species habitats.

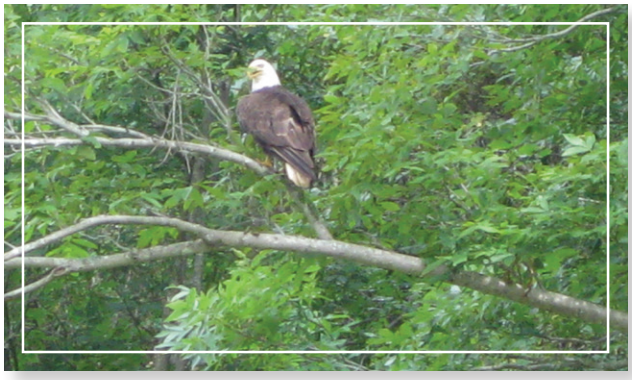
Fundamental Resource or Value	Physical and Biological Processes
Threats and Opportunities	**Threats** • Forest closure in formerly open areas. • Widening river channels and loss of shade in some areas create larger areas of algae blooms. • Concentrated animal feeding operations outside the park present a high risk of polluting park surface water, groundwater, and air quality, which has numerous impacts on biological processes, in particular by adding to nutrient loading within the Buffalo River watershed. • Various pollutants (waterborne and airborne) threaten flora and fauna. • Natural communities are at risk for harmful effects from air pollution due to nutrient enrichment from excess deposition and runoff of nitrogen, impacts to ozone sensitive plants, and mercury contamination. • White-nose syndrome has been confirmed in the park and severely endangers bat populations. Potential secondary impacts to cave invertebrate populations and other rare organisms are likely to occur if bat populations are decimated. • Vehicular use of gravel bars can destroy sensitive habitat and add to petroleum loading in the watershed. • Social trailing and unauthorized trail building impacts park vegetation; may also impact cultural resources, and adds to trail maintenance workload. • Unauthorized entry, theft of minerals (i.e., lead and zinc), and vandalism at mine sites. • Overuse of trail systems taxes already inadequate trail maintenance resources. Equestrian use in unauthorized areas tramples vegetation. • Unauthorized camping at park historic sites. • Increasing graffiti written on the bluffs and other forms of vandalism and theft of park resources. • Flooding events at Lost Valley impact a popular and heavily used trail. • Some new land uses in Boxley Valley are not consistent with previous agricultural uses (e.g., some landowners have begun planting warm season grasses to improve elk habitat). • Stream bank erosion due to road construction, new construction, poor farming practices, and logging. Degradation of adjacent, non-federal lands are primary contributors to erosion. An increase in extreme storm events may exacerbate these threats. **Opportunities** • Compare 2016–2017 LiDAR data with 2001–2004 LiDAR data to monitor land use changes. • Partner with The Nature Conservancy and local counties on incorporating best management practices for gravel road maintenance. • Partner with The Nature Conservancy on streambank restoration activities. • Continue to implement the Buffalo River Watershed Plan in partnership with the Arkansas Natural Resource Commission. • Pursue dark night sky educational and recreational programming. • Improve park sustainability and environmental leadership through NPS Climate Friendly Parks certification and action plan.
Data and/or GIS Needs	• Additional water quality sampling. • Update vegetation map using LiDAR. • Acoustic conditions baseline data. • Post-burn assessment. • Administrative history of past prescribed burning. • Comprehensive streambank erosion mapping. • In-park pollutant deposition and nearby air quality monitoring. • Studies to examine air pollution dose-response relationships in sensitive park ecosystems. • Dye tracing on Big Creek and microbial source tracking on Big Creek and along the main stem of the Buffalo River.

Fundamental Resource or Value	Physical and Biological Processes
Planning Needs	• Comprehensive river use management plan. • Terrestrial habitat management plan (update). • Water quality monitoring plan. • Comprehensive trails management plan. • Park lighting plan. • Planning for adaptation to climate change.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Air Act (42 USC 7401 et seq.) • Clean Water Act, as amended • Endangered Species Act of 1973, as amended • National Environmental Policy Act of 1969, as amended • Executive Order 11514, "Protection and Enhancement of Environmental Quality" • Executive Order 11990, "Protection of Wetlands" • Executive Order 13112, "Invasive Species" • Secretarial Order 3206, "American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Natural and Cultural Resources" • Paleontological Resources Preservation Act of 2009 • NPS Buffalo National River Superintendent's Compendium **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006* (§1.4.6) "What Constitutes Park Resources and Values" • NPS *Management Policies 2006* (§1.6) "Cooperative Conservation Beyond Park Boundaries" • NPS *Management Policies 2006* (§2.1.2) "Scientific, Technical, and Scholarly Analysis" • NPS *Management Policies 2006* (chapter 4) "Natural Resource Management" • NPS *Management Policies 2006* (§4.1) "General Management Concepts" • NPS *Management Policies 2006* (§4.4.1) "General Principles for Managing Biological Resources" • NPS *Management Policies 2006* (§4.4.2) "Management of Native Plants and Animals" • NPS *Management Policies 2006* (§4.7) "Air Resource Management" • NPS *Management Policies 2006* (§4.9) "Soundscape Management" • NPS *Management Policies 2006* (§4.10) "Lightscape Management" • Director's Order 46: *Wild and Scenic Rivers* • Director's Order 77: *Natural Resource Protection* • NPS-77: *Natural Resource Guidelines* • Director's Policy Memorandum 12-02, "Applying National Park Service Management Policies in the Context of Climate Change"

Fundamental Resource or Value	Aquatic and Riparian Habitat
Related Significance Statements	Significance statements 1, 2, 3, and 5.
Current Conditions and Trends	**Conditions** • Zebra mussels, considered a threat to aquatic and riparian resources, have not been documented within park boundaries. • Asian clams exist within park boundaries. • Snakehead fish, considered a threat to aquatic and riparian resources, have not been documented within park boundaries. • The park has not documented occurrences of the federally listed Ozark hellbender. • Didymo has not been found in the Buffalo River; however, it has been identified in the White River. • Widening and shallowing of river channel has occurred in some areas. • Increased channel braiding and lateral channel migration in some areas. • Park has experienced increased flooding frequency and severity. • Increased algal production has been documented in some areas of the river. **Trends** • Decreasing water quality due to a lack of best management practices concerning factors throughout the watershed such as overuse of fertilizer, no use of riparian buffers, cattle wading into stream channels, and alteration of stream channels. • Decrease in smallmouth bass populations due to factors such as widening of the river channel in some areas, reduced spawning habitat due to increased sedimentation, diminished spawning success due to increased river use and corresponding nest disturbance/abandonment, flood frequency during spawning times, and increased water temperatures causing summer/stress mortality. • Increasing water temperatures have been documented over time. • Low river flows in the summer correspond with higher temperatures. • Increasing sediment loading (particularly gravel and sand) originating outside boundaries of federally managed lands within the watershed.

