National Park Service
U.S. Department of the Interior
Buffalo National River
Harrison, Arkansas

Cedar Glade Pond Improvements
Environmental Assessment

March 2013

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Summary

Buffalo National River proposes to improve the ponds and picnic area at Cedar Glade Recreation Area on the Erbie Campground road. In addition to the proposed improvements, Buffalo National River also proposes to conduct prescribed burns in the Cedar Glade Burn Unit. The proposed improvements are described as follows.

The south pond and the picnic area at the river overlook would be upgraded to meet Architectural Barriers Act specifications. The north pond would be developed as a "youth-only" fishing area. Both ponds would be stocked with fish occasionally by the Arkansas Game and Fish Commission. Underbrush would be cleared by a prescribed burn within the boundary of the Cedar Glade Burn Unit.

A new single-stall ROMTEC public bathroom would be installed in one of two potential locations adjacent to the existing parking area. The sites being considered would require fill material. The trail to the river overlook, the area around one picnic table and grill, and the trail to the south pond would be brought up to Architectural Barriers Act standards to provide access for the mobility impaired. Additional boulders or a post and rail system similar to that used in the Erbie Campground may be used to better define parking and pedestrian circulation in the parking area.

Roadside vegetation, including overhanging branches, on the inside of the curve at the crossing would be cleared for approximately 200 feet to the west of the parking area to improve sight distance for pedestrians and the mobility impaired when crossing the road. Periodic mowing and trimming would be required to maintain good sight distance down the road. New signs would be installed along the Erbie Campground road in both directions from the parking lot warning drivers to slow down and beware of the road crossing.

On the north side of the picnic area, the Buffalo River Trail would be enhanced to more clearly define where it enters the picnic area. On the south side of the picnic area, the existing flat stone steps would be reinstalled for a short distance (approximately 15 feet) to more clearly define where the trail enters the picnic area. The wooden rail on the stone wall at the river overlook would be replaced by a durable native wood and stained in accordance with NPS guidelines. One or two additional picnic sites may be installed and native stone may be used to define the picnic sites. An informational kiosk would be installed at the parking area where current regulations, public notices, and park conditions would be posted.

Two new docks would be installed on the south pond. The north and south pond dams would be cleared of vegetation. Trees greater than twelve inches in diameter would be left in place and inspected annually to monitor their health and stability. Lower branches of these trees would be removed to facilitate fishing from the dam.

A boardwalk would be constructed over the spillway and extended over the ground along the edge of the pond to provide access to the proposed new dock on the east side of the pond. A boardwalk

would be installed along the edge of the pond from the existing dock to the proposed new dock on the west side of the pond.

The existing trail from the south pond to the north pond would retain its present character. Minor improvements such as drainage diversions would be installed on the steeper sections of the trail to reduce the erosion potential.

Both ponds would be drained, dredged, refilled, and stocked with fish. BNR proposes to accomplish this by improving the existing trails to the ponds to create temporary access roads. These access roads will be 16' in width for the construction phase. After construction, they will be revegetated to a width of 12' to allow for re-stocking of the ponds by one-ton pickup trucks. Six feet of this roadway to the south pond will be surfaced with material that will allow for access by wheel chairs. The trail to the north pond will not be surfaced. The silt removed by dredging would be hauled off and spread out on hayfields currently maintained by BNR.

In order to minimize the potential for wildfire in the Cedar Glade Burn Unit prescribed burns would be conducted on a 5-year rotation. Prescribed burns would be implemented according to National Park Service and Buffalo National River standard procedures between October 1 and March 1.

This environmental assessment evaluates two alternatives: a no-action alternative and an action alternative. The no-action alternative describes the current condition if no facility improvements are constructed. The action alternative comprises the improvements described above.

This environmental assessment has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential issues and effects to BNR's resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these effects. Resource topics included in this document because the resultant effects may be greater-than-minor include visitor use and experience; and vegetation. All other resource topics were dismissed because the project would result in negligible or minor effects to those resources. No major effects are anticipated as a result of this project. Public scoping was conducted to assist with the development of this document and comments were received, mostly in support of the proposed project.

Public Comment

If you wish to comment on the environmental assessment, you may post comments online at http://parkplanning.nps.gov/buff or mail comments to: Superintendent; Buffalo National River, Visitor Improvements EA, 402 N. Walnut Street, Harrison, Arkansas.

This environmental assessment will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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1 Purpose and Need

1.1 Introduction

Buffalo National River (BNR) is located in Newton, Searcy, Marion, and Baxter Counties in northern Arkansas. The administrative headquarters are located in Harrison, Arkansas. Containing 95,730 acres, BNR was established by Public Law 92-237 on March 1, 1972 and is managed by the National Park Service (NPS). 16 United States Code (USC) § 460m-8 states the purpose of establishment: "….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….". 16 USC § 460m-12 further directs: "The Secretary shall administer, protect, and develop BNR in accordance with the provisions of sections 1, 2, 3, and 4 of this title, 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 subchapter. Management decisions for BNR are based in part on the 1977 Final Master Plan and in part on the 2000 Resource Management Plan (RMP) for BNR, Arkansas.

The purpose of this environmental assessment is to examine the environmental effects associated with the proposal to construct improvements to the Cedar Glade ponds and facilities at BNR in Newton County, Arkansas. The scope of this EA is limited to the improvements described in the proposed action. The following regulations and guidance documents guide the planning and completion of the projects proposed in the EA:

NPS Organic Act of 1916 – Congress directed the U.S. Department of the Interior and NPS to manage units "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 USC § 1). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that the NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress (16 USC § 1 a- 1).

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

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

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

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

National Environmental Policy Act (NEPA) of 1969, **regulations of the Council on Environmental Quality (CEQ) (40 CFR §1508.9)** – The purpose of NEPA is to encourage productive and enjoyable harmony between humans and the environment; to promote efforts which will prevent or eliminate damage to the environment and stimulate the health and welfare of humankind; and to enrich the understanding of the ecological systems and natural resources important to the Nation. NEPA requirements are satisfied by completion of a Categorical Exclusion (CatEx), Environmental Assessment (EA), Environmental Impact Statement (EIS), or a memo to the files documenting existing NEPA compliance that covers the current proposed activity. In the case of an EA or EIS, NEPA requirements are met by successful completion of the document and an accompanying decision document.

Implementation of the National Environmental Policy Act (NEPA) of 1969, Office of the Secretary, Interior (43 CFR Part 46) – Guidance for the implementation of NEPA found in the Departmental Manual (516 DM) are codified as actual regulations. This rule contains Departmental policies and procedures for compliance with NEPA, Executive Order (EO) 11514, EO 13352, and the CEQ regulations (40 CFR Parts 1500-1508). Department officials will use this rule in conjunction with and supplementary to these authorities. The Department believes that codifying the procedures in regulations that are consistent with NEPA and CEQ regulations will provide greater visibility to that which was previously contained in the DM and enhance cooperative conservation by highlighting opportunities for public engagement and input in the NEPA process.

National Park Service Director's Order (DO)-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-Making*) – DO-12 is the NPS guidance for Conservation Planning, Environmental Impact Analysis, and Decision Making. DO-12 states the guidelines for implementing NEPA according to NPS regulations. DO-12 meets all Council on Environmental Quality (CEQ) regulations for implementing NEPA. In some cases, the NPS has added requirements under DO-12 that exceed the CEQ regulations.

- **Clean Water Act/Regulations** – provides national recommended ambient water quality criteria and calls for no degradation of the nation's surface waters.
- **Arkansas Water Quality Regulations** – conserve waters of the State to protect, maintain and improve water quality.
- **Safe Drinking Water Act** - The SDWA authorizes the Environmental Protection Agency (EPA) to set maximum contaminant levels (MCLs) for dangerous chemicals, waterborne bacteria and viruses in the public's drinking water.
- **Executive Order 11990** – provides for the protection of wetlands.
- **Executive Order 11988** – provides for the protection of floodplains.

- **Clean Water Act and Section 404 Regulations** – provides for the protection of wetlands and waters of the United States.
- **Endangered Species Act/Section 7** – provides for the listing and protection of endangered and threatened species and their critical habitat; requires consultation under Section 7 if any listed species may be adversely affected.
- **National Historic Preservation Act (NHPA)/Section 106** – provides for the identification and protection of historic sites and structures.
- **Archeological Resource Protection Act** – provides for the protection of archeological resources on public lands.
- **Executive Order 13007** – provides for protection of Indian sacred sites.
- **NPS Director's Order #28, Cultural Resource Management Guidelines (1998b)** – defines how the NPS will protect and manage cultural resources on NPS lands in accordance with the NPS Management Policies. **Federal Cave Resource Protection Act (1988)** – requires federal land managers to consider impacts of management activities on resources present in significant caves. NPS determined that all caves in National Park units are significant under the law.

1.2 Background

Federal facilities follow the Uniform Federal Accessibility Standards (UFAS), developed by four federal agencies responsible for issuing standards under the Architectural Barriers Act (ABA), hereinafter referred to as "barrier-free." Barrier-free standards for the Architectural Barriers Act of 1968 which required "any building or facility, built or renovated, or leased with Federal funds, will be built to be accessible to and usable by physically disabled persons."

1.3 Purpose and Need

Purpose

- To provide a diverse range of off-river opportunities for barrier-free and youth fishing.
- To improve barrier-free access to Cedar Glade Parking and Picnic Area.
- To improve Cedar Glade trail to meet barrier-free standards.
- To improve access to interpretational and educational opportunities.
- To address public health issues.
- To reduce the potential for wildfire in the surrounding forest.

Need

- Cedar Glade trail, parking lot and picnic area need improvements to meet current Barrier-free standards.
- There are currently not enough opportunities for barrier-free and Youth Fishing in the park for those without access to boats.
- Public has requested that BNR provide more barrier-free compliant trails for outdoor enjoyment. There is currently only one barrier-free compliant trail at Lost Valley in the upper district.
- There are currently no toilets at the picnic area.
- The public has requested more interpretational and education outreach for this area of the park.
- The Cedar Glade area has received little use and thus, has not been included in the prescribed fire management program at BNR. The natural accumulation of fuels has reached a degree where wildfire could potentially destroy the entire stand. It is a necessary part of the proposed improvements in this EA, because if these improvements are made, then a

reduction in accumulated fuels by prescribed burning would be needed to minimize the hazard of fire to public safety.

1.4 Relationship to Other Plans and Policies

Current plans and policy that pertain to this proposal include the 2000 BNR *Resource Management Plan* (NPS 2000) and the *Management Policies 2006* (NPS 2006). The 1977 BNR *Final Master Plan* is being augmented by a new *General Management Plan* (GMP) that is currently being prepared by BNR staff. Following is more information on how this proposal meets the goals and objectives of these plans and policies:

- This project is fully consistent with the goals and objectives of the 2000 BNR *Resource Management Plan*, which does not prohibit any of the improvements described in the proposed action. As of the preparation of this EA, the proposed Cedar Glade ponds and facilities improvements are also fully consistent with the goals and objectives, so far as they have yet been defined, of the new BNR GMP as it is currently being developed, as well as goals and objectives of the existing 1977 *Final Master Plan*.
- The *2003 Fire Management Plan* (FMP) *and EA* considers other fire-related effects within BNR. The proposed prescribed burning at Cedar Glade would be consistent with the effects described in the FMP EA for Unit IV – Natural Fire Management Unit (FMU). Since, however, the Cedar Glade area has not previously been a part of the regular prescribed fire rotation, but would need to be if the improvements proposed are implemented, it is included in this EA as part of the proposed action.
- The proposal is consistent with the goals and objectives of the *2006 National Park Service Management Policies* (Management Policies 2006) that state that major park facilities within park boundaries should be located so as to minimize effects to park resources. The Cedar Glade ponds and facilities already exist and the proposed improvements are fully consistent with the goals and objectives of the *Management Policies 2006*.

2 Alternatives

2.1 Alternatives Carried Forward

2.1.1 Alternative A – No Action

Under this alternative none of the improvements described in the action alternative would be constructed. The existing facilities would continue to provide visitors with the same functions they have now. The ongoing operations at Cedar Glade such as mowing and weeding in the parking area, annual brushing of the trail, scheduled cleaning and trash removal at the picnic area, and daily law enforcement patrols would continue. The picnic area and ponds are currently open to all park visitors. Should the no-action alternative be selected, the NPS would respond to the future needs and conditions of these facilities without major actions or changes in the present course of action.

2.1.2 Alternative B – Improve Cedar Glade Ponds and Picnic Area

The proposed improvements described in this section include many components that may be implemented independently or to lesser degrees than described herein. This project may be implemented in part, or in whole, if approved, in phases as funding becomes available. The proposed improvements are described here in their potential entirety to ensure the effects analysis in Chapter 3 considers all of the potential effects of full build-out, even if the project never actually reaches that level of development.

Under this alternative, the south pond and the picnic area at the river overlook would be upgraded to meet barrier-free specifications. The north pond would be developed as a "youth-only" fishing area. Both ponds would be stocked with bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), and large-mouthed bass (*Micropterus salmoides*), all native species found in the Buffalo River, by the Arkansas Game and Fish Commission (AFGC). Underbrush would be cleared by a prescribed burn within the boundary of the Cedar Glade Burn Unit (CGBU) as shown in Figure 1.

A new ADA compliant single-stall ROMTEC public bathroom would be installed in one of two potential locations as shown in Figure 2. The ROMTEC bathroom has a water-free vault toilet (no plumbing). Orientation of the ROMTEC relative to the sun is important to create proper venting circulation. The approximate size of the ROMTEC unit is 12 feet by 20 feet, which includes the building, space needed for access to the building, and space behind the building for access to the vault hatch. The sites being considered would require fill material. The overall footprint of the fill locations would be approximately 30 feet by 35 feet assuming five feet of fill and 3:1 slopes away from the building.

The trail to the river overlook and the area around one picnic table and grill would be hardened to barrier-free standards by the emplacement of a geo-textile material covered with a base layer of sand and gravel and then coated with a soil stabilizing compound that will provide a usable surface. The table and grill at this picnic location would be replaced with a barrier-free compliant table and grill. The same treatment would be applied from the parking area to the edge of the road opposite to the beginning of the trail to the south pond. Additional boulders or a post and rail system similar to that used in the Erbie Campground may be used to better define parking and pedestrian circulation in the parking area.

Some grading and recontouring would be necessary to improve the transition from the road to the south pond trail. This would involve some minor excavation of the existing roadside ditch, replacement of the existing metal culvert and the placement of a geo-textile, sand and gravel, and soil stabilizing compound (as described for the overlook and picnic area trail) over the culvert that meets barrier-free specifications. Roadside vegetation, including overhanging branches, on the inside of the curve at the crossing would be cleared for approximately 200 feet to the west of the

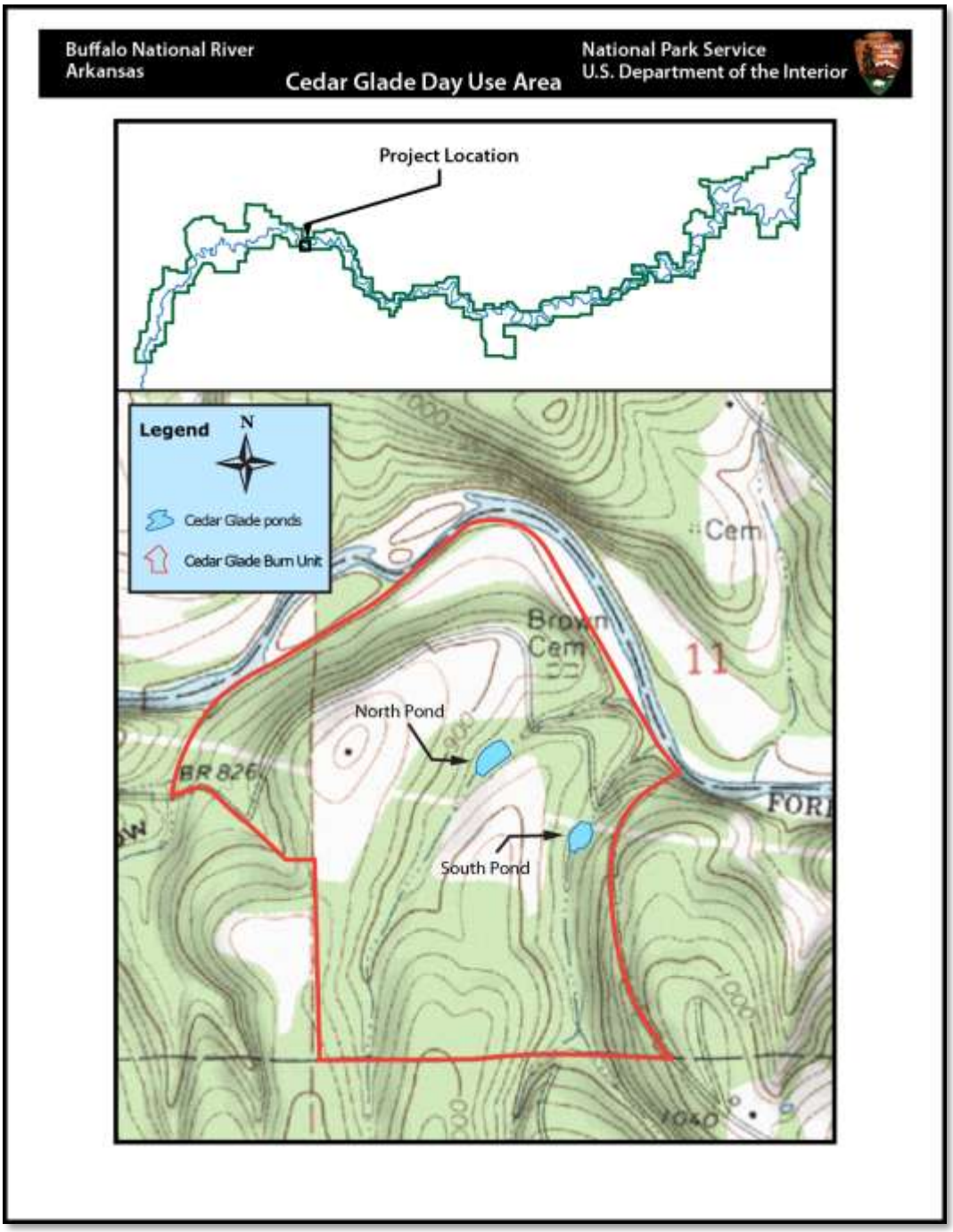

Figure 1. Project Location.

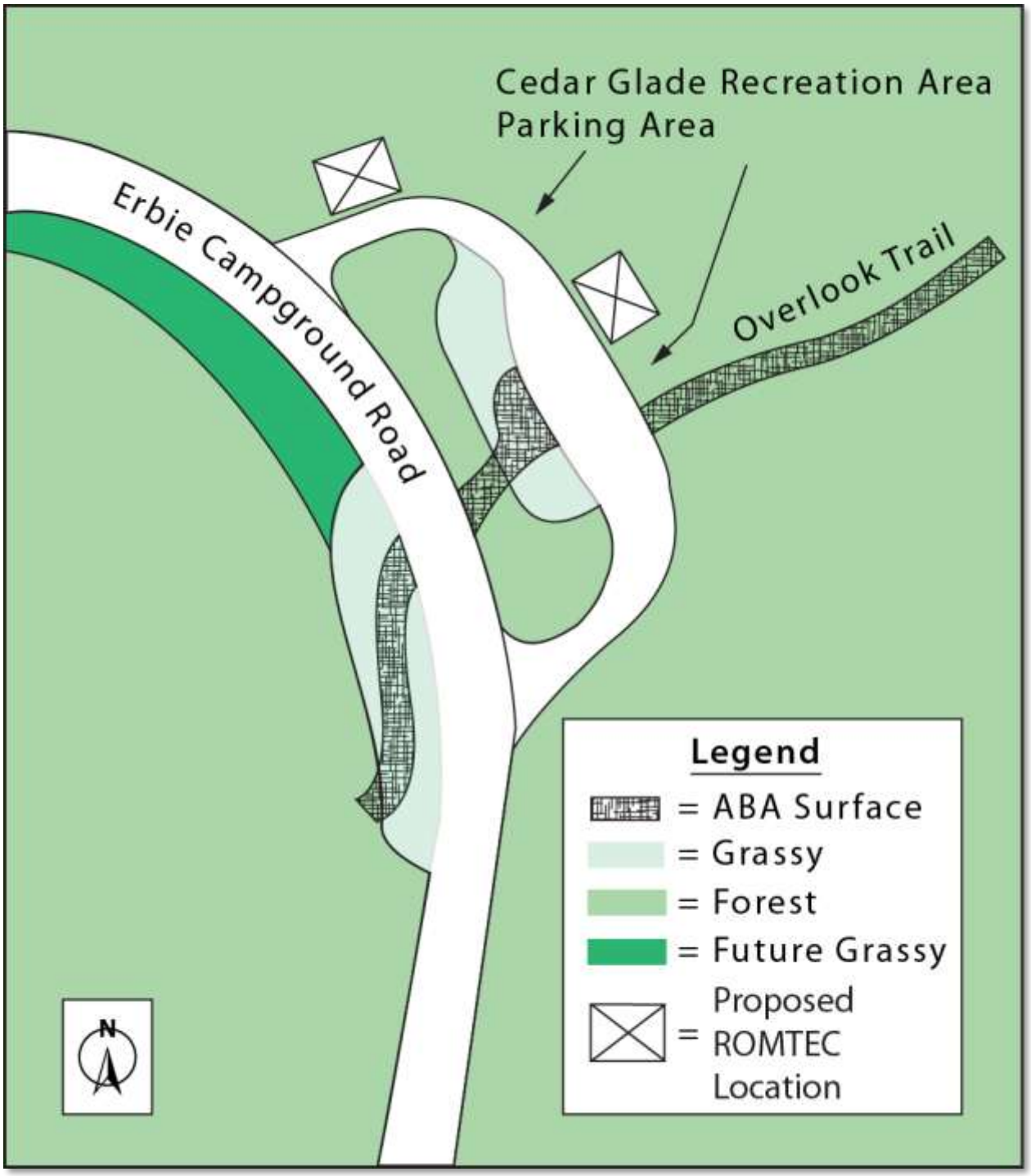

Figure 2. Proposed locations of ROMTEC bathroom and hardened surfaces for barrier-free compliance.

parking area to improve sight distance for pedestrians and the mobility impaired when crossing the road. Ground cover vegetation in this area would be replaced by a durable, low-growing native grass species. Periodic mowing and trimming would be required to maintain good sight distance down the road.

The Buffalo River Trail (BRT) passes through the picnic area at the river overlook. On the north side of the picnic area, the trail would be enhanced to more clearly define where it enters the picnic area. On the south side of the picnic area, the existing flat stone steps would be reinstalled for a short distance (approximately 15 feet) to more clearly define where the trail enters the picnic area. If additional steps are necessary, similar stones would be used. The wooden rail on the stone wall at the river overlook would be replaced by a durable native wood and stained in accordance with NPS guidelines. A few small trees and branches below the overlook would be removed to restore the view of the river from the overlook. In the picnic area existing stumps and roots would be cleared and grubbed. One or two additional picnic sites may be installed and native stone may be used to define the picnic sites.

New signs would be installed along the Erbie Campground road in both directions from the parking lot warning drivers to slow down and beware of the road crossing. An informational kiosk would be installed at the parking area where current regulations, public notices, and park conditions would be posted. The surface of the south pond trail would also receive geo-textile, sand and gravel, and a soil stabilizing compound to bring it up to barrier-free standards. The improved surface of the trail would have a minimum width of six feet. The south pond trail surface would extend right up to the edge of the existing dock. A few small trees may be removed to provide sufficient clearance for access to the pond by vehicle. Vehicle access would be restricted to authorized use. Drainage structures may be installed beneath the trail as necessary to prevent erosion of the trail surface. The existing recreation trails to both the south and north ponds would be extended around the ponds as shown in Figure 3.

Two new docks would be installed on the south pond as shown in Figure 4. The dock on the east side would be approximately 20 feet wide and would extend approximately eight feet out from the bank. The dock on the west side would be approximately 10 feet wide and extend approximately 15 feet out from the bank. The south pond dam would be cleared of vegetation. Trees twelve inches in diameter or smaller may be removed at ground level and the stumps either left in place or removed and the holes backfilled and compacted with earthen material. Trees greater than twelve inches in diameter would be left in place and inspected annually to monitor their health and stability. Lower branches of these trees would be removed to facilitate fishing from the dam.

A compacted aggregate surface would be installed across the dam to the spillway. A material separation fabric/weed barrier may be placed between the aggregate and the ground. Existing debris in the spillway would be removed and replaced with rip-rap to provide a more reliable control of the flow of water from the pond and prevent erosion of the earthen dam. A boardwalk would be constructed over the spillway and extended over the ground along the edge of the pond to provide access to the proposed new dock on the east side of the pond. A boardwalk would be installed along the edge of the pond from the existing dock to the proposed new dock on the west side of the pond. Some small trees, shrubs, overhanging branches, and other vegetation would be removed to facilitate the construction and use of the new boardwalks. Some of the vegetation, such as branches and small trees may be placed in the pond to provide improved fish habitat.

The existing trail from the south pond to the north pond would retain its present character. Minor improvements such as drainage diversions would be installed on the steeper sections of the trail to reduce the erosion potential. These diversions would be constructed of native stone and employed to the minimum degree necessary to be effective. Alternatively, the steeper sections of the trail would be abandoned and replaced by a new section of trail that circles around to the north pond at a slightly lower elevation, thus eliminating the steeper sections of the trail altogether.

The north pond dam would be cleared of vegetation. Trees twelve inches in diameter or smaller may be removed at ground level and the stumps either left in place or removed and the holes

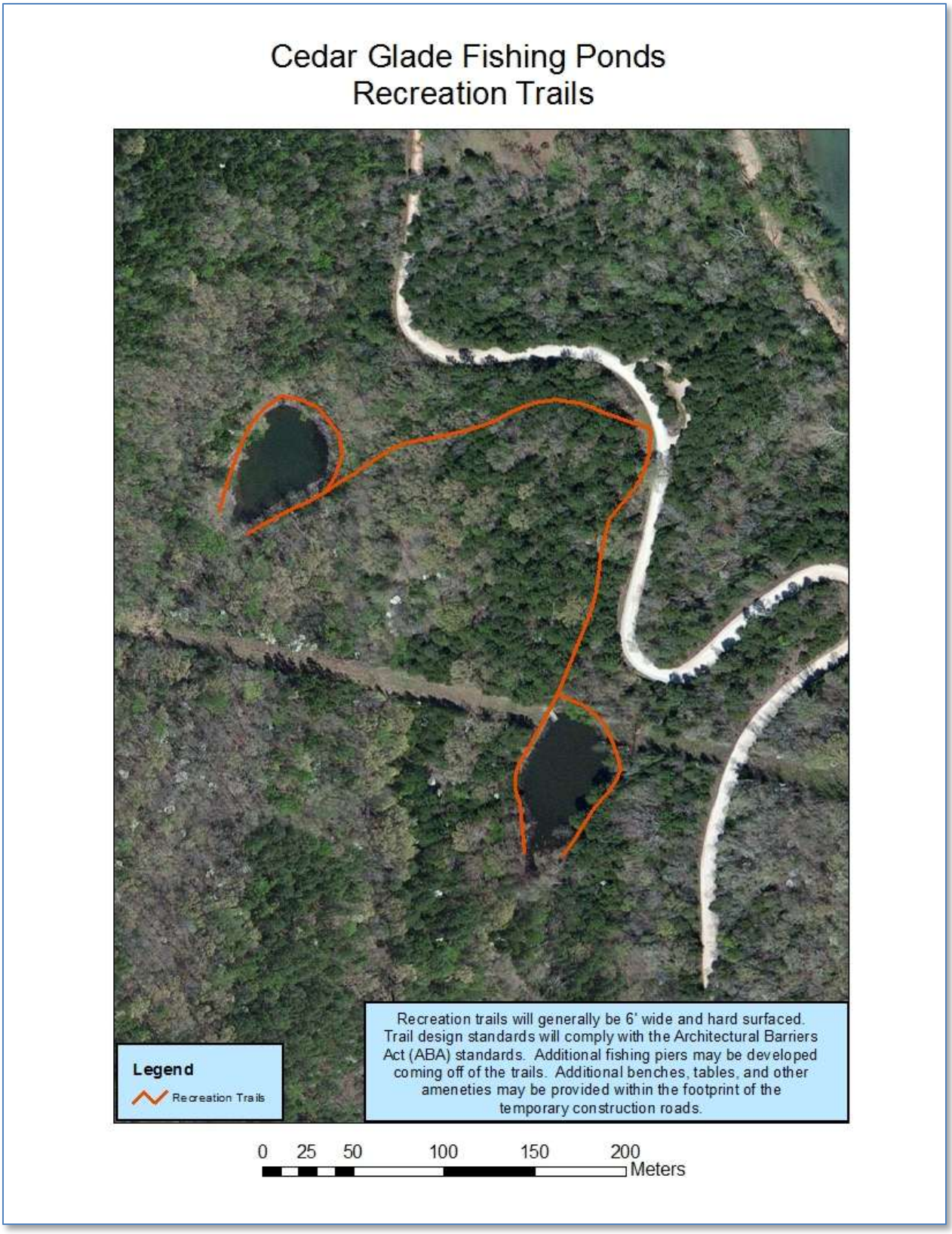

Figure 3. Proposed recreation trails to and around the south and north ponds.