Fundamental Resource or Value	Aquatic and Riparian Habitat
Threats and Opportunities	**Threats** • External impacts to water and air quality (i.e., municipal wastewater, septic systems, agriculture, vehicle exhaust, coal-fired power plants, external development). • Increase in feral hog populations, leading to vegetative trampling, including riparian vegetation. • Algae blooms and low dissolved oxygen impact numerous aquatic species and threaten the scenic character of the Buffalo River. • Asian clams can clog irrigation canals and pipes, alter benthic substrates, and compete with native species for limited resources and drinking water supplies. • Zebra mussels, considered a threat to aquatic and riparian resources have not been documented within park boundaries, but would require rapid response if confirmed. • Snakehead fish, considered a threat to aquatic and riparian resources have not been documented within park boundaries, but would require rapid response if confirmed. • Streambank erosion throughout the park increases sediment loading, affecting floodplain structure and resiliency, as well as impacts to park operations. • Visitor overuse in certain areas of the park increases erosion and impacts stream bank stability, which can potentially alter river channels. • External development impacts federally listed species such as rabbitsfoot mussel and snuffbox mussel. • Rising water temperatures threaten healthy, cool water fisheries. • When stream banks erode, fill material can cause unnaturally shallow pools along park rivers and streams, impacting flora, fauna, and natural geologic processes (land management issues outside the park contribute to these impacts). • Rising stream temperatures due to climate change may alter species composition; extreme storms and flooding may exacerbate streambank erosion. • Wetland and meadow vegetation are sensitive to nutrient enrichment effects of excess nitrogen pollutant deposition and runoff which can impact biodiversity of these plant communities. **Opportunities** • Minimize development of park infrastructure within floodplains and riparian corridors (e.g., move restroom facilities out of these areas). • Increase education, interpretation, and research—park has potential to be a world-class aquatic and riparian laboratory. • Partner with The Nature Conservancy on streambank restoration activities. • Build on citizen science efforts conducted to date. • Continue gravel bar closures to vehicular traffic (to maintain research and education opportunities and minimize resource impacts). • Enlarge the riparian buffer between hayfields and the river and tributaries to increase hydraulic roughness, encourage riparian forest development, and increase infiltration. • Convert bottomland fields to species of grass which require less fertilization, lowering the potential for nutrient enrichment by NPS actions. • Pursue partnerships with Natural Resources Conservation Service for watershed management as well as U.S. Department of Agriculture programs. • Work with Arkansas state agencies to trap and remove feral hogs.

Fundamental Resource or Value	Aquatic and Riparian Habitat
Data and/or GIS Needs	• Additional water quality sampling. • Complete creel survey results compilation. • Comprehensive Buffalo River watershed study. • River crossing mapping. • Macroinvertebrate species inventories. • Land use / land cover class map • Dye tracing on Big Creek and microbial source tracking on Big Creek and along the main stem of the Buffalo River
Planning Needs	• Comprehensive river use management plan. • Planning for adaptation to climate change.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Air Act (42 USC 7401 et seq.) • Clean Water Act, as amended • Endangered Species Act of 1973, as amended • Federal Cave Resources Protection Act of 1988 • Paleontological Resources Preservation Act of 2009 • Executive Order 11988, "Floodplain Management" • Executive Order 11990, "Protection of Wetlands" • Executive Order 13112, "Invasive Species" • Secretarial Order 3206, "American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006* (§1.6) "Cooperative Conservation Beyond Park Boundaries" • NPS *Management Policies 2006* (chapter 4) "Natural Resource Management" • Director's Order 11D: *Records and Electronic Information Management* • Director's Order 46: *Wild and Scenic Rivers* • Director's Order 77-1: *Wetland Protection* • Director's Order 77-2: *Floodplain Management* • NPS *Natural Resource Management Reference Manual 77* • NPS-77: *Natural Resource Guidelines* • Director's Policy Memorandum 12-02, "Applying National Park Service Management Policies in the Context of Climate Change"



Fundamental Resource or Value	Geologic Resources
Related Significance Statements	Significance statements 2, 3, and 5.
Current Conditions and Trends	**Conditions** • Geologic resources are in relatively good, stable condition overall (including caves). • Geologic resources continue to be effectively managed, overall. • The overall morphology of the Buffalo River stream channel is artificially unstable due to a variety past and current contributing factors within the surrounding watershed and park including gravel mining and channelization, effects of agricultural practices, poorly designed and maintained gravel roads, riparian clearing, and bridge structures. • Gravel surfacing material and wash-outs are common occurrences on certain park roads. **Trends** • Climate change results in more frequent, severe flood events that contribute to erosion and impact stream flow. • Vandalism has not been excessive compared to public lands outside park boundaries. • Recreational rock climbing is increasing. • Water tables are slowly diminishing because annual rainfall has not been consistent. Groundwater recharge rates have not been consistent. • Continued unauthorized entry by visitors into closed mines. • Increasing sediment loading (particularly gravel and sand) originating outside boundaries of federally managed lands within the watershed.
Threats and Opportunities	**Threats** • Vandalism and graffiti on rocks, caves, and bluffs throughout the park (i.e., Cob Cave and Indian Rock House). Areas of high visitation can become focal points for vandalism. • Illegal mineral collection in abandoned mines. **Opportunities** • Continue to develop the park's cave research program through cooperative agreements and research learning centers. • Reopen public caving access in specific locations (via a permit process). • Continue cooperative agreement with the Cave Research Foundation. • Compare 2016–2017 LiDAR data with 2001–2004 LiDAR data to monitor land use changes. • Educate visitors on resource damage from graffiti and other types of vandalism.
Data and/or GIS Needs	• Cave mapping and species inventory. • Hydrological survey.
Planning Needs	• Strategic facilities plan. • Cave and karst management plan (update). • Water quality monitoring plan. • Rock climbing management plan. • Planning for adaptation to climate change.

Fundamental Resource or Value	Geologic Resources
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Air Act (42 USC 7401 et seq.) • Clean Water Act, as amended • Endangered Species Act of 1973, as amended • Federal Cave Resources Protection Act of 1988 • Paleontological Resources Preservation Act of 2009 • Executive Order 11988, "Floodplain Management" • Executive Order 11990, "Protection of Wetlands" • Executive Order 13112, "Invasive Species" • Secretarial Order 3206, "American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • Museum Properties Management Act of 1955, as amended (54 USC 102501-102504) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006* (chapter 4) "Natural Resource Management" • Director's Order 11D: *Records and Electronic Information Management* • Director's Order 24: *NPS Museum Collection Management* • Director's Order 46: *Wild and Scenic Rivers* • Director's Order 77-1: *Wetland Protection* • Director's Order 77-2: *Floodplain Management* • NPS *Natural Resource Management Reference Manual 77* • NPS *Museum Handbook*, Parts I, II, and III • NPS-77: *Natural Resource Guidelines* • Director's Policy Memorandum 12-02, "Applying National Park Service Management Policies in the Context of Climate Change"