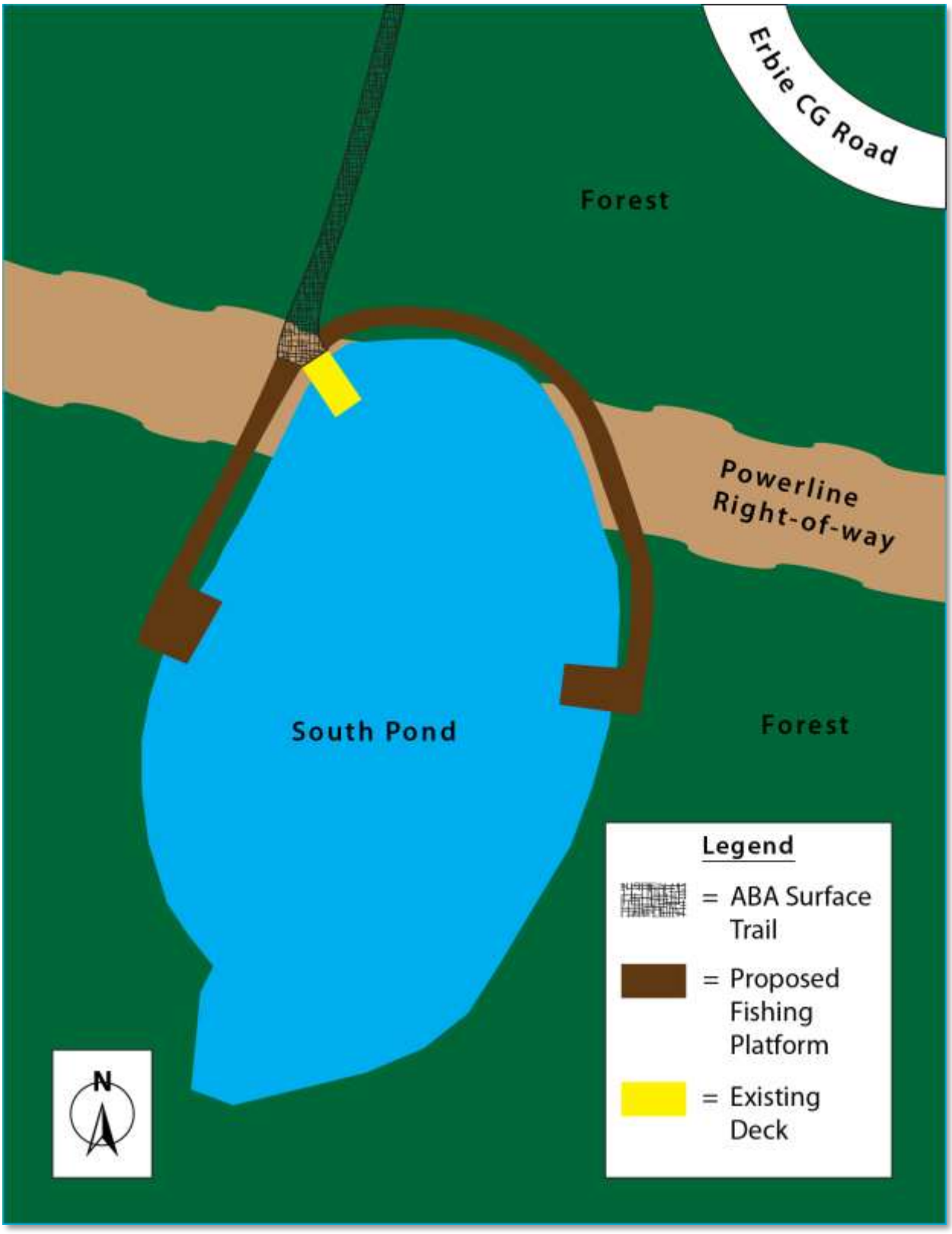

Figure 4. Proposed location of barrier-free compliant fishing platform and trail.

backfilled and compacted with earthen material. Trees greater than twelve inches in diameter would be left in place and inspected annually to monitor their health and stability. Lower branches of these trees would be removed to facilitate fishing from the dam. A compacted aggregate surface would be installed across the dam to the spillway. A material separation fabric/weed barrier may be placed between the aggregate and the ground. Existing debris in the spillway would be removed and replaced with rip-rap to provide a more reliable control of the flow of water from the pond and prevent erosion of the earthen dam.

Both ponds presently have an accumulation of silt of approximately one quarter of the total volume. The ponds would be dredged, refilled, and stocked with fish. BNR proposes to accomplish this by creating a sixteen foot wide temporary access road to each pond following the access trails to the ponds, aligned as shown in Figure 5. These temporary access roads would be used to bring an excavator and dump trucks up to each pond. The excavator would remove the silt from the ponds and place it into the dump trucks for removal from the site. The silt would be spread out on hay fields currently maintained by BNR. After construction, they will be revegetated to a width of 12' to allow for re-stocking of the ponds by one-ton pickup trucks. Six feet of this roadway to the south pond will be surfaced with material that will allow for access by wheel chairs. The trail to the north pond will not be surfaced. Figure 6 shows the portions of the recreation trails that would be used for re-stocking the ponds.

Before the silt removal, each pond would be drained. Trash pumps would be used to accomplish this task with the end of the intake hose suspended on the water's surface to minimize the incidental uptake of silt. This operation would be timed to take place following a period of dry weather when the water column of the ponds is relatively clear. The outlet hose would be placed into the drainage below each pond's spillway where hay bales would be used as a silt fence to filter any sediment that still manages to be sucked up by the pump. Any silt that is trapped by the hay bales would be removed by hand using shovels and hauled off-site to a hay field. Pumping would be stopped when the water level in each pond is too low to avoid sucking silt up off the bottom.

In order to minimize the potential for wildfire in the CGBU prescribed burns would be conducted on a 5-year rotation. Prescribed burns would be implemented according to NPS and BNR standard procedures between October 1 and March 1.

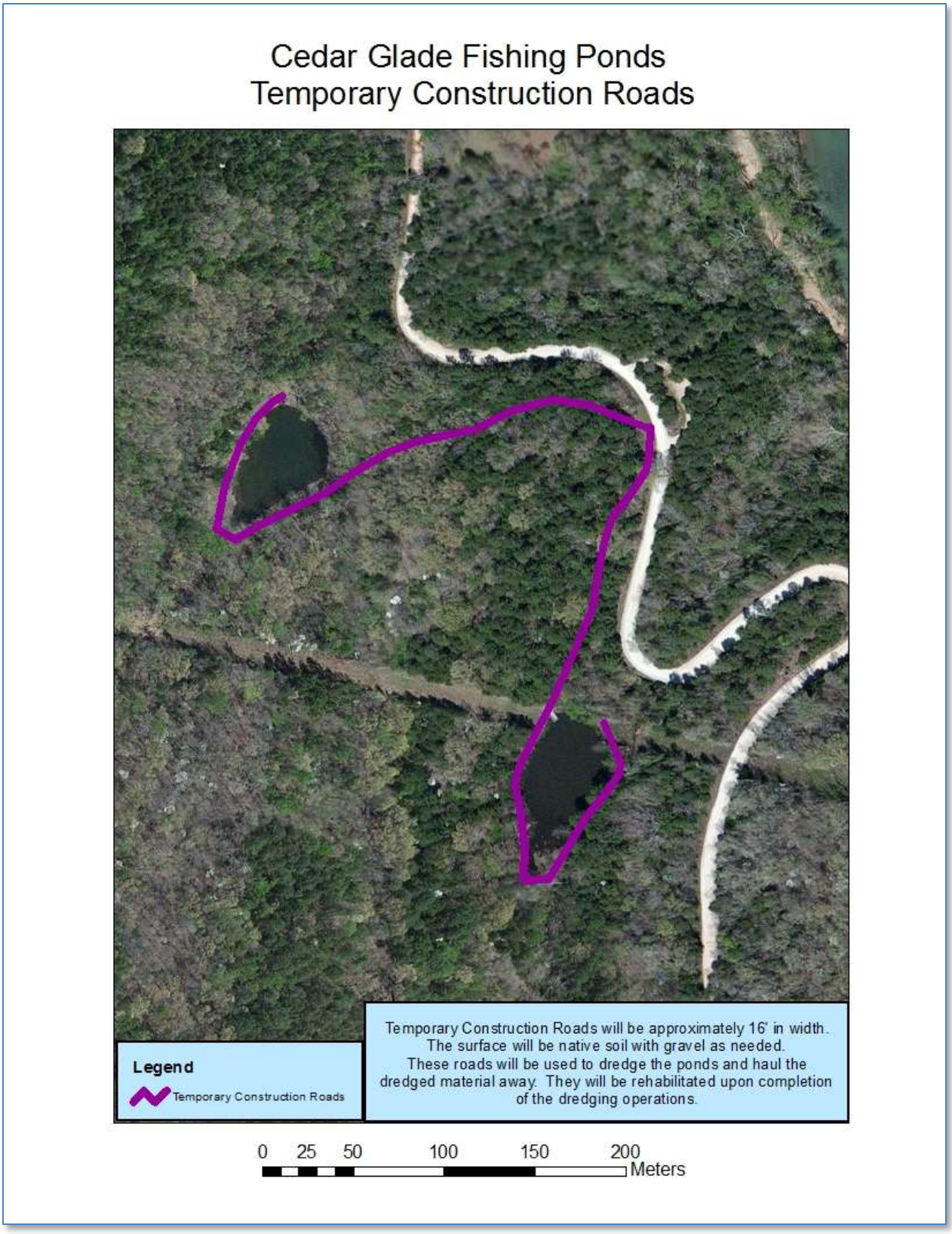

Figure 5. Temporary construction roads for dredging the ponds.

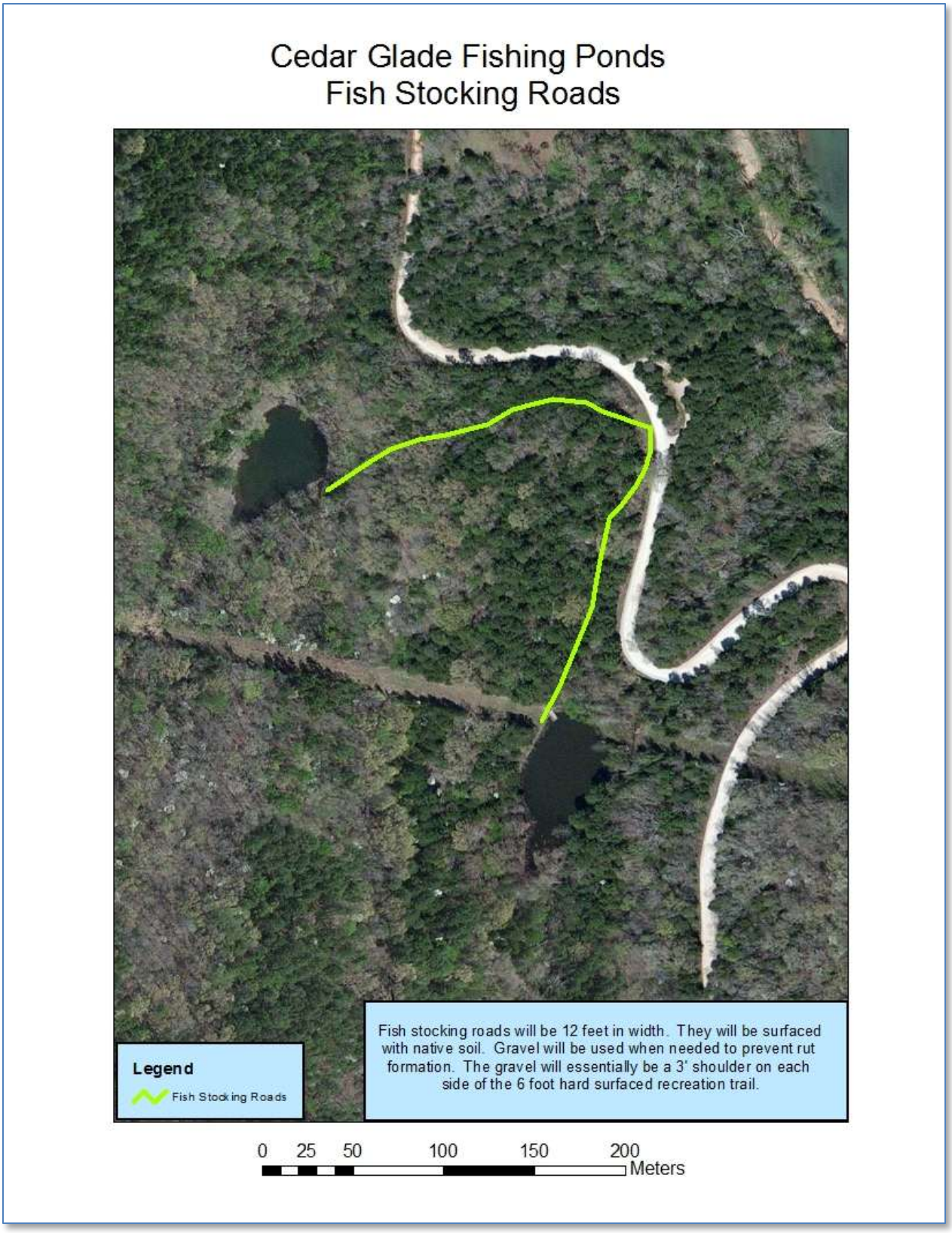

Figure 6. Portions of the recreation trails that would be maintained for fish re-stocking access.

2.2 Alternatives Considered, but Dismissed from Further Analysis

Alternative B was designed to include all of the ideas that have been proposed to meet the purpose and need for the project. It defines all of the potential actions that may be incorporated into the final project. No other activities have been considered for the project area.

2.3 Alternative Summaries

Table 1 summarizes the major components of Alternatives A and B, and compares the ability of these alternatives to meet the project objectives (the objectives for this project are identified in the *Purpose and Need* chapter). As shown in the following table, Alternative B meets each of the objectives identified for this project, while Alternative A meets almost none of the objectives.

Table 1 – Summary of alternatives and how each alternative meets project objectives.

Alternative Elements	Alternative A – No Action	Alternative B – Construct Improvements
Upgrade South Pond to barrier-free specifications.	The South Pond would remain accessible only to those who are not mobility impaired.	Provides a barrier-free compliant access trail, boardwalks, and fishing platforms (docks) for the South Pond.
Upgrade Picnic area at river overlook to barrier-free specifications	Existing access to the picnic area is marginally accessible to the mobility impaired and would remain so.	Provides a barrier-free compliant trail, picnic table and grill for the picnic area at the overlook.
North Pond developed as “youth-only” fishing area.	The North Pond would remain open to all visitors.	BNR would create a regulatory policy that establishes the North Pond as a “youth-only” fishing area with appropriate enforcement measures.
Reduce fuel loading throughout burn unit.	Fuel loading would continue to increase until a wildfire burns it off.	Prescribed burns would be conducted on a periodic basis in the CGBU.
Install bathroom facility near the parking area.	No bathroom facility installed. Visitors would continue to use the woods as a restroom.	A ROMTEC bathroom would be installed at the CGBU Parking Area.
Improve parking area.	The existing parking area would remain the same.	Boulders would be repositioned and added as necessary to the parking area along with a post-and-rail system to improve pedestrian and vehicle circulation.

Install two new docks and a boardwalk at South Pond.	The South Pond would continue to have only one dock that is not currently accessible by the mobility impaired.	Docks would be constructed on the east and west sides of the South Pond with a barrier-free compliant boardwalk to each of them.
Improve BRT ingress and egress from picnic area at river overlook.	The BRT ingress and egress would remain somewhat unobvious.	Stone borders and steps would be installed to better define the trail ingress and egress from the overlook picnic area.
Replace wooden rail on the stone wall at the river overlook.	The existing wooden rail would continue to deteriorate until it is no longer safe.	The existing wooden rail would be replaced with a native species of wood and stained according to NPS guidelines.
Trim trees at overlook to restore view of the river.	The river would remain difficult to view from the overlook.	Tree tops would be trimmed as necessary to restore the view of the river from the overlook.
Install new signs and an informational kiosk at the parking area.	The existing signage at the parking area would remain the same.	A new informational kiosk would be installed at the parking area with a map of the area and current regulations pertaining to the ponds and picnic area.
Stabilize soils and install drainage structures in trail to South Pond.	The trail to the South Pond would remain unimproved and subject to erosion from foot traffic.	Geo-textile material with sand and gravel would be emplaced with a soil stabilizing compound along the path to the South Pond.
Remove lower branches, understory trees, and shrubs from both pond dams.	Shrubs and understory would continue to pose an impediment to fishing from the dams.	Shrubs, vines, low branches, and trees under 12 inches in diameter would be removed from both pond dams.
Clear debris from spillways and install improved flow control structures.	The existing spillways would remain subject to debris loading and blowouts causing occasional pond level fluctuations.	The existing spillways would be removed and replaced with rip-rap.
Remove silt from both ponds, refill and stock with fish.	The ponds would remain shallow with reduced quality as fish habitat.	Both ponds would be dredged to remove the accumulated silt.
Project objectives	**Meets Project Objectives?**	**Meets Project Objectives?**

Provide a diverse range of off-river opportunities for barrier-free and youth fishing within BNR.	No. BNR presently has no opportunities for off-river barrier-free or youth fishing.	Yes. The proposed trail improvements, docks, and boardwalk at the South Pond would provide access to the mobility impaired. Restricting fishing in the North Pond to "youth-only" would result in the first and only off-river "youth-only" fishing opportunity at BNR.
Improve ADA access to CGBU Parking and Picnic Area.	No. The parking and picnic areas would remain as they are and while not inaccessible to the mobility impaired, they would remain non-compliant with ADA standards.	Yes. The proposed improvements to the parking lot surface and vehicle and pedestrian traffic flow would bring parking lot and picnic area into ADA and barrier-free compliance.
Improve CGBU trail to meet barrier-free standards.	No. The present condition of the trail is not sufficient for use by the mobility impaired and no changes would be made to improve it.	Yes. Soil stabilization, widening, leveling, and the installation of minor drainage structures would make the trail barrier-free compliant.
Improve access to interpretational and educational opportunities.	No. Proposed signs and an informational kiosk would not be constructed. There would be no change to the status of the two ponds.	Yes. Signs and an informational kiosk, along with youth fishing programs coordinated by the AGFC would substantially improve access to interpretational and education opportunities at CGBU.
Address public health issues.	No. Visitors would continue to use the woods as a restroom and the hazard of wildfire would continue to grow.	Yes. The proposed new ROMTEC restroom adjacent to the parking area would improve the sanitary condition of the area and prescribed, controlled burns would reduce the hazard of wildfire.

Table 2 summarizes the anticipated environmental effects for Alternatives A and B. Only those impact topics that have been carried forward for further analysis are included in this table. The *Environmental Consequences* chapter provides a more detailed explanation of these effects.

Table 2 – Environmental effects summary by alternative.

Impact Topic	Alternative A – No Action	Alternative B – Preferable Alternative
Water Resources	There would be no change to water quality in the mainstem of the Buffalo River unless a high-intensity wildfire were to occur in the CGBU. In this case, a high volume of ash and no vegetation or topsoil to hold it in place during a storm event could potentially lead to degradation of the river from severe runoff. This degradation would potentially be direct, adverse, short-term, and major.	Pond draining activities could potentially lead to increased turbidity and a corresponding decreased water quality from silt in the ponds being pumped out and drained into river. This potential water quality degradation would be mitigated by timing draining activities to follow a dry period when the water column in the ponds is relatively clear, floating or otherwise maintaining the pump intake on the pond surfaces and stopping pumping before the intake begins to suck sediment off the bottom of the ponds, and by placing hay bale silt fences in the downstream drainages below the pump outlet to trap any remaining sediment that manages to make it into the pump. This sediment would be removed and disposed off site on a BNR hayfield where it would be assimilated into the topsoil. The anticipated rate of pumping would result in a flow of approximately two cubic feet per second of pond water entering the Buffalo River during the draining process. This would amount to less than ten percent of the flow in the river during any month of the year. The effects of this alternative would be direct, adverse, short-term, and negligible.
Archeological Resources	There would be no immediate change to existing archeological resources in the CGBU; however, a catastrophic, stand-replacing wildfire would likely result in the permanent loss of some archaeological resources.	Prescribed burning is the only activity associated with this alternative that could potentially have an adverse effect on archaeological resources. Surface archaeological features could be burned or cracked from fire. Archaeological resources in the area have been located and identified in the CGBU that would be protected from prescribed burning. The effects of this alternative would be direct, potentially adverse, long-term, and negligible.

Impact Topic	Alternative A – No Action	Alternative B – Preferable Alternative
Special Status Species	There would be no immediate change to special status species in or near the CGBU. Catastrophic, stand-replacing wildfire could potentially be harmful to special status species if they happen to be present when such a fire occurred. These effects would be direct, adverse, potentially long-term, and major.	No effects would occur to State or federally protected species because none appear to be present in the areas potentially affected by the proposed improvements. Habitat for two state threatened plant species, Alabama snow wreath (*Neviusia alabamensis*) and ovate-leaved catchfly (*Silene ovata*), is marginally present in the CGBU. Clearing and grubbing activities to provide access to the ponds by an excavator and dump trucks would affect this habitat. A BNR botanist would conduct an intensive survey for these two species in these areas prior to clearing. If individuals or populations of these species are found during this pre-construction survey, then Arkansas Natural Heritage Commission biologists would be consulted to identify and appropriate mitigation plan to prevent adverse effects to them. Prescribed burns would occur between the late fall and early spring months thus eliminating potential adverse effects to nesting migratory birds or roosting protected species of bats.
Visitor Use and Experience	There would be no change to visitor use or experience in the CGBU.	Noise and dust from construction activities would adversely affect visitor use and experience; however all construction-related effects would be temporary and cease following construction activities. Construction activities would result in temporary inconveniences to visitors; however, there are no plans to close the area for extended periods while construction is going on. The overall effects of construction would be direct, adverse, local, short-term, and minor. Most of the proposed improvements are driven by visitor needs, consequently, it is expected that the overall post-construction visitor use and experience would be direct, beneficial, local, long-term, and moderate.

2.4 Environmentally Preferable Alternative

The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative

that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

Alternative A, no-action, protects and preserves historic, cultural and natural resources insofar as no ground disturbing activities, other than the superficial maintenance activities at Cedar Glade, would take place. Wildfire hazard would continue to increase and present a corresponding increasing hazard to natural resources and river water quality. Also, the lack of a bathroom facility would continue to leave visitors with no alternative to using the woods as a restroom.

Alternative B, improve Cedar Glade ponds and picnic area, is the environmentally preferable alternative because the proposed construction, namely the improvements to the pond spillways, trail to the South Pond, installation of a restroom, and controlled burning activities would result in improved river water quality and enhanced protection and preservation of natural resources.

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

3 Affected Environment and Environmental Consequences

3.1 Impact Topics Dismissed from Detailed Analysis

In this section of the EA, NPS provides a limited evaluation and explanation as to why some impact topics are not evaluated in more detail. Impact topics are dismissed from further evaluation in this EA if:

- they do not exist in the analysis area, or
- they would not be affected by the proposal, or the likelihood of effects are not reasonably expected, or
- through the application of mitigation measures, there would be minor or less effects (i.e. no measurable effects) from the proposal, and there is little controversy on the subject or reasons to otherwise include the topic.

Due to there being no effect or no measurable effects, there would either be no contribution towards cumulative effects or the contribution would be low. For each issue or topic presented below, if the resource is found in the analysis area or the issue is applicable to the proposal, then a limited analysis of direct and indirect, and cumulative effects is presented. There is no impairment analysis included in the limited evaluations for the dismissed topics because the NPS's threshold for considering whether there could be impairment is based on "major" effects.

3.1.1 Geology, Topography, and Soils

According to the NPS's *Management Policies 2006*, the NPS will preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue (NPS 2006). These policies also state that the NPS will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

While there are significant topographic and geologic features within BNR, none of these features are found within the area that would be affected by proposed improvements at the CGBU. Clearing and grubbing activities to provide access to the ponds by an excavator and haul trucks would create a temporary soil erosion hazard; however, best management practices would be employed to minimize erosion during pond dredging and a revegetation/reseeding plan would be implemented afterwards for long-term erosion control. Any sediment runoff that might manage to make it into the creek above the ponds would be trapped by the pond before it could reach the Buffalo River. The Preferred Alternative would result in negligible, short-term adverse effects to soils and no effects to topography or geology. Further, such effects would not result in any unacceptable effects; the proposed improvements are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects would be negligible or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this EA.

3.1.2 Floodplains

Executive Order 11988 *Floodplain Management* requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. The NPS under *Management Policies 2006* and Director's Order 77-2 *Floodplain Management* will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director's Order 77-2

Floodplain Management, certain construction within a 100-year floodplain requires preparation of a statement of findings for floodplains.

The proposed improvements described in the preferable alternative are all well above the regulatory floodplain of the Buffalo River. Three artificial floodplains exist in the uplands around the two ponds in the CGDUA. Two are located around the inlets to the two ponds and one is located near the existing dock at the south pond where the access trail comes in. According to DO 77-2, the effects to these artificial floodplains would be transitive and inconsequential; therefore, no floodplain statement of findings is required. A memorandum for the record that provides details of this determination is located in Appendix D of this EA. Because effects to floodplains would be negligible or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this EA.

3.1.3 **Wetlands**

Executive Order 11990 *Protection of Wetlands* requires all federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. The NPS under *Management Policies 2006* and Director's Order 77-1: *Wetland Protection* requires parks to protect and preserve wetlands. A wetland statement of findings must be prepared if an NPS action has the potential to have an adverse impact on wetlands (unless the action is "excepted"). Those actions that involve placing of dredged or fill materials in wetlands or other "waters of the U.S." must comply with Section 404 of the Clean Water Act as well.

Two artificial wetlands occur at the inlets to the ponds. The total acreage of these two wetlands is approximately 0.28 acres. According to DO 77-1, these artificial wetlands fall within the excepted category H of DO 77-1: Actions designed to restore degraded (or completely lost) wetland, stream, riparian, or other aquatic habitats or ecological processes [Some "artificial wetlands" may have been constructed on sites which were originally 100 percent upland habitat (e.g., wetlands sustained by water pumps or other means). Restoration of such sites to upland habitat may also be considered under this exception.]; therefore, a wetland statement of findings is not required. A memorandum for the record that provides details of this determination is located in Appendix E of this EA. Because effects to wetlands would be negligible or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this EA.

The preferable alternative meets the definition of use for Nationwide Permit 27, Aquatic Habitat Restoration, Establishment and Enhancement Activities authorized by the U.S. Army Corps of Engineers, which requires an approved delineation and pre-construction notification to the district engineer. It qualifies for the blanket ADEQ Section 401 Water Quality Certification. A copy of the blanket water quality certification letter is located in Appendix E of this EA.

3.1.4 **Vegetation**

According to the NPS's *Management Policies 2006*, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2006).

Plant communities at BNR are rich and diverse. The ridges, bluffs, hillsides and valleys provide a variety of habitats, supporting over 1,500 species of plants. The major forest types are Floodplain, Mixed Hardwood, Oak-Hickory, Oak-Pine, Cedar Glade, and Beech Forests, cultivated fields (mostly consisting of hay and other cattle forage grasses), fields being restored to warm grass communities, and abandoned fields at different stages of ecological succession are present throughout the area (NPS 2005).

Approximately one-quarter acre of upland hardwood forest vegetation would be cleared to provide access to the ponds by an excavator and haul trucks. Disturbed areas not permanently covered by gravel would be rehabilitated and vegetation restored following construction; therefore, removal and/or disturbance of vegetation in the project area is expected to result in negligible adverse effects to vegetation. Further, such negligible effects would not result in any unacceptable effects; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable effects, this topic is dismissed from further analysis in this EA.

3.1.5 **Wildlife**

According to the NPS's *Management Policies 2006*, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2006). Wildlife commonly found at BNR include elk, white-tailed deer, raccoon, opossum, bobcat, mink, black bear and beaver (NPS 2005) along with increasing numbers of feral pigs. Elk populations have slowly increased since their re-introduction to the area in 1981 and sightings are common in the upper district of BNR. The lack of natural predators has left hunters and disease events to regulate most ungulate populations. Many fluctuate at or near ecological carrying capacity.

Most of the proposed improvements would occur in areas that are already developed and receive frequent human visitation. Wildlife typically avoid these areas during daylight hours to avoid humans. Disturbed areas would be revegetated and rehabilitated following construction, which would result in a negligible to minor adverse impact to the wildlife and wildlife habitat in the immediate area of construction. There would be no overall loss of wildlife habitat.

During construction, noise would also increase, which may disturb wildlife in the general area. Construction-related noise would be temporary and existing sound conditions would resume following construction activities. Therefore, the temporary noise from construction would have a negligible adverse effect on wildlife.

Further, such negligible effects would not result in any unacceptable effects; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable effects, this topic is dismissed from further analysis in this EA.

3.1.6 **Ethnographic Resources**

NPS's Director's Order-28 *Cultural Resource Management* defines ethnographic resources as any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. According to DO-28 and Executive Order 13007 on sacred sites, the NPS should try to preserve and protect ethnographic resources.