Fundamental Resource or Value	Cultural and Historic Resources
Related Significance Statements	Significance statements 4 and 5.
Current Conditions and Trends	**Conditions** • Cultural resources are in a variety of conditions, ranging from good to poor. • Park includes variety of cultural resources within a living cultural landscape. • The park includes very few private inholdings. However, Boxley Valley is a complex patchwork of privately owned parcels that each have covenants and restrictions that prevent some threats to cultural resources. Boxley Valley properties have covenants and associated property deeds that restrict development and limit improvements to those that support agricultural uses. Properties in Boxley Valley are changing ownership through natural attrition and other processes. As ownership changes, private landowners are tasked to maintain the cultural landscape to which these properties contribute. • Park has documented more than 700 archeological sites. • A cultural landscape inventory has been completed for the park. • Cultural landscape reports have been completed for some areas of the park (e.g., the Rush Historic District cultural landscape report is a current, ongoing effort, as of 2017). • Historic documentation is highly variable depending on location. • List of structures the park actively maintains is short, including the Parker-Hickman Homestead and the Cold Springs School. • The Boxley Mill, associated structures, and pond is included in a historic lease with the Gorgas Foundation (expires in 2042). • The park maintains a Terrestrial Habitat Management Program (e.g., hay special use permits). • The Ponca low water bridge is a class 1 contributing feature of the Buffalo River Historic District that is considered an important ethnographic resource for many local residents. • The condition of the park's Civilian Conservation Corps cabins is deteriorating. • Archeological sites are generally stable, although some sites are eroding and some are being looted. **Trends** • Historic structures are deteriorating in the absence of funding for repairs and maintenance—representing significant deferred maintenance. • Boxley Mill pond may be filling in due to sedimentation. • The park's Terrestrial Habitat Management Program has declined significantly with a chronic staffing shortage, reducing the total number of acres treated. As fields are not maintained, they are colonized by undesirable vegetation, which degrades the qualities of the pastoral landscape. • Replacing in-kind components of historic resources is declining (e.g., hand hewn logs are being replaced with sawn logs). • Continued unauthorized entry into closed mines.

Fundamental Resource or Value	Cultural and Historic Resources
Threats and Opportunities	**Threats** • Vandalism—breaking windows, tagging, etc. (i.e., Parker-Hickman Homestead). • Lack of monitoring and oversight of historic properties and some archeological sites. • Inability to repair and restore historic resources. • Unauthorized camping and use of fires in historic fireplaces. • Unauthorized entry, theft of minerals (i.e., lead and zinc) and vandalism at mine sites. • Unauthorized camping at park historic sites, resulting in graffiti and other forms of vandalism. • Historic ruins or historic components are damaged due to inappropriate visitor uses. • Some archeological sites are threatened by feral hogs, looting, and erosion. • The park lacks appropriate guidance for how to repair certain historic structures. • Erosion impacts in the Rush Historic District could lead to a loss of archeological resources and instability of above-ground resources. • Several historic structures documented in the park's List of Classified Structures (database) are collapsing as the park does not have the resources to maintain them. • Projected increases in extreme storms, drought, wildfire, and other climate change-related effects exacerbate current threats to archeological sites and historic structures. • Some new land uses in Boxley Valley are not consistent with previous agricultural uses (e.g., some landowners have begun planting warm season grasses to improve elk habitat). **Opportunities** • Update certain cultural studies and documentation. • Update interpretive programs and materials for Boxley Mill to increase visitation and relevancy of the site. • Educate visitors on the history and historical value of ruins to decrease misuse. • Increase use of prescribed burns as a management tool for open fields. • Provide historic preservation technical expertise and assistance to Boxley Valley property owners. • Obtain integrated cultural resource inventory/documentation. Need comprehensive integration of site document that records archeology and the List of Classified Structures (database).
Data and/or GIS Needs	• Cultural resource stewardship assessment. • Comprehensive boundary survey. • Boundary assessment (for lands adjacent to the Conard Fissure). • Comprehensive LCS update. • Historic archeological survey. • Administrative history for Buffalo National River.
Planning Needs	• Boxley Valley comprehensive area plan (in progress). • Strategic facilities plan. • Land protection plan (for Boxley Valley properties). • Planning for adaptation to climate change.

Fundamental Resource or Value	Cultural and Historic Resources
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • American Indian Religious Freedom Act of 1978 • Archeological and Historic Preservation Act of 1974 • Archaeological Resources Protection Act of 1979 • Historic Sites Act of 1935 • Museum Properties Management Act of 1955, as amended (54 USC 102501-102504) • National Historic Preservation Act of 1966, as amended • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13007, "Indian Sacred Sites" • Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Protection of Historic Properties" (36 CFR 800) • Paleontological Resources Preservation Act of 2009 • Federal Cave Resource Protection Act of 1988 • Native American Graves Protection and Repatriation Act of 1990 **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006* (chapter 4) "Natural Resource Management" • NPS *Management Policies 2006* (chapter 5) "Cultural Resource Management" • Director's Order 11D: *Records and Electronic Information Management* • Director's Order 24: *NPS Museum Collections Management* • Director's Order 28: *Cultural Resource Management* • Director's Order 28A: *Archeology* • Director's Order 46: *Wild and Scenic Rivers* • "Department of the Interior Policy on Consultation with Indian Tribes" • *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* • NPS *Museum Handbook*, Parts I, II, and III • NPS-77: *Natural Resource Guidelines* • Director's Policy Memorandum 12-02, "Applying National Park Service Management Policies in the Context of Climate Change" • Director's Policy Memorandum 14-02, "Climate Change and Stewardship of Cultural Resources" • Director's Policy Memorandum 15-01, "Addressing Climate Change and Natural Hazards for Facilities"

Fundamental Resource or Value	Wilderness Character
Related Significance Statements	Significance statements 1, 2, 3, 4, and 5.
Current Conditions and Trends	**Conditions** • Wilderness character integrity is threatened by overuse in some areas. No current limitation on wilderness use or permitting in place. • The Ponca Wilderness values of Opportunities for Solitude and a Primitive and Unconfined Recreation are degraded by the very heavy usage trails and a section of the Buffalo River that is extremely popular with floaters. • There is a high volume of recreational floaters entering the Ponca Wilderness area from existing trails. • The Lower Buffalo Unit Natural and Undeveloped qualities are degraded by the illegal use of ATVs. • The Lower Buffalo Unit Opportunities for Solitude and a Primitive and Unconfined Recreation are degraded at times by large equestrian groups. The Lower Buffalo Unit Natural values are believed to be degraded by a large number of river crossings used by equestrian users. Ponca Wilderness has a lack of solitude on weekends and this degrades wilderness character integrity. • The Lower Buffalo Unit Undeveloped and Natural values are degraded by a proliferation of social trails and primitive routes following old road traces. • The Ponca unit Undeveloped value is degraded by the extensive network of hiking and equestrian trails and primitive routes. The Lower Buffalo Unit Undeveloped value is degraded by large semi-permanent equestrian campsites replete with wall tents, stoves, etc. • Camping in and around historic structures such as the Cold Springs Schoolhouse in the Lower Buffalo Unit and the Eva Barnes Henderson house in the Ponca unit threatens the integrity of these structures and the stories they have to tell. **Trends** • High visitation is causing degradation of trails. • Increasing unofficial campsites, root exposure, damaged trees, and litter. • Equestrian use cutting into river banks. • Visitors may be overusing old road routes (social trails). • Occurrence of trash and human waste is increasing. • Special use permits are issued for events like concerts, weddings, and guided hikes to manage visitor use and prevent crowding near Ponca Wilderness. • Lack of understanding in the general public regarding what wilderness areas values are and people unaware of what wilderness designation entails. • Fire rings are becoming prolific in undesignated areas.