Ethnography is concerned with contemporary peoples associated with the national river, with their cultural systems or ways of life, and with the related technology, sites, structures, other material features, and natural resources within its boundaries. These groups typically assign significance to places closely linked with their own sense of purpose, existence as a community, and development as ethnically distinctive peoples. Important places may support subsistence or ceremonial activities or represent birthplaces of significant individuals or group origin sites. Both culturally affiliated American Indian tribes recognized by the federal government and white ethnic groups, which have endured for two generations or more within the boundaries, are considered traditional users. Ethnographic resources are subsistence and ceremonial locales and sites, structures, objects, and rural landscapes assigned cultural significance by traditional users. Natural resources may have

heritage significance in activities and beliefs related to, for example, religion, healing, and subsistence. Some peoples' religious beliefs also require quarrying certain minerals or collecting certain plants in specific places for sacred or medicinal purposes.

Certain contemporary Native American and other communities are permitted by law, regulation, or policy to pursue customary religious, subsistence, and other cultural uses of park resources with which they are traditionally associated. Such continuing use is often essential to the survival of family, community, or regional cultural systems, including patterns of belief and economic and religious life. Recognizing that its resource protection mandate affects this human use and cultural context of park resources, the NPS will plan and execute programs in ways that safeguard cultural and natural resources while reflecting informed concern for the contemporary peoples and cultures traditionally associated with them.

Ethnographic surveys or studies are not currently available for BNR due to staffing and funding constraints. In 2000, the NPS contracted for a cultural affiliation study in order to determine which federally recognized Native American tribes are affiliated with BNR. The study is in draft form at this time. Ten tribes have been reported to be culturally affiliated with BNR:

- the Absentee Shawnee Tribe;
- the Caddo Tribe of Oklahoma;
- the Cherokee Nation of Oklahoma;
- the Eastern Shawnee Tribe of Oklahoma;
- the Osage Tribe of Oklahoma;
- the Quapaw Tribe of Oklahoma,
- the Shawnee Tribe;
- the Tunica-Biloxi Tribe of Louisiana;
- the United Keetoowah Band of the Cherokee Nation, and;
- the Wichita and Affiliated Tribes.

BNR staff have attempted to contact the affiliated Tribes through normal channels; however, none of the Tribes have demonstrated any interest in the proposed actions. The lack of responses is interpreted to indicate that no effects to significant ethnographic resources would be expected. The proposed actions, therefore, are consistent with §1.4.7.1 of NPS *Management Policies 2006*. Because there would be no effects to ethnographic resources, this topic is dismissed from further analysis in this EA.

3.1.7 **Paleontological Resources**

According to *Management Policies 2006*, paleontological resources (fossils), including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education, interpretation, and scientific research (NPS 2006). At BNR, paleontological resources are generally restricted to caves. No paleontological resources are known to occur within the APE of the Preferred Alternative.

There would be no effects to paleontological resources. Further, there would be no unacceptable effects; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies 2006*. Because these effects are minor or less in degree and would not result in any unacceptable effects, this topic is dismissed from further analysis in this EA.

3.1.8 **Air Quality**

The Clean Air Act of 1963 (42 U.S.C. 7401 *et seq.*) was established to promote the public health and welfare by protecting and enhancing the nation's air quality. The act establishes specific programs that provide special protection for air resources and air quality related values associated with NPS

units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. The majority of BNR, including all of the improvement project locations, is designated as a Class II air quality area under the Clean Air Act as amended (NPS 2003a). A Class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in §163 of the Clean Air Act. State air quality laws and regulations are available on-line at the Arkansas Department of Environmental Quality website (ADEQ 2010).

Construction activities such as hauling materials and operating heavy equipment could result in temporary increases of vehicle exhaust, emissions, and fugitive dust in the general project area. Any exhaust, emissions, and fugitive dust generated from construction activities would be temporary and localized and would likely dissipate rapidly because air stagnation at BNR is rare. Overall, the project could result in a negligible degradation of local air quality; however, such effects would be very short-term, lasting only while construction activities involving heavy equipment are being used. The Class II air quality designation for BNR would not be affected by the proposed action. Further, because the Class II air quality would not be affected, there would be no unacceptable effects; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because there would be no effects on air quality, and the proposed actions would not result in any unacceptable effects, this topic is dismissed from further analysis in this EA.

3.1.9 **Soundscape Management**

In accordance with *Management Policies 2006* and Director's Order-47 *Sound Preservation and Noise Management*; an important component of the NPS's mission is the preservation of natural soundscapes associated with NPS units (NPS 2006). Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

During construction, human-caused sounds would likely increase due to construction activities, equipment, vehicular traffic, and construction crews. Any sounds generated from construction would be short-term, lasting only as long as the construction activity is generating the sounds, would generally be confined to the immediate vicinity of the construction activities, and would have a minor adverse effect on visitors and employees. Operation of the facilities upon completion of construction may result in a negligible increase in human-caused sounds at the CGBU in the parking lot, picnic area, and around the ponds if visitation to these areas increases as anticipated. Such negligible effects are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects would be negligible or less in degree and would not result in any unacceptable effects, this topic is dismissed from further analysis in this EA.

3.1.10 **Lightscape Management**

In accordance with *Management Policies 2006*, the NPS strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human caused light (NPS 2006). BNR strives to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements. There are no lights at the CGBU and no new lights are included in the Preferred Alternative; therefore, there would be no effects to the natural ambient lightscape as a result of the proposed improvements. Because there would be no effect to the Lightscape, this topic is dismissed from further analysis in this EA.

3.1.11 **Socioeconomics**

The proposed action would change neither local nor regional land use nor appreciably affect local businesses or other agencies in an adverse way. Implementation of the proposed action could provide a negligible beneficial impact to local small businesses, such as bait and tackle stores, due to improved fishing opportunities at the ponds in the CGBU. Because the effects to the socioeconomic environment would be negligible and likely beneficial, this topic is dismissed from further analysis in this EA.

3.1.12 **Prime and Unique Farmlands**

The Farmland Protection Policy Act of 1981, as amended, requires federal agencies to consider adverse effects to prime and unique farmlands that would result in the conversion of these lands to non-agricultural uses. Prime or unique farmland is classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), and is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. Both categories require that the land be available for farming uses. None of the land that would be affected by the proposed action is available for farming and, therefore, do not meet these criteria. Because there would be no effects on prime or unique farmlands, this topic is dismissed from further analysis in this EA.

3.1.13 **Indian Trust Resources**

Secretarial Order 3175 requires that any anticipated effects to Indian trust resources from a proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

There are no Indian trust resources at BNR. The lands comprising the river are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Because there are no Indian trust resources, this topic is dismissed from further analysis in this EA.

3.1.14 **Environmental Justice**

Executive Order 12898 *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Because the proposed improvements would be available to the benefit of all visitors regardless of race or income, and the construction workforces would not be hired based on their race or income, the proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities. Because there would be no disproportionate effects, this topic is dismissed from further analysis in this EA.

3.1.15 **Climate Change and Sustainability**

Although climatologists are unsure about the long-term results of global climate change, it is clear that the planet is always experiencing cyclic warming and cooling trends that affect ocean currents, sea levels, polar sea ice, and global weather patterns. Although these changes will likely affect winter precipitation patterns and amounts in the parks, it would be speculative to predict localized changes in temperature, precipitation, or other weather changes, in part because there are many variables that are not fully understood and there may be variables not currently defined. Therefore,

the analysis in this document is based on past and current weather patterns and the effects of future climate changes are not discussed further in this EA.

3.2 Cumulative Impacts Scenario

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), require assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects are considered for both the no-action and preferable alternative.

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

- **Development of Fire Management Plan, 2003:** The fire management plan was completed in March 2003. One of the primary actions prescribed by the plan is the reduction of hazardous fuels and maintenance of ecosystem health and diversity through prescribed burning.
- **Buffalo River Trail, 2003 and ongoing:** This is a planned 26 mile extension of the Ozark Highland Trail with portions passing through BNR. This is currently designated as a pedestrian hiking trail only and there are no plans presently being considered to change this designation.
- **Development of a Water Resources Management Plan, 2004:** This plan presents a carefully laid out list of recommendations that includes, among others, recommendations to reduce erosion of streambanks and restore riparian areas at a total of 14 and 26 locations, respectively.
- **Development of a Streambank Management Plan, 2005:** This plan was developed as an outgrowth of the Water Resources Management Plan. It describes a preferable alternative for the stabilization of streambanks and restoration of riparian areas along the river.
- **Development of a General Management Plan, Ongoing:** Some topics that may be included in the GMP are vehicle launch ramps for johnboats, creating ADA access to the river at Hasty Landing, conversion of the campgrounds at Hasty Landing and Lost Valley to day-use only areas, development of an overflow parking lot at Hasty Landing at the top of the hill, and expanded horse trailer parking areas and campgrounds at various locations within BNR.
- **Facilities Improvements at Rush Landing, Spring Creek Trailhead, Hasty Landing, and Lost Valley, 2011:** The EA for these improvements was completed in 2010 and a FONSI was signed in 2011. Construction of these projects began in the fall of 2011. These improvements include traffic, pedestrian, parking, and drainage improvements at Rush Landing, a parking facility at the Spring Creek trailhead, drainage, parking, and restroom facility improvements at Hasty Landing, and ABA and safety improvements at Lost Valley.

3.3 Impact Topics Retained for Detailed Analysis

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders; *Management Policies 2006*; and NPS knowledge of resources at BNR. Impact topics that are carried forward for further analysis in this environmental assessment are listed below along with the reasons why the impact topic is further analyzed. For each of these topics, the text also

describes the existing setting or baseline conditions (i.e. affected environment) within the project area. This information will be used to analyze the effects of the two alternatives against the current conditions of the project area.

In this section and the following section on *Impact Topics Dismissed from Further Analysis*, the NPS takes a "hard look" at all potential effects by considering the direct, indirect, and cumulative effects of the proposed action on the environment, along with connected and cumulative actions. Effects are described in terms of context and duration. The context or extent of the impact is described as localized or widespread. The duration of effects is described as short-term, ranging from days to three years in duration, or long-term, extending up to 20 years or longer. The intensity and type of impact is described as negligible, minor, moderate, or major, and as beneficial or adverse. The NPS equates "major" effects as "significant" effects. The identification of "major" effects would trigger the need for an EIS. Where the intensity of an impact could be described quantitatively, the numerical data is presented; however, most impact analyses are qualitative and use best professional judgment in making the assessment.

The NPS defines "measurable" effects as moderate or greater effects. It equates "no measurable effects" as minor or less effects. "No measurable effect" is used by the NPS in determining if a categorical exclusion applies or if impact topics may be dismissed from further evaluation in an EA or EIS. The use of "no measurable effects" in this EA pertains to whether the NPS dismisses an impact topic from further detailed evaluation in the EA. The reason the NPS uses "no measurable effects" to determine whether impact topics are dismissed from further evaluation is to concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail, in accordance with CEQ regulations at 1500.1(b).

Topics analyzed in this chapter include water resources, archaeological resources, biological resources, and visitor use and experience. Direct, indirect, and cumulative effects, as well as impairment are analyzed for each resource topic carried forward. Potential effects are described in terms of type, context, duration, and intensity. General definitions are defined as follows, while more specific impact thresholds are given for each resource at the beginning of each resource section.

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

3.3.1 **Archaeological Resources**

Affected Environment

BNR contains numerous prehistoric and historic archeological sites, over 500 recorded as of 2003, spanning almost 10,000 years of human history (NPS 2003). A common occurrence at BNR is the overlay of historic structure upon historic archeological site upon prehistoric archeological site. Site condition varies from good to destroyed, with impact levels varying from low to severe.

Structural sites have recently been added to the finds within BNR boundaries. The discovery of a baking oven in the Boxley area and the remains of the first known prehistoric house structure in the Arkansas Ozarks (at Erbie) demonstrate the high significance of this largely unknown resource. Until recently, the Native Americans occupying the Ozarks were believed to make use of natural bluffs and caves for shelter rather than constructing dwellings. Archeological testing during planning prior to the development of the Erbie campground (1986-87) revealed post molds that indicated the use of constructed "pole house" shelters comparable to Mississippian sites elsewhere in the southeast. Burial sites have been discovered within the boundaries of the national river and are protected by federal and State laws (NPS 2003).

Known historic archeological sites cover a period beginning in the early 1800s when modern Native Americans such as the Osage and the Cherokee were present. Most of the historic archeological sites are associated with nineteenth and twentieth century Euro-American settlements. These sites vary from vegetation-covered areas with no above ground resources, to abandoned farms, communities, and industries. Civil War engagements are reported to have taken place at various locations along the river. Sites associated with the region-wide mining of lead and zinc include the sites in the Rush Historic District as well as numerous unstudied sites in the Lower Buffalo Wilderness. Other known sites are associated with the processing of guano from bat caves to produce gunpowder. Sites associated with the logging industry, including major milling sites and "tie slides," where logs were pushed off ridges to glide down to the river to waiting rafts (NPS 2003).

A comprehensive cultural landscape inventory has not been funded for BNR. There are some who believe that the entire national river may be one large cultural landscape in which are contained smaller, distinct elements. Although it is unknown which distinct cultural landscapes exist within BNR's boundaries, BNR treats designated historic districts as potential cultural landscapes. Other potential areas include community sites, Civil War sites, and agricultural settlement areas. For the most part, fence-lines and old roadways are left in place to mark settlement patterns. Special use hay permits and historic leases maintain selected pastoral landscapes.

Standing structures and ruins are the most visible part of the overall national river cultural landscape and are scattered throughout its boundary. Settlement occurred along the river's length, in fertile tributary valleys, and along forested slopes. Structures or other remains are virtually everywhere, whether still in use as part of active farms or long abandoned. The NPS's List of Classified Structures (structures on or eligible for the National Register) for BNR lists 256 structures. Under a 1988 Memorandum of Agreement with the Arkansas State Historic Preservation Officer, structures, including those in Wilderness, will be inventoried and determinations of National Register eligibility made. However, staff and funding constraints have focused National Register evaluations towards areas slated for development with the result that only a few Wilderness area structures have been evaluated.

Euro-Americans began settling the surrounding area in the 1820s. The oldest standing structures in the park, remains of the Parker-Hickman farm, date to the 1840s and are located 3.5 miles west of the project area along Erbie Campground road.

A Class III Archaeological Survey of the entire CGBU was conducted by NPS archaeologist Melissa Baier during the fall and winter months of 2011-2012. The results of this survey are contained in a report (NPS 2012) prepared for internal use by NPS. The archeological investigation indicates that human occupation of the landscape was relatively continuous from prehistory through modern times. Excavations at one site in the project area recovered artifacts that date from the Dalton period. Most of the prehistoric sites within the CGBU and within the park as a whole suggest that early inhabitants of the park [(8500-7900 BC) through the Mississippian (AD 1000-1600) period] practiced a transient hunter-gatherer lifestyle. These prehistoric sites consist primarily of campsites containing domestic debris including stone flakes from tool making with some locations showing signs of specialized activities such as hickory nut processing. Most of these artifacts are located below the ground surface. One prehistoric site with surface features located within the project area has been recommended as eligible for nomination to the National Register of Historic Places (NRHP) under Criterion D (partially because of the presence of subsurface hearth features).

Evidence of historic occupation of the CGBU includes foundations, wells, artifact scatters, fences, and a historic cemetery. The cemetery is a privately owned parcel within the park boundary. One of the historic sites within the CGBU contains flammable materials including a portion of a collapsed wooden structure. The other foundations are constructed of either poured concrete or native stone.

Intensity Level Definitions

In addition to the National Historic Preservation Act and the NPS *Management Policies 2006*, the NPS's Director's Order-28B *Archeology* affirms a long-term commitment to the appropriate investigation, documentation, preservation, interpretation, and protection of archeological resources inside units of the National Park System. As one of the principal stewards of America's heritage, the NPS is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. Archeological resources are nonrenewable and irreplaceable, so it is important that all management decisions and activities throughout the National Park System reflect a commitment to the conservation of archeological resources as elements of our national heritage.

The National Historic Preservation Act of 1966 (PL 89-665, 80 Stat 915-919, 16 USC 470 et seq.) established a federal historic preservation program. It authorized the Secretary of the Interior to (1) expand and maintain a national register of districts, sites, buildings, structures, and objects significant in American history; (2) establish a program of matching grants-in-aid to states for historical preservation; and (3) establish a program of matching grants-in-aid to the National Trust for Historic Preservation. The act also established the Advisory Council on Historic Preservation (ACHP). The Director of the NPS or his or her designee is to be the Executive Director of the Council. A 1980 amendment to this act places specific responsibilities on federal agencies in terms of historic preservation and the conducting of their own programs, planning, and projects (Section 110).

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

resource surveys prior to ground disturbing activities and submit the results of those surveys along with any Assessment of Effect Forms and proposed mitigation to the SHPO, ACHP, and Tribes for review and consultation. The thresholds for this impact assessment are as follows:

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

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

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

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

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

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

Effects of Alternative A (No-Action Alternative)

Without the implementation of prescribed burns in the CGBU fuel loading would continue to increase until it experiences a wildfire. Such a wildfire would not provide an opportunity for the exclusion of surface artifacts or historic structures, consequently the No-Action Alternative would lead to long-term, potentially major, local, direct, adverse effects to archaeological resources.

Effects of Alternative B (Preferable Alternative)

The archaeological features referred to in this analysis are identified and located in more specific detail in the Class III Archaeological Survey Report (NPS 2012) prepared for Cedar Glade. Artifacts located beneath the ground surface would not be affected by a prescribed fire regime. The prehistoric site with NHRP recommended eligibility would need to be excluded from prescribed burns in order to protect the integrity of surface hearth features. Exclusion would be performed by removing flammable materials around the site with a leaf blower.

The historic cemetery would need to be excluded from prescribed burns to prevent damage to the fence and the headstones. The historic site within the CGBU that contains flammable materials including a portion of a collapsed wooden structure, would need to be protected from fire. This site would need to be excluded from the prescribed burn through the use of leaf blowers. Other foundations at this site are constructed of either poured concrete or native stone and concrete and should be unaffected by fire; however, measures such as hand-clearing would be employed to reduce fire temperatures in these locations to prevent cracking and crazing of the stone and concrete. In addition, the Arkansas SHPO recommends that historic fences be protected from fire. There is one fence that would need to be excluded from the prescribed burn.

The Preferable Alternative was designed to avoid archaeological resources in the area of potential effect. As long as the recommendations described here are followed, construction and increased visitation of the area related to the Preferable Alternative would have a negligible, local, direct, long-term, adverse effect on archaeological resources. No indirect or cumulative effects were identified for archaeological resources.

3.3.2 Special Status Species

Affected Environment

The Endangered Species Act of 1973 requires examination of potential effects on all federally-listed threatened, endangered, and candidate species. Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the *Management Policies 2006* and Director's Order-77 *Natural Resources Management Guidelines* require the NPS to examine the effects on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species (NPS 2006). For the purposes of this analysis, the U.S. Fish and Wildlife Service (USFWS) and the Arkansas Game and Fish Commission (AGFC) were contacted with regards to federally- and state-listed species to determine those species that could potentially occur on or near the project area. A Biological Evaluation (BE) was prepared for this project and included in in Appendix B of this EA.

The APE for special status species includes all of the land within the CGBU boundary as shown in Figure 1 of this EA, the mainstem of Buffalo River along the northern boundary of the CGBU and the reach of the river immediately downstream for approximately 0.5 mile.

Letters were sent to the USFWS and the AGFC requesting input regarding protected species in the vicinity of the facilities where improvements are proposed. One response has been received from the USFWS. A copy of the letters and the USFWS response are included in Appendix B. Thirteen protected species are identified for Newton County on the USFWS Arkansas Field Office website (USFWS 2011) and the Arkansas Natural Heritage Commission website (ANHC 2011) and are presented in Table 3. A complete list, including those not protected, but listed for inventory, by the Arkansas Natural Heritage for Newton County are presented in Appendix B.

Table 3 – Federal and State protected species known to occur within BNR.

Scientific Name	Common Name	Federal Status	State Status
Birds			
Haliaeetus leucocephalus	Bald eagle	BGEPA	INV
Fish			
Etheostoma moorei	Yellowcheek darter	C	INV
Invertebrates			
Quadrula cylindrica cylindrica	Rabbitsfoot	C	INV
Epioblasma triquetra	Snuffbox	E	-
Mammals			
Corynorhinus townsendii ingens	Ozark big-eared bat	E	INV

Myotis grisescens	Gray bat	E	INV
Myotis sodalis	Indiana bat	E	INV
Plants			
Dodecatheon frenchii	French's shooting star	-	T
Neviusia alabamensis	Alabama snow wreath	-	T
Silene ovata	Ovate-leaved catchfly	-	T
Silene regia	Royal catchfly	-	T
Trichomanes petersii	Dwarf bristle fern	-	T

BGEPA = Bald and Golden Eagle Protection Act

E = Endangered

T = Threatened

PE = Proposed Endangered

C = Candidate

INV = Inventory Element (Species for which the ANHC is currently conducting active inventory work and for which there is a conservation concern.)

Bald eagles are protected by the *Bald and Golden Eagles Protection Act*. As of 2003, each winter for most of the previous twelve years, an eagle survey was performed by BNR staff. The survey was conducted as a one-day, intensive search designed to cover as much of the river as possible. The lower sections of the river have a wintering population of approximately one eagle per two river miles. (NPS unpublished records). There have been no nesting pairs of this eagle found within the boundary of BNR since the species was removed from protection under the Endangered Species Act.

Yellowcheek darters (*Etheostoma moorei*) are only known to occur in the Little Red River basin above Greer's Ferry Lake and are not present in BNR (Hodges 2010).

Snuffbox mussels (*Epioblasma triquetra*) are listed by USFWS as endangered under ESA. Snuffbox has only been found in the lower wilderness section of the river. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012).

Rabbitsfoot mussels (*Quadrula cylindrica cylindrica*) are a candidate for federal protection under ESA. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012).

The Ozark big-eared bat (*Corynorhinus townsendii ingens*)is listed by the USFWS as endangered under ESA and is a state inventory species. They roost in caves and mines year round. Caves are typically located in limestone karst regions dominated by mature hardwood forests of hickory, beech, maple, and hemlock. Colonies are small, generally under 1,000 individuals. They tend to roost near the entrances of caves and mines and have been found roosting in rock overhangs, talus piles, and other fairly exposed locations (NPS 2010). These are large bats which prefer to forage in open forests or on forest edge (USFWS 1995). Ozark big-eared bats forage over fields, streams,

forest edges, mountain slopes, cliff faces, and in clearings. They feed primarily on small moths, though they will also catch and eat beetles (NPS 2010).

Their summer roost requirements are variable. They may roost in caves proper, or in fractures in limestone or sandstone bluffs. Sandstone bluffs are present in the northern portion of the CGBU along the rim of the Buffalo River. These bluffs contain fractures, some of which may be suitable for summer roosting.

The gray bat (*Myotis grisescens*) is listed by the USFWS as endangered under ESA and is a state inventory species. Roosting sites are nearly exclusively restricted to caves throughout the year, though only a few percent of available caves are. The proximity of the CGBU to known roosting sites implies that some foraging by these bats may occur here.

Indiana bats are listed by the USFWS as endangered under ESA and are a state inventory species. They roost in caves during the winter in colonies of up to 100,000 individuals. In the summer they tend to roost and raise their young under the sloughing bark of snags and under the bark of shagbark hickory (*Carya ovata*), green ash (*Fraxinus pennsylvanica*), elm (*Ulmus* sp.), cottonwood (*Populus deltoides*) and other trees with large loose bark plates.

Indiana bats are found in four hibernacula at BNR. These bats have not been captured at BNR in the summer months, but it is the possible that a maternity colony exists in the area. There are no confirmed maternity colonies in the state. A lack of suitable summer roost trees does not seem to be a limiting factor in this species recovery; potential roost trees are regularly recruited from dead and dying trees. Potential roost trees for this species occur in the CGBU; however, no caves for winter hibernation are present are found there.

French's shooting star (*Dodecatheon frenchii*) is listed as threatened by the State of Arkansas. It has a small geographic range extending from southern Illinois to eastern Missouri and Arkansas, Indiana and western Kentucky. To date, the species is found in only two counties within the state, Newton (numerous occurrences) and Cleburne (one occurrence). Characteristic habitat for this species does not occur within the project area and it was not found during a biological survey of the CGBU conducted in 2011 in support of the BE prepared for this project.

Alabama snow wreath is listed as threatened by the State of Arkansas. It is rare throughout its range, with widely scattered 'populations' that are mostly or entirely clonal. Characteristic habitat for this species may be marginally present within the project area. During the biological survey of the CGBU conducted by PFE (2011) this species was not found. Because this distinctive species would be relatively easy to detect, particularly when it is blooming, it is unlikely that it occurs in the project area.

Ovate-leaved catchfly is listed as threatened by the State of Arkansas. It is rare throughout its range. It occurs from southwest Virginia, south to Georgia, and west to southeast Illinois and northern Arkansas. This species was not found in the project area during the survey conducted by Pathfinder Environmental in 2011. Because this distinctive species would be relatively easy to detect, particularly when it is blooming, it is unlikely that it occurs in the project area.

Royal catchfly (*Silene regia*) is listed as threatened by the State of Arkansas. Characteristic habitat for this species does not occur within the project area and it was not observed during the biological survey conducted by Pathfinder Environmental in 2011.

Dwarf bristle fern (*Trichomanes petersii*) is listed as threatened by the State of Arkansas. Characteristic habitat for this species does not occur within the project area and it was not observed during the biological survey conducted by Pathfinder Environmental in 2011.

Intensity Level Definitions

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

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

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

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

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

Duration: Very short-term – the species would be expected to recover fully within one year.

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

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

Effects of Alternative A (No-Action Alternative)

Without the implementation of prescribed burns in the CGBU fuel loading would continue to increase until it experiences a wildfire. Such a wildfire would likely burn with a much higher intensity than a prescribed burn and be more likely to destroy desirable habitat for special status species, consequently the No-Action Alternative would lead to, potentially major, local, direct, long-term adverse effects to special status species.

Effects of Alternative B (Preferable Alternative)

Because no bald eagles or bald eagle nests have been observed in the CGBU, no effects to this species would be expected. If a bald eagle is observed within a quarter mile of the CGBU when a prescribed burn is scheduled or during construction activities related to the Preferred Alternative, then such activities would be halted until the bald eagle left the area of its own volition.

There would be no effect to yellowcheek darters because they are not present in the APE for the Preferred Alternative.

Neither rabbitsfoot nor snuffbox mussels would be affected by the Preferred Alternative because they are not presently found in the mainstem of the Buffalo River near the CGBU and the only activity that might affect these species, if they did occur there, would be draining the ponds prior to excavation. Since the ponds would be drained in a manner that would almost completely eliminate

turbidity from sediment, even if these species did occur in the reach of the Buffalo River below immediately downstream of the confluence of the two pond drainages, the water quality in the Buffalo River would not be sufficiently diminished to cause them harm. Also, stormwater runoff from other prescribed burn areas within BNR have not been found to adversely affect water quality in the mainstem of the Buffalo River (NPS 2003a)

There would be no effects to Ozark big-eared bats, gray bats, or Indiana bats expected as a result of activities proposed in the preferred alternative because the only activity with any potential to affect them is prescribed burning, which would occur while these species are hibernating in caves or abandoned mine shafts located outside of the APE.

Since neither French's shooting star, royal catchfly, nor Dwarf bristle fern are known to occur within the project area and were not found during the 2011 biological survey of the CGBU, no effects to these species are anticipated. A survey for Alabama snow wreath and ovate-leaved catchfly should be conducted in the spring or early summer, while they are blooming, and immediately prior to the proposed clearing activities associated with dredging the ponds and in the year preceding a planned prescribed burn in the CGBU to definitively determine their presence or absence. If either species is found during this survey, biologists from the ANHC should be consulted to determine the best methods for mitigating potential impacts to them. If this recommendation is followed, effects to these species would be minor or less, local, direct, and short-term. If they are not found, no effects to these species as a result of the Preferred Alternative would be expected.

The BE prepared for the Preferred Alternative in this EA (PFE 2012) included analysis of potential effects to State of Arkansas inventory species. In addition to the species just described, wood frog (*Rana sylvatica*), Swainson's warbler (*Limnothlypis swainsonii*), an isopod (*Lirceus bicuspidatus*), a ground beetle (*Scaphinotus inflectus*), Ozark beetle (*Pseudactium ursum*), and the woodland tiger beetle (*Cicindela unipunctata*) were identified as having some potential for being affected by the Preferred Alternative. The potential effects to these species were analyzed in detail in the BE (PFE 2012), the results of which are presented here.

If individuals of wood frogs do exist within the project footprint, they would potentially be subject to elimination from clearing and grubbing activities during construction. The loss of these individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal listing or loss of species viability. Because of the overall security and wide range of this species, the anticipated effects to this species would be negligible, local, direct, adverse, and potentially long-term.

The only activity associated with the Preferred Alternative with potential for affecting Swainson's warbler is prescribed burning. As long as prescribed burns are conducted outside of the nesting season, no effects to this species would be expected. Prescribed burning may ultimately benefit this species through improved nesting habitat. The Preferred Alternative would be expected to result in negligible, local, direct, long-term, and potentially beneficial effects to this species.

The potential effects of prescribed burning, which is the only activity associated with the Preferred Alternative with potential for affecting the isopod (*Lirceus bicuspidatus*), are not well known and may be beneficial when compared to the potential effects of an uncontrolled wildfire. As long as best management practices are employed to minimize runoff during dredging operations in the ponds, the Preferred Alternative would be expected to result in negligible, local, direct, short- or possibly long-term, potentially adverse or beneficial effects to this species.

If any individuals of the three beetle species do exist within the APE, they could potentially be affected by the Preferred Alternative. Habitat for this species is abundant throughout the known range of this species. Consequently, the low probability of their occurrence within the project area

combined with the high probability of their presence elsewhere within their ranges implies that the loss of individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal or State listing or loss of species viability. The small scale of the proposed project combined with the potential long-term benefits to overall forest quality and the reduction of catastrophic wildfire hazard indicate that adverse effects to these species are unlikely. The anticipated effects of the Preferred Alternative to these species would be negligible, local, direct, short-term, and potentially adverse or beneficial. No indirect or cumulative effects were identified for special status species.

3.3.3 Water Resources

Affected Environment

BNR drains an elongated basin, approximately 22 miles wide by 70 miles long, and covers 1,338 square miles. Flowing from the Boston Mountains in the west to the White River in the east, it follows a 153-mile winding course. Small tributaries enter at intervals. The geology and hydrology of the BNR watershed is unique because of a combination of factors such as karst geomorphology, steep topography, shallow soils and highly integrated ground/surface water. The river has 24 major tributaries within the BNR boundary (NPS 2004).

The Arkansas Department of Environmental Quality has designated BNR and Richland Creek (a tributary) as "Extraordinary National Resource Waters," providing the highest water quality standards and protection through a policy of non-degradation. The water quality of the river has remained relatively unpolluted due to the large amount of forested land, few point source pollution sources, and a relatively sparse population within the watershed. Water quality problems are related to high fecal coliform bacteria levels, sediment, loading, and nutrient enrichment from a variety of animal operations, sewage treatment operations, inadequate rural septic systems, and runoff from bare ground. Following several short-term water quality studies in the 1970s and early 1980s, the NPS initiated a regular water monitoring program in 1985.

All stream channels naturally shift and meander over time in the absence of human activity within their watershed, thus causing a certain amount of natural turbidity. Within the steep terrain of the Ozarks, stormwater runoff from unpaved roads and cleared land carries both fine and coarse sediments to tributaries of BNR. The dominant source of turbidity during high flow is from erosion of road surfaces and ditches, cattle pastures and other cleared land, and unprotected rapidly eroding cut-banks (NPS 2004). This turbidity results in an unnatural decrease in stream channel stability, eroding stream banks, and degraded aquatic habitat. One of the NPS's objectives at BNR is to identify the specific locations of these human-caused sources of turbidity and take action, where possible, to reduce or eliminate them.

A proposal for water impoundments was the key issue, among others, as an immediate threat to one of America's last, untouched wild rivers, leading to the establishment of BNR. BNR's enabling legislation prohibits the federal licensing of water-related projects on or directly affecting the river. The potential development of impoundments or diversion projects on major tributaries outside BNR boundaries remains a local issue and obtaining instream flow data to address this issue is a critical need. The APE for water resources includes the two tributaries on which the ponds are currently located and the mainstem of the Buffalo River adjacent to the CGBU and for a distance of 0.5 mile downstream from the point where the river leaves the CGBU.

Intensity Level Definitions

The enabling legislation for BNR (Public Law 92-237) stipulates specific protections under Section 4 by stating that "…no department (including the NPS) 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 was established, as determined by the Secretary [of Interior]. 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 or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of approval of this Act."

The park is required to make a written evaluation and determination of the effects of projects that may have a direct or adverse effect on the values of the river. The values and purposes of the river include free-flow, water quality, scenic, and scientific features. Any water resources project that would be determined by the park to have a direct and adverse effect on or invade or unreasonably diminish the free-flow or the values of the river is prohibited under the law. BNR is afforded considerable protection from and statutory authority over internal and external disturbances under the Organic Act (39 Stat. 535; 16 U.S.C. 1 et seq.) and through specific language (section 4 of the Act) that further limits construction activities that may harm the river from within the river corridor, up and downstream on the mainstem, or on its tributaries.

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

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

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

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

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

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

Short-term – Recovers in less than one year.

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

Effects of Alternative A (No-Action Alternative)

Without the implementation of prescribed burns in the CGBU fuel loading would continue to increase until it experiences a wildfire. The high intensity of such a wildfire would be more likely to generate large amounts of ash and eliminate natural barriers to runoff created by vegetation and topsoil. Stormwater runoff following this kind of wildfire would carry large amounts of ash and debris into the mainstem of the Buffalo River resulting in potentially severe adverse effects to the water quality in the river. The No-Action Alternative would be expected to lead to potentially major, local and remote, direct, short- and long-term, adverse effects to water quality at BNR.

Effects of Alternative B (Preferable Alternative)

The three potential sources of effects to water quality that could result from the Preferred Alternative are the pond draining, sediment disposal, and prescribed burns. Sediment loading in the water column of the ponds as a result of runoff from a heavy rainstorm or stirring up sediment from the bottom of the ponds during pumping operations to drain the ponds could result in increased turbidity and corresponding decreased water quality in the mainstem of the Buffalo River until draining has been completed. This source would be mitigated by limiting the draining activities to periods when turbidity from sediment in the ponds is minimal and keeping the pump intake off the bottom of the ponds.

Sediments would be hauled away from the CGBU and spread out on hayfields maintained by BNR. Grasses growing in these low-lying fields would benefit from the rich silt and hold it in place during storm events. Some ash from prescribed burns would eventually make its way into the Buffalo River; however, experience has shown that ash runoff from prescribed burns at BNR do not result in noticeable adverse effects to water quality in the river. The Preferred Alternative would be expected to result in negligible, local, direct, short-term, adverse effects to water quality at BNR. No indirect or cumulative effects were identified for water resources.

3.3.4 Visitor Use and Experience

Affected Environment

Visitation statistics are kept by the NPS at all of the national parks, rivers, and monuments. Visitation data for BNR can be found online at: http://www.nature.nps.gov/stats/park.cfm (see Appendix C). An explanation of how the counting is done can also be found at this website. December, January and February are the periods of lowest visitation with less than 50,000 visitors per month in 2011. Visitation peaked in June 2009 with over 300,000 visitors that month. Total visitation in 2011 was 1,169,802.

The primary visitor activity is touring the river, which is the main attraction (NPS 2000). The clean, free-flowing waters of the BNR, set off by the surrounding bluffs, cliffs, woods and pastoral lands, constitute a visual resource enjoyed by visitors. BNR has two major highway crossings, a number of smaller ones, and 47 access points, providing for dispersed entry to this linear park (NPS 2003a). Popular outdoor recreational and educational activities at BNR include hunting, fishing, camping, hiking, interpretive programs, horseback riding, and of course, floating the river by raft, canoe, or kayak. Numerous trails wind their way through BNR providing hikers and equestrians multiple opportunities to enjoy the Ozark Mountains with their rich variety of forests and pastures.

The CGBU currently receives visitors to the picnic area and the two ponds. It also provides access to the Buffalo River Trail (BRT), which passes through the picnic area. There are no official counts of the number of visitors it receives; however, all traffic to and from the Erbie Campground area passes through the CGBU and directly by the parking area for the picnic area and ponds. The traffic count for the Erbie Campground area for all of 2011 was 8,179. It can probably be safely assumed that between two and five percent of this traffic (from 160 to 400) may have been by visitors to the CGBU.

Intensity Level Definitions

According to *Management Policies 2006*, the enjoyment of park resources and values by people is part of the fundamental purpose of all park units (NPS 2006). The NPS is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and will maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the NPS will provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. The NPS *Management Policies*

2006 also state that scenic views and visual resources are considered highly valued associated characteristics that the NPS should strive to protect.

BNR was established to preserve and protect the river for the benefit and enjoyment of the public. The APE for visitor use and experience is the area shown in Figure 1. The methodology used for assessing effects to visitor use and experience is based on how the proposed improvements at the CGBU would affect the visitor, particularly with regards to the visitors' use and enjoyment of the river and natural environment. The thresholds for this impact assessment are as follows:

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

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

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

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

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

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

Effects of Alternative A (No-Action Alternative)

Visitation to the CGBU would remain relatively unchanged and would likely follow overall trends for BNR in general. If a high-intensity wildfire swept through the area, visitation would necessarily be restricted for a period of time adequate for sufficient recovery of the biological environment for it to be safe and desirable to reenter. The No-Action Alternative would potentially have a major, local, direct, long-term, adverse effect on visitor use and experience.

Effects of Alternative B (Preferable Alternative)

The ponds would be closed to access during construction activities related to the Preferred Alternative starting with clearing activities to create access for the excavator to the ponds and improvements to the parking area and ending after all the improvements have been completed. The area would also be closed immediately prior to and during prescribed burns. These effects to visitor use and experience would be moderate, local, direct, short-term and adverse in the APE. Once construction related to the Preferred Alternative was completed, the improvements to the ponds would be expected to result in an increase in visitors to both the picnic area and the two ponds. The ponds would likely see the largest increase as a direct result of the improved fishing opportunities for both the mobility impaired and young visitors. These effects would potentially be moderate, local, direct, long-term and beneficial to visitor use and experience. No indirect or cumulative effects were identified to visitor use and experience.

3.4 Unacceptable Impacts

As described in *Purpose and Need*, the NPS must prevent any activities that would impair BNR

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

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

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

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

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

  Under both the No-Action Alternative and the Preferable Alternative, there would be no change to the river's purposes or values. The Preferable Alternative would not alter scientific features or the flow of the river. Upgrades to the CGBU to barrier-free and ADA compliance, as described in the preferable alternative, would not change the unique scenic features of this area.

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

- Under the No Action Alternative the existing condition of a high potential for wildfire due to fuel loading could eventually lead to a catastrophic loss of the forest and topsoils in the CGBU. This potential loss is reduced by the Preferable Alternative.
- Under either alternative, visitors would continue to have opportunities to enjoy, learn about, or be inspired by BNR resources and values. Neither alternative would change the overall opportunities available to visitors including interpretive talks, evening programs, hours of operation, scenic drives, or access to facilities. The No-Action Alternative would maintain visitor use and experience exactly as it is now. The Preferable Alternative would result in some small, short-term inconveniences to BNR visitors during construction, but in the long-term would enhance and improve visitor enjoyment.
- Both alternatives provide for facilities that do not unreasonably interfere with BNR programs, an appropriate use, the natural atmosphere, or concessioner activities. The No-Action Alternative would not involve construction-related activities, and thereby maintain the existing conveniences and current atmosphere. During construction of the improvements proposed under the Preferable Alternative there would be short-term, temporary disturbances to visitors as a result of noise, dust, limited parking, trail construction activities, and construction equipment; however, these inconveniences would be limited to the construction period only and would not interfere with BNR programs, activities, appropriate uses, the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural or historic locations within BNR.

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

4 Mitigation Measures

Archaeological Resources

The archaeological features referred to in this analysis are identified and located in more specific detail in the Class III Archaeological Survey Report (NPS 2012) prepared for Cedar Glade.

1. The prehistoric site with NHRP recommended eligibility will be excluded from prescribed burns in order to protect the integrity of surface hearth features. Exclusion will be performed by removing flammable materials around the site with a leaf blower.
2. The historic cemetery will be excluded from prescribed burns to prevent damage to the fence and the headstones.
3. The historic site within the CGBU contains flammable materials including a portion of a collapsed wooden structure, will be protected from fire. This site will be excluded from the prescribed burn through the use of leaf blowers. Other foundations at this site will be protected by hand-clearing to reduce fire temperatures in these locations to prevent cracking and crazing of the stone and concrete.
4. There is one fence that will be excluded from the prescribed burn.

Special Status Species and Water Quality

1. Prescribed burns will be conducted from late fall to early spring to prevent accidental take of migratory and protected birds that may be nesting in the area and to avoid disturbance of any protected bats that may be using the area for summer roosting.
2. A preconstruction survey for Alabama snow wreath and ovate-leaved catchfly will be conducted during the spring or early summer immediately prior to the initiation of clearing activities for heavy equipment access to the ponds.
3. The pump intake used to drain the ponds prior to dredging will be floated or otherwise suspended on the surface of the ponds and pumping will be stopped when the water level is too low to avoid the suction of sediment on the bottom of the pond into the pump.
4. Pond draining will take place during a period when the water column in the ponds is relatively clear and free of suspended sediments.
5. Burlap bags filled with sand and pea gravel will be placed in a dam configuration in the drainages below the pump outlet to filter coarse sediments out and act as a silt fence to trap any sediment that manages to be sucked out of the ponds during draining. Sediment trapped by these silt fences will be removed by hand using shovels and hauled off the site to be spread on a BNR hayfield.
6. All sediment removed from the ponds by dredging activities will be hauled off the site and spread on hayfields maintained by BNR.
7. Other best management practices will be employed where practicable to minimize erosion during and after dredging activities.
8. All areas disturbed by clearing and grubbing will be revegetated by following a revegetation plan prepared by BNR biologists for the project.

Visitor Use and Experience

1. Closures to the Cedar Glade will be kept to the minimum necessary to complete the improvements in a safe and efficient manner.

5 References

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USFWS 1982	*Gray Bat Recovery Plan*. United States Department of Interior, Fish and Wildlife Service
USFWS 1995	*Ozark Big-Eared Bat Plecotus townsendii ingens (Handley), Revised Recovery Plan*. United States Department of Interior, Fish and Wildlife Service
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6 Consultation and Coordination

6.1 Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from BNR. Interdisciplinary team members met on February 24, 2011, to discuss the purpose and need for the project and various objectives. The team has also gathered background information and discussed public outreach for the project. Over the course of the project, team members have conducted individual site visits to view and evaluate the proposed action. The results of the February 2011 meeting are summarized and presented in Appendix F of this EA.

6.2 External Scoping

Scoping is a process to identify the resources that may be affected by a project proposal, and to explore possible alternative ways of achieving the proposal while minimizing adverse effects. BNR conducted internal scoping with appropriate NPS staff, as described in more detail in the Consultation and Coordination chapter. BNR also conducted external scoping with the public, interested/affected groups, and Native American tribes.

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposal to improve the Cedar Glade ponds and facilities at BNR and to generate input for the preparation of this environmental assessment. The scoping letter dated April 4, 2011 was mailed to over 200 residents in the northern Arkansas region including landowners adjacent to the river. In addition, the scoping letter was mailed to various federal and State agencies, affiliated Native American tribes, local governments, and local news organizations. Scoping information was also posted on the NPS Planning, Environment and Public Comment (PEPC) website.

During the 30-day scoping period, two public responses were received. One respondent simply indicated support for the project and its objectives with a reminder to keep safety in mind. The other respondent indicated support for the project with the following recommendations: 1) maintain the secluded nature of the ponds; 2) no path or walkway should encircle either pond; 3) one side should be left natural; 4) two piers should be built only if they cannot both be seen at once; 5) do not widen the trail to the south pond as it is wide enough already for wheelchair access; 6) maintain the narrow, natural, single-file condition of the path to the north pond; 7) establish a safe wheelchair crossing from the parking area to the south pond trail. This second respondent also noted that the Erbie Campground road may not be sufficiently well maintained for the types of vehicles that are sometimes used to transport the mobility impaired.

6.3 Agency Consultation

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

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

6.4 Native American Consultation

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

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

None of these tribes responded.

6.5 Environmental Assessment Review and List of Recipients

The environmental assessment will be released for public review in August 2012. To inform the public of the availability of the environmental assessment, the NPS will publish and distribute a letter to various agencies, tribes, and members of the public on BNR's mailing list, as well as publish a press release in local and regional newspapers. Copies of the environmental assessment will be provided to interested individuals, upon request. Copies of the document will also be available for review at the BNR Headquarters in Harrison, Arkansas and on the internet at http://parkplanning.nps.gov/buff.

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

6.6 List of Preparers

From the NPS, BNR, Arkansas:

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

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

7 Appendices

7.1 Appendix A – Buffalo River Cedar Glade Pond Improvements Impairment Determination

Buffalo National River – Cedar Glade Pond Improvements – Impairment Determination

The following three impact topics were retained for detailed analysis in the EA and are park resources that could potentially be subjected to impairment as a result of park actions:

1. Archaeological Resources
2. Special Status Species
3. Water Resources

An impairment find is not necessary for Visitor Use and Experience because impairment findings relate back to park resources and values and this impact topic is not generally considered to be a park resource or value according to the Organic Act; therefore, it cannot be impaired the same way that an action can impair park resources and values.

Archaeological Resources

The primary archaeological resources potentially affected by the preferable alternative in this EA are those features that are located above ground. Prescribed fire in the Cedar Glade Fire Management Unit (CGFMU) is the main activity in the preferable alternative that poses a risk to archaeological resources. Wooden structures (fences and collapsed structures), headstones, surface hearth features, and concrete foundations located within the CGFMU could be damaged by fire by burning or cracking as a result of intense heat. Measures such as hand-clearing and leaf-blowing would be used to reduce or eliminate the potential for damage to these structures and features. Other measures, as necessary, would be employed to ensure wooden artifacts are not burned. By comparison, without prescribed burning to reduce fuel loading in the CGFMU, wildfire would likely destroy or possibly severely damage most, if not all of these surface features.

Since the environmentally preferable alternative also includes the installation of a ROMTEC restroom, some excavation would be necessary for the placement of the subsurface septic tank that would be located beneath it. Prior to excavation in the selected location for the ROMTEC, an NPS archaeologist would complete a detailed investigation of the area that would be affected by such excavation. If any archaeological resources are discovered during this investigation, the Arkansas State Historic Preservation Officer (SHPO) would be consulted to identify an appropriate mitigation and data recovery plan for the archaeological resources found in the area. This plan, upon approval by the SHPO, would be fully implemented and completed prior to excavation for installation of the ROMTEC facility.

The application of the proposed measures described here to mitigate adverse effects to archaeological resources in the CGFMU would preclude the potential for impairment to park resources as a result of the preferable alternative.

Special Status Species

Surveys for special status species were conducted in the spring and fall of 2011 in the CGFMU by a contracted biologist. No state or federally protected or sensitive plant or animal species were found in the CGFMU during these surveys. Habitat is present for two state threatened plant species, Alabama snow wreath (*Neviusia alabamensis*) and ovate-leaved catchfly (*Silene ovata*). Additional surveys for these two species would be conducted by a BNR botanist during the spring and early summer months when they are in bloom and immediately prior to the initiation of construction activities. These surveys would be concentrated in the area where

clearing and grubbing for access to the ponds by an excavator and haul trucks would take place. If individuals or populations of either species is found, then BNR would consult with the Arkansas Natural Heritage Commission to identify appropriate mitigation. If none are found, then the preferable alternative would not result in an impairment to special status plant species.

Ozark big-eared bats (*Corynorhinus townsendii ingens*) could potentially use cracks in the sandstone bluffs above the Buffalo River for roosting during the late spring to early fall months. Smoke from prescribed burning during this period, if these bats were present, could potentially adversely affect them. Since prescribed burns at BNR are conducted during the winter and early spring, Ozark big-eared bats would not be affected by prescribed burns.

Similarly, Indiana bats (*Myotis sodalis*), which could potentially roost under the loose bark of some hardwood trees in the CGFMU during the late spring to early fall months, would not be affected by prescribed burning. Tree removal during the clearing and grubbing to provide access to the two ponds by heavy equipment for dredging would be restricted to the late fall through early spring months in order to avoid any potential harm to Indiana bats.

The environmentally preferable alternative, therefore, would not result in an impairment to special status bat species.

Pond draining activities have the potential to introduce silt into the mainstem of the Buffalo River. Increased turbidity in the Buffalo River could potentially be harmful to rabbitsfoot (*Quadrula cylindrica cylindrica*) and snuffbox (*Epioblasma triquetra*) mussels. A mussel survey conducted by BNR biologists in the spring of 2012 at and just below the confluence of the Buffalo River and the two drainages on which the ponds are located resulted in a determination that these two mussel species are not present in the area of potential effect by the preferable alternative. Even if these species were present in the area of potential effect, very little sediment from the ponds would make it into the Buffalo River because the ponds would be drained when turbidity in the ponds is low, the pump intake would be floated or otherwise maintained on the surface of the water during pumping, pumping would be halted before sediment on the bottom of the ponds could be drawn into the pump, and a hay bale silt fence would be placed in each drainage just below the pump outlet to trap any sediments that happen to make it into the pump. Any sediment caught by the silt fences would be removed by hand using shovels and hauled off site for disposal. Consequently, the preferable alternative would not result in an impairment to special status mussels.

There are no known bald eagles in the CGFMU. If a bald eagle is spotted within a quarter mile of the area where construction activities are taking place, then those activities would be halted until it flies away of its own volition.

There are no other special status species with potential for being adversely affected by the preferable alternative; therefore, there would be no impairment to special status species.

Water Resources

The primary water resource characteristic potentially affected by the preferable alternative in this EA is surface water quality. The environmentally preferable alternative does not include any activities, such as drilling, or the establishment of seepage basins, that could result in any effect to ground water. While the two ponds at Cedar Glade may act as seepage basins, no activities are planned that would alter their relationship to groundwater in such a way as to provide an opportunity for any new effects to groundwater. Maintenance of high water quality in the river is

directly related to the health of the ecosystem that depends upon it. Water quality data from the river have been collected since 1985 (NPS 2004), although the sampling schedule did not become consistent until 1991. Data have been collected for fecal coliform bacteria, nutrients (fixed forms of nitrogen), turbidity, dissolved oxygen, and specific conductance.

The preferable alternative does not include any activities that could potentially alter levels of fecal coliform bacteria, nutrients, dissolved oxygen, or specific conductance in the river; therefore, these factors are not considered further. Turbidity is the only water quality characteristic that could potentially be affected by the preferred alternative. Generally, base-flow turbidity of the Buffalo River is between one and three Nephelometric Turbidity Units (NTUs). Turbidities as high as 420 NTUs have been recorded in association with rain events (NPS 2004). The dominant source of turbidity during high flow is from erosion of road surfaces and ditches, cattle pastures and other cleared land, and unprotected rapidly eroding cut-banks.

The number one threat to water quality in the river is the conversion of forest within the Buffalo river watershed to pasture (NPS 2004). The primary pollutants that result from the conversion are fecal coliform bacteria and nutrients; whoever, common agricultural practices include clearing and tilling, which contribute to increased turbidity in the river during storm events.

The preferable alternative includes spreading silt from the bottom of the two ponds on existing pastures currently maintained by BNR, which is similar to tilling activities for agricultural purposes. Because the pastures would not actually be tilled and the silt would be spread out over a relatively large area on top of a dense layer of grass, the silt would be held in place long enough for the grass to grow roots into it and permanently assimilate it into the existing topsoil. As a result, very little sediment would be expected to make it into the river in the short- or long-term; therefore, it is determined that there would be no impairment of water quality at BNR as a result of this component of the preferable alternative.

Draining the ponds to prepare them for dredging would require pumping the water in the ponds out and into the streambed below each pond's spillway. This activity could potentially introduce silt from the ponds into the river as the water flows down the drainages into the Buffalo River. In order to minimize the effects of this activity on the turbidity of the Buffalo River the intake hose would be suspended on the surface of the ponds to prevent it from stirring up sediment from the bottom of the ponds and sucking it through the pump. Pumping operations would take place after a long enough period of dry weather such that the water column in the ponds would be relatively clear with a minimum of suspended solids. Any silt thus making it through the pump and released into the drainage below the spillways would be filtered by the placement of hay bales between the pump hose outlet and the river. Silt accumulated on the upstream side of the hay bales would be removed by hand using shovels and hauled off-site to be spread on the same pastures with the silt removed from the ponds by dredging. As a result, very little sediment would be expected to make it into the river in the short- or long-term; therefore, it is determined that there would be no impairment of water quality at BNR as a result of this component of the preferable alternative.

Water pumping and silt excavation represent the only two activities with any potential to affect water quality in the Buffalo River. The water in the ponds has been flowing into the river since the ponds were created before the land became part of the BNR. Pumping operations would only accelerate the flow of this water into the river by fully draining them over a period of a few days. The addition of 7.75 acre feet of pond water to the mainstem of the Buffalo River over a

period of approximately six days would be equivalent to the rate of just under two cubic feet per second (CFS) assuming pumping operations would only be taking place during a normal eight hour workday. Table 1 shows the average flow in the river at Pruitt, the nearest gaging station, by month. Draining the ponds during any month of the year would result in a dilution of the river water by less than ten percent. Consequently, the preferable alternative would not result in an impairment to water quality.

Table 1. Rates of flow recorded at Pruitt from October 2008 through September 2011.

00060, Discharge, cubic feet per second,												
YEAR	Monthly mean in cfs (Calculation Period: 2008-10-01 -> 2011-09-30) Period-of-record for statistical calculation restricted by user											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008										32.0	38.6	315.0
2009	325.3	523.1	341.1	524.4	970.2	177.9	25.8	17.4	476.1	1,001	294.3	230.1
2010	251.3	484.9	411.9	238.9	523.1	49.1	84.3	8.95	97.9	7.97	9.74	9.49
2011	12.8	130.6	194.8	1,856	1,182	47.7	5.41	9.78	5.23			
Mean of monthly Discharge	196	380	316	873	892	92	39	12	193	347	114	185

** No Incomplete data have been used for statistical calculation

7.2 Appendix B – Special Status Species Support Documentation

Biological Evaluation

Cedar Glade Recreation Area Improvements

Buffalo National River
Newton County, Arkansas

June 1, 2012

Prepared for:

Buffalo National River
Fire and Natural Resources Division
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A. Introduction and Project Description

The Buffalo National River (BNR) is proposing to make improvements to the picnic area and two ponds in the Cedar Glades Day Use Area located on the access road to the Erbie Campground in Newton County, Arkansas. The proposed improvements in the picnic area include the installation of a single-stall ROMTEC bathroom, placement of additional boulders to better define the parking area boundaries, improvements to the ingress and egress points of the Buffalo River Trail (BRT) in the picnic area, minor vegetation clearing, and the installation of a new bulletin board and other signage. The two ponds would be improved by the selective removal of trees and underbrush on the dams, the installation of boardwalks and two new fishing docks on the south pond, and minor improvements to the trails that lead to the ponds to stabilize the soil and facilitate access to the south pond by the mobility impaired. Both ponds would be dredged to remove silt that is filling in approximately one quarter of the ponds' volume. Access to one side of each pond via the powerline right-of-way that passes through the Cedar Glade Fire Management Unit (CGFMU) would have to be cleared for an excavator and dump trucks. BNR also proposes to conduct a controlled burn of the CGFMU. Figures 1, 2 and 3 show the location of the proposed project in Newton County.

Figure 1. General project area map.

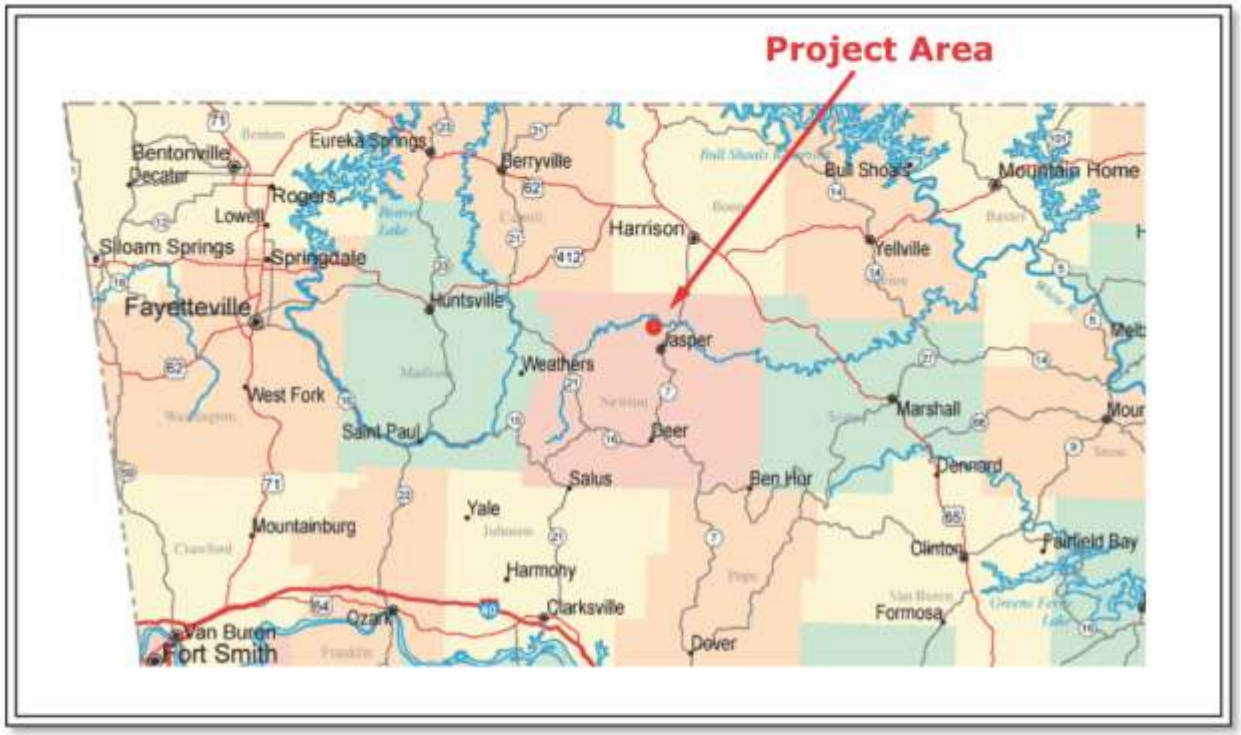

Figure 2. Project area local vicinity map.