Fundamental Resource or Value	Wilderness Character
Threats and Opportunities	**Threats** • Increased visitation can contribute to resource damage, particularly in undesignated areas. • Proliferation of unauthorized backcountry campsites along trails. • Trash on the river affects the natural quality and untrammeled quality. • Some areas are experiencing use that is too heavy to be supportive of one or more of the values of wilderness character. Erosion has occurred at archeological sites and Lafoon cemetery due to visitor numbers. • Feral hogs affect all aspects of wilderness character and much of the park. • Social trails are becoming more prevalent (e.g., Lower Wilderness trails are not well-marked and have become a maze due to social trails). • Camping in historic structures such as the Cold Springs Schoolhouse, Lockhead Barn, Eva Barnes Henderson House, etc., is a threat to the cultural resource value. • Scenic views are often obscured by pollution-caused haze. Average natural visual range is reduced from about 120 miles (without the effects of pollution) to about 50 miles because of pollution at the park. The visual range is reduced to below 30 miles on high pollution days. At night, air pollution scatters artificial lights, increasing the effect of light pollution to the night sky. **Opportunities** • Increase public education regarding the importance of wilderness values through user education of Leave No Trace principles. More clearly delineate points of entry and approach at trailheads with improved signage. • Limit special use permit activities around Wilderness areas, especially Ponca. • Install trail counters on all designated trails. • Establish park webcam(s) to provide a virtual experience of park scenery.
Data and/or GIS Needs	• Backcountry campsite inventory and monitoring. • GPS trail surveys. • Comprehensive boundary survey. • Boundary assessment (for lands adjacent to the Conard Fissure). • Land use / land cover class map. • Geologic map data (1:24,000 scale) for Buffalo National River and watershed. • Trail counters on all designated trails. • Wilderness character assessment. • Visual resource inventory.
Planning Needs	• Wilderness stewardship and backcountry management plan. • Commercial services plan. • Comprehensive river use management plan.

Fundamental Resource or Value	Wilderness Character
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • National Environmental Policy Act of 1969, as amended • Wilderness Act of 1964 • Wild and Scenic Rivers Act • Endangered Species Act of 1973, as amended • National Invasive Species Act • Lacey Act, as amended • Federal Noxious Weed Act of 1974, as amended • Federal Cave Resources Protection Act of 1988 • Clean Water Act, as amended • Clean Air Act (42 USC 7401 et seq.) • Executive Order 13112, "Invasive Species" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • Paleontological Resources Preservation Act of 2009 **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006* (§1.4) "Park Management" • NPS *Management Policies 2006* (§1.4.6) "What Constitutes Park Resources and Values" (identifies scenery as a resource that is subject to non-impairment) • NPS *Management Policies 2006* (§1.6) "Cooperative Conservation Beyond Park Boundaries" • NPS *Management Policies 2006* (§4.1) "General Management Concepts" • NPS *Management Policies 2006* (§4.1.4) "Partnerships" • NPS *Management Policies 2006* (§4.4.1) "General Principles for Managing Biological Resources" • NPS *Management Policies 2006* (§4.7) "Air Resource Management" • NPS *Management Policies 2006* (§4.7.2) "Weather and Climate" • NPS *Management Policies 2006* (chapter 4) "Natural Resource Management" • NPS *Management Policies 2006* (chapter 5) "Cultural Resource Management" • Director's Order 18: *Wildland Fire Management* • Director's Order 28: *Cultural Resource Management* • Director's Order 28A: *Archeology* • Director's Order 46: *Wild and Scenic Rivers* • NPS *Natural Resource Management Reference Manual 77* • NPS *Reference Manual 18: Wildland Fire Management* • NPS-77: *Natural Resource Guidelines* • Director's Policy Memorandum 12-02, "Applying National Park Service Management Policies in the Context of Climate Change"

Fundamental Resource or Value	Recreational Opportunities
Related Significance Statements	Significance statement 5.
Current Conditions and Trends	**Conditions** • Park provides numerous access points and a variety of recreational opportunities. • Outreach and information—information regarding opportunities and about park conditions is disseminated via the park website and social media accounts, and through its concessioners. Visitors can use www.recreation.gov for reservations in some areas. • Plentiful recreational activities: hunting, fishing, swimming, paddling, boating, caving, hiking, wildlife observation, and horseback riding. • Park does not currently issue backcountry permits. • Mountain biking is not currently allowed. • Qualitative data suggests resource impacts from equestrian uses remain minimal due to relatively low trail-ride numbers compared to other state and federal lands in the Ozark region. **Trends** • Approximately 60% of visitors are from central and northern Arkansas. • Several river accesses and trailheads (both wilderness and non-wilderness) have become excessively overcrowded, leading to inefficient traffic flow and illegal parking that can damage park resources. • Increased visitor use has most impacted upper river resources in recent years. • Increasing interest in mountain biking, rock climbing, private boating, and ranger-guided tours. • Recreational rock climbing is increasing. • Visitation has increased as the northwestern Arkansas population has increased. • Hiking is increasing—more numbers of people and in more seasons. Shoulder season has increased—and almost no longer applies. • Park staffing is calibrated to serve higher visitor numbers in the summer season but visitation and use are popular year round. • Backcountry wilderness has almost no law enforcement or patrol.

Fundamental Resource or Value	Recreational Opportunities
Current Conditions and Trends	**Trends (continued)** • Visitors are increasingly participating in tubing and kayaking activities (with comparatively less canoeing overall compared to previous years). • More people using drones in the park, which is illegal and an ongoing law enforcement issue for the park. • Pets in areas where they are not allowed are increasing. • While still an issue, trash and litter on the river have decreased over the last 15 years due in large part to park's "Pack in, Pack out" campaign and the Arkansas statute that requires the use of mesh litter bags attached to boats, floating beverage holders, and a prohibition against glass containers. • Increase in unauthorized equestrian trails and river crossings. • Equestrian trails continue to widen at a sustained rate due to the ongoing levels of use.
Threats and Opportunities	**Threats** • Overuse and crowding threaten recreational experiences. • Pollution threatens river resources. • Fecal coliform levels are increasing overall. If the primary contact season is longer then there is increased exposure. • Increasing algal blooms. • Off-leash dogs on trails could threaten visitors. • Park visitation is increasing and staffing is reduced, impacting visitor protection, safety, maintenance, interpretation, and resource management. • Glass in the river threatens visitor safety. • Increased private boating (motorboats in particular) will increase the likelihood of the park finding invasive species (i.e., zebra mussels, didymo). • Visitation is projected to increase as the climate warms, particularly in the shoulder seasons, putting further stress on limited staff resources. **Opportunities** • Apply for International Dark-Sky Association designation to become an International Dark-Sky Place and enhance night sky educational and recreational programming. • Direct visitors to lesser-used areas of the park. • Educate users about other river access points. • Educate visitors on pollution/fecal issues in water and to keep dogs on leash.
Data and/or GIS Needs	• Visitor use study (ongoing as of 2017). • Increase water quality testing and monitoring. • Backcountry campsite inventory and monitoring. • GPS trail surveys.
Planning Needs	• Comprehensive river use management plan. • Commercial services plan. • Comprehensive roads management plan. • Comprehensive trails management plan. • Strategic facilities plan. • Accessibility plan. • Planning for adaptation to climate change.

Fundamental Resource or Value	Recreational Opportunities
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Air Act (42 USC 7401 et seq.) • Clean Water Act, as amended • NPS Concessions Management Improvement Act of 1998 • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Resource Protection, Public Use and Recreation: Fishing" (36 CFR 2.3) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006* (chapter 8) "Use of the Parks" • Director's Order 4: *Diving Management* • Director's Order 6: *Interpretation and Education* • Director's Order 9: *Law Enforcement Program* • Director's Order 17: *National Park Service Tourism* • Director's Order 28: *Cultural Resource Management* • Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services* • Director's Order 46: *Wild and Scenic Rivers* • Director's Order 53: *Special Park Uses* • Director's Order 83: *Public Health* • NPS *Natural Resource Management Reference Manual 77* • NPS *Transportation Planning Guidebook* • Director's Policy Memorandum 12-02, "Applying National Park Service Management Policies in the Context of Climate Change"

Identification of Key Issues and Associated Planning and Data Needs

This section considers key issues to be addressed in planning and management and therefore takes a broader view over the primary focus of part 1. A key issue focuses on a question that is important for a park. Key issues often raise questions regarding park purpose and significance and fundamental resources and values. For example, a key issue may pertain to the potential for a fundamental resource or value in a park to be detrimentally affected by discretionary management decisions. A key issue may also address crucial questions that are not directly related to purpose and significance, but that still affect them indirectly. Usually, a key issue is one that a future planning effort or data collection needs to address and requires a decision by NPS managers.

The following are key issues for Buffalo National River and the associated planning and data needs to address them:

- **Challenges with maintaining existing infrastructure and meeting new infrastructure needs.** Although improvements to park facilities and infrastructure have been made in recent years, further improvements, site rehabilitation, and best management practices need to be implemented in areas of high use such as Lost Valley. Similarly, facilities located in vulnerable, flood- or erosion-prone areas need to be strategically evaluated to determine the most appropriate planning and infrastructure needs. For example, existing facilities and infrastructure such as campgrounds, roads, trails, and river access points require site-specific evaluations and updates to improve visitor access, reduce erosion, minimize corrective maintenance costs, and improve visitor safety. On-site septic systems at busy campgrounds such as Steel Creek, Kyles Landing, and Ozark, need to be reduced or eliminated and transition towards more sustainable and appropriate wastewater facilities and infrastructure.

    - *Associated planning and data needs:* Strategic facilities plan, comprehensive roads management plan, upper district operations and facilities plan, commercial services plan, accessibility plan

- **Water quality degradation.** Pollution sources originating outside park boundaries as well as certain NPS management activities within the park can negatively impact the water quality of the Buffalo River and its tributaries. Connections between surface water and groundwater and the karst geology that shapes the dynamic Buffalo River watershed intersects with external development and land uses outside of the park boundaries that can threaten regional water quality. Farming practices adjacent to park boundaries, including Concentrated animal feeding operations and both historic and new agricultural uses within the park can cause stream bank erosion, runoff, and emission of nutrients, fecal material, antibiotics, and pesticides. Commercial trucking has the potential to impact water quality in event of an accident.

    - *Associated planning and data needs:* Cave and karst management plan (update), comprehensive streambank erosion mapping, water quality monitoring plan (update)

- **Congestion and crowding.** Popular trailheads, river access points, and certain pull-offs and waysides are often congested during peak visitation times (e.g., periods of high water flows and the park's uniquely popular elk viewing opportunities in October and November). In addition to capacity challenges related to limited parking and access, crowding and congestion cause a number of safety concerns and expose some neighboring private landowners to additional hazards. Because this crowding also diminishes the visitor experience and adversely affects park resources, there is a need to revisit the types and amount of use at these locations, as well as visitor circulation and access. There is additional need for the park to outline adjustments to commercial and private operations.

    - *Associated planning and data needs:* Commercial services plan, comprehensive river use management plan, comprehensive trail management plan, comprehensive roads management plan, backcountry campsite inventory and monitoring, GPS trail surveys, acoustic conditions baseline data

- **Limited visitor services and opportunities for interpretation and education.** The park needs wayfinding aids and NPS interpretive presence in more heavily visited areas of the park to help inform park visitors of park resources, park etiquette, and responsible behavior while recreating. In the absence of updated wayfinding materials and NPS staff, visitors have limited information and frequently ask neighboring private landowners for basic information.

    - *Associated planning and data needs:* Accessibility plan, strategic facilities plan, Boxley Valley comprehensive area plan (in progress), visitor use monitoring, development of the park's technology applications

- **Maintaining ecosystem health and protecting endemic species.** Protecting endemic species and sensitive habitat parkwide continues to challenge the park's limited resource staff. The ability to incorporate best practices and protect resources ahead of disease outbreaks and related climate change impacts, for example, continue to present challenges.

    - *Associated planning and data needs:* Terrestrial habitat management plan (update), cave and karst management plan (update), planning for adaptation to climate change, macroinvertebrate species inventories, additional water quality sampling, evaluation of fire program effects on natural and cultural resources

Planning and Data Needs

To maintain connection to the core elements of the foundation and the importance of these core foundation elements, the planning and data needs listed here are directly related to protecting fundamental resources and values, park significance, and park purpose, as well as addressing key issues. To successfully undertake a planning effort, information from sources such as inventories, studies, research activities, and analyses may be required to provide adequate knowledge of park resources and visitor information. Such information sources have been identified as data needs. Geospatial mapping tasks and products are included in data needs.

Items considered of the utmost importance were identified as high priority, and other items identified, but not rising to the level of high priority, were listed as either medium- or low-priority needs. These priorities inform park management efforts to secure funding and support for planning projects.

Planning Needs – Where A Decision-Making Process Is Needed

Related to an FRV or Key Issue?	Planning Needs	Priority (H, M, L)	Notes
FRV, Key Issue	Comprehensive river use management plan	H	The park needs to update its 1983 river use management plan to address new planning issues, including critical visitor use management issues related to crowding and congestion. Among its multiple management purposes, the plan would define a river capacity to sustain healthier use levels.
FRV, Key Issue	Commercial services plan	H	Complementing the development of the comprehensive river use management plan, the commercial services plan is needed to guide the park's management of special use permits, concessions contracts, commercial use authorizations, and all commercial activities. Due to the important visitor use management interconnections with the comprehensive river use management plan, it is likely the commercial services plan would be developed concurrently or within close timeframe of that plan.
FRV, Key Issue	Terrestrial habitat management plan (update)	H	Much has changed since development of the 2008 terrestrial management plan and this update would include crucial elements related to the park's fire program and open field management. Invasive plant management would be another fundamental component addressed in the updated plan as well as agricultural leasing.
FRV, Key Issue	Strategic facilities plan	H	The strategic facilities plan would provide a comprehensive condition assessment of park facilities, maintenance needs, and projected funding availability for improvements over a 5- to 10-year timeframe. As a strategic planning tool, the strategic facilities plan would establish high-level management goals, objectives, and strategies to provide a roadmap to address the park's critical facility needs and funding gaps (e.g., wastewater infrastructure and management). The plan would also suggest ways to use funding streams such as historic leasing, and revenue sharing with partners to better manage facilities.