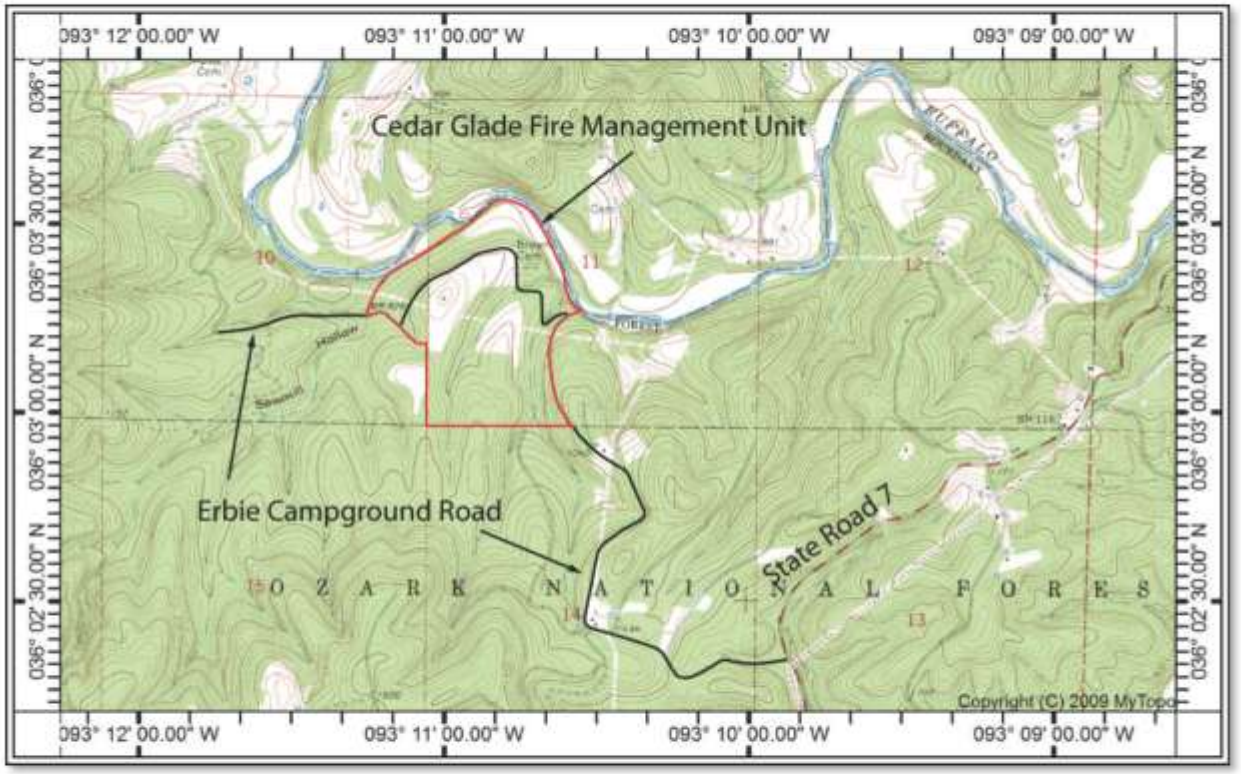

Figure 3. Project area map.

B. Project Purpose and Need

The proposed project is designed to address the following purpose and need:

Purpose

- To provide a diverse range of off-river opportunities for ABA and youth fishing.
- To improve ABA access to Cedar Glade Parking and Picnic Area.
- To improve Cedar Glade trail to meet ABA standards.
- To improve access to interpretational and educational opportunities.
- To reduce the risk of wildfire in the Cedar Glade Day Use Area.
- To address public health issues.

Need

- Cedar Glade trail, parking lot and picnic area need improvements to meet current ABA standards.
- There are currently not enough opportunities for ABA and Youth Fishing in the park for those without access to boats.
- Public has requested that BNR provide more ABA compliant trails for outdoor enjoyment. There is currently only one ABA compliant trail at Lost Valley in the upper district.
- There are currently no toilets at the picnic area.
- Conduct a controlled burn to reduce accumulated fuel loading in the shrub and understory layers of the forest.
- The public has requested more interpretational and education outreach for this area of the park.

The project area is shown on the *Jasper, Arkansas* U.S. Geological Survey 7.5' quadrangle topographic map.

C. Methods

Prior to the field work, a target list of protected or sensitive plant and animal species was compiled from the, U.S. Fish and Wildlife Service (USFWS 2008) and Arkansas Natural Heritage Commission (ANHC) websites. This list was developed by identifying species listed from Newton County and then eliminating those species with no potential for occurring within the project limits. The list of State of Arkansas noxious weeds was also reviewed prior to the survey.

The air temperature during both surveys was approximately 80 ° Fahrenheit (°F) under calm conditions and clear skies. A handheld Garmin 60 CSx Global Positioning System (GPS) capable of accuracy of under three meters was carried along to record the locations of any target species or noxious weeds observed. Figure 4 shows the route followed during the survey.

11, 12 May 2011 – Biological resources reconnaissance of the proposed project area.

3 - 6 October 2011 – Biological resources reconnaissance of the proposed project area.

Survey Personnel

Devin Kennemore **M.S. Biology**
Biological Resources Survey

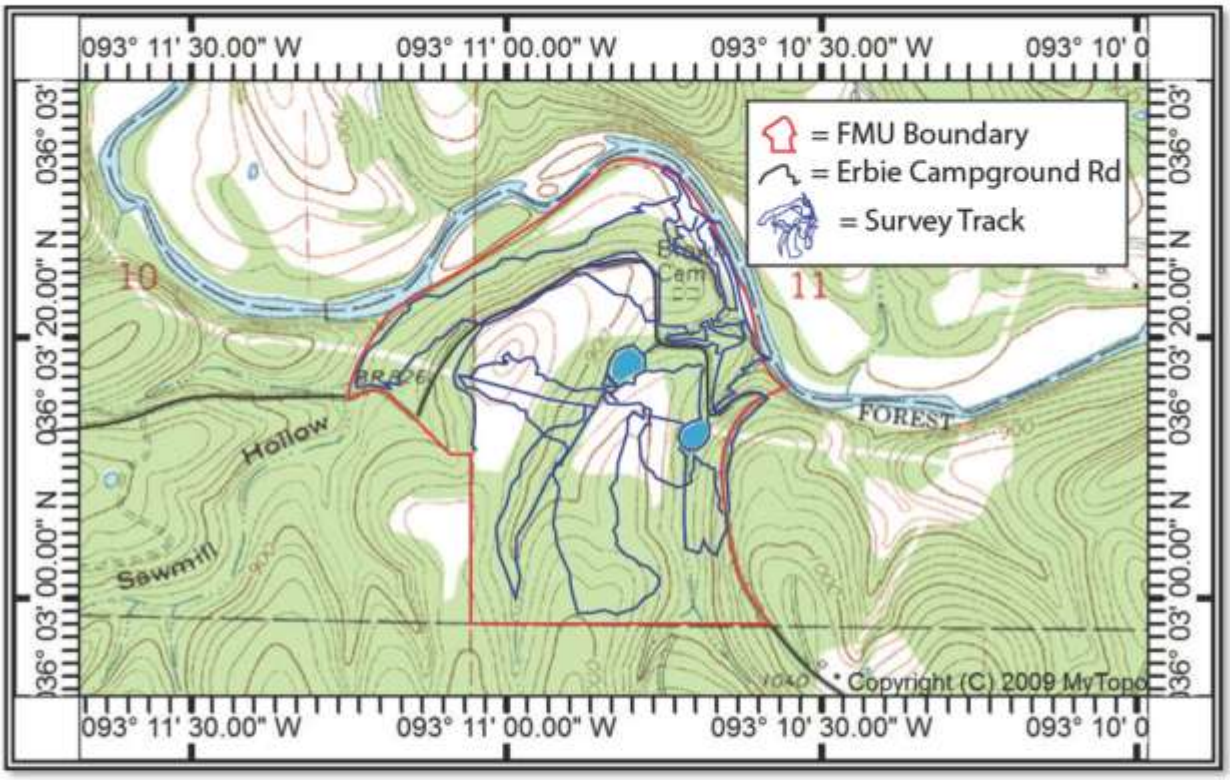

Figure 4. Biological survey track.

D. Existing Conditions

Climate, Topography, and Soils

The climate in the project area is wet with an annual average of approximately 45.2 inches of precipitation recorded in Harrison, AR. The annual average maximum air temperature is 88.9 °F (SRCC 2011). The annual average minimum air temperature is 25.4 °F. The annual average air temperature is 57.0 °F. The average annual frost-free period is approximately 198 days (USDA 1984).

Elevation in the project area ranges between approximately 800 and 1,010 feet above mean-sea-level (amsl). The Cedar Glade Day Use Area lies within the Boston Mountain eco-region of the Ozark Plateau. The Ozark Plateau is an area of steep hills and bluffs separated by deep valleys cut by rivers and streams. Most of the Cedar Glade Day Use Area lies in the uplands with elevations above 830 feet AMSL. The northern boundary follows the Buffalo River at the lowest elevations in the project area. Uplands are sharply demarcated from the river by a steep bluff at the northernmost point of the project area. Just beneath the top of the bluff and adjacent to the picnic area is a rock outcrop composed of large blocks of stone and crevices approximately 15 feet high. The two ponds in the project area have surface elevations of 840 and 855 feet amsl and lie within short, shallow, parallel drainages that empty into the Buffalo River on the upstream and downstream sides of the bluff.

Seven soil types are found within the project boundary. Table 1 identifies the soil types and the percentage of the project area that is composed of each, along with each soil type's drainage class, permeability, and hazard of erosion and runoff (NRCS 2011). None of these soils are specifically identified in the soil surveys as soils that either meet the definition of hydric soils or have major components that meet the definition of hydric soils (USDA 1984). Also, none of these soils contain gypsum. A soil map of the project area and vicinity is presented in the Appendix to this document.

Vegetation

The plant community on the north side of the Erbie Campground road that contains the picnic area is characterized by Ozark-Ouachita Dry-Mesic Oak Forest as described in the *Arkansas Wildlife Action Plan* (Anderson, 2006). The plant community on the south side of the Erbie Campground road is primarily Ozark-Ouachita Pine-Oak Forest with some Ozark-Ouachita Mesic Hardwood Forest intermingled. Other minor components include Ozark-Ouchita Riparian (Anderson, 2006) in the drainages below the ponds and Eastern Red-cedar Successional Forest in the vicinity of the picnic area and River Birch-Sycamore Small River Floodplain Forest of the Riverfront Hardwood Forest map class as described by the *International Ecological Classification Standard* (IECS) and found in the floodplain of the Buffalo River (NatureServe 2004).

The dominant species present in the project area are shortleaf pine (*Pinus echinata*), white oak (*Quercus alba*), and southern red oak (*Q. falcata*), with red cedar (*Juniperus virginiana*), blackjack oak (*Q. marilandica*), and chinquapin oak (*Q. muhlenbergii*). Bottlebrush grass (*Elymus hystrix*) is common in the herbaceous layer in upland areas. The pond margins are dominated by button bush (*Cephalanthus occidentalis*) and smallspike false nettle (*Boehmeria cylindrica*). The margin of the Erbie Campground road and the parking area are dominated by wood sorrel (*Oxalis dillenii, O. violacea*), blue grass (*Poa pratensis*), low hop clover (*Trifolium campestre, T. dubium*), sparkleberry (Vaccinium arboreum), and gooseberry (*Polycodium stamineum*). Floodplain dominants included sycamore (*Platanus occidentalis*), switchcane (*Arundinaria gigantea*), and jumpseed (*Polygonum virginianum*). A total of 113+ plant species were observed within the project limits during the reconnaissance. For a listing of species that were observed within the project area during the reconnaissance, see the Appendix.

Table 1. Soil types and characteristics within the project area.

Map Unit Number - Soil Type	Component	Drainage Class	Permeability	Hazard of Erosion (water)	Surface Runoff	Percent of Project Area
17 - Estate-Lily-Portia complex, 8 to 20 percent slopes	Estate	well drained	slow	n/d	rapid	22.5
	Lily	well drained	moderately rapid	n/d	rapid	
	Portia	well drained	moderately slow	n/d	rapid	
18 - Estate-Lily-Portia complex, 20 to 40 percent slopes	Estate	well drained	slow	n/d	rapid	33.0
	Lily	well drained	moderately rapid	n/d	rapid	
	Portia	well drained	moderately slow	n/d	rapid	
20 - Lily-Udorthents-Rock outcrop complex, 8 to 20 percent slopes	Lily	well drained	moderately rapid	n/d	rapid	12.4
	Udorthents	well drained	rapid	n/d	rapid	
	Rock outcrop	n/a	n/a	n/d	n/a	
21 - Lily-Udorthents-Rock outcrop complex, 20 to 40 percent	Lily	well drained	moderately rapid	n/d	rapid	21.4
	Udorthents	well drained	rapid	n/d	rapid	

Map Unit Number - Soil Type	Component	Drainage Class	Permeability	Hazard of Erosion (water)	Surface Runoff	Percent of Project Area
slopes	Rock outcrop	n/a	n/a	n/d	n/a	
48 - Razort loam, occasionally flooded	-	well drained	moderate	slight	slow to medium	5.4
49 - Riverwash, frequently flooded	-	n/a	n/a	n/a	n/a	3.7
54 - Water	-	n/a	n/a	n/a	n/a	1.6

n/a = not applicable; n/d = no data

Noxious Weeds

The State of Arkansas, under the administration of the Department of Agriculture, lists certain weed species as being noxious. "Noxious" in this context is defined as plants that have a negative impact on the economy or environment and are targeted for management and control. Preventing new infestations and eliminating existing infestations are the priorities for noxious weeds.

Any management and control of State-listed noxious weeds should take into consideration possible impacts to native plant species and communities. Non-native invasive weeds can and do adversely affect native vegetation and communities. An ecological approach to control and management should be taken at all times. Minimizing disturbance and re-establishing native species are two important components of an ecological approach.

A small population of Canada wild onion (*Allium canadense*) and a few individuals of common morning glory (*Ipomoea purpurea*) were observed within the proposed project limits adjacent to the parking area during the reconnaissance. All species of the genera Allium and Ipomoea are considered noxious weeds and can be treated as such according to BNR guidelines.

Wildlife

Wildlife is likely common within the project area due to its mostly undeveloped, rural nature and proximity to a permanent water source. The following species were either directly observed or evidence of their presence was observed during the reconnaissance, or have been observed by BNR staff in or near the project area: raccoon (*Procyon lotor*), beaver (*Castor canadensis*), opossum (*Didelphis virginiana*), elk (*Cervus canadensis*), white-tail deer (*Odocoileus virginianus*), domestic dog (*Canis lupus*), black bear (*Ursus americanus*), eastern box turtle (*Terrapene carolina*), common five-lined skink (*Plestiodon fasciatus*), and armadillo (*Dasypus novemcinctus*). Other common wildlife species that likely occur in the project area or pass through from time to time include coyote (*Canis latrans*), bobcat (*Lynx rufus*), eastern chipmunk (*Tamias striatus*), gray squirrel (*Sciurus carolinensis*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), red fox (*Vulpes vulpes*), and timber rattlesnake (*Crotalus horridus*). Fish species were identified by electrofishing in the two ponds (Bio-West, 2011). Large-mouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), redear sunfish (*Lepomis microlophus*), and western mosquitofish (*Gambusia affinis*) were the only documented fish species found in the ponds. All of these species also inhabit the section of the Buffalo River into which the ponds naturally drain.

Migratory Birds

Pursuant to the Migratory Bird Treaty Act (16 U.S.C. 703-712), it is unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs. Take is defined as pursuit, hunting, shooting, wounding, killing, trapping, capturing, or collecting (50 CFR 10.12). This law applies to both intentional and unintentional harmful conduct. If taking of migratory birds, their parts, nests, or eggs is determined by a project proponent to be the only alternative, a Migratory Bird Permit must be obtained through the Migratory Bird Permit Office of the USFWS (50 CFR 13, 21). The optimum time for removal of unoccupied nests occurs from October through January.

Three bird species were observed during the reconnaissance: crow (*Corvus brachyrhynchos*), blue jay (*Cyanocitta cristata*), and pileated woodpecker (*Dryocopus pileatus*). These birds are protected under the Migratory Bird Treaty Act. Other protected migratory birds likely occupy the project area from time to time as well.

Wetlands and Waterways

Wetlands are lowland areas that are inundated or saturated with water for a sufficient period of time to allow a prevalence of hydrophytic vegetation to develop. Jurisdictional wetlands, those protected from unauthorized dredge-and-fill activities under Section 404 of the Clean Water Act and Executive Order 11990, have three essential characteristics:

1) Dominance by hydrophytic vegetation

2) Hydric soils

3) Wetland hydrology

Hydrophytic vegetation requires inundated or saturated soil for its existence. Hydric soils are ponded or flooded for a sufficient enough period of time during the growing season to develop anaerobic conditions. Wetland hydrology is the availability of surface water or groundwater to create the wetland environment.

The two drainages encompassed by the project area along with the two ponds may meet the definitions necessary to be considered jurisdictional waters of the U.S. Also, the pond inlets contain potential wetlands. A jurisdictional determination should be requested from the U.S. Army Corps of Engineers (USACE), Little Rock District, prior to the initiation of dredging activities. If the drainages are determined to be jurisdictional, then a Clean Water Act (CWA) Section 404 permit and Section 401 Water Quality Certification must be applied for and received prior to the initiation of dredging activities. The Buffalo National River is a jurisdictional water of the U.S.

In addition to compliance with CWA Sections 404 and 401, National Park Service (NPS) Director's Order #77-1 (DO #77-1) requires the preparation of a Wetlands Statement of Findings (WSOF) for any proposed project on NPS administered lands that has the potential to adversely affect wetlands, unless the action is "excepted" under Section 4.2 of the DO. The exceptions listed under Section 4.2 do not include the size and scope of the activities proposed for this project that would affect the potential wetlands at the pond inlets; therefore, NPS must determine if, in fact, wetlands are present at the inlets to the ponds and, if so, a WSOF must be prepared as part of compliance with the National Environmental Policy Act (NEPA) for this project, as required by DO #77-1.

DO #77-1 further states that when wetlands also occur within floodplains, as is the case with the potential wetlands at the inlets of the two ponds at Cedar Glade, a Floodplain Statement of Findings (WSOF) must

also be prepared in accordance with the procedures defined in Director's Order #77-2. Because the wetland definition used by the USACE is narrower than the Cowardin et al (1979) wetland definition used by NPS, the requirements of DO #77-1 must sometimes be met even when the wetlands in question do not meet the definition used by the USACE.

E. Summary of Impacts

Vegetation

Areas of dense undergrowth and deep leaf-litter would be cleared out by prescribed burning. Some very small areas supporting small forbs would be covered by compacted, crushed aggregate, and a small amount of natural roadside vegetation would be trimmed or replaced by low-growing, native grasses and kept mowed over the long-term. Vegetation around the two ponds and along the dams and proposed boardwalks would be permanently cleared to a minor extent. Dredging operations would require clearing around one side of each pond for access by an excavator and dump trucks. Cleared areas would provide easier access to the ponds for fishing. Burning activities would have a net positive benefit to vegetation as the project area is historically a fire-adapted landscape. Past fire suppression activities have lengthened the natural fire interval from 11 years to 55 years (NPS 2003) which has led to an unnatural condition that favors a lower diversity of plants species and a greater potential for catastrophic, stand-replacing fires. Some trees would be killed as a result of the fire; however, these dead trees left standing would provide important habitat for a variety of species. Dead trees adjacent to established trails would be removed for public safety. Losses of vegetation from non-prescribed burning activities would be negligible in the overall context of the entire Buffalo National River and minor relative to the Cedar Glade Day Use Area.

Wildlife

The activities not related to the proposed prescribed burning would have no adverse effects to wildlife. Dredging the ponds would stimulate the growth of phytoplankton, which would have a beneficial effect on aquatic species and terrestrial species that are dependent on aquatic species. It would also result in the mortality of fish currently inhabiting the ponds. Prescribed burning activities would be carried out as described in the BNR Fire Management Plan (NPS 2003). Short-term impacts to wildlife due to prescribed burning would be the temporary displacement of wildlife or mortality of some individuals. The mortality of individuals would not "jeopardize the viability of the populations on and adjacent to BNR. It should be stressed that all species of wildlife native to the region are adapted to and can survive fire. Some species will prefer the forage and browse that emerges post fire; still others, such as deer, ruffed grouse, and turkey, may actually be dependent upon the habitat conditions created by fires" (NPS 2003). The long-term effects of prescribed burning would be positive and beneficial to wildlife as the historic fire-regime is restored.

Migratory Birds

Activities not related to prescribed burning would have no effect on migratory birds. Prescribed burning would be the only activity that might potentially affect migratory birds. Abundant nesting habitat for migratory birds exists within the project area and for many square miles around the project area. The small amount of tree cutting that may be necessary for this project would have no adverse effect on these species or others that likely inhabit the area because this activity would be conducted outside of the nesting season for migratory and other birds.

Wetlands and Waterways

If the drainages that contain the ponds are determined by the U.S. Army Corps of Engineers to fall within their regulatory jurisdiction, then a Clean Water Act Section 404 permit and Section 401 water quality certification would be required prior to work within the ordinary high water mark of these drainages.

Prior to dredging activities, the ponds would be drained using trash pumps. Pumping would take place after a sufficiently dry period that the water column in the ponds is relatively clear and free of suspended solids. The intake hose would be suspended on the surface of each pond during drawdown to prevent the suction of silt from the bottom. When the water level becomes too low to prevent the intake of silt, the pump would be removed and the remaining water allowed to evaporate. The pump outlet hose would be directed into the drainage immediately downstream from the pond spillways. Hay bales would be placed below the outlet to filter out any silt that might still make it into the pump intake. Upon completion of pumping activities, any silt that has built up in front of the hay bales would be removed by hand with shovels and hauled off-site. All silt removed from the ponds would be hauled off-site and disposed of by spreading onto BNR hayfields.

Water from the two ponds already drains into the Buffalo River. Draining the ponds would only accelerate this process to a rate similar to the rate observed at the spillway after a typical storm event when the ponds are already full. It is expected that draining each pond would require several days. The rate of flow would be sufficiently slow and the water sufficiently silt free that no effects to water quality and, therefore, aquatic species in the Buffalo River would be anticipated.

F. Protected, Sensitive, and Monitored Species

The USFWS has direct responsibility for implementing the Endangered Species Act, officially listing species as threatened or endangered and protecting such listed species. This agency also lists some species as candidate or species of concern. The State of Arkansas, through the ANHC, lists species as endangered, threatened, or inventory. Inventory species are those for which more information is needed to determine their eligibility for legal protection, but are not currently protected. Lists provided by these sources for Newton County were consulted prior to the field survey to identify "target" species of plants and animals for this survey. Target species selected were listed as endangered, threatened, inventory, or species of concern, with potential for occurring within the project limits.

SPECIES ELIMINATED FROM FURTHER ANALYSIS

Each species identified in the county lists was researched to determine its potential for occurrence within the project limits. The primary criteria for the exclusion of species included: elevation restrictions, lack of suitable habitat, lack of suitable soil types, topographic preferences, species mobility in conjunction with the nature of the project, and occasionally range or distribution confinement where finding a particular species in the vicinity of the project corridor would be extremely unlikely. Unless otherwise noted, species and habitat information for plants and animals in this section were obtained from the NatureServe online database (NatureServe, 2011).

PLANTS

The following plant species were eliminated from further analysis on the basis of known habitat requirements and their absence from the project area during the biological reconnaissance.

Dwarf bristle fern (*Trichomanes petersii*) – This is a State threatened species. It inhabits moist, sheltered rocks, predominantly sandstones, where the surrounding air is perpetually moist. The species is

rarely found on the shaded portion nearest the ground of tree trunks (GSRC, 2011). Habitat for this species is one of relatively high humidity forming mats up to 900 square cm, particularly on southern magnolias and typically within one meter from the base of the tree. Associate plant species include several species of liverworts and mosses, green fly orchid (*Epidendrum conopseum*), and resurrection fern (*Pleopeltis polypodioides ssp. michauxiana*) (GSRC, 2011). Characteristic habitat for this species does not occur within the project area and it was not observed during the biological reconnaissance; therefore, it was eliminated from further analysis.

French's shooting star (*Dodecatheon frenchii*) – This State threatened species. It has a small geographic range extending from southern Illinois to eastern Missouri and Arkansas, Indiana and western Kentucky. It is found in close association to seepages at the base of sandstone ledges, overhangs and bluffs, preferring north and east-facing exposures (Hill 2002). French's shooting-star grows in habitats which yield little competition from other plant species, often growing alone in bare, wet, well-drained soil. In Arkansas, this species is found occasionally in large numbers in areas that have not been impacted by timber management. To date, the species is found in only two counties within the state, Newton (numerous occurrences) and Cleburne (one occurrence). Characteristic habitat for this species does not occur within the project area and it was not found during the biological reconnaissance; therefore, it was eliminated from further detailed analysis.

Royal catchfly (*Silene regia*) – This is a State threatened species. It is found in prairies and on rock outcrops and along roadsides and railroad rights-of-way in cherty, well-drained soils. Periodic disturbances (fire, bush-hogging, etc.) may need to be implemented to reduce woody vegetation and may provide favorable conditions for seedling establishment. Plants appear smaller and produce fewer flowers in the shade. Recruitment of seedlings requires exposed soils and minimal competition. Characteristic habitat for this species does not occur within the project area and it was not observed during the biological reconnaissance; therefore, it was eliminated from further detailed analysis.

The following plants are listed as inventory species by the Arkansas Natural Heritage Commission: Arkansas alumroot (*Heuchera villosa* var. *arkansana*), blue cohosh (*Caulophyllum thalictroides*), blue-eyed Mary (*Collinsia verna*), butternut (*Juglans cinerea*), Canada violet (*Viola canadensis* var. *canadensis*), Carey's caric sedge (*Carex careyana*), carrion flower (*Smilax ecirrata*), celadine poppy (*Stylophorum diphyllum*), Church's wild rye (*Elymus churchii*), Clayton's sweet cicely (*Osmorhiza claytonii*), false hellebore (*Melanthium woodii*), glade cress (*Leavenworthia uniflora*), great Indian plantain (*Arnoglossum reniforme*), hairy scorpionweed (*Phacelia gilioides*), hedgenettle (*Stachys iltisii*), Hitchcock's caric sedge (*Carex hitchcockiana*), Kentucky lady's slipper (*Cypripedium kentuckiense*), mock orange (*Philadelphus hirsutus*), Moore's larkspur (*Delphinium newtonianum*), nodding muhly (*Muhlenbergia bushii*), Nuttall's pleat-leaf (*Nemastylis nuttallii*), Ozark chinquapin (*Castanea pumila* var. *ozarkensis*), Ozark least trillium (*Trillium pusillum var. ozarknum*), Ozark spiderwort (*Tradescantia ozarkana*), rough hawkweed (*Hieracium scabrum*), sand phlox (*Phlox bifida*), shining club-moss (*Huperzia lucidula*), short's caric sedge (*Carex shortiana*), silky aster (*Symphyotrichum sericeum*), southern running-pine (*Diphasiastrum digitatum*), tassel flower (*Brickellia grandiflora*), Texas Indian mallow (*Abutilon incanum*), Turk's cap lily (*Lilium superbum*), yellow monkey flower (*Mimulus floribundus*). Little is known about the habitat requirements of most of these species. Generally, prescribed burning is likely to have an overall beneficial effect for species that would be expected to occur naturally in the project area. Project construction and the anticipated public use of the Cedar Glade project area would not be expected to have an adverse effect on these species, particularly since none of them were found in the project area during the biological reconnaissance. For these reason, these species were eliminated from further analysis.

ANIMALS

Least brook lamprey (*Lampetra aepyptera*) – This is a State inventory species. They are found in clean, clear gravel riffles and runs of creeks and small rivers. Larvae burrow in bottom of quiet water (e.g., spring-fed wetlands, pools and backwaters of small, sand- or mud-bottomed streams). Adults usually are found in breeding areas. Eggs are laid in nests in gravelly riffles (Page and Burr 1991). Characteristic habitat for this species is not found within the area of potential effect; therefore, this species was eliminated from further analysis.

Ozark chub (*Erimystax harryi*) – This is a State inventory species. They are typically found in large, medium-gradient, moderately clear streams and rivers with clean gravel bottom; often in shoal areas with moderate flow (Lee et al. 1980). Over gravel and rubble in riffles, runs, and flowing pools of clear, small to large rivers (Page and Burr 1991). Characteristic habitat for this species is not found within the area of potential effect; therefore, this species was eliminated from further analysis.

Ozark shiner (*Notropis ozarcanus*) – This is a State inventory species. They are found in small to medium clear rivers with high gradient and permanent strong flow. Most common near riffles in slight to moderate current (runs and flowing pools) over firm silt-free bottom. Schools in mid-water. Eliminated from many impounded areas (NatureServe, 2011). Characteristic habitat for this species is not found within the area of potential effect; therefore, this species was eliminated from further analysis.

American eel (*Anguilla rostrata*) –

MOLLUSKS

Some of these species may be found in the Buffalo River; however, the only proposed activities with any potential effect on the river would be ash runoff from prescribed burning and the potential introduction of silt from the ponds when they are drained. Historical evidence strongly supports the conclusion that prescribed burning within Buffalo National River does not adversely affect aquatic species dependent on the river for survival. The ponds would be drained at a time when the water column is relatively clear and the pump intake would be floated on the surface to avoid stirring up silt from the bottom of the ponds. Pumping would be stopped before the pump intake begins to draw silt off the bottom of the ponds. Hay or straw silt fences would be placed in the stream channel below each pond and the pump outlet would drain the water upstream of the silt fences, thus trapping any sediment that still manages to make it into the pump. Sediment trapped by the silt fences would be manually removed by shovel and hauled off-site. Habitat data for these species were drawn from Oesch (1995), Cummings and Mayer (1992), and NatureServe (2011).

Rabbitsfoot (*Quadrula cylindrica cylindrica*) – This is a federal candidate species. Typical habitat for this species is small to medium rivers with moderate to swift currents. In smaller streams it inhabits bars or gravel and cobble close to the fast current. In medium to large rivers it is found in sand and gravel. It has been found in depths up to 3 meters. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012) and given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Snuffbox (*Epioblasma triquetra*) – This is a federal endangered species. It is found in riffles of medium and large rivers with stony or sandy bottoms, in swift currents, usually deeply buried. While the host fish for this species is found in the section of the Buffalo River along the northern boundary of the project area, snuffbox has only been found in the lower wilderness section of the river. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern

boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012) and given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Bleedingtooth mussel (*Venustaconcha pleasii*) – This is a State inventory species. It is found in small to relatively large rivers in noticeable current with firm sand or mixed sand and gravel substrate. Characteristic habitat for this species is found within the area of potential effect. This species was found in the mainstem of the Buffalo River during a survey conducted in the project area by BNR fisheries biologists on April 27, 2012 (Hodges 2012); however, given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Elktoe (*Alasmidonta marginata*) – This is a State inventory species. It is found in medium-sized streams in gravel or mixed sand and gravel. Characteristic habitat for this species is found within the area of potential effect; however, it was not found in the mainstem of the Buffalo River during a survey conducted by BNR fisheries biologists on April 27, 2012 (Hodges 2012); therefore, this species was eliminated from further analysis.

Flutedshell (*Lasmigona costata*) – This is a State inventory species. It is usually found in medium-sized rivers in small- to medium-sized gravel with moderate current. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012) and given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Little spectaclecase (*Villosa lienosa*) – This is a State inventory species. It is found in small to medium rivers in sand or gravel. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012) and given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Ouachita kidneyshell (*Ptychobranchus occidentalis*) – This is a State inventory species. Characteristic habitat for this species is found within the area of potential effect. This species was found in the mainstem of the Buffalo River during a survey conducted in the project area by BNR fisheries biologists on April 27, 2012 (Hodges 2012); however, given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Purple lilliput (*Toxolasma lividum*) – This is a State inventory species. It seems to prefer gravel substrate down to sand and fine gravel. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012) and given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Purple wartyback (*Cyclonaias tuberculata*) – This is a State inventory species. It prefers streambeds consisting primarily of gravel. Characteristic habitat for this species is present in the Buffalo River on the northern boundary of the project area; however, this species was not found during a survey conducted in the mainstem of Buffalo River along the northern boundary of the project area by BNR fisheries biologists on April 27, 2012, (Hodges 2012) and given the planned method for draining the ponds, no effects to this species would be expected; therefore, it was eliminated from further analysis.

Rainbow (*Villosa iris*) – This is a State inventory species. It prefers cool, clear upper reaches of streams with gravel bottoms. Characteristic habitat for this species is not found within the area of potential effect; therefore, this species was eliminated from further analysis.

Slippershell mussel (*Alasmidonta viridis*) – This is a State inventory species. It is most frequently found in the headwaters of streams where water is clearer and cooler in small- to medium-sized gravel. Characteristic habitat for this species is not found within the area of potential effect; therefore, this species was eliminated from further analysis.

Western fanshell (*Cyprogenia aberti*) – This is a State inventory species. It is found in shallow water with mixed gravel and mud bottom. Characteristic habitat for this species is not found within the area of potential effect; therefore, this species was eliminated from further analysis.

CHELICERATES

Harvestman (*Crosbyella distincta*) – This is a State inventory species. This is a cave-dwelling species (Bitting, 2011). Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

CRUSTACEANS

Boston mountains crayfish (*Cambarus causeyi*) – This is a State inventory species. It burrows near springs and run-off areas, and sometimes on adjacent hillsides. Researchers believe that this burrowing species is restricted to seeps, springs, and habitats immediately adjacent to these areas. Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

Isopod (*Caecidotea ancyla*) – This is a State inventory species. It is an aquatic cave-dweller (Graening et al, 2007). Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

Isopod (*Caecidotea macropropoda*) – This is a State inventory species. It is an aquatic cave-dweller (Graening et al, 2007). Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

Isopod (*Caecidotea stiladactyla*) – This is a State inventory species. It is an aquatic cave-dweller (Graening et al, 2007). Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

****Isopod (*Lirceus bicuspidatus*)** – This is a State inventory species. It is endemic to Arkansas and is known from Newton County at two locations, four and 9.6 miles south of Boxley. It appears to prefer small streams, seeps, and spring-fed streams (Graening et al, 2007). Project-related activities would not be expected to adversely affect this species, if present; therefore, it was eliminated from further analysis.

INSECTS

Cave obligate millipede (*Trygenotyla parca*) – This is a State inventory species. This is a cave-dwelling species (Bitting, 2011). Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

Predaceous diving beetle (*Heterosternuta phoebeae*) – This is a State inventory species. This species is only known from second, third, and fourth order tributaries to the Buffalo River. The drainages within the Cedar Glade Burn Unit are all first order tributaries. Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

Springtail (*Arrhopalites clarus*) – This is a State inventory species. This is a cave obligate species (Slay, 2011). Characteristic habitat for this species is not present within the project area; therefore, it was eliminated from further analysis.

MAMMALS

Eastern small-footed bat (*Myotis leibii*) – This is a State inventory species. It hibernates in caves and mine shafts during winter. It roosts in talus, caves, coal mines, buildings, and bridges over rivers (in expansion joints). It has also been found to roost in cliff crevices, hollow trees, and in spaces beneath the loose bark of trees. Characteristic habitat for this species during the winter is not present in the project area. Clearing and prescribed burning activities for the project would occur during the hibernation period for this species. Potentially increased insect populations would be expected as a result of increased phytoplankton in the ponds as a result of dredging may benefit these bats. For these reasons, this species was eliminated from further analysis.

Gray bat (*Myotis grisescens*) – This is a federal endangered and State inventory species. Roosting sites are nearly exclusively restricted to caves throughout the year, though only a few percent of available caves are. Winter roosts are in deep vertical caves with domed halls. Large summer colonies utilize caves that trap warm air and provide restricted rooms or domed ceilings; maternity caves often have a stream flowing through them and are separate from the caves used in summer by males. Occasionally non-cave roost sites are used, specifically storm sewers in the expansion joints and in mines and buildings. Summer caves are nearly always located within 1 km of a river or reservoir over which the bats forage. Characteristic habitat for this species is not present in the project area. Foraging habitat could potentially be improved over the ponds if insect populations increase as an indirect result of dredging. For these reasons, this species was eliminated from further analysis.

Indiana bat (*Myotis sodalis*) – This is a federal endangered and State inventory species. It hibernates in caves; maternity sites generally are behind loose bark of dead or dying trees or in tree cavities. Foraging habitats are riparian areas, upland forests, ponds, and fields, but forested landscapes are the most important habitat in agricultural landscapes. Males will roost in trees near their hibernacula by day and move to caves at night. There are no caves within the CGFMU and clearing activities would occur during winter hibernation. For these reasons, this species was eliminated from further analysis.

Ozark big-eared bat (*Corynorhinus townsendii ingens*) – This is a federal endangered and State inventory species. It uses caves typically in limestone karst regions dominated by mature hardwood forests of hickory, beech, maple, and hemlock. Hibernates usually near cave entrances just beyond twilight zone (or deeper in cave if unusually cold); hibernation caves may be better protected from cold and wind than are maternity caves; uses same roost in successive years. It may move among hibernacula in winter. In Oklahoma, foraging adult females used edge habitats of intermittent streams and mountains slopes more than expected based on relative availability of habitats. Young are born in maternity caves, which usually are closer to food sources than are the hibernation caves. Characteristic habitat for this cave roosting and hibernating species is not present in the project area; therefore, it was eliminated from further analysis.

SPECIES REQUIRING FULL EVALUATION

Potential suitable habitat for eight special status species occurs within the project area (Table 2). None of these species were observed within the project area during the survey.

Table 2. Special status species with potential for occurring within the project area.

Name	Federal Status	State Status
PLANTS		
Alabama snow wreath (*Neviusia alabamensis*)	None	Threatened
Ovate-leaved catchfly (*Silene ovata*)	None	Threatened
AMPHIBIANS		
Wood frog (*Rana sylvatica*)	None	Inventory
BIRDS		
Swainson's warbler (*Limnothlypis swainsonii*)	MBTA*	Inventory
CRUSTACEANS		
Isopod (*Lirceus bicuspidatus*)	None	Inventory
MANDIBULATES		
Ground beetle (*Scaphinotus inflectus*)	None	Inventory
Ozark beetle (*Pseudactium ursum*)	None	Inventory
Woodland tiger beetle (*Cicindela unipunctata*)	None	Inventory

*MBTA = Migratory Bird Treaty Act

SPECIES IMPACT EVALUATIONS

PLANTS

Species Name – *Neviusia alabamensis* (Alabama snow-wreath)

A. Species Ecology

Alabama snow-wreath is rare throughout its range, with widely scattered 'populations' that are mostly or entirely clonal. Sexual reproduction does not appear to be occurring at all; little or no seed production has been observed and seedlings have never been found at any of the sites. Although this species has been cultivated far north of its natural range, wild populations may be restricted to some specific habitat condition(s) near the boundary of the Mississippi Embayment of the Gulf of Mexico Coastal Plain. While it carries no federal designation, it is listed as threatened by the State of Arkansas.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011).

C. Affected Habitat Description

It grows on forested bluffs, talus slopes, and streambanks on a variety of geologic substrates, soil types, and aspects, and under open- to completely closed-canopy conditions. Most typical habitat may be within forested areas on thin soil over limestone that is moist for part of the year (seasonal streambeds, margins of sinkholes, river bluffs). Characteristic habitat for this species may be marginally present within the project area.

D. Analysis of Effects

This species was not found in the project area during the survey conducted by Pathfinder Environmental in 2011. Because this distinctive species would be relatively easy to detect, particularly when it is blooming, it is unlikely that it occurs in the project area. If it does occur within the footprint of planned construction activities, individuals could be destroyed during clearing and grubbing operations to prepare access for dredging the ponds. Also, the effects of fire on this species are not well known; therefore, prescribed burning could affect this species adversely if it is present in the project area.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they would potentially be subject to elimination from clearing and grubbing activities during construction. The loss of these individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal listing or loss of species viability. It is recommended that in the spring or early summer prior to construction, an additional ground survey for this species be conducted to definitively ascertain its presence or absence. **If this species is found within the planned construction footprint, biologists from the ANHC should be consulted to determine the best methods for mitigating impacts to it. If this recommendation is followed, there should be no effects to this species.**

F. Finding

If the recommendations described in Section E, above, are followed and no Alabama snow-wreath is found, then there would be no effects. If it is found in the project area, then consultation with ANHC biologists should result in appropriate mitigation to eliminate the potential for adverse effects.

Species Name – *Silene ovata* (Ovate-leaved catchfly)

A. Species Ecology

Ovate-leaved catchfly is rare throughout its range; it occurs from southwest Virginia, south to Georgia, and west to southeast Illinois and northern Arkansas. Most populations are small and much of its habitat has been lost. Threats include logging, grazing, trampling, road construction, and right-of-way maintenance. While it carries no federal designation, it is listed as threatened by the State of Arkansas.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011).

C. Affected Habitat Description

It's typical habitat is rich woods. In the Carolinas, this species occurs on circumneutral soils of woodlands and forests, especially over mafic or calcareous rocks, mostly at medium elevations. In Tennessee, it occurs in a variety of open or forested sandy or pebbly habitats including floodplains. In Illinois, it occurs in forests on moderate to steep slopes, often in very rocky habitats with shallow loess-derived soils over sandstone rock, and a pH between 5.8 and 6.2. In Alabama it has been found in hardwood-dominated forest on bluffs and ravines, and in partial shade on a Black Belt clay bluff.

D. Analysis of Effects

This species was not found in the project area during the survey conducted by Pathfinder Environmental in 2011. Because this distinctive species would be relatively easy to detect, particularly when it is blooming, it is unlikely that it occurs in the project area. If it does occur within the footprint of planned construction activities, individuals could be destroyed during clearing and grubbing operations to prepare

access for dredging the ponds. Also, the effects of fire on this species are not well known; therefore, prescribed burning could affect this species adversely if it is present in the project area. In some situations, this species would probably benefit from removal of competing shrubs and understory vegetation, as well as careful creation of canopy gaps to provide additional light.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they would potentially be subject to elimination from clearing and grubbing activities during construction. The loss of these individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal listing or loss of species viability. It is recommended that in the spring or early summer prior to construction, an additional ground survey for this species be conducted to definitively ascertain its presence or absence. **If this species is found within the planned construction footprint, biologists from the ANHC should be consulted to determine the best methods for mitigating impacts to it. If this recommendation is followed, there should be no effects to this species.**

F. Finding

If the recommendations described in Section E, above, are followed and no Alabama snow-wreath is found, then there would be no effects. If it is found in the project area, then consultation with ANHC biologists should result in appropriate mitigation to eliminate the potential for adverse effects.

AMPHIBIANS

Species Name – *Rana sylvatica* (Wood frog)

A. Species Ecology

Wood frogs are widespread in North America, abundant in many areas; not of conservation concern in the vast majority of the range, though many local populations have declined as a result of agricultural and residential development and intensive timber harvesting practices. It is known to occur in the Ozark Mountain region of northwestern Arkansas and southwestern Missouri. While it carries no federal designation, it is listed as an inventory species by the State of Arkansas.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011). Additional information was obtained from Muths et al (2005).

C. Affected Habitat Description

This species is found in various kinds of wooded habitats, including the edges of ponds and streams and willow thickets and grass/willow/aspen associations. In winter or when otherwise inactive, wood frogs hide in logs, humus, leaf litter, or under logs and rocks. It prefers small, semi-drainage ponds of natural origin, less than 1 meter deep, fish-free, with emergent vegetation. They may also use inactive beaver ponds and man-made ponds if topographical features are suitable. Typical oviposition sites are shallow, unshaded north shores with emergent vegetation and a depth of 0.1 to 0.3 meters within 3 meters of shore. They may also use roadside ditches or depressions and wheel ruts in unimproved forest roads, although these locations my dry up before metamorphosis is complete.

D. Analysis of Effects

This species was not found in the project area during the biological reconnaissance conducted by Pathfinder Environmental in 2011. If it does occur within the footprint of planned construction activities,

individuals could be destroyed during clearing and grubbing operations to prepare access for dredging the ponds. Also, the effects of fire on this species are not well known; therefore, prescribed burning could affect this species adversely if it is present in the project area. Adverse effects from habitat fragmentation would not be expected as a result of the proposed project and there may be some long-term benefits if insect populations increase in the area as an indirect result of dredging.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they would potentially be subject to elimination from clearing and grubbing activities during construction. The loss of these individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal listing or loss of species viability. **Because of the overall security and wide range of this species, it would not be expected to be adversely affected by the proposed project.**

F. Finding

Long-term adverse effects to this species would not be expected as a result of the proposed project.

BIRDS

Species Name – *Limnothlypis swainsonii* (Swainson's warbler)

A. Species Ecology

Swainson's warblers breed in the southeastern U.S., winter the West Indies, Mexico, and Belize. Eggs are laid late April or May through July. It is a rare and local breeder but still occupies much of historic range. There are indications of ongoing decline, but status and trends are not well documented. Much lowland hardwood habitat is privately owned and subject to harvest or conversion to pine plantations. Locally, harassment by birdwatchers is a problem. It is apparently sensitive to the size of the habitat block, successional stage, and probably the spatial arrangement of blocks, thus requiring sensitive planning wherever wet lowland forest harvest continues. It is probably undersampled throughout its range because of difficult access to its habitat. It is present in several large protected areas and its preference for successional habitat increases chances of surviving despite human forest use. It is listed as an inventory species by the State of Arkansas and is protected under the federal Migratory Bird Treaty Act.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011).

C. Affected Habitat Description

This species appears to prefer rich, damp, deciduous forest, typical of floodplains and swamps. It requires areas of deep shade from both canopy and understory. A dense shrub stratum of switchcane (*Arundinaria gigantea*) is preferred, although other shrub species are acceptable. The most important characteristic is a multilayered forest structure with dense undergrowth and little herbaceous ground cover. Some marginal characteristic habitat for this species is present within the project area in the floodplain of the Buffalo River along the northern boundary of the CGFMU.

D. Analysis of Effects

This species was not found in the project area during the biological reconnaissance conducted by Pathfinder Environmental in 2011. While controlled burning may reduce the density of undergrowth in the upland areas, its effect on switchcane in the floodplain of the Buffalo River would be short-term and

potentially beneficial in the long-term (Bednarz, 2011). Studies are currently underway to better understand the effects of fire on switchcane habitat used by Swainson's warblers.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they would potentially be subject to elimination from prescribed burning during the mid- to late-spring nesting season. This potential loss could easily be avoided by restricting controlled burns to the winter and early spring months, not later than April 1st. Also, there would potentially be a short-term loss of habitat from burning; however, this would not result in mortality of individuals and could potentially have a long-term benefit, pending the results of current studies on the impact of fire to this species. **Because none of the proposed project activities except prescribed burning could affect this species, as long as the recommendation for limiting prescribed burns to the winter and early spring periods is followed, there would be no effect.**

F. Finding

Limiting prescribed burns to winter and early spring periods would eliminate potential adverse effects to this species. Prescribed burning may ultimately result in improved habitat for this species.

CRUSTACEANS

Species Name – *Lirceus bicuspidatus* (Isopod)

A. Species Ecology

It is endemic to 14 counties in Arkansas and is known from Newton County at three locations, four and 9.6 miles south of Boxley and in a spring below Diamond cave. While it carries no federal designation, it is listed as an inventory species by the State of Arkansas.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011). Additional information was obtained from Graening et al (2007).

C. Affected Habitat Description

This isopod appears to prefer small streams, seeps, and spring-fed streams (Graening et al, 2007). Some potential habitat for this species is present within the project area in the form of small streams.

D. Analysis of Effects

This species was not found in the project area during the biological reconnaissance conducted by Pathfinder Environmental in 2011. If it does occur within the project area, individuals are not likely to be affected from dredging-related activities because these would be restricted to the ponds and adjacent uplands. Best management practices should be employed to mitigate silt runoff from clearing and grubbing activities related to dredging the ponds. Also, the effects of fire on this species are not well known; however, impacts to the small streams in the project area from low-intensity prescribed burning would likely be very minimal and far less damaging than a potential catastrophic fire that might result from accumulated fuels in the forest.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they would be unlikely to be affected by the proposed project. **Because none of the proposed project activities except prescribed burning would be likely to affect this species, which could potentially be beneficial insofar as it may prevent**

more severe damage from a catastrophic wildfire, as long as the recommendation for best management practices for controlling runoff during dredging operations is followed, the project would not be expected to adversely affect this species.

F. Finding

Adverse effects to this species are not expected as a result of the proposed project as long as the recommendations for the use of best management practices for controlling runoff during dredging activities is followed. The reduced risk of catastrophic wildfire as a result of prescribed burning may provide a long-term benefit for this species.

INSECTS

Species Name – *Scaphinotus inflectus* (Ground beetle)

A. Species Ecology

This ground beetle is known only from Newton and Pope counties in Arkansas. It is known in Newton County from the Buffalo River watershed. While it carries no federal designation, it is listed as an inventory species by the State of Arkansas.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011). Additional information was obtained from Anderson (2006).

C. Affected Habitat Description

It prefers Ozark-Ouachita Mesic Hardwood Forest. Habitat for this species is present in the project area and is common throughout Buffalo National River and the surrounding Boston Mountains and Ozark Highlands.

D. Analysis of Effects

This species was not found in the project area during the biological reconnaissance conducted by Pathfinder Environmental in 2011. If it does occur within the project area, individuals may be affected from clearing and grubbing operations. Also, the effects of fire on this species are not well known; however, impacts to the project area from low-intensity prescribed burning would likely be very minimal and far less damaging than a potential catastrophic wildfire that might result from accumulated fuels in the forest.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they could potentially be affected by the proposed project. Habitat for this species is abundant throughout the known range of this species. Consequently, the low probability of its occurrence within the project area combined with the high probability of its presence elsewhere within its range implies that the loss of these individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal or State listing or loss of species viability. **The small scale of the proposed project combined with the potential long-term benefits to overall forest quality and the reduction of catastrophic wildfire hazard indicate that adverse effects to this species are unlikely.**

F. Finding

The proposed project is not expected to result in adverse effects to this species.

Species Name – *Pseudactium ursum* (Ozark beetle)

A. Species Ecology

The Ozark beetle is known only from Newton County in Arkansas. It is known to occur in the Buffalo river watershed. While it carries no federal designation, it is listed as an inventory species by the State of Arkansas.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011).

C. Affected Habitat Description

No information could be found regarding the habitat requirements of this species.

D. Analysis of Effects

This species was not found in the project area during the biological reconnaissance conducted by Pathfinder Environmental in 2011. If it does occur within the project area, individuals may be affected from clearing and grubbing operations. Also, the effects of fire on this species are not well known; however, impacts to the project area from low-intensity prescribed burning would likely be very minimal and far less damaging than a potential catastrophic wildfire that might result from accumulated fuels in the forest.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they could potentially be affected by the proposed project. Habitat for this species is abundant throughout the known range of this species. Consequently, the low probability of its occurrence within the project area combined with the high probability of its presence elsewhere within its range implies that the loss of these individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal or State listing or loss of species viability. **The small scale of the proposed project combined with the potential long-term benefits to overall forest quality and the reduction of catastrophic wildfire hazard indicate that it may affect, but is not likely to adversely affect this species.**

F. Finding

The proposed project is not expected to result in adverse effects to this species.

Species Name – *Cicindela unipunctata* (Woodland tiger beetle)

A. Species Ecology

The woodland tiger beetle is known to occur in 27 States and is apparently secure in seven of them. This widespread species is not commonly found, but this could reflect its secretive habits. It occurs in common forest habitats and is probably a lot more common than records suggest. It is not readily seen in the daytime and surveys require specialized methods. While it carries no federal designation, it is listed as an inventory species by the State of Arkansas.

B. Data Sources (including surveys conducted)

Information regarding this species was adapted from NatureServe (2011). Additional information was obtained from Anderson (2006).

C. Affected Habitat Description

It prefers Ozark-Ouachita Mesic Hardwood Forest and Lower Mississippi river High Bottomland Forest. Habitat for this species is present in the project area and is common throughout Buffalo National River and the surrounding Boston Mountains and Ozark Highlands.

D. Analysis of Effects

This species was not found in the project area during the biological reconnaissance conducted by Pathfinder Environmental in 2011. If it does occur within the project area, individuals may be affected from clearing and grubbing operations. Also, the effects of fire on this species are not known; however, impacts to the project area from low-intensity prescribed burning would likely be very minimal and far less damaging than a potential catastrophic wildfire that might result from accumulated fuels in the forest.

E. Determination of Effect / Recommended Mitigation

If individuals of this species do exist within the project footprint, they could potentially be affected by the proposed project. Habitat for this species is abundant throughout the known range of this species. Consequently, the low probability of its occurrence within the project area combined with the high probability of its presence elsewhere within its range implies that the loss of these individuals, which did not appear to be present in 2011, would not be expected to cause a trend toward federal or State listing or loss of species viability. **The small scale of the proposed project combined with the potential long-term benefits to overall forest quality and the reduction of catastrophic wildfire hazard indicate that it may affect, but is not likely to adversely affect this species.**

F. Finding

The proposed project is not expected to result in adverse effects to this species.

G. Summary of Recommendations

1. Clearing and grubbing activities related to creating access to the ponds for dredging activities should take place between October 1 and March 1 in order to avoid the possibility of taking active migratory bird nests.
2. Controlled burning should be conducted between October 1 and March 1 in order to avoid the possibility of taking active migratory bird nests.
3. Conduct species surveys for Alabama snow-wreath and ovate-leaved catchfly in the spring or early summer prior to project initiation in the areas to be cleared for access to the ponds for dredging operations.
4. Drain ponds when the water column is clear and suspended solids are minimal. Float or otherwise maintain the pump intake on the surface during pumping operations. Place silt fences in the drainages below the ponds and the pump outlets to trap any sediment that makes it into the pump. Stop pumping when the pump intake gets too close to the bottom of the ponds to avoid sucking silt off the bottom of the ponds. Manually remove any sediment trapped by the silt fences with shovels.

H. Contacts, Contributors, Preparers

Devin Kennemore **Pathfinder Environmental LLC**
Biological Resources Survey, Biological Resources Research, Preparation of BE

I. Signatures

Prepared by:

5/13/12
Devin Kennemore, Principal Biologist **Date**
Pathfinder Environmental LLC

J. Photographs of the Project Area (taken 10 May 2011)

Photo #1 – View looking south of the south pond and dock.

Photo #2 – View north of the south pond from the south side.

Photo #3 – Beaver dam on top of spillway for north pond.

Photo #4 – View of the north pond from the south side.

Photo #5 – View of the northwest end of the parking area.

Photo #6 – View of parking spaces and the trailhead to the picnic area.

Photo #7 – View of the south end of the parking area.

Photo #8 – View of one of the optional locations for a single-stall ROMTEC restroom.

Photo #9 – View of one of the optional locations for a single-stall ROMTEC restroom.

Photo #10 – View of the picnic area.

Photo #11 – View of Buffalo River Trail access on north (upstream) side of picnic area.

Photo #12 – View of Buffalo River Trail access on south (downstream) side of picnic area.

Photo #13 – View of river overlook and rail at the top of the bluff at the end of the picnic area.

Photo #14 – View of proposed location for wheelchair path to road crossing.

Photo #15 – View of the proposed road crossing location and trailhead to the south pond.

Photo #16 & #17– Rock outcrop just beneath the picnic area at the top of the bluff above the river.

Photo #18 – Buffalo River looking upstream from below the bluff at the picnic area.

K. References Used and Literature Cited

This section includes all literature cited in the report as well as a compendium of references that were used during the field surveys for the identification of both plant and animal species.

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L. Appendix

Plant Species Encountered During Biological Reconnaissance of Cedar Glade Burn Unit

Family	Genus	Species	Subsp./Var.	Common Name
Altingiaceae	*Liquidambar*	*styraciflua*		sweetgum
Amaryllidaceae	*Allium*	*canadense*	var. *canadense*	Canada wild onion
Anacardiaceae	*Rhus*	*copallina*		winged sumac
Anacardiaceae	*Toxicodendron*	*sp.*		poison oak/ivy
Annonaceae	*Asimina*	*triloba*		paw-paw
Apocynaceae	*Asclepias*	*quadrifolia*		milkweed
Apocynaceae	*Vinca*	*minor*		periwinkle
Asparagaceae	*Maianthemum*	*racemosum*		false Solomon's seal
Aspleniaceae	*Asplenium*	*platyneuron*		ebony spleenwort
Asteraceae	*Ambrosia*	*artemisiifolia*		ragweed
Asteraceae	*Elephantopus*	*carolinianus*		Carolina elephant's foot
Asteraceae	*Erigeron*	*strigosus*		daisy fleabane
Asteraceae	*Gamochaeta*	*purpurea*		purple cudweed
Asteraceae	*Hieracium*	sp.		hawkweed
Asteraceae	*Krigia*	*virginica*		Virginia dwarf dandelion
Asteraceae	*Leucanthemum*	*vulgare*		ox-eye daisy
Asteraceae	*Pycnanthemum*	*sp.*		mountain mint
Asteraceae	*Solidago*	*sp.*		goldenrod
Asteraceae	*Taraxacum*	*officinale*		dandelion
Berberidaceae	*Podophyllum*	*peltatum*		may-apple
Betulaceae	*Betula*	*nigra*		river birch
Betulaceae	*Ostrya*	*virginiana*		hop hornbeam
Boraginaceae	*Cynoglossum*	*virginianum*		wild comfrey
Brassicaceae	*Cardamine*	*parviflora*	var. *arenicola*	bitter cress
Brassicaceae	*Lepidium*	*virginicum*		poor man's pepper
Campanulaceae	*Lobelia*	*siphilitica*		great blue lobelia
Campanulaceae	*Triodanis*	*perfoliata*	subsp. *biflora*	Venus' looking glass
Caprifoliaceae	*Lonicera*	*japonica*		Japanese honeysuckle

Family	Genus	Species	Subsp./Var.	Common Name
Caprifoliaceae	*Viburnum*	*rufidulum*		blue haw
Caryophyllaceae	*Arenaria*	*serpyllifolia*		sandwort
Caryophyllaceae	*Silene*	*virginica*		fire pink
Caryophyllaceae	*Stellaria*	*media*		chickweed
Celastraceae	*Euonymus*	*americanus*		bleeding heart
Convolvulaceae	*Ipomoea*	*purpurea*		common morning glory
Cornaceae	*Cornus*	*florida*		dogwood
Cornaceae	*Nyssa*	*sylvatica*		black gum
Crassulaceae	*Sedum*	*pulchellum*		stonecrop
Cupressaceae	*Juniperus*	*virginiana*		red cedar
Cyperaceae	*Carex*	*blanda*		sedge
Cyperaceae	*Carex*	*hirsutella*		sedge
Cyperaceae	*Carex*	*lurida*		sedge
Cyperaceae	*Carex*	*microdonta*		sedge
Cyperaceae	*Carex*	*oxylepis*		sedge
Dioscoreaceae	*Dioscorea*	*villosa*		wild yam
Dryopteridaceae	*Polystichum*	*acrosticoides*		Christmas fern
Ericaceae	*Polycodium*	*stamineum*		gooseberry
Ericaceae	*Vaccinium*	*arboreum*		sparkleberry
Euphorbiaceae	*Euphorbia*	*corollata*		tramp's spurge
Fabaceae	*Cercis*	*canadensis*		redbud
Fabaceae	*Desmodium*	*ciliare*		beggar lice
Fabaceae	*Lespedeza*	*juncea*	var. *sericea*	lespedeza
Fabaceae	*Trifolium*	*campestre*		low hop clover
Fabaceae	*Trifolium*	*dubium*		low hop clover
Fabaceae	*Vicia*	*grandiflora*		vetch
Fagaceae	*Fagus*	*grandifolia*		beech
Fagaceae	*Quercus*	*alba*		white oak
Fagaceae	*Quercus*	*falcata*		southern red oak

Family	Genus	Species	Subsp./Var.	Common Name
Fagaceae	*Quercus*	*marilandica*		blackjack oak
Fagaceae	*Quercus*	*muhlenbergii*		chinquapin oak
Fagaceae	*Quercus*	*stellata*		post oak
Geraniaceae	*Geranium*	*pusillum*		cranesbill
Hydrangaceae	*Hydrangea*	*arborescens*		wild hydrangea
Juglandaceae	*Carya*	*cordiformis*		bitternut hickory
Juncaceae	*Juncus*	*tenuis*		path rush
Lamiaceae	*Glechoma*	*hederacea*		ground ivy
Lamiaceae	*Prunella*	*vulgaris*		heal-all
Lamiaceae	*Salvia*	*lyrata*		cancerweed
Lauraceae	*Sassafras*	*albidum*		sassafras
Menispermaceae	*Menispermum*	*canadense*		moonseed
Moraceae	*Morus*	*rubra*		red mulberry
Ophioglossaceae	*Botrychium*	*virginianum*		rattlesnake fern
Oxalidaceae	*Oxalis*	*debilis*		wood sorrel
Oxalidaceae	*Oxalis*	*stricta*		wood sorrel
Phytolaccaceae	*Phytolacca*	*americana*		poke berry
Pinaceae	*Pinus*	*echinata*		shortleaf pine
Plantaginaceae	*Plantago*	*virginica*		plantain
Plantaginaceae	*Veronica*	*arvensis*		veronica
Platanaceae	*Platanus*	*occidentalis*		sycamore
Poaceae	*Andropogon*	*gerardii*		bluestem
Poaceae	*Arundinaria*	*gigantea*		switchcane
Poaceae	*Chasmanthium*	*latifolia*		river oats
Poaceae	*Dichanthelium*	*sp.*		panic grass
Poaceae	*Echinochloa*	*crus-galli*		barnyard grass
Poaceae	*Elymus*	*hystrix*		bottlebrush grass
Poaceae	*Elymus*	*canadensis*		Canada wildrye
Poaceae	*Erianthus*	*sp.*		plume grass

Family	Genus	Species	Subsp./Var.	Common Name
Poaceae	*Microstegium*	*vimineum*		Japanese stiltgrass
Poaceae	*Poa*	*pratensis*		blue grass
Poaceae	*Setaria*	*sp.*		bristlegrass
Poaceae	*Tridens*	*flavus*		purple top
Polygonaceae	*Polygonum*	*spp.*		knotweed, smartweed
Polygonaceae	*Polygonum*	*virginianum*		jumpseed
Rosaceae	*Prunus*	*sp.*		plum
Rubiaceae	*Cephalanthus*	*occidentalis*		button bush
Rubiaceae	*Galium*	*pilosum*		bedstraw
Rubiaceae	*Galium*	*triflorum*		bedstraw
Rubiaceae	*Galium*	*virgatum*		bedstraw
Rubiaceae	*Sherardia*	*arvensis*		field madder
Sapindaceae	*Acer*	*rubrum*		red maple
Saxifragaceae	*Heuchera*	*americana*		American alum-root
Scrophulariaceae	*Paulownia*	*tomentosa*		princess tree
Smilacaceae	*Smilax*	*bona-nox*		greenbrier
Smilacaceae	*Smilax*	*tamnoides*		carrion flower
Ulmaceae	*Celtis*	*occidentalis*		hackberry
Ulmaceae	*Ulmus*	*alata*		winged elm
Ulmaceae	*Ulmus*	*americana*		American elm
Urticaceae	*Boehmeria*	*cylindrica*		smallspike false nettle
Valerianaceae	*Valerianella*	*radiata*		corn salad
Violaceae	*Lophion*	*striatum*		white violet
Vitaceae	*Parthenocissus*	*quinquefolia*		Virginia creeper
Vitaceae	*Vitis*	*rotundifolia*		muscadine
Vitaceae	*Vitis*	*aestivalis*		summer grape
Woodsiaceae	*Woodsia*	*scopulina*	subsp. *appalachiana*	rocky mountain woodsia

USFWS Listed Species in Newton County Number of species: 4

Common Name	Scientific Name	Group	Status
Gray bat	*Myotis grisescens*	Mammal	Endangered
Indiana bat	*Myotis sodalis*	Mammal	Endangered
Rabbitsfoot	*Quadrula cylindrica cylindrica*	Mollusk	Candidate
Snuffbox	*Epioblasma triquetra*	Mollusk	Proposed Endangered

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Newton

Name	Status		Rank	
	Federal	State	Global	State
Animals - Invertebrates				
Alasmidonta marginata (elktoe)	-	INV	G4	S3
Alasmidonta viridis (slippershell mussel)	-	INV	G4G5	S1
Arrhopalites clarus (a springtail)	-	INV	G4	S1S2
Caecidotea ancyla (an isopod)	-	INV	G3G4	S1?
Caecidotea macropropoda (bat cave isopod)	-	INV	G2G3	S1
Caecidotea stiladactyla (an isopod)	-	INV	G3G4	S1?
Cambarus causeyi (a crayfish)	-	INV	G1	S1
Cicindela unipunctata (woodland tiger beetle)	-	INV	G4	S2
Crosbyella distincta (a cave obligate harvestman)	-	INV	G1G2	S1
Cyclonaias tuberculata (purple wartyback)	-	INV	G5	S3?
Cyprogenia aberti (western fanshell)	-	INV	G2G3Q	S2
Heterelmis muta phoebae (a predaceous diving beetle)	-	INV	GNR	S2
Lasmigona costata (fluteshell)	-	INV	G5	S3
Lirceus bivuspidatus (an isopod)	-	INV	G3Q	S3
Pseudactium ursum (Ozark pseudactium)	-	INV	GNR	S1
Ptychobranchus occidentalis (Ouachita kidneyshell)	-	INV	G3G4	S3
Quadrula cylindrica (rabbitsfoot)	-	INV	G3G4	S2
Scaphinotus inflectus (a ground beetle)	-	INV	GNR	S1
Toxolasma lividus (purple lilliput)	-	INV	G2	S2
Trigenotyla parca (a cave obligate millipede)	-	INV	G1G2	S1
Venustaconcha pleasii (bleedingtooth mussel)	-	INV	G3G4	S3
Villosa iris (rainbow)	-	INV	G5Q	S2S3
Villosa lienosa (little spectaclecase)	-	INV	G5	S3
Animals - Vertebrates				
Accipiter striatus (Sharp-shinned Hawk)	-	INV	G5	S1S2B
Corynorhinus townsendii ingens (Ozark big-eared bat)	LE	INV	G4T1	S1
Dendroica cerulea (Cerulean Warbler)	-	INV	G4	S4B
Erimystax harryi (Ozark chub)	-	INV	G3G4Q	S3S4
Eurycea spelaea (grotto salamander)	-	INV	G4	S3
Lampetra aepyptera (least brook lamprey)	-	INV	G5	S2?
Lampetra appendix (American brook lamprey)	-	INV	G4	S2?
Limnothlypis swainsonii (Swainson's Warbler)	-	INV	G4	S3B
Myotis grisescens (gray myotis)	LE	INV	G3	S2S3
Myotis leibii (eastern small-footed bat)	-	INV	G3	S1
Myotis sodalis (Indiana bat)	LE	INV	G2	S1
Notropis ozarcanus (Ozark shiner)	-	INV	G3	S2
Rana sylvatica (wood frog)	-	INV	G5	S3
Thryomanes bewickii (Bewick's Wren)	-	INV	G5	S2B,S3N
Plants - Vascular				
Abutilon incanum (Texas Indian mallow)	-	INV	G5?	S1S2
Arnoglossum reniforme (great Indian plantain)	-	INV	G4	S2
Brickellia grandiflora (tassel flower)	-	INV	G5	S2

http://www.naturalheritage.com/research-data/rarespecies-search.aspx[10/17/2011 10:00:38 AM]

Arkansas Endangered Species - Rare Plants and Animals - Arkansas Rare Animals and Plants

Carex careyana (Carey's caric sedge)	-	INV	G4G5	S3
Carex hitchcockiana (Hitchcock's caric sedge)	-	INV	G5	S1S2
Carex shortiana (Short's caric sedge)	-	INV	G5	S2
Castanea pumila var. ozarkensis (Ozark chinquapin)	-	INV	G5T3	S3S4
Caulophyllum thalictroides (blue cohosh)	-	INV	G4G5	S2
Collinsia verna (blue-eyed Mary)	-	INV	G5	S1
Cypripedium kentuckiense (Kentucky lady's-slipper)	-	INV	G3	S3
Delphinium newtonianum (Moore's larkspur)	-	INV	G3	S3
Diphasiastrum digitatum (southern running-pine)	-	INV	G5	S1S2
Dodecatheon frenchii (French's shooting star)	-	ST	G3	S2
Elymus churchii (Church's wild rye)	-	INV	G2G3	S2?
Heuchera villosa var. arkansana (Arkansas alumroot)	-	INV	G5T3Q	S3
Hieracium scabrum (rough hawkweed)	-	INV	G5	S2
Huperzia lucidula (shining club-moss)	-	INV	G5	S2S3
Juglans cinerea (butternut)	-	INV	G4	S3
Leavenworthia uniflora (glade cress)	-	INV	G4	S3
Lilium superbum (turk's-cap lily)	-	INV	G5	S1
Melanthium woodii (false hellebore)	-	INV	G5	S3
Mimulus floribundus (yellow monkey flower)	-	INV	G5	S2S3
Muhlenbergia bushii (nodding muhly)	-	INV	G5	S2
Nemastylis nuttallii (Nuttall's pleat-leaf)	-	INV	G4	S2
Nevriusia alabamensis (Alabama snow wreath)	-	ST	G2	S1S2
Osmorhiza claytonii (Clayton's sweet cicely)	-	INV	G5	S1S3
Phacelia gilioides (hairy scorpionweed)	-	INV	G5	S2S3
Philadelphus hirsutus (mock orange)	-	INV	G5	S2S3
Phlox bifida (sand phlox)	-	INV	G5?	S3
Prosartes lanuginosa (yellow mandarin)	-	INV	G5	S2
Silene ovata (ovate-leaved catchfly)	-	ST	G3	S3
Silene regia (royal catchfly)	-	ST	G3	S2
Smilax ecirrata (carrion-flower)	-	INV	G5?	SH
Stachys illisii (hedgenettle)	-	INV	GNR	S3
Stylophorum diphyllum (celandine poppy)	-	INV	G5	S3
Symphyotrichum sericeum (silky aster)	-	INV	G5	S2
Tradescantia ozarkana (Ozark spiderwort)	-	INV	G3	S3
Trichomanes petersii (dwarf bristle fern)	-	ST	G4G5	S2
Trillium pusillum var. ozarkanum (Ozark least trillium)	-	INV	G3T3	S3
Viola canadensis var. canadensis (Canada violet)	-	INV	G5T5	S2
Special Elements - Natural Communities				
Central Interior Highlands & Appalach Sinkhole & Depres Pond	-	INV	GNR	SNR
Ozark-Ouachita Mesic Hardwood Forest	-	INV	GNR	SNR
Upland Headwater Stream-Ozark Mountains	-	INV	GNR	SNR
Upland River-Ozark Mountains	-	INV	GNR	SNR
Upland Stream-Ozark Mountains	-	INV	GNR	SNR
Special Elements - Other				
Colonial nesting site, water birds	-	INV	GNR	SNR
Geological feature	-	INV	GNR	SNR

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http://www.naturalheritage.com/research-data/rarespecies-search.aspx[10/17/2011 10:00:38 AM]

Pathfinder Environmental LLC
PO Box 231, Rowe, New Mexico 87562-0231

October 12, 2011

R. Mark Sattelberg
Field Supervisor
Arkansas Ecological Services Field Office
U.S. Fish and Wildlife Service
110 S. Amity Road, Suite 300
Conway, Arkansas 72032

Subject: Cedar Glade Pond Improvements Environmental Assessment, Buffalo National River, AR

Dear Mr. Sattelberg:

The National Park Service (NPS) has initiated work on an Environmental Assessment (EA) and is seeking public and agency input for the proposed Cedar Glade Pond Improvements project at Buffalo National River (BNR) to determine if the project could potentially result in any significant impacts to the natural or human environment. The EA will evaluate potential impacts to the natural, cultural, and human environment from construction and operations activities related to the proposed action and will be available for public review in the winter of 2012. The NPS is seeking comments from the public, government agencies, and tribes to help identify issues and concerns for the planning process and the EA analysis.

The purpose of the project is to provide a diverse range of off-river opportunities for youth and the mobility impaired, upgrade the Cedar Glade parking area, trail, and picnic area to Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) standards, improve access to interpretational and educational opportunities, and address public health issues. The EA will also assess the potential impacts of prescribed fire in the Cedar Glade burn unit. Figure 1 presents a map showing the location of the Cedar Glade area and the boundaries of the burn unit.

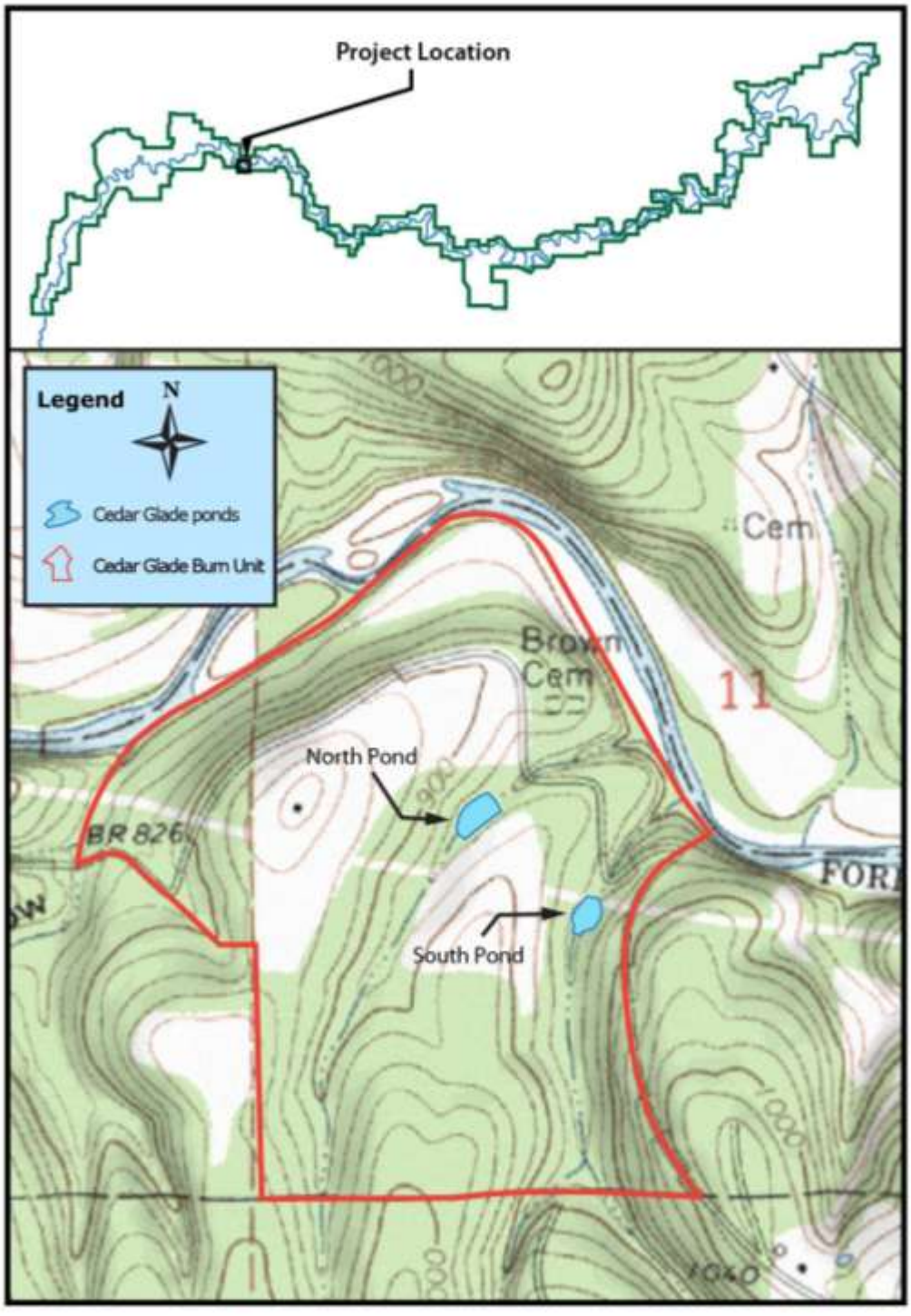
BNR regularly uses prescribed fires to reduce natural fuel accumulations and promote the overall health and safety of the forest. These fires are conducted in accordance with the BNR Fire Management Plan (2003). These same burn techniques would be used at Cedar Glade. The upgrades to the Cedar Glade area include resurfacing the parking lot, adding a ROMTEC bathroom, making the trail to the south pond ADA accessible, adding docks and a boardwalk to the south pond, rebuilding the spillways of both ponds, and clearing dense brush and undergrowth from the dams.

Both ponds would be drained, dredged, re-contoured, refilled, and restocked with game fish. Restocking would be carried out through a cooperative agreement with the Arkansas Game and Fish Commission (AGFC) for the promotion of youth and ADA fishing. Dredging activities would include some clearing and grubbing to provide access to the ponds by an excavator and dump trucks.

Buffalo National River
Arkansas

Cedar Glade Day Use Area

National Park Service
U.S. Department of the Interior



At this time, we are requesting input from your agency to identify any issues or concerns you may have with the proposed project so that they may be appropriately considered in the EA. Additional information may be found online at: http://parkplanning.nps.gov/buff. Comments may be mailed to the following address:

Pathfinder Environmental LLC
Attn: Devin Kennemore
PO Box 231
Rowe, New Mexico 87562-0231

Best regards,
Pathfinder Environmental LLC

Devin Kennemore
Environmental Project Manager

United States Department of the Interior

FISH AND WILDLIFE SERVICE
110 South Amity Road, Suite 300
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480

IN REPLY REFER TO:

October 14, 2011

Mr. Devin Kennemore
Pathfinder Environmental LLC
P.O. Box 231
Rowe, New Mexico 87562-0231

Dear Mr. Kennemore:

This letter is in reference to your letter dated October 12, 2011, concerning the Cedar Glade Pond Improvements Environmental Assessment, Buffalo National River, Newton County, Arkansas. The Fish and Wildlife Service's (Service) comments are submitted in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661-667c) and the Endangered Species Act (87 Stat.884, as amended; 16 U.S.C. 1531 et.seq.).

The proposed Cedar Glade Pond Improvements is to provide a diverse range of off-river opportunities for youth and the mobility impaired, upgrade the Cedar Glade parking area, trail and picnic area to Americans with Disabilities Act (ADA) and Architectural Barriers Act standards, and other improvements. The area includes two ponds which would be drained, dredged, re-contoured, refilled, and restocked with game fish. Restocking would be carries out through a cooperative agreement with the Arkansas Game and Fish Commission for the promotion of youth and ADA fishing.

Newton County supports two endangered bats, the gray bat (*Myotis grisescens*) and Indiana bat (*Myotis sodalist*), and the candidate rabbitsfoot (*Quadrula cylindrica cylindrica*). The impacts to the proposed project on these species should be evaluated as planning for this project proceeds.

We appreciate the opportunity to provide these comments.

Sincerely,

for Margaret A. Harney

Jim Boggs
Field Supervisor

Newton

Name	Status		Rank	
	Federal	State	Global	State
Animals - Invertebrates				
Alasmidonta marginata (elktoe)	-	INV	G4	S3
Alasmidonta viridis (slippershell mussel)	-	INV	G4G5	S1
Caecidotea ancyla (an isopod)	-	INV	G3G4	S2
Caecidotea macropropoda (bat cave isopod)	-	INV	G2G3	S2
Caecidotea stiladactyla (an isopod)	-	INV	G3G4	S3
Cambarus causeyi (a crayfish)	-	INV	G2	S1
Cicindela unipunctata (woodland tiger beetle)	-	INV	G4G5	S2
Crosbyella distincta (a cave obligate harvestman)	-	INV	G1G2	S1
Cyclonaias tuberculata (purple wartyback)	-	INV	G5	S3?
Cyprogenia aberti (western fanshell)	-	INV	G2G3Q	S2
Dendrocoelopsis americana (a cave obligate planarian)	-	INV	G2G3	S1
Hesperochernes occidentalis (a pseudoscorpion)	-	INV	G5	S1
Heterosternuta ouachita (Ouachita diving beetle)	-	INV	GNR	S2
Heterosternuta phoebeae (a predaceous diving beetle)	-	INV	G2	S2
Heterosternuta sulphuria (Sulphur Springs diving beetle)	-	INV	G1?	S1?
Lasmigona costata (flutedshell)	-	INV	G5	S3
Lirceus bicuspidatus (an isopod)	-	INV	G3Q	S2
Pseudactium ursum (Ozark pseudactium)	-	INV	GNR	S1
Ptychobranchus occidentalis (Ouachita kidneyshell)	-	INV	G3G4	S3
Pygmarrhopalites clarus (a springtail)	-	INV	G4	S1S2
Quadrula cylindrica cylindrica (rabbitsfoot)	C	INV	G3G4T3	S2
Scaphinotus inflectus (a ground beetle)	-	INV	GNR	S1
Speyeria diana (Diana)	-	INV	G3G4	S2S3
Stygobromus ozarkensis (Ozark cave amphipod)	-	INV	G4	S2
Toxolasma lividus (purple lilliput)	-	INV	G3	S2
Trigenotyla parca (a cave obligate millipede)	-	INV	G1G2	S1
Venustaconcha pleasii (bleedingtooth mussel)	-	INV	G3G4	S3
Villosa iris (rainbow)	-	INV	G5Q	S2S3
Villosa lienosa (little spectaclecase)	-	INV	G5	S3
Animals - Vertebrates				
Accipiter striatus (Sharp-shinned Hawk)	-	INV	G5	S1S2B
Ambystoma tigrinum tigrinum (eastern tiger salamander)	-	INV	G5T5	S3
Corynorhinus townsendii ingens (Ozark big-eared bat)	LE	INV	G4T1	S1
Crotaphytus collaris (eastern collared lizard)	-	INV	G5	S3
Dendroica cerulea (Cerulean Warbler)	-	INV	G4	S4B
Erimystax harryi (Ozark chub)	-	INV	G3G4Q	S3S4
Eurycea spelaea (grotto salamander)	-	INV	G4	S3
Lampetra aepyptera (least brook lamprey)	-	INV	G5	S2?
Lampetra appendix (American brook lamprey)	-	INV	G4	S2?
Limnothlypis swainsonii (Swainson's Warbler)	-	INV	G4	S3B
Lithobates sylvaticus (wood frog)	-	INV	G5	S3
Myotis grisescens (gray myotis)	LE	INV	G3	S2S3
Myotis leibii (eastern small-footed bat)	-	INV	G3	S1
Myotis sodalis (Indiana bat)	LE	INV	G2	S1
Notropis ozarcanus (Ozark shiner)	-	INV	G3	S2
Plethodon angusticlavius (Ozark zigzag salamander)	-	INV	G4	S3
Plethodon serratus (southern redback salamander)	-	INV	G5	S3

Thryomanes bewickii (Bewick's Wren)	-	INV	G5	S2B,S3N
Plants - Vascular				
Abutilon fruticosum (Texas Indian-mallow)	-	INV	G4G5	S1S2
Amorpha canescens (lead-plant)	-	INV	G5	S1
Anemone acutiloba (sharp-lobe hepatica)	-	INV	G5	S1S2
Blephilia hirsuta (hairy wood mint)	-	INV	G5?	S1
Brickellia grandiflora (tassel-flower)	-	INV	G5	S2
Callirhoe bushii (Bush's poppy-mallow)	-	INV	G3	S3
Carex careyana (Carey's sedge)	-	INV	G4G5	S3
Carex hirtifolia (sedge)	-	INV	G5	S3
Carex hitchcockiana (Hitchcock's sedge)	-	INV	G5	S1S2
Carex sparganioides (bur-reed sedge)	-	INV	G5	S3
Caulophyllum thalictroides (blue cohosh)	-	INV	G4G5	S2
Cerastium velutinum var. velutinum (field mouse-ear chickweed)	-	INV	GNR	S1
Collinsia verna (blue-eyed Mary)	-	INV	G5	S1
Cypripedium kentuckiense (Kentucky lady's-slipper)	-	INV	G3	S3
Delphinium newtonianum (Moore's delphinium)	-	INV	G3	S3
Diphasiastrum digitatum (southern running-pine)	-	INV	G5	S1S2
Elymus churchii (Church's wild rye)	-	INV	G2G3	S2?
Elymus riparius (river-bank wild rye)	-	INV	G5	S1S2
Heuchera villosa var. arkansana (Arkansas alumroot)	-	INV	G5T3Q	S3
Hieracium scabrum (rough hawkweed)	-	INV	G5	S2
Huperzia lucidula (shining fir-moss)	-	INV	G5	S2S3
Juglans cinerea (butternut)	-	INV	G4	S3
Lilium superbum (Turk's-cap lily)	-	INV	G5	S1
Mimulus floribundus (yellow monkey-flower)	-	INV	G5	S2S3
Muhlenbergia bushii (nodding muhly)	-	INV	G5	S2
Nemastylis nuttallii (Nuttall's pleat-leaf)	-	INV	G4	S2
Neviusia alabamensis (Alabama snow-wreath)	-	ST	G2	S1S2
Osmorhiza claytonii (hairy sweet-cicely)	-	INV	G5	S1S3
Phacelia gilioides (scorpion-weed)	-	INV	G5	S2S3
Philadelphus hirsutus (hairy mock orange)	-	INV	G5	S2S3
Phlox bifida (sand phlox)	-	INV	G5?	S3
Physalis missouriensis (Missouri ground-cherry)	-	INV	G5?	SH
Primula frenchii (French's shooting-star)	-	ST	G3	S2
Prosartes lanuginosa (yellow mandarin)	-	INV	G5	S2
Silene ovata (ovate-leaf catchfly)	-	ST	G3	S3
Silene regia (royal catchfly)	-	ST	G3	S2
Smilax ecirrhata (carrion-flower)	-	INV	G5?	SH
Stachys iltisii (Ouachita hedge-nettle)	-	INV	GNR	S3
Stylophorum diphyllum (celandine-poppy)	-	INV	G5	S3
Symphyotrichum sericeum (silvery aster)	-	INV	G5	S2
Tradescantia ozarkana (Ozark spiderwort)	-	INV	G3	S3
Trichomanes petersii (dwarf bristle fern)	-	ST	G4G5	S2
Trillium ozarkanum (Ozark trillium)	-	INV	G3	S3
Veratrum woodii (false hellebore)	-	INV	G5	S3
Viola canadensis var. canadensis (Canadian white violet)	-	INV	G5T5	S2
Special Elements - Natural Communities				
Central Interior Highlands & Appalach.Sinkhole & Depres.Pond	-	INV	GNR	SNR
Ozark-Ouachita Mesic Hardwood Forest	-	INV	GNR	SNR
Upland Headwater Stream-Ozark Mountains	-	INV	GNR	SNR
Upland River-Ozark Mountains	-	INV	GNR	SNR
Upland Stream-Ozark Mountains	-	INV	GNR	SNR
Special Elements - Other				
Colonial nesting site, water birds	-	INV	GNR	SNR
Geological feature	-	INV	GNR	SNR

7.3 Appendix C – Visitation Data

NPS Stats

National Park Service Public Use Statistics Office

National Park Service
U.S. Department of the Interior

Buffalo NR

2011	Rec Visits	Non-Rec Visits	Concession Lodging	Tent Campers	RV Campers	Concession Campgrounds	Back Country Campers	Misc Campers	Total Overnight Stays
January	48,609	0	0	101	14	0	0	32	147
February	34,449	0	0	162	7	0	84	0	253
March	85,108	0	61	3,668	165	0	1,682	700	6,276
April	86,150	0	211	4,527	553	0	1,720	723	7,734
May	164,498	0	243	7,970	1,230	0	3,222	1,566	14,231
June	192,333	0	1,075	6,071	4,875	0	6,977	1,454	20,452
July	168,967	0	554	6,825	1,876	0	1,958	1,023	12,236
August	127,661	0	203	2,191	1,644	0	418	161	4,617
September	78,190	0	0	3,080	1,783	0	976	1,027	6,866
October	93,433	0	0	3,055	2,870	0	242	473	6,640
November	48,968	0	0	629	633	0	16	18	1,296
December	41,436	0	0	124	50	0	0	32	206
2011 Total	1,169,802	0	2,347	38,403	15,700	0	17,295	7,209	80,954
Report Total	1,169,802	0	2,347	38,403	15,700	0	17,295	7,209	80,954

7.4 Appendix C – Floodplain Memorandum

United States Department of the Interior
NATIONAL PARK SERVICE
Buffalo National River
402 N. Walnut, Suite 136
Harrison, AR 72601

IN REPLY REFER TO:

PEPC ID 36001 (BUFF)

Date May 8, 2012

Memorandum for the Record

From: Barbara Wilson, Chief of Fire and Resource Management

Through: Kevin Cheri, Superintendent Kevin A Cheri

Subject: Determination of Floodplain Vulnerability related to the proposed Cedar Glade Improvements Project.

1. Background Information:

Director's order 77-2: Floodplain Management requires parks to preserve floodplain values and minimize potentially hazardous conditions associated with flooding. Implementation of the policy requires that the proposed project be classified into one of three action classes once the project is determined to be within a regulatory floodplain. If cost to obtain precise floodplain information is prohibitive, the park should assume the project is within a regulatory floodplain. The procedural manual does not apply to certain excepted actions: those that are located near water for the enjoyment of the visitor but require little physical development and do not involve overnight occupation: Examples include:

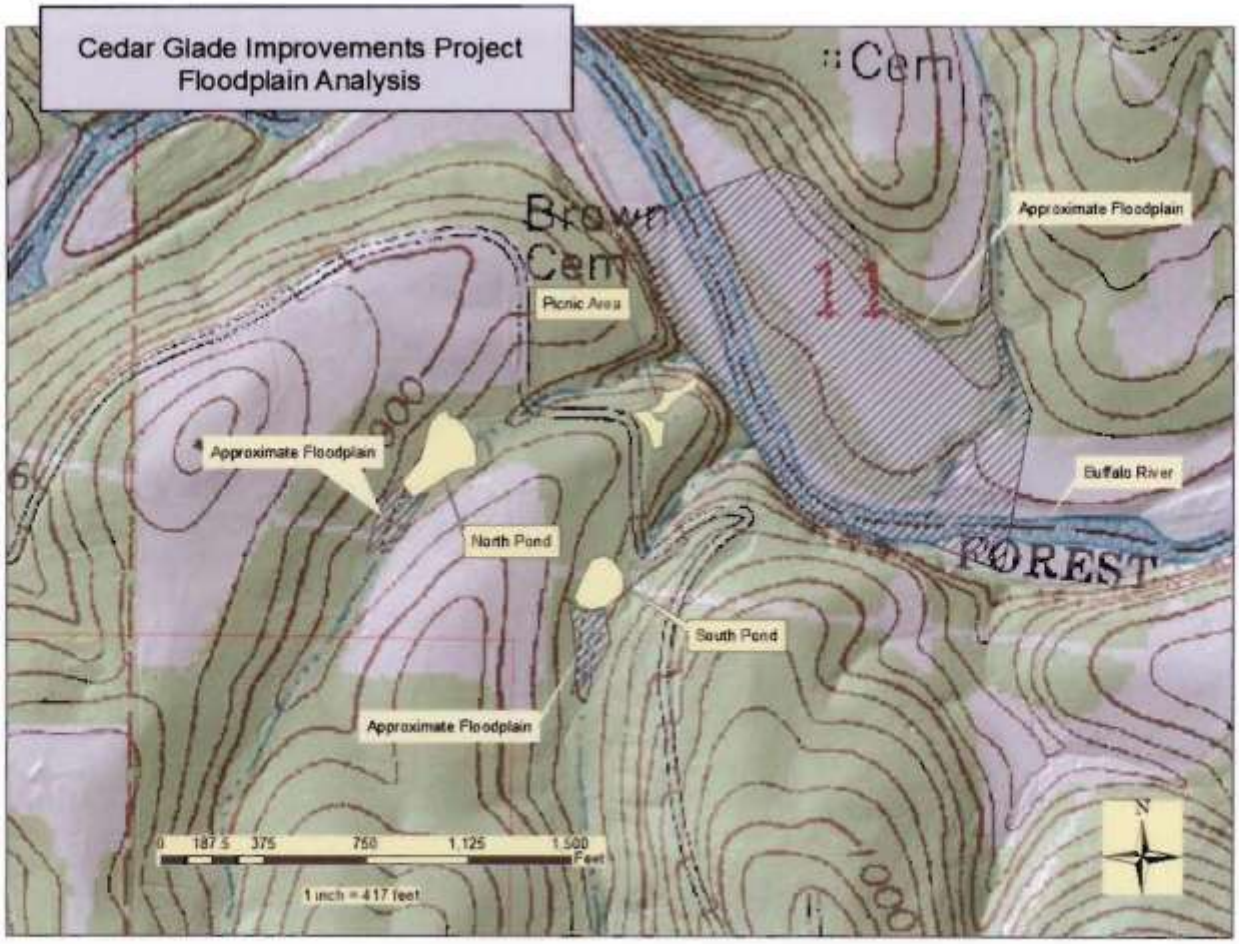
- Picnic facilities, scenic overlooks, foot trails, and small associated daytime parking facilities in non-high hazard areas provided that the impacts of these facilities on floodplain values are minimized;
- Isolated backcountry sites, natural or undeveloped sites along trails or roads, survey and study sites, or other similar activities; and
- Emergency actions essential to protecting property and public health, provided that emergency actions are limited to the minimum required and that all possible steps are taken to mitigate the short and long term adverse impacts of these actions on floodplain values.

2. Determination of applicability: The proposed project is partially located within the floodplain of two small unnamed intermittent blue line streams identified on USGS 7.5 minute topographic

map quad name Jasper, Ar. These streams are intercepted by earthen dams within 1/4 mile of their confluence with the Buffalo River. The streams traverse narrow steep hills and several small artificial floodplains (created by the dams) are located at the upstream end of each of the ponds. Additionally, at the south pond possible overtopping of the dam by extreme rain events could cause a small floodplain to occur at the current location of the floating dock. This area includes the current access trail from the parking area near the picnic area, which is located across North River Road. As part of the proposed project, a small portion of the new trail system will be constructed within this possible floodplain. Additionally, as part of this project, the ponds will be drained and the overburden of silt will be removed. This action may have a small transitory effect on the artificial floodplain at the upstream end of each of these ponds. Any overtopping of either dam would result in floodwater sheeting downhill where it would be intercepted by road side drainage structures on North River Road and would therefore not be a concern to the picnic area and overlook.

Due to the elevation of the project site, the proposed project is well outside of the regulatory floodplain of the Buffalo River and therefore determination of action class is not required.

3: Recommendation: The proposed project is not subject to the procedures for implementing floodplain protection and management actions in units of the National Park System as required by Executive Order 11988, "Floodplain Management," and Director's Order #77-2, "Floodplain Management."



7.5 Appendix E – Wetland Memorandum

United States Department of the Interior

NATIONAL PARK SERVICE

Buffalo National River
402 N. Walnut, Suite 136
Harrison, AR 72601

IN REPLY REFER TO:
N1621 (BUFF)
PEPC ID 36001

June 5, 2012

To: Central Files

Through: Superintendent Kevin A. Cheri

From: Chief of Resource Management

Subject: Determination of Wetland Vulnerability related to the proposed Cedar Glade Improvements Project.

1. Background Information:

Director's order 77-1: Wetland Protection requires parks to protect and preserve wetlands. A Wetland Statement of Findings must be prepared if an NPS action has the potential to have an adverse impact on wetlands (unless the action is "accepted". Those actions that involve placing of dredged or fill materials in wetlands or other "waters of the U.S. must comply with Section 404 of the Clean Water Act also. Excepted Actions to completing a Wetland Statement of Findings include:

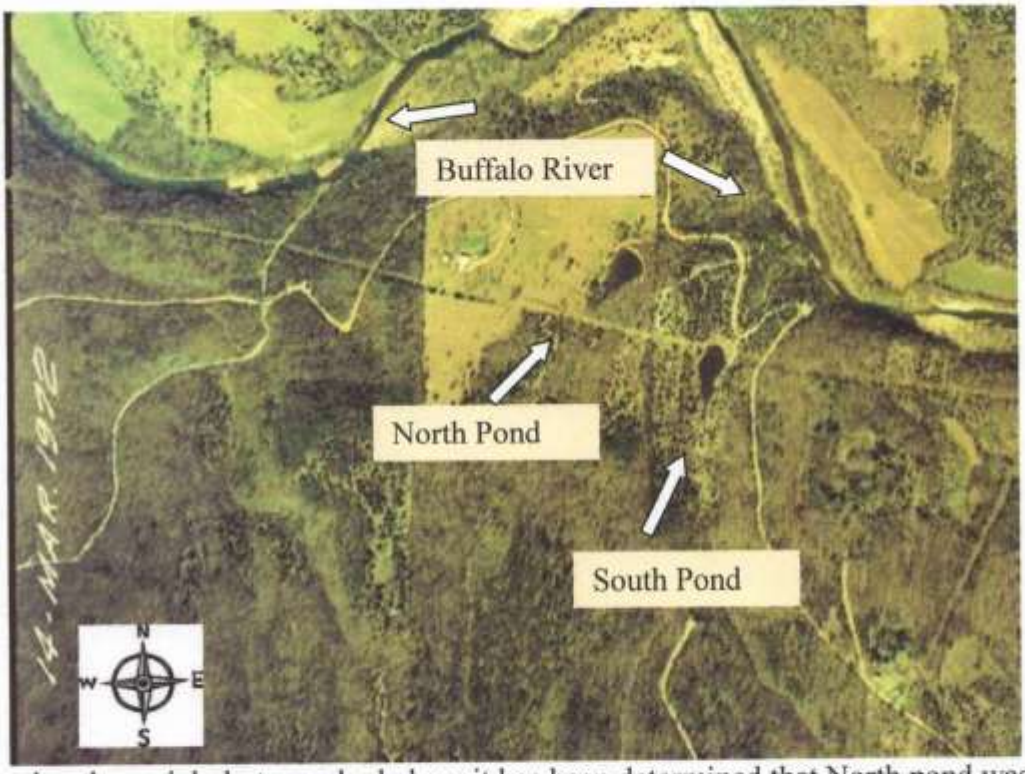
A. Scenic overlooks and foot/bike trails or boardwalks, including signs, where primary purposes include public education, interpretation, or enjoyment of wetland resources and where total wetland impacts from fill placement are 0.1 acre or less (Parking lots, access roads, borrow sites, and other associated facilities cannot be excepted).
B. Small boat ramps/launches, piers, or docks with the total long-term wetland impact for the entire project (both onsite and offsite) of 0.1 acre or less
C. Use and maintenance of unimproved backcountry vehicle stream crossings (use of stream channels as road corridors cannot be accepted).
D. Minor stream crossings using bridges or other structures that completely span the channel and associated wetland habitat (i.e. no pilings, fill, or other support structures in the wetlands/stream habitat.
E. Minor stream crossing for underground utility lines, including electrical lines, telecommunications cables, or water, sewer, gas or other pipelines, if the cumulative wetland disturbance totals 0.1 acres or less.
F. Installation of scientific measuring devices such as water level recorders, water quality monitoring stations, small weirs or flumes, or similar devices necessary for monitoring of or research on wetland resources.
G. Maintenance, repair or renovation (but not full reconstruction of expansion) of currently serviceable facilities or structures:

- that were under construction or were completed prior to May 28, 1980 (date when original "NPS Floodplain Management and Wetland Protection Guidelines" were published) but whose retention has been reviewed and justified according to Section 5.6 of these procedures, or
- That was completed after publication of the May 28, 1980 guidelines (or subsequent revisions, including this Procedural Manual) and for which compliance with them in on record.

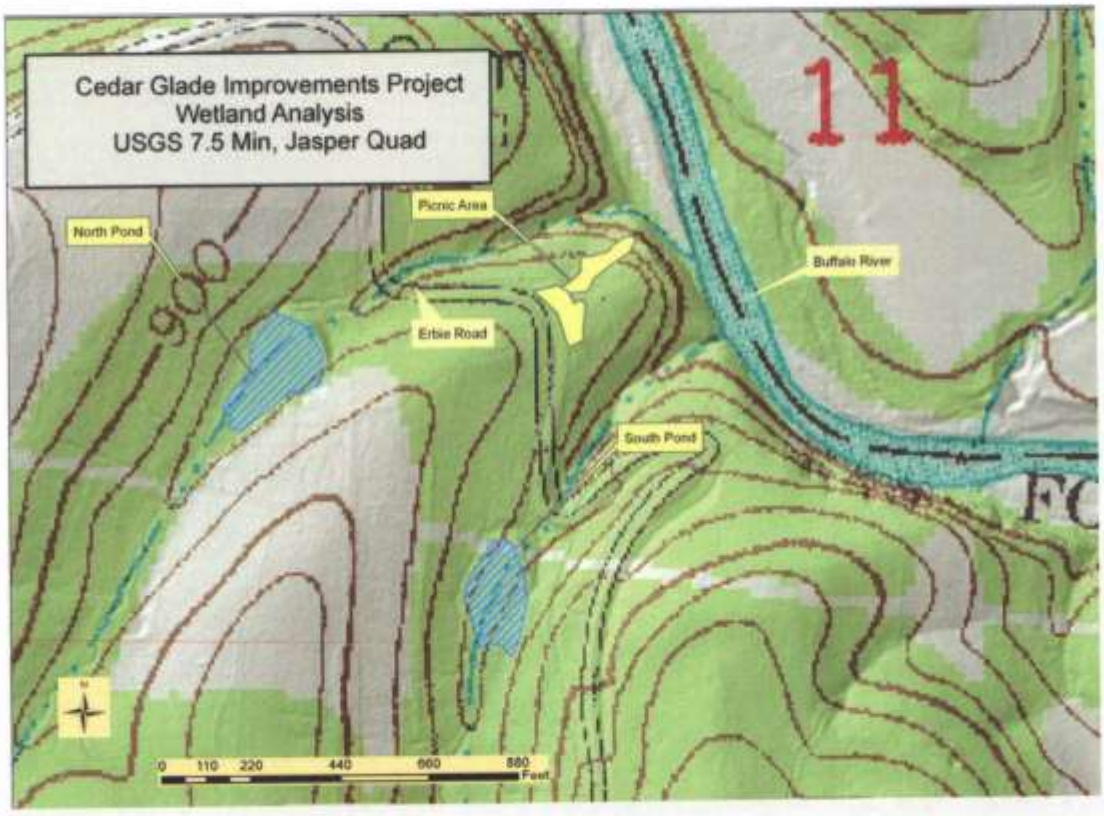
This exception allows for minor (0.1 acre or less) deviations in the structure's configuration or fill footprint in wetlands due to changes in construction codes, methods, or safety standards, but does not apply to other types of reconstruction/expansion or conversion to other uses that cause new adverse impacts to wetlands.

H. Actions designed to restore degraded (or completely lost) wetlands, stream, riparian, or other aquatic habitats or ecological processes. For this exception, "restoration" refers to reestablishing environments in which natural ecological processes can to the extent practicable, function as they did prior to disturbance.
   - Short-term wetland disturbances that are directly associated with and necessary for implementing the restoration may be allowed under this exception.
   - Conditions 1 and 2 in Appendix 2 may be waived for this excepted action if adverse impacts on hydrology and fauna exceed "minor" but are necessary to achieve restoration objectives. Justification of this waiver must be included in the NEPA document.
   - Actions causing a cumulative total of up to 0.25 acres of new, long-term adverse impacts on natural wetlands may be allowed under this exception if they are directly associated with and necessary for the restoration (e.g., small structures).
   - Some "artificial wetlands" see definitions in Section 4.3.2 below) may have been constructed on sites which were originally 100% upland habitat (e.g., wetlands sustained by water pumps or other means). Restoration of such sites to upland habitat may also be considered under this exception.
     - "Artificial" wetlands are those that have been created on former uplands or in deepwater habitats as a result of human activities. Such wetlands may be incidental or intentional (constructed ponds or reservoirs.... Proposed actions in small (5 acres or less) intentional artificial wetlands are subject to NPS NEPA compliance procedures. However, actions impacting these types of artificial wetlands may be excepted for the Statement of Findings requirements and compensation required of these procedures if, After evaluation of impacts on wetland functions and values, the anticipated wetland loss or degradation is determine to be minor (including not adverse impacts on state or federally listed or candidate species or their critical

2. Determination of applicability: The proposed project includes the draining and reshaping of two small farm type ponds built prior to conversion of the property to BNR in 1972.



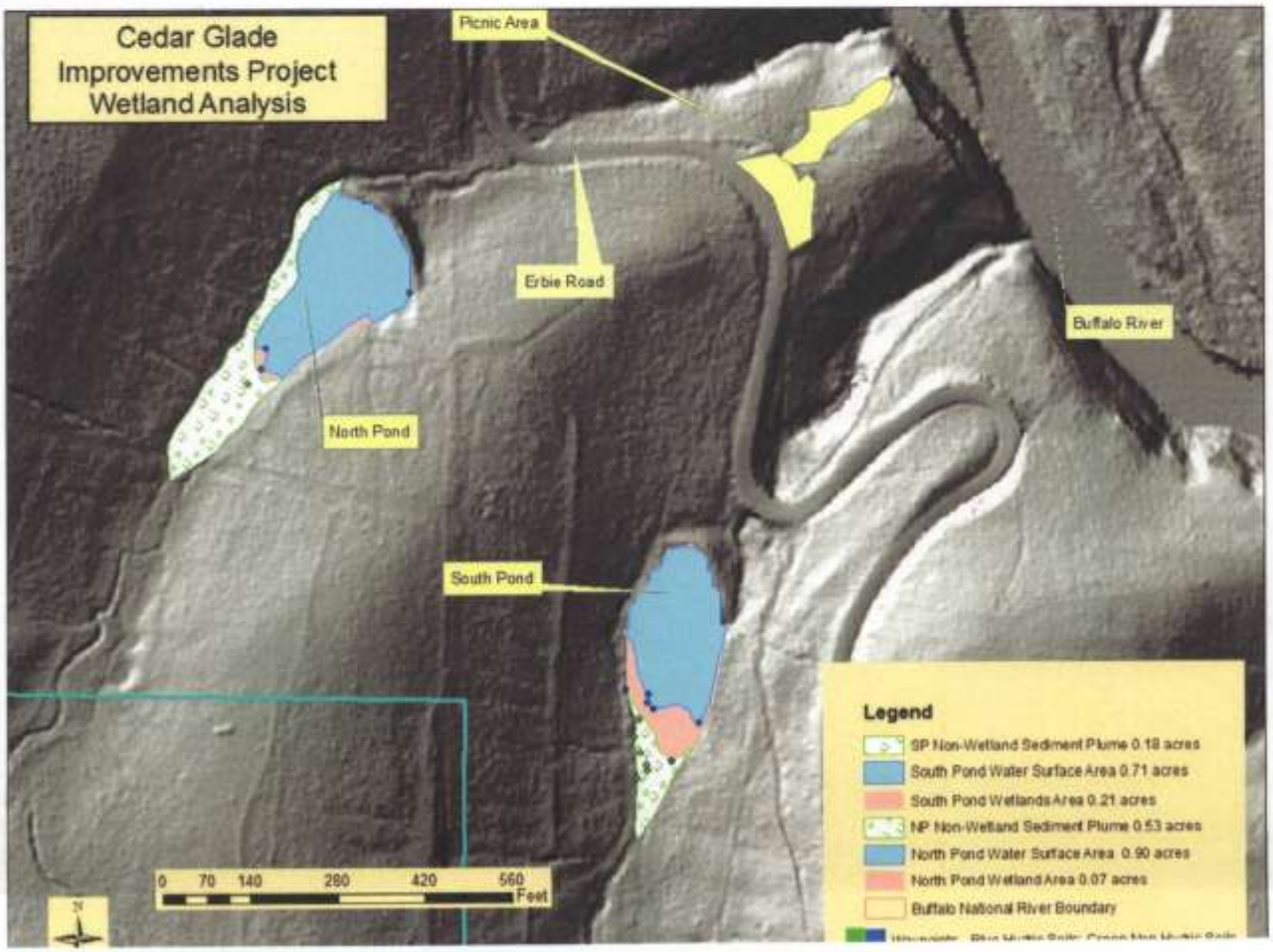
In reviewing the aerial photography below, it has been determined that North pond was likely constructed to support cattle ranching activities and the South pond was likely constructed to support management of a pine plantation. Both were also likely used to provide recreational fishing.



Both streams are classified as intermittent blue line streams and can be found on USGS 7.5 minute topographic map quad name Jasper, Ar. These streams are intercepted by earthen dams within 1/4 mile of their confluence with the Buffalo River. The streams traverse narrow steep hills and several small artificial wetlands (created by the dams) are located at the upstream end of each of the ponds.

Both dams were surveyed by NPS personnel qualified in dam safety. Both dams, which are essentially in the same configuration as when constructed, are stable and usable into the future. It is also recommended that any trees with a diameter at breast height of 10 inches or small that have been allowed to grow up through the dams since the NPS has taken ownership will need to be removed. Removal of larger trees may compromise stability of dam if removed at this time.

The dams have caused head cutting and erosion of the stream bed upstream of the ponds; resulting in a plume of sandy sediment collecting on the bottom of the ponds and extending for a short distance upstream of the ponds. Additionally, hydric soils have formed around the fringes of each pond. These soils host multiple obligate and facultative wetland plant species. With the exception of very drought stricken years, the hydrological regime of the two creeks feeding the ponds keeps these areas wet during most of the year and generally always during the growing season. Wetland delineation forms are attached to this report. The North pond has an open water area of 0.90 acres and a wetland area of 0.07 acres. The South pond has an open water area of 0.71 acres and a wetland area of 0.21 acres. These ponds and their wetlands are not connected, but are served by separate watersheds and blue line streams. Therefore, they were not added in a cumulative fashion but considered stand alone wetlands for the purpose of completing the determination of applicably of the D.O. # 77-1.



As part of the proposed project, these ponds will be drained and the overburden of silt will be removed. In order to remove the silt, a tract hoe will access the pond from the sides and from the inlet of the stream; when the stream bed is not running. This action may have a short term transitory effect on the artificial wetland at each of the ponds. During construction, the ponds will be reshaped to provide more shallow area suitable for both emergent wetland vegetation and fish reproduction. Once the project is completed, the small areas of existing wetlands, plus the newly expanded shallows will be left to naturally regenerate vegetation. The overall goal is to create a larger, more diverse, properly functioning wetland that will provide reproductive area for the aquatic pond species.

3. Recommendation: The project area wetlands fall within the excepted category H of Director's Order 77-1: Actions designed to restore degraded (or completely lost) wetlands of the [Actions causing a cumulative total of up to 0.25 acres of new, long-term adverse impacts on natural wetlands may be allowed under this exception if they are directly associated with and necessary for the restoration (e.g., small structures)] and therefore a Wetlands Statement of Findings is not required. Neither wetland area exceeds 0.25 acres.

4. U.S. Army Corps of Engineer Section 404, Clean Water Act requirements.
The proposed action meets the definition of use for Nationwide Permit 27, Aquatic Habitat Restoration, Establishment and Enhancement Activities. Activities in waters of the United States associated with the restoration, enhancement, and establishment of tidal and non-tidal wetlands and riparian areas, the restoration and enhancement of non-tidal streams and other non-tidal open waters, and the rehabilitation or enhancement of tidal streams, tidal wetlands, and tidal open waters, provided those activities result in net increases in aquatic resource functions and services.

To the extent that a Corps permit is required, activities authorized by this NWP include, but are not limited to: the removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms, as well as discharges of dredged or fill material to restore appropriate stream channel configurations after small water control structures, dikes, and berms, are removed; the installation of current deflectors; the enhancement, restoration, or establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or establish stream meanders; the backfilling of artificial channels; the removal of existing drainage structures, such as drain tiles, and the filling, blocking, or reshaping of drainage ditches to restore wetland hydrology; the installation of structures or fills necessary to establish or re-establish wetland or stream hydrology; the construction of small nesting islands; the construction of open water areas; the construction of oyster habitat over unvegetated bottom in tidal waters; shellfish seeding; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; re-establishment of submerged aquatic vegetation in areas where those plant communities previously existed; re-establishment of tidal wetlands in tidal waters where those wetlands previously existed; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species should be planted at the site.

This NWP authorizes the relocation of non-tidal waters, including non-tidal wetlands and streams, on the project site provided there are net increases in aquatic resource functions and services.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing any activity (see general condition 31).

General Condition 31. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b) (1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

5. Arkansas Department of Environmental Quality Water Quality Certification, Clean Water Act, Section 401 requirements: The State of Arkansas re-issued blanket water quality certification as required by Section 401 in March 16, 2012. The proposed project location and type do not fit within any of their excepted categories.

7.6 **Appendix F – Scoping Documents**

Project Description

PMIS Statement includes: ADA Compliant Toilet near picnic area, Hard Surface Parking, 23,000 square feet of hardened trails, 1200 feet of board walks, ramps and fishing platforms, upgrade existing day use picnic area to be ABA accessible.

PMIS statement raised a lot of questions on how and why the project was created, what was the original scope of work envisioned and what was the size. Other questions from staff included:

- Did project include one or both ponds
- How about a connecting trail systems
- Can the ponds support increased fishing pressure
- What is the current use pattern of the ponds and picnic area
- what is the water source for both ponds; are they on BUFF or if not are they protected
- Can the ponds be stocked or have they been stocked in the past
- Are the earthen dams safe for increased use
- Should the ponds be use limited to just ADA and youth
- Once completed will the youth ponds support yearly fishing derbies
- Do the ponds need reshaping and how much silt has accumulated\
- Can the parking area support the proposed increased use
- What is the proposed increase use of parking area, picnic area and ponds
- What type of toilet, where will it be located and how big
- What does upgrade existing picnic area involve
- Will a section of Erbie Road need to be modified to accommodate an ABA trail
- Will new trail system be connected to the BRT and if so, how
- Will improvements to the picnic area include better trail marking of the BRT in that area
- Are Fire pit upgrades
- If ponds need stocking how will the ponds be accessed; trail may need to be wide enough to accommodate stocking vehicle
- Will project include educational program and/or signage – ie bulletin boards posted with park and AGFC regulations, special creel limits, etc
- Could fishing platforms be strategically placed to provide access to specific types of fish – ie catfish
- Would BNR host an "Opening Day Event"

Other comments/concerns included:

- Use or removal of gate providing access to utility ROW – this served as the original road to pond
- Denver Service Center developed existing trail and fishing pier in 1989 and may have as built plan sets.
- Existing fishing pier and/or approach to fishing pier may not meet current ABA standards (Mark Foster has copies of standards).

- Social trail around ponds may be developed into a branch of new ABA trail system
- Ponds are not on the 1960's USGS topographic maps. North pond may have been constructed as a fishing pond.
- Options for south pond may include a loop trail with boardwalks for stream crossing
- All agreed that overdevelopment was not wise
- There were concerns about cost to maintain the site in repairs, trash pickup, grate cleaning and toilet cleaning.
- Use Dry Fork Creek development as a comparison
- Youth Fishing may require fish stocking by AGFC as well as stricter enforcement of fishing regulations. May require changes in Arkansas fishing regulations.
- Change in use may require a 1.5 closure and Superintendent Compendium change.
- Current contacts with AGFC have suggested that they would favor youth fishing in particular and would be willing to stock as needed.
- North pond is both stream and spring fed.
- New fishing platforms may be "floating" type.
- Dams will be surveyed for safety by Regional Dam expert Jim Conroy.
- Lidar data will be available to help review issues and develop design concepts
- There is an old access road to North Pond.
- Possible youth activities could include fishing derbies, fishing with a rangers, etc.
- Most likely fish to be stocked include Blue Gill, White River Catfish and large and small mouth bass.
- Project footprint will be developed by Chuck Bitting and will include input from Fire and Cultural Resources. Footprint will serve as prescribed fire boundary and APE for cultural resources.

Some of the answers from the project developers included: project was meant to widen the array of off-river recreational opportunities, particularly for ADA and youth. Current trail system is listed as ADA, but does not meet most recent requirements.

Dave Thompson is the ABA (ABA, not ADA are regulations for federal facilities) Coordinator for Midwest Region (*need to check this and get phone number)*

Group participated in the development of draft purpose and need sections:

Purpose

- To provide a diverse range of off-river opportunities for ABA and youth fishing
- To improve ADA access to Cedar Glade Parking and Picnic Area
- To Improve Cedar Glade trail to meet ABA standards
- To Improve access to interpretational and education al opportunities

- To address public health issues

Need

- Cedar Glade trail, parking lot and picnic area need improvements to meet current ABA standards.
- There are currently not enough opportunities for ADA and Youth Fishing in the park for those without access to boats.
- Public has requested that BNR provide more ABA compliant trails for outdoor enjoyment. There is currently only one ABA compliant trail at Lost Valley in the upper district.
- There are currently no toilets at the picnic area
  The public has requested more interpretational and education outreach for this area of the park.

No Action Alternative can be described as:

Aside from the current configuration of Cedar Glade the ongoing operations including Mowing/Weeding in parking area, annual brushing of the trail, scheduled cleaning and trash removal at the picnic area and daily Law Enforcement patrols. The picnic area and ponds are currently open to all park visitors.