Planning Needs – Where A Decision-Making Process Is Needed			
Related to an FRV or Key Issue?	**Planning Needs**	**Priority (H, M, L)**	**Notes**
FRV	Comprehensive trails management plan	H	The planning effort would map existing authorized and unauthorized trails throughout the park—including wilderness areas—and identify potential new trails. The plan is needed to clearly specify permitted trail uses in designated locations and include additional opportunities for new and expanded recreational opportunities. It would also consider commercial use on certain trails and identify best practices to minimize potential user conflicts.
FRV	Wilderness stewardship and backcountry management plan	H	The plan would provide an integrated framework for decision making for the stewardship of wilderness and backcountry lands at the park. In addition, the plan would address commercial and special permitted uses within wilderness. Of particular focus, the plan would also include strategies to help visitors understand the importance of wilderness values as most visitors do not understand differences between wilderness and non-wilderness lands. Relevant wilderness character narrative and baseline character assessments (also known as NPS Wilderness Basics components) would be examined prior to initiation of this plan.
FRV	Land protection plan (for Boxley Valley properties)	H	As privately owned properties in Boxley Valley are listed for sale, the park needs a plan to prioritize land parcels it can purchase in fee as well as provide and obtain legal realty guidance. The plan would also provide guidance for supporting property management.
FRV, Key Issue	Cave and karst management plan (update)	H	The park needs to update its 1984 cave and karst management plan to provide a consistent framework for managing Buffalo National River's substantial subterranean systems. The planning update is needed to protect sensitive resources—particularly those related to visitation, research, as well as above ground activities impacting cave resources. The plan would also help the park provide sustainable public enjoyment and education.
FRV, Key Issue	Upper district operations and facilities plan	M	Facilities throughout the upper district are fragmented. The park needs a comprehensive site plan to evaluate park facility needs and identify opportunities for consolidated operations. This plan would help support the park's goal of financial sustainability.
FRV, Key Issue	Comprehensive roads management plan	M	This plan is needed to manage authorized roads and vehicle fords within park boundaries and to identify specific maintenance and management needs for these facilities. Planning strategies could possibly include rerouting some roads.

Planning Needs – Where A Decision-Making Process Is Needed			
Related to an FRV or Key Issue?	**Planning Needs**	**Priority (H, M, L)**	**Notes**
FRV, Key Issue	Accessibility plan	M	An accessibility plan would help guide implementation of universal accessibility recommendations for the park.
FRV	Water quality monitoring plan	M	The park needs to update the 1993 Water Quality Monitoring Plan.
FRV	Park lighting plan	L	This plan would upgrade and provide more efficient lighting parkwide.

Data Needs – Where Information Is Needed Before Decisions Can Be Made			
Related to an FRV or Key Issue?	**Data and GIS Needs**	**Priority (H, M, L)**	**Notes**
FRV	Comprehensive boundary survey	H	The park needs a comprehensive boundary survey and marking aids to assist compliance with its severance boundary. The survey would help inform which of the various severance tracts and private inholdings may be significant enough to purchase or preserve through other land protection methods. Should funding not be provided for this data need, the park should, at a minimum, properly mark the boundary with two survey technicians and a survey grade RTK GPS.
FRV	Hydrological survey	H	Due to the region's extensive karst topography and associated impacts to subsurface hydrology (i.e., water contamination), the park needs to better understand watershed dynamics to project and minimize threats to water quality. Note: As of spring 2018, the park planned to initiate a dye tracing study to help map the park's watershed. The purpose of the dye study as well as a hydrological survey is to inform cave and karst management and to better understand overall water quality throughout the park. Furthermore, the hydrological survey would be one of first steps in overall water quality assessment. Additionally, there is potential to data share with the Arkansas Department of Environmental Quality to potentially extend across park boundaries.
FRV, Key Issue	Comprehensive streambank erosion mapping	H	At several areas within park boundaries, the Buffalo River has migrated extensively and the park needs to compare current river channel stability with channel conditions documented in 2003. This mapping and analysis would provide crucial insight into erosion-related natural and cultural resource impacts along the river. This mapping should be done every 5 years.

Data Needs – Where Information Is Needed Before Decisions Can Be Made			
Related to an FRV or Key Issue?	**Data and GIS Needs**	**Priority (H, M, L)**	**Notes**
FRV	Water quality monitoring	H	The park needs to continue ongoing water quality monitoring in combination with the groundwater dye tracing effort (FY18 PMIS); hydrological survey (data need); and comprehensive streambank erosion mapping (data need). There is also a need for a more in-depth groundwater quality survey.
FRV	Cultural resource stewardship assessment	H	The cultural resource stewardship assessment combines scholarly cultural resource data with expert interpretations as a primary basis for developing cultural resource information and condition findings for the park's spectrum of cultural resources. The assessment highlights emerging or crosscutting issues that require the greatest management attention and helps inform the development of stewardship activities. For the park's historic structures, for example, the cultural resource stewardship assessment would also include supporting Facility Management Software System (database) updates to identify future planning needs. Note: The natural resource condition assessment and the cultural resource stewardship assessment are required information sources for developing a resource stewardship strategy.
FRV	Cave mapping and species inventory	H	As Buffalo National River and the Cave Research Foundation continue to map and inventory park caves, there are expanded opportunities for both entities to leverage limited resources to more fully study the park's unique cave habitat and fauna. Joint efforts would focus activities to provide summaries of park caves that have and have not been mapped and outline strategies to map and document undiscovered caves. Such work would include biological inventories, projections, and analysis of current and future recreational use impacts on the park's cave resources. Conducting and furthering these mapping and species inventory baselines would likely be precursor to initiating a cave and karst management plan.
FRV, Key Issue	Backcountry campsite inventory and monitoring	H	The park needs to quantify the extent of camping impacts in both authorized and unauthorized areas primarily in wilderness and backcountry lands. Known impacts have occurred from visitors camping in historic structures, bluff shelters, and caves. Examples include documentation of visitors using historic structure materials for firewood, general littering, and improper trash disposal.

Data Needs – Where Information Is Needed Before Decisions Can Be Made			
Related to an FRV or Key Issue?	**Data and GIS Needs**	**Priority (H, M, L)**	**Notes**
FRV, Key Issue	GPS trail surveys	H	As a potential precursor to the comprehensive trails management plan, the park also needs data regarding authorized and unauthorized trail use throughout the park, including mapping of unauthorized and authorized trails. This information could inform park staff where it needs to devote more time and resources for parkwide trail management. This mapping effort would map stream and river crossings for authorized and unauthorized trail uses as well.
FRV	Administrative history	H	Buffalo National River has never prepared an administrative history and as primary contacts and people with substantial institutional knowledge continue to age, the park needs to begin preparing this document.
FRV	Boundary assessment (for lands adjacent to the Conard Fissure)	M	The park needs a comprehensive boundary assessment of lands connected to the privately held Conard Fissure, a renowned geologic feature that contained several saber-toothed cat fossils and other notable bone deposits from the Pleistocene era. The park would use information in the assessment to determine which of the various severance tracts and private inholdings may be significant enough to purchase or preserve through other land protection methods.
FRV	Wilderness character assessment	M	Following the park's mostly completed Wilderness Basics, conducting a wilderness character assessment would provide quantifiable measures to identify the baseline condition of the park's wilderness character that can be monitored to track change over time. This assessment is an important precursor to the wilderness stewardship and backcountry management plan.
Key Issue	Evaluation of fire program effects on natural and cultural resources	M	The park needs a comprehensive analysis of the effects of fire management at the park from its designation as an NPS unit to the present, which would provide scientific justification and monitoring data to inform future fire management decisions.
FRV	Visual resource inventory	M	The inventory would identify scenic view quality and importance that will establish baseline condition, and be used to develop protection strategies for park visual resources.

Data Needs – Where Information Is Needed Before Decisions Can Be Made			
Related to an FRV or Key Issue?	**Data and GIS Needs**	**Priority (H, M, L)**	**Notes**
FRV	Dye tracing on Big Creek and microbial source tracking on Big Creek and along the main stem of the Buffalo River	M	The purpose of the dye tracing and microbial source tracking is to better understand the hydrological dynamics and overall water quality of Big Creek and the main stem of the Buffalo River. There may be opportunities to share data with the Arkansas Department of Environmental Quality and discuss cave and karst management strategies that extend across park boundaries.
FRV	Land use / land cover class map	L	The park needs to update its land use and land cover class map with new aerial photography and contemporary LiDAR data for the entire watershed.
FRV, Key Issue	Planning for adaptation to climate change	L	The planning effort would help the park develop a range of plausible future science-based scenarios that inform development of adaptation strategies to serve park planning needs, resource protection, and visitors in a rapidly changing environment.
FRV, Key Issue	Acoustic conditions baseline data	L	This baseline data can be used in various interpretive and education roles; wilderness stewardship; outreach to partners and adjacent landowners; and to guide areas of potential improvement of park operations. Data would likely be collected in partnership with the NPS Natural Sounds and Night Skies Division.
FRV, Key Issue	Macroinverte-brate species inventories	L	Representing one type of parkwide natural resource study, a more comprehensive macroinvertebrate species inventory should be conducted to build on inventories led by an NPS Cooperative Ecosystem Studies Unit that began in FY17. Inventories would provide habitat quality information and characterization. Additional inventory work is expected to continue in March 2018. Note that a natural resource condition assessment would inform any further data gaps for macroinvertebrates.
FRV	Administrative history of past prescribed burning	L	This historical documentation (in one central text) is important for future park managers to understand the effects of prescribed burning over time.
FRV	Geologic map data (1:24,000 scale) for Buffalo National River and watershed	L	Data is to be released as part of NPS Geologic Resources Inventory (estimated FY2018) from USGS and existing State of Arkansas data.
FRV	Comprehensive Buffalo River watershed study	L	Study impacts to subsurface hydrology (i.e., pollution, etc.). Need to better understand watershed dynamics to project and minimize threats.

Data Needs – Where Information Is Needed Before Decisions Can Be Made			
Related to an FRV or Key Issue?	**Data and GIS Needs**	**Priority (H, M, L)**	**Notes**
FRV, Key Issue	Additional water quality sampling	L	Additional water quality sampling for nutrients (nitrogen and phosphorus) in addition to normal parameters.
FRV	Update vegetation map using LiDAR	L	The park needs to update the 2003 vegetation map using new LiDAR for entire watershed (analyze river channel stability and compare current channel conditions to 2003 channel conditions).
FRV	In-park pollutant deposition and nearby air quality monitoring	L	This ongoing monitoring is for visibility and ozone, providing updated conditions at the park, and maintaining a long-term record for understanding threats from development.
FRV	Studies to examine air pollution dose-response relationships in sensitive park ecosystems	L	These studies would include surveying for ozone-sensitive plant foliar injury and monitoring for contaminants in park biota (dragonfly mercury project, fish, birds, bats).
FRV	River crossing mapping	L	Data would support future roads, trails, and infrastructure planning.

Part 3: Contributors

Buffalo National River

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Photo Credits

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Appendixes

Appendix A: Enabling Legislation and Legislative Acts for Buffalo National River

(PUBLIC LAW 92-237)

An Act

To provide for the establishment of the Buffalo National River in the State of Arkansas, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free-flowing stream an important segment of the Buffalo River in Arkansas for the benefit and enjoyment of present and future generations, the Secretary of the Interior (hereinafter referred to as the "Secretary") may establish and administer the Buffalo National River. The boundaries of the national river shall be as generally depicted on the drawing entitled "Proposed Buffalo National River" numbered NR-BUF-7103 and dated December 1967, which shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior. The Secretary is authorized to make minor revisions of the boundaries of the national river when necessary, after advising the Committees on Interior and Insular Affairs of the United States House of Representatives and the United States Senate in writing, but the total acreage within such boundaries shall not exceed ninety-five thousand seven hundred and thirty acres.

SEC. 2. (a) Within the boundaries of the Buffalo National River, the Secretary may acquire lands and waters or interests therein by donation, purchase or exchange, except that lands owned by the State of Arkansas or a political subdivision thereof may be acquired only by donation: Provided, That the Secretary may, with funds appropriated for development of the area, reimburse such State for its share of the cost of facilities developed on State park lands if such facilities were developed in a manner approved by the Secretary and if the development of such facilities commenced subsequent to the enactment of this Act: Provided further, That such reimbursement shall not exceed a total of $375,000 . When an individual tract of land is only partly within the boundaries of the national river, the Secretary may acquire all of the tract by any of the above methods in order to avoid the payment of severance costs. Land so acquired outside of the boundaries of the national river may be exchanged by the Secretary for non-Federal lands within the national river boundaries, and any portion of the land not utilized for such exchanges may be disposed of in accordance with the provisions of the Federal Property and Administrative Services Act of 1949 (63 Stat. 377; 40 U.S.C. 471 et seq.), as amended. With the concurrence of the agency having custody thereof, any Federal property within the boundaries of the national river may be transferred without consideration to the administrative jurisdiction of the Secretary for administration as part of the national river.

(b) Except for property which the Secretary determines to be necessary for the purposes of administration, development, access or public use, an owner or owners (hereafter referred to as "owner") of any improved property which is used solely for noncommercia1 residential purposes on the date of its acquisition by the Secretary or any owner of lands used solely for agricultural purposes (including, but not limited to, grazing) may retain, as a condition of the acquisition of such property or lands, a right of use and occupancy of such property for such residential or agricultural purposes. The term of the right retained shall expire upon the death of the owner or the death of his spouse, whichever occurs later, or in lieu thereof, after a definite term which shall not exceed twenty-five years after the date of acquisition. The owner shall elect, at the time of conveyance, the term of the right reserved. The Secretary shall pay the owner the fair market value of the property on the date of such acquisition, less the fair market value of the term retained by the owner. Such right may, during its existence, be conveyed or transferred, but all rights of use and occupancy shall be subject to such terms and conditions as the Secretary deems appropriate to assure the use of such property in accordance with the purposes of this Act.

Upon a determination that the property, or any portion thereof, has ceased to be used in accordance with such terms and conditions, the Secretary may terminate the right of use and occupancy by tendering to the holder of such right an amount equal to the fair market value, as of the date of the tender, of that portion of the right which remains unexpired on the date of termination.

(c) As used in this section the term "improved property" means a detached year-round one-family dwelling which serves as the owner's permanent place of abode at the time of acquisition, and construction of which was begun before September 3, 1969, together with so much of the land on which the dwelling is situated, the said land being in the same ownership as the dwelling, as the Secretary shall designate to be reasonably necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use.

SEC. 3. The Secretary shall permit hunting and fishing on lands and waters under his jurisdiction within the boundaries of the Buffalo National River in accordance with applicable Federal and State laws, except that he may designate zones where and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, fish or wildlife management, or public use and enjoyment. Except in emergencies, any rules and regulations of the Secretary pursuant to this section shall be put into effect only after consultation with the Arkansas Fish and Game Commission.

SEC. 4. The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (41 Stat. 1063), as amended (16 U.S.C. 791a et seq.), on or directly affecting the Buffalo National River and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river is established, as determined by the Secretary. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above the Buffalo National River or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of approval of this Act. No department or agency of the United States shall recommend authorization of any water resources project that would have a direct and adverse effect on the values for which such river is established, as determined by the Secretary, nor shall such department or agency request appropriations to begin construction on any such project, whether heretofore or hereafter authorized, without, at least sixty days in advance, (i) advising the Secretary, in writing, of its intention so to do and (ii) reporting to the Committees on Interior and Insular Affairs of the United States House of Representatives and the United States Senate, respectively, the nature of the project involved and the manner in which such project would conflict with the purposes of this Act or would affect the national river and the values to be protected by it under this Act.

SEC. 5. The Secretary shall administer, protect, and develop the Buffalo National River in accordance with the provisions of the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1 et seq.), as amended and supplemented; except that any other statutory authority available to the Secretary for the conservation and management of natural resources may be utilized to the extent he finds such authority will further the purposes of this Act.

SEC. 6. Within three years from the date of enactment of this Act, the Secretary shall review the area within the boundaries of the national river and shall report to the President, in accordance with subsections 3(c) and 3(d) of the Wilderness Act (78 Stat. 890; 16 U.S.C. 1132 (c) and (d), his recommendation as to the suitability or nonsuitability of any area within the national river for preservation as a wilderness, and any designation of any such area as a wilderness, shall be accomplished in accordance with said subsections of the Wilderness Act.

SEC. 7. For the acquisition of lands and interests in lands, there are authorized to be appropriated not more than $16,115,000. For development of the national river, there are authorized to be appropriated not more than $283,000 in fiscal year 1974: $2,923,000 in fiscal year 1975; $3,643,000 in fiscal year 1976; $1,262,000 in fiscal year 1977; and $1,260,000 in fiscal year 1978. The sums appropriated each year shall remain available until expended.

Approved, March 1, 1972.

Appendix B: Inventory of Administrative Commitments

Visitor and Resource Protection Agreements

Agreement Name	Start Date	Expiration Date	Purpose
Arkansas Game and Fish Commission	12/11/2012	12/11/2017	
Arkansas State University (P14AC00552)			
Mutual Aid Agreement: Arkansas State Police	05/17/2016	05/17/2021	Establish protocol for assistance
Mutual Aid Agreement: Baxter County Sheriff	05/23/2016	05/23/2021	Mutual aid agreement
Mutual Aid Agreement: Boone County Sheriff	06/12/2015	06/12/2020	Mutual aid agreement
Boy Scouts of America	09/30/2016	09/30/2021	
Cave Research Foundation (P14AC00850			
Mutual Aid Agreement: Marion County Sheriff	06/09/2015	06/09/2020	Mutual aid agreement
Medical Advisor	04/07/2015	04/07/2020	
The Nature Conservancy – Arkansas Chapter (P17AC01110)			
Mutual Aid Agreement: Newton County Sheriff	06/06/2016	06/06/2021	Mutual aid agreement
NPS Law Enforcement Training Center	07/10/2012	07/10/2017	
Mutual Aid Agreement: Searcy County Sheriff	01/09/2015	01/09/2020	Mutual aid agreement
U.S. Forest Service	09/06/2016	09/06/2021	
Arkansas Forestry Commission	03/02/2009	03/02/2014	
Compton Volunteer Fire Department	02/06/2015	02/06/2020	Fire response agreement
Hasty Volunteer Fire Department	03/16/2012	03/16/2017	Fire response agreement
HA RO CO Volunteer Fire Department	03/02/2015	03/02/2020	Fire response agreement

Visitor and Resource Protection Agreements (continued)

Agreement Name	Start Date	Expiration Date	Purpose
Jasper Volunteer Fire Department	02/06/2015	02/06/2020	Fire response agreement
Krooked Kreek Volunteer Fire Department	09/09/2013	09/09/2018	Fire response agreement
Marshall Volunteer Fire Department	02/23/2015	02/23/2015	Fire response agreement
Mt. Sherman Volunteer Fire Department	03/06/2015	03/06/2020	Fire response agreement
Parthenon Volunteer Fire Department	02/06/2015	02/06/2020	Fire response agreement
Pindall, Gilbert, and Saint Joe Volunteer Fire Department	06/17/2013	06/17/2018	Fire response agreement
Ponca Volunteer Fire Department	02/04/2015	02/04/2020	Fire response agreement
Ralph/Caney Volunteer Fire Department	03/09/2015	03/09/2020	Fire response agreement
Rea Valley Volunteer Fire Department	11/12/2013	11/12/2018	Fire response agreement
Arkansas Forestry Commission	03/17/2015	03/9/2020	
Compton Volunteer Fire Department	02/06/2015	02/06/2020	Fire response agreement
Morning Star Volunteer Fire Department	05/29/2001	05/29/2006	Fire response agreement
Rea Valley Volunteer Fire Department	06/06/2006	06/06/2011	Fire response agreement

Radio Communications General Agreements

Agreement Name	Start Date	Expiration Date	Purpose
Marion County Fire Chiefs	08/12/2014	08/12/2019	Communications protocol
Newton County Fire Association	06/17/2015	06/17/2020	Communications protocol
Ralph/Caney Radio	06/18/2014	06/18/2019	Communications protocol

Midwest Region Foundation Document Recommendation
Buffalo National River

October 2018

This Foundation Document has been prepared as a collaborative effort between park and regional staff and is recommended for approval by the Midwest Regional Director.

10-11-18

RECOMMENDED
Mark Foust, Superintendent, Buffalo National River **Date**

10-19-18

APPROVED
Craig Kenkel, Acting Regional Director, Midwest Region **Date**

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

BUFF 173/149177
October 2018

Foundation Document • Buffalo National River

NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR