OZARK NATIONAL SCENIC RIVERWAYS

ENVIRONMENTAL ASSESSMENT FOR BROADFOOT AND SHAWNEE STAGING AREAS

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SUMMARY

The National Park Service (NPS), Ozark National Scenic Riverways (ONSR), is proposing the modification of 2 existing horse staging areas at Broadfoot and Shawnee areas, located in Shannon County, Missouri, near the confluence of the Jacks Fork and Current Rivers.

In August 2005, a lawsuit was filed against ONSR by the Missouri Coalition for the Environment (MCE) alleging that the park did not properly follow the National Environmental Policy Act (NEPA) in the establishment of horse staging areas (trailheads) or in administering scenic easements. The settlement agreement that was prepared as a result of this lawsuit stipulates that, among other things, the park must complete an environmental assessment (EA) of the Shawnee and Broadfoot staging areas that includes any road segments improved, constructed or developed in connection with the Broadfoot staging area.

The alternatives proposed within this EA address this lawsuit, as well as focus on the protection and mitigation of potential impacts to natural and cultural resources as a result of the construction, maintenance and ongoing use of the staging areas. This EA discusses the no-action alternative, and two action alternatives designed to achieve these objectives, and analyzes the potential impacts at each site.

Broadfoot Staging Area

- Alternative B1 – No-Action at Broadfoot, proposes no new development or changes in operations.
- Alternative B2 (Agency preferred) – Modification to staging area and selected infrastructure at Broadfoot, proposes trail, road, and staging area modifications.
- Alternative B3 – Removal of staging area and selected infrastructure at Broadfoot, proposes removal of the staging area, retention of vault toilet, and rehabilitation of selected road infrastructure.

Shawnee Staging Area

- Alternative S1 – No-Action at Shawnee, proposes no new development or changes in operations.
- Alternative S2 (Agency preferred) – Modification to staging area and selected infrastructure at Shawnee, proposes trail, runoff, and staging area modifications
- Alternative S3 – Removal of staging area and selected infrastructure at Shawnee, proposes removal of the staging area, retention of vault toilet, and rehabilitation of selected road infrastructure.

The Agency preferred alternative at each site would retain existing staging area function and facilities, while modifying trail access, mitigating runoff, and at Broadfoot, rehabilitating selected roads to reduce impact within the river corridor.

We are seeking public and agency comments on this environmental assessment from April 26, 2006 through May 26, 2006.

Comments must be received by May 26, 2006 and may be submitted by two methods:

1. Planning, Environment, and Public Comment (PEPC) website (select Ozark National Scenic Riverways from the dropdown menu): http://parkplanning.nps.gov/publicHome.cfm

2. ONSR park headquarters: Superintendent, Ozark National Scenic Riverways, P.O. Box 490, Van Buren, MO 63965

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1.0 PURPOSE AND NEED

In 1991, staff at Ozark National Scenic Riverways (ONSR) completed a Roads and Trails Study in which the preferred alternative included a recommendation to create three day-use horse staging areas in the park; one in the lower Current River area, one in the upper Current River area, and one in the Jacks Fork River area. Horse use within the park continued to increase over the years, and in the late-1990's ONSR management began to develop the concept of a Horse Use Management Plan. Subsequent meetings of the ONSR Horse Use Management "Core Team" resulted in the development of criteria for selecting horse trail routes and developing horse staging areas. The team recognized that resource protection was a concern and had to be carefully evaluated in areas of the park which received very heavy use associated with organized trail rides. The need for horse staging areas in ONSR came from increasing incidents of conflicts between horse riders and other visitors at some locations, increased numbers of vehicles parking along roadsides (safety), next to the river (impacts to water quality), and in fields (impacts to vegetation), and the general need to accommodate horse riders traveling to the park from outside the region. Although the Horse Use Management Plan was never developed, one of the initial tasks identified was to "define the need and location of day-use staging areas, including facilities and links to trail systems".

Park maintenance staff submitted a proposal for National Park Service (NPS) funding in 1998 for the restoration of hiking and horse trails throughout the park following the recommendations of the Roads and Trails Study. The proposal identified actions such as improving foot trails, improving 14 miles of horse trails, developing maps, and establishing three day use staging areas. The proposal was funded in 1999 and work began immediately. In 2001, using funds obligated under this proposal, construction of two day-use staging areas began in the Two Rivers area; one at Broadfoot and one at Shawnee (Figure 1). Each of these staging areas consisted of a single vault toilet, gravel parking loop, and wooden hitching posts to accommodate trail riders using the nearby NPS designated horse trails. Improvements were also made to road segments at the Broadfoot site. These included the addition of chat (i.e. crushed rock) to harden and define the road surfaces for vehicular traffic. Construction of the staging areas was subsequently completed during the summer of 2002.

In August 2005, a lawsuit was filed against the park by the Missouri Coalition for the Environment (MCE) alleging that the park did not properly follow the National Environmental Policy Act (NEPA) in the establishment of horse staging areas (trailheads) or in administering scenic easements. The settlement agreement that was prepared as a result of this lawsuit stipulates that, among other things, the park must complete an environmental assessment of the Shawnee and Broadfoot staging areas that includes any road segments improved, constructed or developed in connection with the Broadfoot staging area. A decision document must be provided by June 1, 2006.

In keeping with the NPS mission as well as addressing the lawsuit, the need the National Park Service is focusing on is the protection and mitigation of potential impacts to natural and cultural resources as a result of the construction, maintenance and ongoing use of the staging areas.

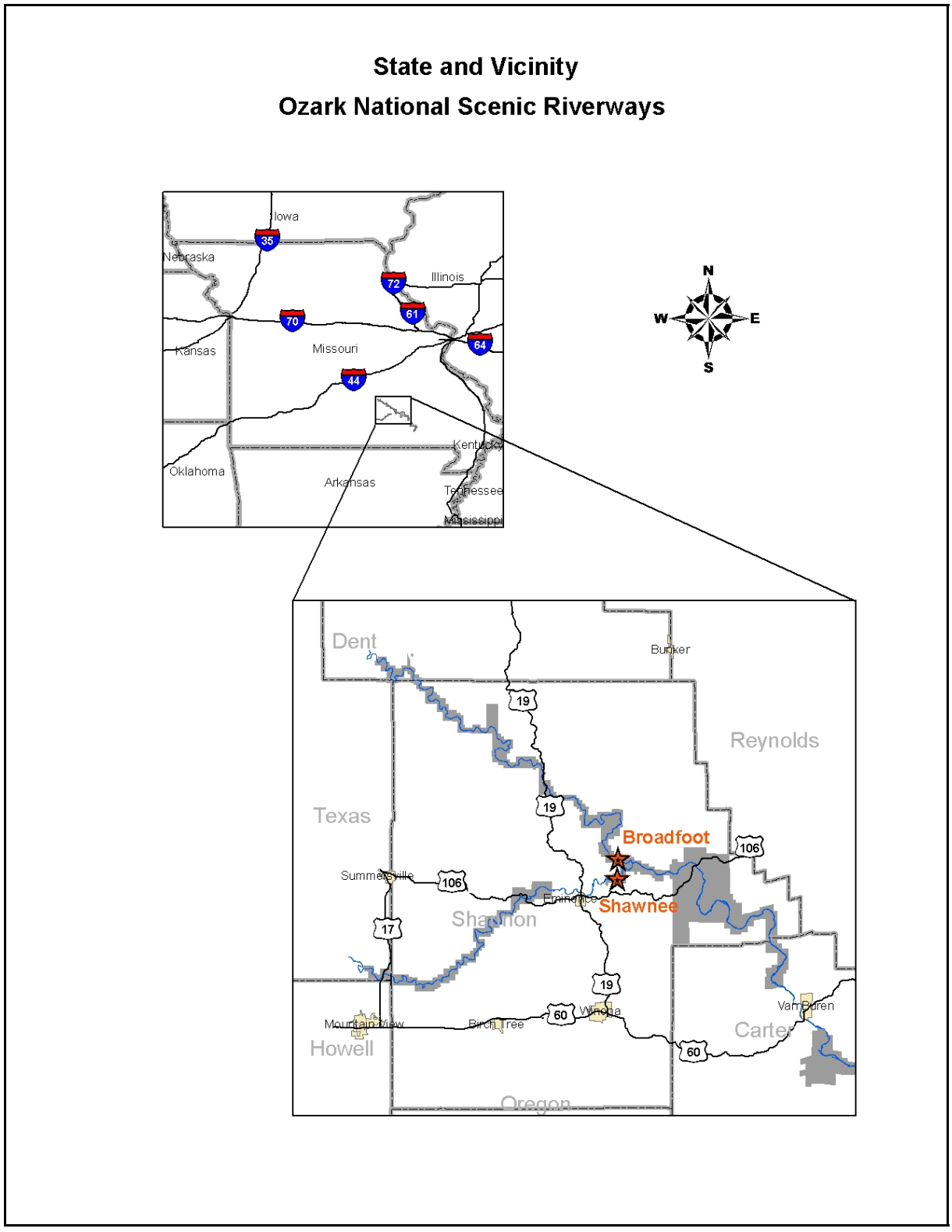
2.0 APPLICABLE REGULATORY REQUIREMENTS & COORDINATION

This Environmental Assessment (EA) has been prepared to evaluate the impacts of the alternatives described in Section 4.0. The EA is prepared in accordance with the *National Park Service's Director's Order No. 12: Conservation Planning, Environmental Impact Analysis, and Decision Making*, and its accompanying Handbook, and the provisions of the National Environmental Policy Act of 1969 (NEPA) (PL91-190, 42 USC 4321-4247). Detailed procedures for developing this document comply with the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508).

Regulatory requirements, which may be applicable to the activities addressed in this EA, include:

- Section 106 of the National Historic Preservation Act addressing any activities directly or indirectly impacting prehistoric or historic archeological sites, historic structures, or cultural landscapes eligible for or listed in the National Register of Historic Places.
- Section 106 consultation also includes coordination with any Native American Tribes as appropriate.
- Section 404 of the Clean Water Act and state water quality certification through Section 401 of the Act.
- Section 7 consultation with the U.S. Fish and Wildlife Service under the Endangered Species Act.
- Executive Order 11990, Protection of Wetlands
- Executive Order 11988, Floodplain Protection
- Executive Order 13112, Invasive Species

Figure 1. Vicinity Map.



3.0 DEVELOPMENT OF THE STAGING AREAS

The purpose of NEPA as described in the act that created it is to "encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; and to enrich the understanding of the ecological systems and natural resources important to the Nation…" NEPA was enacted to make sure that federal agencies fully consider the environmental costs and benefits of their proposed actions before they make any decision to undertake those actions. In the case of the Broadfoot and Shawnee staging areas, the National Park Service (NPS) is preparing an EA after-the-fact; it is important to clearly describe the actions that took place in the construction of these facilities. This section of the environmental assessment provides a brief description of the pre-development site conditions and construction activities at each staging area location.

Broadfoot Area

The Broadfoot staging area (Figures 2, 3) was constructed along the Broadfoot Tract Road (2-3063) in a 2-acre open field on a level terrace approximately 500 feet south of the Current River. This site was selected in a centralized location near the junction of the Shawnee and Broadfoot horse trail riding loops. One designated primitive campground is located on the Current River 0.5 miles to the east of the staging area. In addition to horse riders and campers, local residents and sightseers visit the area to view the feral horses that frequently gather in the north field to feed. Today, the open fields at Broadfoot are maintained by the Wild Horse League (WHL) through periodic brush-hogging for the purpose of providing additional forage for the wild horses.

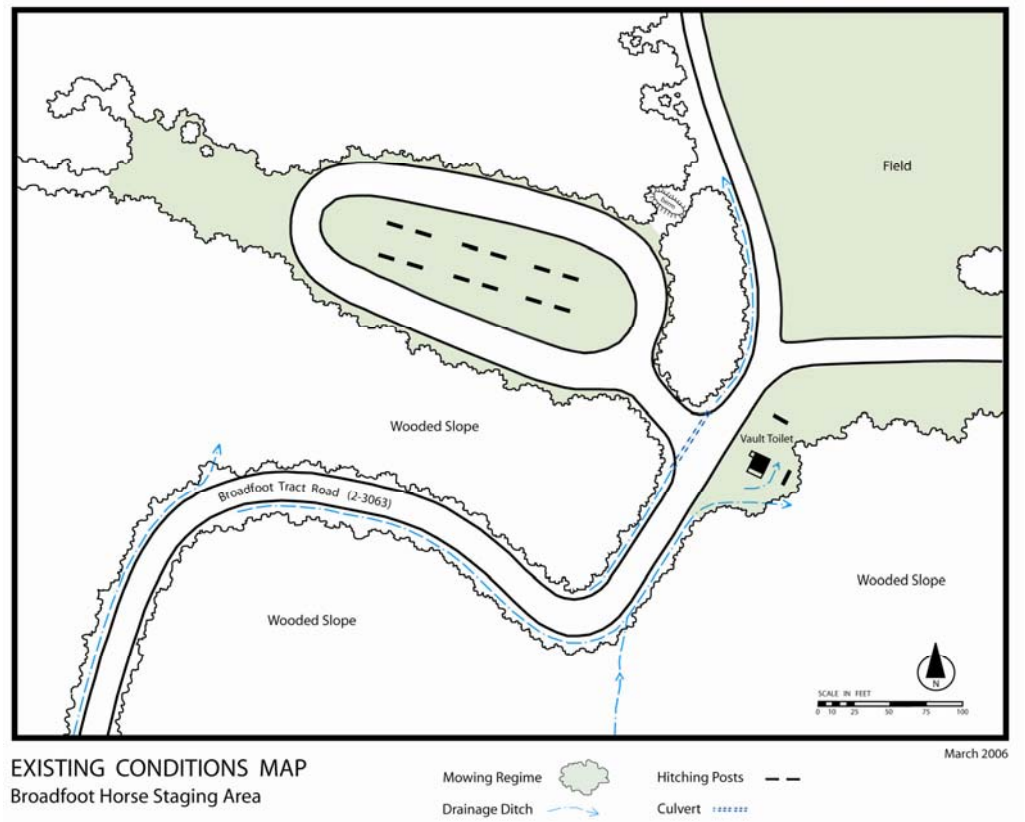
The roads at the Broadfoot site have historically been maintained by the ONSR Roads and Trails crew through periodic grading. In 2000, while grading the road that crosses the south field, an upslope ditch was removed. During the following summer, in order to correct drainage problems that had developed, the ditch was reinstated. This action inadvertently resulted in significant impacts to a known archeological site. Subsequent consultations with the park's archeologist and the Midwest Archeological Center (MWAC) resulted in the development and implementation of a stabilization plan to mitigate these impacts. This involved the addition of fill, chat, and rock to the impacted area. Additional road improvements that took place during the summer of 2001 include the addition of chat to; 1) the road on the south side of the north field, and 2) the loop road in the south field. These activities were done to harden and define their surfaces for vehicular traffic.

Work on the Broadfoot staging area began in July of 2002 with modifications and improvements to the Broadfoot Tract Road that accesses the site off of County Road 206. Modifications and improvements also occurred to approximately 700 feet of the Broadfoot Tract Road where it enters the site from a steeply descending curve. The existing access was widened, and an 18"diameter 60 foot length of metal culvert was set in place to accommodate runoff traveling down the inboard ditch paralleling the road. The Broadfoot Tract Road was widened, the surface hardened, and the curvature alignment adjusted to accommodate large vehicles (horse trailers) as they descended on approach to the staging area entrance. A total of 336 cubic yards of clay fill and 182 tons of chat were laid to accomplish this task. In addition, a drainage ditch was cut to redirect runoff coming from a swale which channeled flow down the ridge to the south of the Broadfoot fields. The creation of this ditch sent surface runoff away from the terminus of the county road and sent it to the east along the wood's edge to the south.

The staging area site was a level open field that required little grading and no cut and fill. The parking loop on the site was constructed by removing the organic top soils down to the subgrade, followed with compacted base and finish lifts using 140 tons of chat material to provide a stabilized load-bearing surface. The organic top soil removed during the creation of the road bed was spread evenly within the

Figure 2. Broadfoot Staging Area.

Figure 3. Broadfoot Staging Area Existing Conditions.



center of the loop and quickly returned to grass. In addition, a total of 780 tons of chat was laid on the entire road network encircling the north field in order to improve access. Following construction of the staging area and improvements to the access road in August of 2002, a single unit vault toilet was constructed to the east of the staging area and the access road. A total of 120 cubic yards of clay fill was used to prepare the site of the vault toilet installation. Fourteen hitching rails were installed; twelve within the grassy island in the center of the staging area parking loop and two adjacent to the vault toilet. These were installed using 6" x 10 foot round posts.

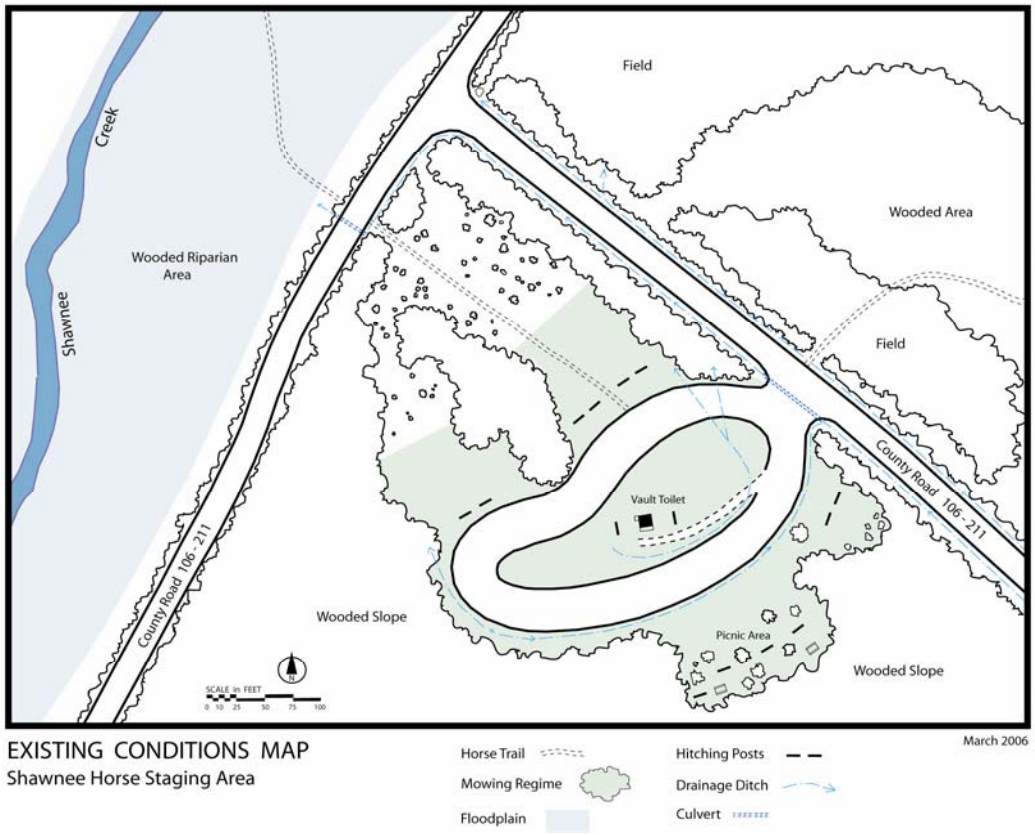
Shawnee Staging Area

The Shawnee staging area was developed in a 5-acre open field on a northwest facing slope within approximately 500 feet and upslope of Shawnee Creek (Figures 4, 5). This field had previously been managed for hay through a special use permit and contained primarily tall fescue (*Lolium arundinaceum*) and other grasses. A park designated horse trail, the Shawnee Loop, enters the Shawnee Creek floodplain from the west, crosses the creek, and enters the staging area before continuing north along the Jacks Fork River. Because of the proximity of the horse trail to the Shawnee campground, prior to the construction of the staging area horse riders in the area were increasingly using the comfort station located there. It was not unusual to observe 50 -100 horses crowded in the campground during one of the Cross Country Trail Rides (CCTR). Visible impacts to the campground were observed and consisted of damage to tree trunks, loss of vegetative cover, and soil compaction. It was thought that the addition of a vault toilet at the new staging area would alleviate some of the impacts and help with the issue of conflicting use.

Early in the summer of 2002, work began on the Shawnee staging area with the construction of an access driveway off of County Road 106-211. This required the installation of a 24" diameter metal culvert 60 feet in length to carry water from the existing drainage ditch paralleling the county road under the access driveway. To level the existing gradual incline of the site, a terrace bench was created to accommodate the parking loop and the single vault toilet. This was accomplished by first cutting an inboard ditch into the upper slope running along the eastern side of the open field. This fill material was consequently used for creating a portion of the loop road. An additional 504 cubic yards of fill was hauled to the site to complete rough grading which included creating a raised island terrace in the center of the parking loop where the vault toilet was installed. Following this, a total of 545 tons of chat was used to stabilize and harden the access drive, the parking loop, and the raised terrace at the site of the toilet facility. The single unit vault toilet was constructed on site in July 2002. Following finish grading the disturbed areas of the site were seeded and mulched. A total of 14 hitching rails were installed using 6" x 10 foot round posts. In 2005, a picnic area containing two picnic tables was added near 4 of the hitching posts.

Figure 4. Shawnee Staging Area.

Figure 5. Shawnee Staging Area Existing Conditions.



4.0 ALTERNATIVES

As a result of the scoping process, the no-action alternative and two action alternatives for addressing the purpose and need of this EA were selected for further analysis. Each alternative has been analyzed independently for each of the two staging areas (Broadfoot and Shawnee). The alternatives evaluated are:

Broadfoot Staging Area
- Alternative B1 – No-Action at Broadfoot
- Alternative B2 – Modification to staging area and selected infrastructure at Broadfoot
- Alternative B3 – Removal of staging area and selected infrastructure at Broadfoot

Shawnee Staging Area
- Alternative S1 – No-Action at Shawnee
- Alternative S2 – Modification to staging area and selected infrastructure at Shawnee
- Alternative S3 – Removal of staging area and selected infrastructure at Shawnee

4.1 Broadfoot Staging Area

ALTERNATIVE B1 – No-Action at Broadfoot

The No-Action alternative would maintain the existing facilities at the staging area. Current recreational use of the area would continue. No modifications to the existing facilities or associated road segments would occur. Recently permitted intermittent camping has been eliminated and the site would continue to function as a day-use only horse staging area.

The single unit vault toilet and two associated hitching rails would remain as is. Current operations to maintain the staging area would continue. These activities would include cleaning the vault toilet and picking up trash once per week (4 hours), mowing the open grassy areas five times per year, and pumping the vault toilet once per year. The horse trailer parking loop and fourteen associated hitching rails to the west of the vault toilet would remain. Vehicular access to the loop road surrounding the north Broadfoot field would continue. Vehicular access through the south field to access the small loop road would continue. The road segments and parking loop would continue to be maintained by Shannon County.

ALTERNATIVE B2– Modification to staging area and selected infrastructure at Broadfoot

This alternative proposes to modify the existing staging area and selected infrastructure. Modification at this site would include the closure and rehabilitation of some road segments, closure and re-routing of a section of the Shawnee horse trail loop (nearby horse trail that intersects with the Broadfoot loop), installation of physical barriers (fencing, gate, etc.), periodic collection of manure from the parking loop, and installation of a turn-around loop. Recently permitted intermittent camping has been eliminated and the site would function as a day-use only horse staging area. This alternative would also include the installation of an interpretive kiosk or panel at the entrance to the staging area and signs to indicate closures and/or direct traffic. After implementation of this alternative, the park would begin monitoring the effects of these modifications to archeological sites and exotic plant introduction.

Under this alternative, a 0.6 mile section of improved road running parallel to the Current River on the north and west sides of the north field (Figure 7, C) would be closed and rehabilitated. Vehicular access to this road segment would be precluded by the installation of 125 feet of fencing at its southwest terminus (Figure 7, B) and the use of logs and brush at its east terminus (Figure 7, D). A 0.5 mile section of improved road running southeast through the south field (Figure 7, H) would be closed and

rehabilitated. The existing road bed would be used to create 0.3 miles of approximately 4 foot wide horse (Shawnee loop trail) and hiking trail (Figure 7, G). Vehicular access would be precluded (horse and hiker access would continue) through the installation of a gate at the junction of this road segment and the north field (Figure 7, F).

The 0.3 mile Shawnee horse trail cut through extending northeast from County Road 235-F to the southern end of the north field would be closed and rehabilitated (Figure 7, I) due to ongoing erosion and consolidation of trail segments. Installation of physical barriers (logs, brush, etc.) at the southern and northern terminus of this cut through would prevent access. The Shawnee horse trail would be re-routed west and north along the county road into the staging area.

A 50 foot radius turn-around loop would be constructed in the southeast corner of the north field (Figure 7, E). Construction of this loop would involve the removal of 900 square feet of soil and the addition of 15 tons of chat. This loop would allow visitors to the site an opportunity to turn around before entering the primitive campground.

In order to prohibit access to a nearby creek and adjacent private land, approximately 75 feet of fencing would be installed just to the west of the parking loop (Figure 7, A). The open grassy area remaining to the west of the fence would be allowed to revegetate naturally. Revegetation of native plant communities in this area would be encouraged, and the establishment of undesirable plants (i.e. exotic or invasive plants) would be prevented through periodic treatments (i.e. mechanical, etc.).

Figure 6. Alternative B2 – Modification at Broadfoot Staging Area

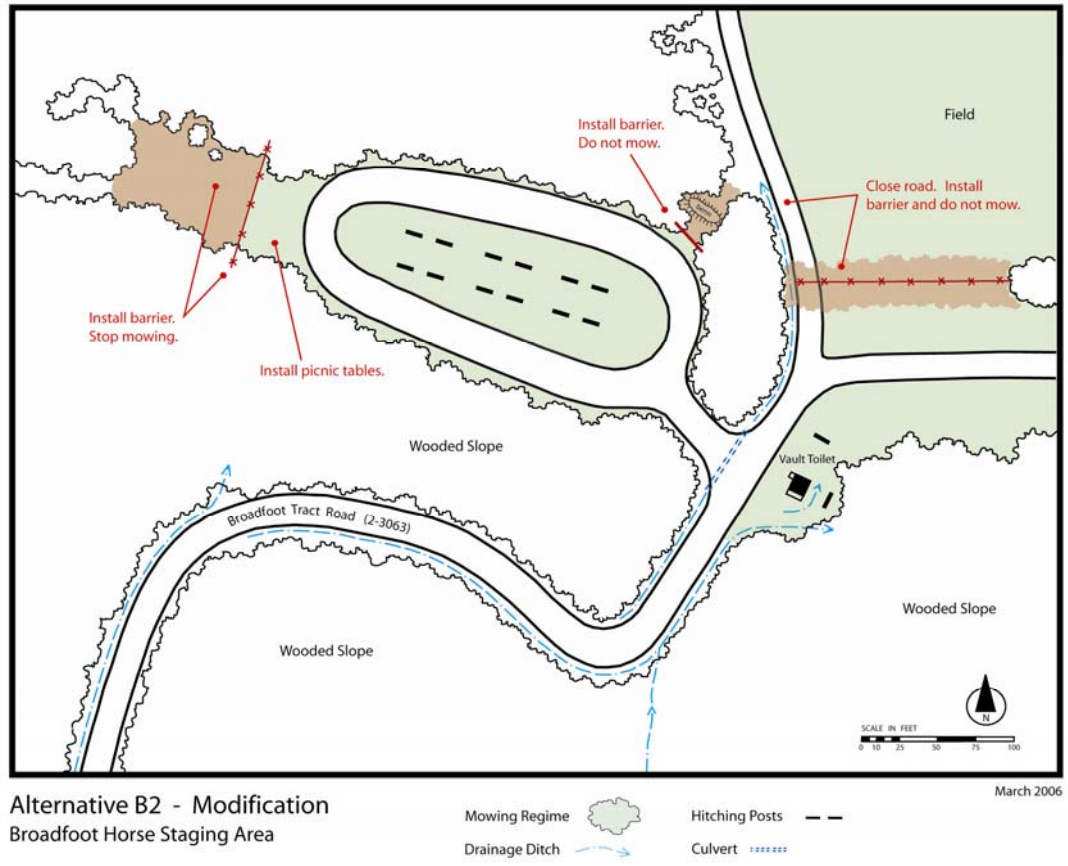
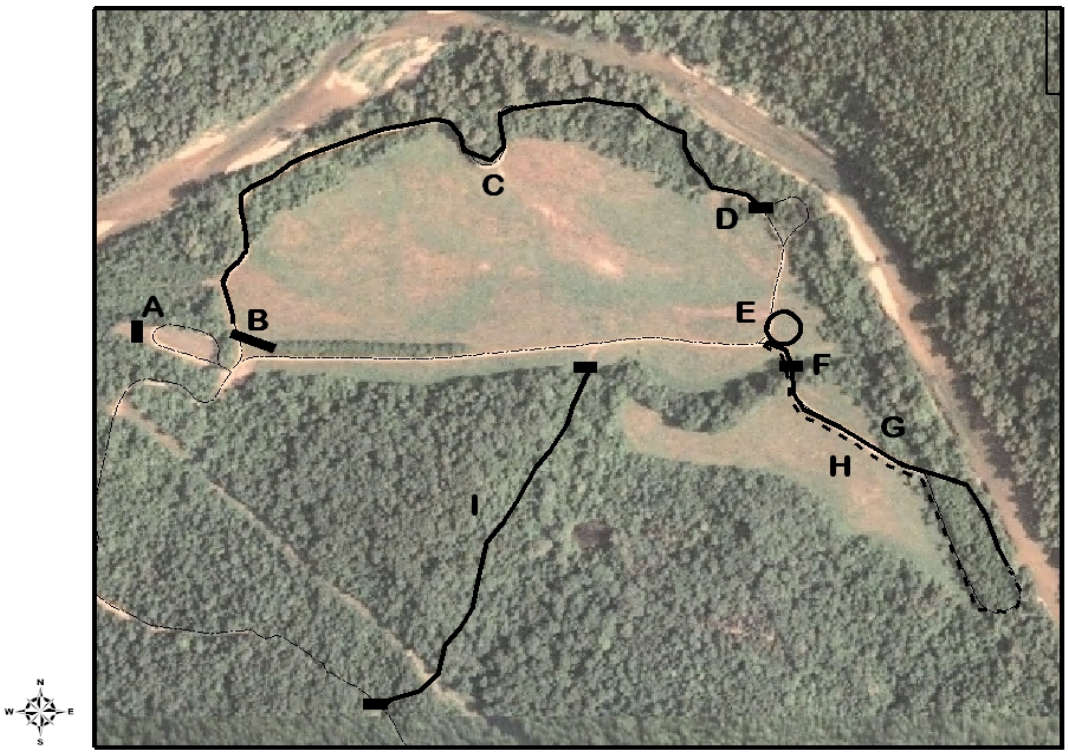


Figure 7. Alternative B2 – Modification at Broadfoot Site



ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

This alternative proposes to remove the staging area and selected infrastructure and rehabilitate any impacted areas. As in Alternative B2, removal of the staging area would include the closure and rehabilitation of some road segments, closure and re-routing of a section of the Shawnee horse trail loop, installation of physical barriers (fencing, gate, etc.), and installation of a turn-around loop. Alternative B3 differs from Alternative B2 in that in addition to the modifications listed above, the horse trailer parking loop and associated hitching rails would be removed. The vault toilet would remain in its present location. This alternative would also include the installation of an interpretive kiosk or panel and signs to indicate closures and/or direct traffic.

As in Alternative B2, a 0.6 mile section of improved road running parallel to the Current River on the north and west sides of the north field would be closed and rehabilitated. Vehicular access to this road segment would be precluded by the installation of 125 feet of fencing at its southwest terminus and the use of logs and brush at its east terminus. A 0.5 mile section of improved road running southeast through the south field would be closed and rehabilitated. The existing road bed would be used to create 0.3 miles of approximately 4 foot wide horse and hiking trail. Vehicular access would be precluded through the installation of a gate at the junction of this road segment and the north field.

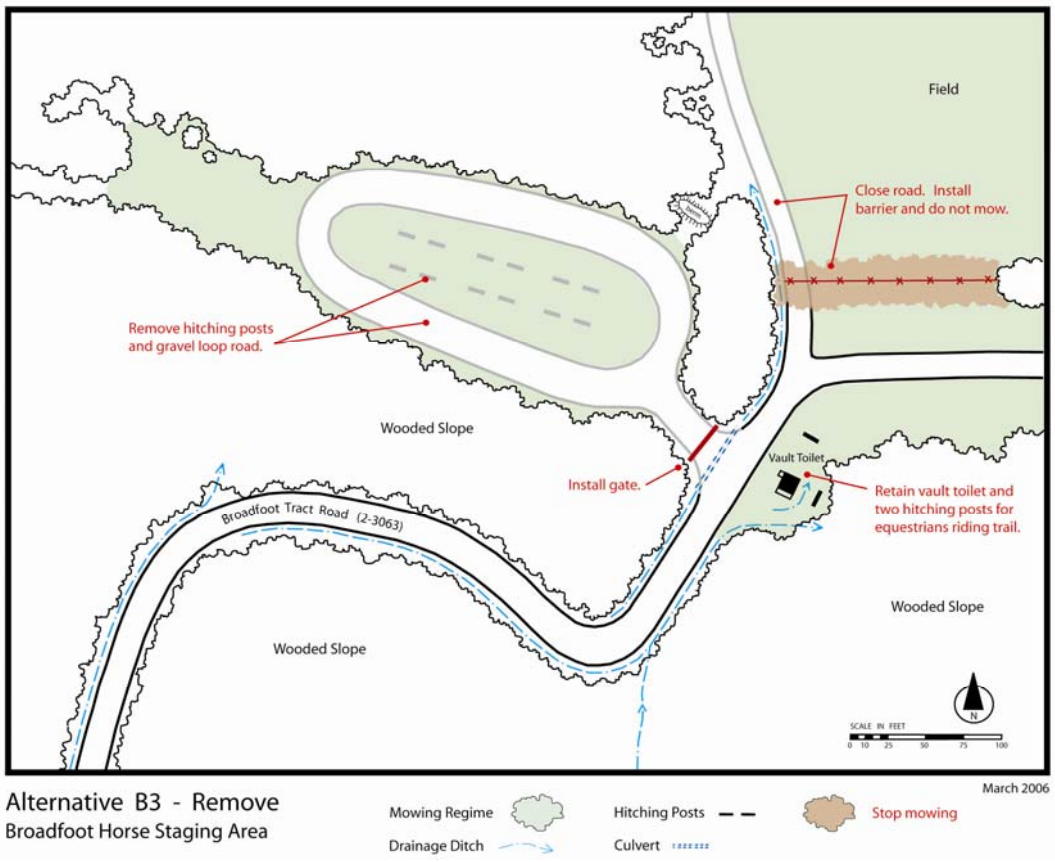
The 0.3 mile Shawnee horse trail cut through extending northeast from County Road 235-F to the southern end of the north field would be closed and rehabilitated, due to ongoing erosion. Installation of physical barriers (logs, brush, etc.) at the southern and northern terminus of this cut through would

prevent access. The Shawnee horse trail would be re-routed west and north along the county road into the staging area.

To reduce drive -thru traffic in the primitive campsite area, a 45-50 foot radius turn-around loop would be constructed in the southeast corner of the north field. Construction of this loop would involve the removal of 900 square feet of soil and the addition of 15 tons of chat.

The horse trailer parking loop would be closed and allowed to revegetate naturally. Revegetation of native plant communities in this area would be encouraged, and the establishment of undesirable plants (i.e. exotic or invasive plants) would be prevented through periodic treatments (i.e. mechanical, etc.). The fourteen associated wooden hitching rails would be removed. The installation of a gate at the entrance to the parking loop would preclude access to the area. This alternative also differs from Alternative B2 in that a fence would not be required along the west side of the parking loop. The vault toilet would remain to service visitors using the area. The two hitching rails adjacent to the vault toilet would remain.

Figure 8. Alternative B3 – Removal of staging area and selected infrastructure at Broadfoot



4.2 Shawnee Staging Area

ALTERNATIVE S1 – No-Action at Shawnee

The No-Action alternative would maintain the existing facilities at the staging area. Current recreational use of the area would continue. No modifications to the existing facilities or associated horse trail segments would occur. Recent intermittent camping has been eliminated, and the site would function as a day-use only horse staging area.

The single unit vault toilet would remain in its current location. Current operations to maintain the staging area would continue. These would include cleaning the vault toilet and picking up trash once per week (3 hours), mowing the open grassy areas 5 times per year, and pumping the vault toilet once per year. The horse trailer parking loop and fourteen associated hitching rails would remain. The picnic area up slope from the parking loop would remain. Runoff from the staging area would not be diverted and would continue to move down slope towards County Road 106-211 and Shawnee Creek.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

This alternative proposes to modify the existing staging area and selected infrastructure. Modification at this site would include the removal and rehabilitation of the current horse trail access to the staging area, relocation of the horse trail access further south along County Road 106-211, modification to the picnic area, installation of a berm to divert runoff, and the installation of hardened crossings and culverts for access to the picnic area. A manure collection site would be designated and serviced as needed. Recent intermittent camping has been eliminated, and the site would function as a day-use only horse staging area. This alternative would also include the installation of an interpretive kiosk or panel, signs, and fencing to indicate closures and/or direct traffic. After implementation of this alternative, the park would begin monitoring the effects of these modifications to the Shawnee Creek and Jacks Fork River.

Under this alternative, the existing horse trail access to the staging area would be closed and rehabilitated. This would involve the installation of a physical barrier (logs, brush, etc.) on the east side of County Road 106-211 where the horse trail enters the staging area. Additionally, approximately 75 feet of fencing would be installed 50 feet to the west of the parking loop across the open area currently being traversed by the horse trail. Vegetation below the fence would be allowed to grow up naturally and would not be mowed.

The new horse trail access to the staging area would be constructed approximately 30 feet south of the existing access trail. This trail would meander through approximately 300 feet of forested old field adjacent to the staging area. The trail would be designed so that runoff potential would be minimized. Construction of this access trail would include the removal of trees and brush and the addition of approximately 33 tons of chat.

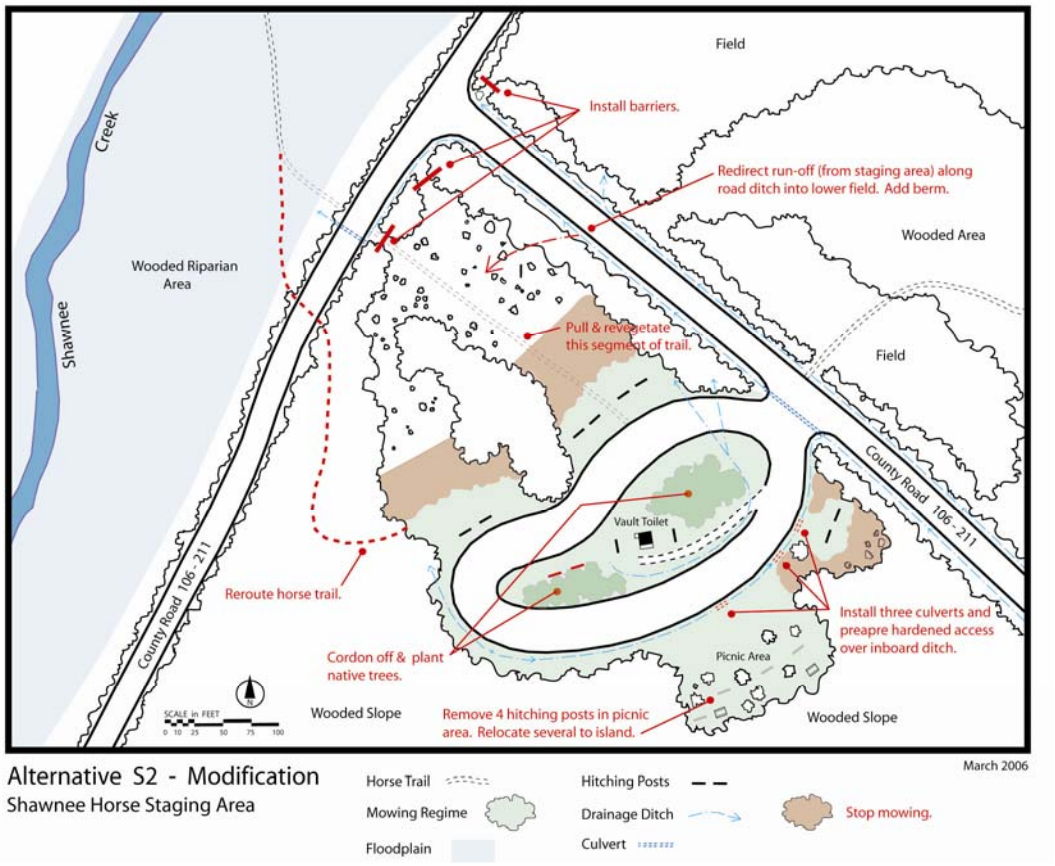
The picnic area up slope from the parking loop on the southeast side of the staging area would be closed to horses. This would involve the installation of signs and the removal of four hitching rails. The two picnic tables would remain. Three hardened crossings and culverts would be installed to reduce erosion and improve runoff. Trees would be planted inside of the parking loop to provide additional shade for visitors using the site.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

This alternative proposes to remove the staging area and rehabilitate any impacted areas. As in Alternative S2, removal of the staging area would include the closure and rehabilitation of the current

horse trail access to the staging area, relocation of the horse trail access further south along County Road 106-211, and installation of a berm to divert runoff. Alternative S3 differs from Alternative S2 in that in addition to the modifications listed above the horse trailer parking loop, associated hitching rails, and the picnic area would be removed. The vault toilet would remain in its present location. Revegetation of native plant communities in this area would be encouraged, and the establishment of undesirable plants

Figure 9. Alternative S2 – Modification at Shawnee



(i.e. exotic or invasive plants) would be prevented through periodic treatments (i.e. herbicide, mechanical, etc.). A small portion of the area around the vault toilet would be maintained through periodic mowing. This alternative would also include the installation of an interpretive kiosk or panel, signs, and fencing to indicate closures and/or direct traffic.

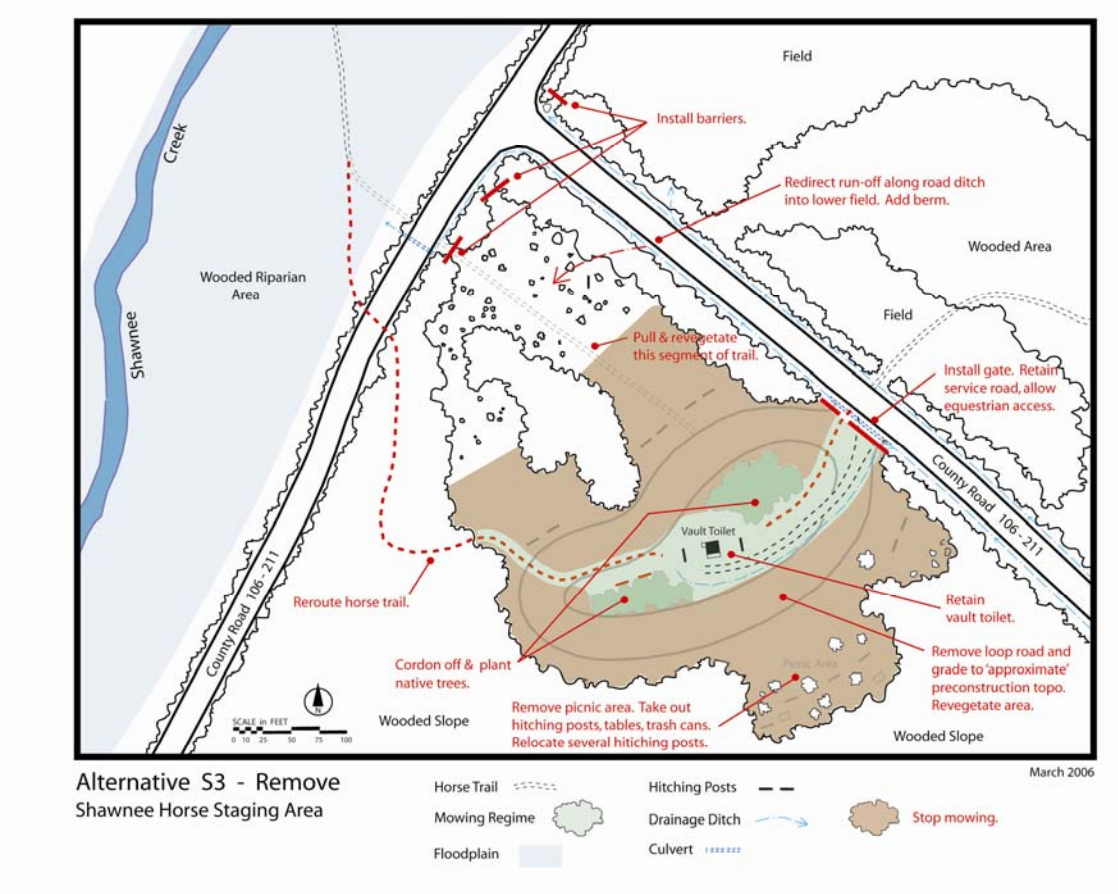
As in Alternative S2, the horse trail access to the staging area would be closed and rehabilitated. This would involve the installation of a physical barrier (logs, brush, etc.) on the east side of County Road 106-211 where the horse trail enters the staging area.

The new horse trail access to the staging area would be constructed approximately 30 feet south of the existing access trail. This trail would meander through approximately 300 feet of forested old field adjacent to the staging area. The trail would be designed so that runoff potential would be minimized. Construction of this access trail would include the removal of trees and brush and the addition of 33 tons of chat.

The picnic area up slope from the parking loop on the southeast side of the staging area would be closed and rehabilitated. This would include the removal of two picnic tables and six hitching rails. This area would be allowed to revegetate naturally.

The horse trailer parking loop would be closed and allowed to revegetate naturally. Some grading of the site may be required to return the site to its original contour. The eight associated wooden hitching rails would be removed. The installation of a gate at the entrance to the parking loop would preclude access to the area except by authorized personnel. This alternative also differs from Alternative S2 in that a fence would not be required west of the parking loop. The vault toilet would remain to service visitors using the area.

Figure 10. Alternative S3 - Removal of staging area and selected infrastructure at Shawnee



4.3 Alternatives Considered but Dismissed

The project boundaries considered for this Environmental Assessment included the immediate vicinity of the existing horse staging areas and associated infrastructure. An alternative of relocating the existing staging areas to other sites within the immediate vicinity at Shawnee and Broadfoot was considered but eliminated by the planning team. The original site placement utilized already disturbed lands (old fields) and avoided archeological and high quality natural resource features. New site construction within the vicinity would require additional impacts of removing existing forest cover, disturbance of additional soils, and may potentially require construction of additional road segments.

Table 1. Summary of the alternatives for the Broadfoot and Shawnee staging areas.

ALTERNATIVE B1 **No Action at Broadfoot** • Staging area, infrastructure, and associated roads remain in their current locations with no modifications to site or operations **ALTERNATIVE B2** **Modification at Broadfoot** • Closure of road segment (Figure 7, C) adjacent to Current River. • Closure and rehabilitation of horse trail cut through (Figure 7, I) from county road. • Closure of road segments (Figure 7, F and G) in the southeast corner of the site. • Installation of interpretive kiosk and other signs • Installation of a turn-around loop (Figure 7, E) at the southeast corner of the north field. • Installation of a fence at the west end of the parking loop (Figure 7, A). • Installation of a gate for access to lower field (Figure 7, F) • Monitoring effects of modifications to archeological sites and exotic plants at the staging area. **ALTERNATIVE B3** **Removal of staging area and selected infrastructure at Broadfoot** • Removal of existing hitching rails (leave 2 next to vault toilet) and parking loop • Rehabilitation of the impact area (plantings, removal of fill, etc.) • Closure and rehabilitation of road segments adjacent to staging area (Figure 7, C, F, and G) • Closure and rehabilitation of horse trail cut through (**I** on map) from county road • Installation of a turn-around loop (Figure 7, E) at the southeast corner of the north field • Rule or compendium amendment that prohibits parking horse trailers at site	**ALTERNATIVE S1** **No Action at Shawnee** • Staging area and infrastructure remain in its current location with no modifications to site or operations **ALTERNATIVE S2** **Modification at Shawnee** • Diversion of runoff from ditch along County Road 106-211back into grassy, shrubby open area at base of parking loop • Relocation of horse trail access further south along County Road 106-211 • Closure of current horse trail access to the staging area • Installation of interpretive kiosk and other signs • Removal of 4 hitching rails from picnic area • Installation of 3 hardened crossings and culverts for foot access to picnic area. • Planting of trees in the center of the parking loop • Designation and servicing of a manure collection site. • Monitoring the effects of modifications to the Shawnee Creek and Jacks Fork River adjacent to the staging area. **ALTERNATIVE S3** **Removal of staging area and selected infrastructure at Shawnee** • Removal of existing hitching rails (leave 2 next to vault toilet), picnic tables, and parking loop • Rehabilitation of impact area (plantings, removal of fill, etc.) • Rule or compendium amendment that prohibits parking horse trailers on road adjacent to Shawnee campground • Installation of a gate at the entrance to the parking loop

4.4 Comparison of Alternative Effects

Table 2. Comparison of Alternative Effects

		ALTERNATIVE B1 NO ACTION AT BROADFOOT	ALTERNATIVE B2 MODIFICATION AT BROADFOOT	ALTERNATIVE B3 REMOVAL AT BROADFOOT	ALTERNATIVE S1 NO ACTION AT SHAWNEE	ALTERNATIVE S2 MODIFICATION AT SHAWNEE	ALTERNATIVE S3 REMOVAL AT SHAWNEE
RESOURCE AREAS	**Soil**	Minor long-term adverse effects on soil erosion and productivity with recommended mitigation efforts	Moderate long-term beneficial effects to soil erosion Minor long-term adverse effects to soil productivity	Moderate long-term beneficial effects to soil erosion Minor long-term beneficial effects to soil productivity	Minor long-term adverse effects to soils erosion Moderate long-term adverse effects to soil productivity with recommended mitigation efforts	Same as Alternative S1	Minor, long-term beneficial effects to soil erosion Moderate long-term beneficial effects to soil productivity
	Water Quality/Quantity	Negligible short and long-term effects on the water quality or quantity	Minor long-term beneficial effects to water quality Negligible effect to water quantity	Same as Alternative B2	Moderate long-term adverse effects on water quality Minor long-term adverse effects to water quantity	Moderate long-term beneficial effect to water quality Minor long-term beneficial effects to water quantity	Same as Alternative S2
	Wetlands/ Floodplain	Negligible short and long-term impacts to wetlands or floodplain	Negligible long-term effects to wetlands Minor long-term beneficial effects to floodplains	Same as Alternative B2	Minor long-term adverse effects to wetlands and floodplain with recommended mitigation	Same as Alternative S1	Minor long-term beneficial effects to wetlands and floodplains
	Cultural Resources	Negligible short and long-term effects	Moderate short-term adverse impacts and moderate long-term beneficial impacts on two prehistoric archeological sites if not mitigated A moderate beneficial long-term effect on the Cultural Landscape	Same as Alternative B2	Negligible short and long-term effect on cultural resources	Minor, long-term adverse impact on the Cultural Landscape	Negligible impacts to archeological sites or standing historic structures Moderate beneficial long-term effect to the Cultural Landscape
	Visitor Use and Experience	Negligible short-term and long-term impacts on visitor use and experience	Minor short-term and long-term adverse impacts on visitor use and experience	Minor short-term and long-term adverse impacts to visitor use and experience Moderate short-term and long-term adverse impacts to users of the staging area	Negligible short-term and long-term impacts on visitor use and experience	Negligible short-term impacts and minor long-term beneficial impacts on visitor use and experience	Minor short-term and long-term adverse impacts to visitor use and experience Moderate short-term and long-term adverse impacts to users of the staging area
	Vegetation	Minor long term adverse impacts on existing vegetation Minor long term adverse impacts on exotic plants	Negligible short term impacts and minor long-term beneficial impacts to existing vegetation Minor long term adverse impacts on exotic plants	Negligible short term impacts and moderate long term beneficial impacts to existing vegetation Negligible long term impacts to exotic plants	Minor long term adverse impacts to existing vegetation Minor long term adverse impacts on exotic plants	Negligible short term and long term impacts to existing vegetation Minor long term adverse impacts on exotic plants	Negligible short term impacts and minor long term beneficial impacts to existing vegetation Negligible long term adverse impacts to exotic plants
	Wildlife	Minor short and long-term adverse impacts to wildlife	Negligible short-term and long-term impacts to wildlife	Negligible short-term and long-term impacts to wildlife	Minor short-term adverse impacts and moderate long-term adverse impacts to the wildlife	Negligible short term and minor beneficial long-term impacts to wildlife	Minor short-term adverse and minor long-term beneficial impacts to wildlife
	Park Operations	Negligible short and long-term impact on park operations	Moderate short-term adverse effect on park operations Minor to moderate beneficial effects	Moderate short-term adverse effect on park operations Minor to moderate long term beneficial effects	Negligible short and long-term impact on park operations	Moderate short-term adverse effects on park operations Long term negligible to minor effects	Moderate short-term adverse effect on park operations Minor to moderate long term beneficial effects

4.5 Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in NEPA, which are guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "…the environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101." Using the six criteria from Section 101, the preferred alternative for the Broadfoot site is Alternative B2 (Modification to staging area and selected infrastructure at Broadfoot), and the preferred alternative for the Shawnee site is Alternative S3 (Remove staging area and selected infrastructure at Shawnee).

***Criterion 1** – Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations*

This criterion looks to the future, promoting selection of alternatives which provide for park sustainability and ensure longevity to the quality and thus enjoyment of park environmental features. There are no alternatives that provide major and significant adverse impact to the resource areas evaluated at both Broadfoot and Shawnee. Those that moderately negatively impact environmental resource areas in the long-term include alternatives S1 - No-Action and S2 - Modification. Those alternatives that benefit the resource areas include the modification and removal alternatives at each site. Thus removal alternatives B3 and S3 provide the most cumulative beneficial effect toward promoting long-term sustainability of the sites and high quality of the resources.

***Criterion 2** – Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings.*

There is a compelling need to either reduce or manage both human and horse waste for trail ride activities. Due to the large number of trail riders in both the Shawnee and Broadfoot areas, restroom services now and into the future are important. Surface manure management is not as straightforward, but at a minimum should be located away from surface water features where possible. These needs are best provided for with Alternatives B2 or B3, and S3.

***Criterion 3** – Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.*

There is clearly a desire by the public to ride within ONSR. The riding experience is improved and resources are better protected by having designated areas to stage trailers and adequate restroom facilities. If this can be accomplished without unacceptable impact to other park values, and is sustainable as a park operation, then a proactive plan to adequate site facilities is the next step. Trail riding, trailer staging, and resource protection can be accommodated with alternative B2 at Broadfoot. Alternative S3 is the best accommodation of both trail riding and resource protection at Shawnee, but does not provide for the horse staging needs.

***Criterion 4** – Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.*

With anticipated mitigative measures for archeological, cultural, and natural resources, as well a providing for the most diverse park visitor choice of experience, Alternative B2 and Alternative S2 best meet this criterion.

***Criterion 5** – Achieve a balance between population and resource use that would permit high standards of living and wide sharing of life's amenities.*

The Shawnee area services a very high number of trail riders, both as a trail head and as a stopping point for thru-riders. At Shawnee, Alternative S2 would best provide for both staging activities, trail riders, and provide for important mitigation for impacts to water quality. Broadfoot has a lower use base, but provides for a wider variety of functions within the area. Alternative B2 best provides for the balance of function and protection here.

Criterion 6 *– Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.*

Alternatives 2 and 3 at both Broadfoot and Shawnee promote additional techniques that recapture soil and nutrient loss which may migrate off-site or off-trail. They each refine trail alignment to eliminate spur trail impact on new soils loss. They consolidate human waste and transport off-site.

4.6 Agency-Preferred Alternative

In order to continue to provide quality recreational opportunities for the public while protecting park resources, Alternative B2 (Modification to staging area and selected infrastructure at Broadfoot) and Alternative S2 (Modification to staging area and selected infrastructure) are the agency-preferred alternatives at each site.

5.0 AFFECTED ENVIRONMENT

Broadfoot Staging Area

The 70-acre Broadfoot site is primarily defined by two open fields, one 38 acres (north field) and one 8 acres (south field) in size, located on the south side of the Current River 4 miles northeast of Eminence, Missouri (Figure 7). A narrow corridor of bottomland forest and forested old field separates the fields from the river. Mixed oak-hickory and white oak forests are found along the slope bordering the fields to the south and west. The entire site, consisting of the fields and associated roads, sits on an expansive river terrace located approximately 1.5 miles upriver from the confluence of the Jacks Fork and Current rivers.

The facilities directly associated with the horse staging area comprise approximately 2 acres of the Broadfoot site. These include a single unit vault toilet, 14 wooden hitching rails, a 600 foot long hardened parking loop, and associated mowed areas. Approximately 1.5 miles of improved and maintained roads adjacent to the staging area provide access to the fields, primitive campground, and river. These roads are currently maintained by Shannon County through a Memorandum of Understanding (MOU) signed by the park and County in 2005.

Shawnee Staging Area

The Shawnee staging area is located approximately 3 miles east of the town of Eminence, Missouri off of County Road 106-211 on the south side of the Jacks Fork River. This staging area consists of approximately 5 acres of open fields, mowed grass, and forested old field. The site is bordered on two sides by county roads and overlooks Shawnee Creek to the west. To the south and east of the staging area, forested old field and white oak forests dominate the landscape. The Shawnee campground, consisting of a vault toilet and 6 family camping sites, is located approximately 1000 feet to the north of the staging area. Because of the proximity of this site to the town of Eminence and the Cross Country Trail Ride facility, it receives a significant amount of horse use during the warmer months of the year.

This staging area and associated facilities include an area approximately 5 acres in size. This site contains a single unit vault toilet, 14 wooden hitching rails, an 800 foot long hardened parking loop, and associated mowed areas. Approximately 300 feet of horse trail extends up to the parking loop from County Road 106-211.

5.1 Impact Topics Selected for Analysis

Topics addressed in this section and subsequently analyzed in Section 6.0 (Environmental Consequences) were selected based on their relevance as indicated by on-site visits, project scoping, secondary source documents, regulatory agency input, and ONSR personnel.

5.1.1 Soils

The Broadfoot staging area was constructed on footslope and terrace landforms of Lecoma soils, well drained, with a depth to water table of 6 feet. The road infrastructure and vault toilet in the Broadfoot area is constructed on footslope and terrace soils of Lecoma and Racket type, with the downstream loop constructed partially on floodplain Racket soils (CARES 2006, MDNR 2006) .

The Shawnee staging area is located on a northwest-facing shoulder ridge, above the confluence of the Shawnee Creek and Jacks Fork floodplains. The staging area was constructed on Reuter and Courtois soils, both of which are well drained, with a seasonal high water table at a depth of more than 6 feet (MDNR 2006).

5.1.2 Water Quality/Quantity

Both the Current River and Jacks Fork rivers are designated as Outstanding National Resource Waters (ONRW) under Missouri's water quality standards. They are Tier III waters with antidegradation restrictions. Thus, any lowering of water quality is not permitted in these waters.

The Broadfoot staging area is located on a terrace overlooking a large floodplain and meander of the Current River, approximately 500 feet from the river proper. The road infrastructure at Broadfoot skirts this terrace edge. Water quality is generally excellent within most sites of the Current River, a 6^{th} order river (Strahler).

Shawnee Creek and its floodplain are located approximately 300 feet from the Shawnee staging area, separated by a shrub-forested buffer and a county road along the top of the creek terrace. Shawnee Creek is a perennial 4^{th} order stream (Strahler), draining a basin of 52 km^2 (Panfil and Jacobson 2001). Bacterial contamination of Shawnee Creek during summer monitoring is an ongoing problem and concern. During June-October 2005, fecal coliform levels in the creek exceeded the State standard of 200 colonies/100ml during 10 of 37 sampling events at the monitoring site near the mouth of the creek. Shawnee Creek enters the Jacks Fork River, approximately 1200 feet downstream from the staging area. The Jacks Fork River in this reach is designated as an impaired water under section 303(d) of the Federal Water Pollution Control Act (Clean Water Act) for the pollutant fecal coliform. A Total Maximum Daily Load (TMDL) document was prepared for the 303(d) reach by the Missouri Department of Natural Resources in January of 2004. A TMDL end point of 25 colonies/100ml was established for the Jacks Fork (EPA 2005).

5.1.3 Wetland/Floodplain

The National Wetlands Inventory shows no wetlands within the current staging area or road infrastructure footprints at either the Shawnee or Broadfoot locations (CARES 2006). Initial site assessment at the Shawnee location shows no soils or vegetation characteristic of wetland communities. At the Broadfoot site, the road/trail segment along the outer edge of the lower loop is located on a natural river levee and borders a low spot within the loop which intermittently holds water.

Detailed floodplain delineation is not available at either the Shawnee or Broadfoot areas. However, recent soils mapping at Broadfoot show landforms/soils indicative of rarely or occasionally flooded floodplain areas for a portion of the lower loop road segment, and the road segment from the junction to the primitive camping area (MDNR 2006). The Shawnee site borders the floodplain of Shawnee Creek, located to the west.

5.1.4 Cultural Resources

The large flat bottomland and stream terraces evident at the Broadfoot site have long attracted human populations. Archeological investigations in the region have demonstrated that there was almost uninterrupted human habitation of the Current River Valley for at least 10,000 years. Such large tracts of arable land attracted Euro-American settlers following the Louisiana Purchase and remained as viable farms under agricultural permits after the formation of Ozark National Scenic Riverways.

The area between Little Shawnee Creek and Big Shawnee Creek (Shawnee site) has long experienced habitation by both prehistoric Native Americans and early Euro-American pioneer populations. Archeological sites spanning at least 10,000 years of prehistory occur in the general vicinity. High natural terraces along the creeks as well as the Jacks Fork River attracted both prehistoric people as well as historic people as ideal locations for habitation.

5.1.5 Visitor Use and Experience

ONSR North District law enforcement rangers patrol the Broadfoot site by boat or vehicle an average of one day per week over the course of a year with more frequent patrols occurring during the peak summer months. The Shawnee campground and horse staging area are patrolled 5 days per week by the Jacks Fork District law enforcement rangers. During the peak visitor season, law enforcement is present in the Shawnee area as much as two times per day especially during the Cross Country Trail Ride (CCTR) events that originate nearby.

Ranger observations at the Shawnee staging area show that 750-1,000 trail riders per year actually utilize the staging area as a destination point for their horse trailers so as to begin a trail ride within the boundaries of ONSR. These trail riders come from all over the State of Missouri. Many riders from local towns and saddle clubs utilize this facility 2-3 times per week. An estimated 5,000-10,000 horse riders per year stop at this facility and utilize the restroom or picnic area. The vast number of users is trail riders associated with the trail rides originating out of CCTR which is 5 horse trail miles away. The staging area is the first place to stop with a restroom and picnic facilities. A study conducted during the summers of 1999 and 2000 showed that up to 250 horse riders may travel through the Shawnee staging area per day during a Cross Country Trail Ride event (Chilman 2001). The development of the Shawnee staging area has resulted in a dramatic improvement in the number of visitor complaints originating from the Shawnee campground. Most of these complaints were associated with visitor conflicts with horses and horse waste near camping, picnicking, swimming, or fishing activities.

Ranger observations at the Broadfoot site are that 250-500 trail riders per year use the Broadfoot Staging Area as a staging area or starting point for a ride through the horse trails of ONSR. The main user group of this staging area is local area users. The users of Broadfoot and Shawnee are essentially the same. The

Shawnee staging area probably has more than double the use because it is much more accessible for vehicles and horse trailers. The spontaneous comments to field rangers by many horse users is one of great appreciation to the NPS for providing what they perceive as excellent facilities. Rangers estimate that 2,500-7,500 horse riders, most of which originate from the CCTR, come by the Broadfoot area in a given year. The vast majority of these riders do not stop at the Broadfoot staging area other than to utilize the restroom. Most riders wanting to stop will go to the river to rest horses in the shade. The Broadfoot site is also visited frequently by people hoping to catch a glimpse of the wild horse herd that lives in this section of the park. These people spend most of their time driving the roads at Broadfoot looking for the horses.

5.1.6 Vegetation

The entire Broadfoot site, including the associated roads and open fields, sits on an expansive river terrace on the south side of the Current River. Two large open fields, containing a mixture of tall fescue (*Lolium arundinaceum*) and other pasture grasses, dominate the landscape. The outer roads and fields are buffered from the river by a narrow band of floodplain forest containing species of trees such as sycamore (*Platanus occidentalis*), elm (*Ulmus americana*), hackberry (*Celtis occidentalis*), and silver maple (*Acer saccharinum*). The most abundant plant community at the Broadfoot site, other than the open fields, is forested old field. This early successional community is usually dominated by species such as elm, box elder (*Acer negundo*), wild plum (*Prunus americana*), and a variety of oaks that respond well to disturbance. Other plant communities found at the site are white oak forest, mixed oak-hickory forest, cedar hardwood woodland, mesic bottomland forest, and box elder forest (Struckhoff et al. 2006). In addition, a small number of butternut (*Juglans cinerea*) trees are found along the forested edge of the parking loop and north field.

The Shawnee staging area is located on an exposed backslope that drains northwest towards County Road 106-211 and the Shawnee Creek (Nigh et al 2000). A variety of pasture grasses are found throughout the open areas surrounding the parking loop and vault toilet. Forested old field is found immediately adjacent to and upslope of the parking loop and grassy areas. At this particular site, a number of eastern red cedars (*Juniperus virginiana*) are found throughout this community. Bordering the site to the southwest is a relatively small patch of white oak forest. This plant community usually consists of species such as white oak (Quercus alba), northern red oak (*Quercus rubra*), chinkapin oak (*Quercus muehlenbergii*), and ash (*Fraxinus Americana*).

5.1.7 Wildlife

The Shawnee Creek and Broadfoot staging area sites have a wildlife habitat mosaic of mowed fields, scattered hardwoods, and riparian forest adjacent to Shawnee Creek, and the Jacks Fork and Current Rivers. Forested old field and mixed oak-hickory forest surrounds the mowed fields and supports a relatively high diversity of wildlife species. Wildlife species commonly occurring in this habitat type include raccoon, white-tailed deer, eastern cottontail rabbit, opossum, eastern chipmunk, striped skunk, eastern gray and fox squirrels, wild turkey, Northern bobwhite, and a variety of songbirds.

The mowed staging areas consist primarily of pasture grasses and provide limited foraging habitat for songbirds and species such as the white-tailed deer. Nesting opportunities for songbirds are limited to the scattered trees contained within the sites and the forest edges along the periphery of the sites. Due to their disturbed nature, the lack of natural vegetative cover, and intensive human and equine activity, the value of these sites to wildlife is limited.

The included or adjacent riparian areas have considerable wildlife value. The forest fringe bordering these sites provides nesting and foraging opportunities for a variety of wildlife species and offers cover

for migratory birds during the spring and fall. In addition to the riparian habitat, effects on water quality may in turn affect wildlife in Shawnee Creek and the Jacks Fork and Current Rivers, including the Ozark hellbender (*Cryptobranchus alleganiensis bishopi*), a candidate for the federal Endangered Species list.

5.1.8 Park Operations

Broadfoot Area

Maintenance: Routine site maintenance of the Broadfoot horse staging area consists of cleaning the vault toilet, picking up litter around the site, and emptying the garbage can. The vault toilet is pumped once a year. Periodic brushing and limb removal is done as needed around the periphery of the staging area loop. Repairs to damaged hitching posts and horse trail signs or the vault toilet are required from time to time requiring repair or replacement. The primitive campsite at Broadfoot does not have amenities regularly maintained by staff.

The park trails crew periodically provides routine seasonal trail maintenance along the segment of the Shawnee horse trail that descends northeast into the north field. Sections of this trail are steep and erosion is a continuing problem requiring treadwork. Segments of the Broadfoot and Shawnee horse trails that follow the gravel vehicular roads do not require attention from the trails crew.

Two other maintenance operations are currently included in the upkeep of the Broadfoot area: maintaining open fields (mowing/brush-hogging) and routine road maintenance and repair (including the loop parking road in the staging area). Responsibility for both these maintenance functions has been allocated to 1) Shannon County (roads), and 2) the Wild Horse League (WHL) (brushing/mowing the fields). In April 2005 the park signed an MOU with Shannon County whereby the county has assumed maintenance of the Broadfoot Tract Road leading to the Broadfoot fields from County Road 206, as well as specified roads (including the staging area loop) within the Broadfoot fields area. The MOU outlines strict established standards by which the roads are to be maintained and repaired. This MOU is in effect for a period of five years, with provisions for termination upon 60 days written notice by either the NPS or the county. In 2004 the park signed a General Agreement with the WHL with provisions that they would consult with park staff on a yearly basis to set the parameters for a defined mowing regime for the open fields at Broadfoot. The WHL continues to voluntarily provide the labor and equipment to perform this task.

Ranger Protection: Rangers patrol the Broadfoot area once a week with more frequent patrols during the summer visitor season. Routine visitor contact is made, reports regarding current user numbers are tallied, and occasional (rare) incidents of damage/vandalism are reported.

Shawnee Horse Staging Area

Maintenance: Park Roads crews perform routine seasonal maintenance on the loop road in the Shawnee horse staging area. This includes grading the surface to reshape and smooth it as needed to control runoff and ensure proper drainage and prevent soil aggregate erosion. Ditches are cleaned and reshaped (as needed) and the culvert under the access drive kept clear of debris. Periodically, surface material (clay and crushed gravel) is replaced and compacted to maintain a hardened surface. Staff clean the vault toilet two times a week in the summer and one time a week in the winter. The vault is pumped once a year. Four trash receptacles at the site are emptied and any litter in the general area is picked up. The site is mowed five times during the growing the season. Periodic brushing and limb removal is done as needed. Occasional damage to the vault toilet, picnic tables, or signage, may require repair or replacement.

Ranger Protection: Rangers routinely patrol the Shawnee area daily which includes both the horse staging area and the Shawnee campground. Visitors are contacted, and reports regarding current user numbers are tallied. Rare incidents of damage/vandalism are reported.

5.2 Impact Topics Eliminated from Further Consideration

Some resource effects were not considered in this Environmental Assessment for analysis because they were not relevant (i.e. not present, discountable, etc.) to the discussion of impacts from the proposed alternatives. These included air quality, soundscapes, marine or estuarine resources, rare or unusual vegetation, unique fish habitat, museum collections, socioeconomics, energy resources, and urban quality.

6.0 ENVIRONMENTAL CONSEQUENCES

This discussion of impacts (effects) is organized by resource area. For each resource area, a brief description of the methodologies used to evaluate the impacts is presented, followed by discussions of the alternatives. To the extent possible, the direct, indirect, short-term, long-term, beneficial, and adverse impacts of each alternative are described for each resource area. Cumulative impacts are discussed in the context of the definition given in 40 CFR 1508.7.

The impact analysis involved the following steps:

- Identifying the area that could be affected.
- Comparing the area of potential effect with the resources selected for evaluation.
- Identifying the intensity (negligible, minor, moderate or major), context (Are the effects site-specific, local, or even regional?), duration (Are the effects short-term or long-term?), and type (direct or indirect) of effect, both as a result of this action and from a cumulative effects perspective. Identifying whether effects would be beneficial or adverse. The criteria used to define the intensity of impacts associated with the analyses are presented in the methodologies of the individual impact topics.
- Identifying mitigation measures that may be employed to offset or minimize potential adverse impacts.

The impact analyses were based on professional judgment using information provided by park staff, relevant references and technical literature citations, and subject matter experts.

Impairment Analysis - The following excerpt is taken from the National Park Service Management Policies 2001 section 1.4.5, "What Constitutes Impairment of Park Resources and Values."

> "The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.
>
> "An impact to any park resource or value may constitute impairment. Impairment may result from National Park Service activities in managing the park, from visitor activities,

or from activities undertaken by concessioners, contractors, and others operating in the park. Impairment of resources can also occur from activities occurring outside park boundaries. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of ONSR;
- Key to the natural or cultural integrity of ONSR or to opportunities for enjoyment of the park;
- Identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Using these guidelines, resource specialists analyze potential effects to determine whether or not actions would impair park resources or values.

Cumulative Impacts: The CEQ regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7).

Intensity, Duration, and Type of Impact—Intensity thresholds are evaluated on a continuum scale from barely detectable (negligible) to substantial alteration of current conditions (major) with certain measurable milestones in between (minor and moderate). Duration of impacts is evaluated based on the short-term or long-term nature of alternative-associated changes on existing conditions. Type of impact refers to the beneficial or adverse consequences of implementing a given alternative. More exact interpretations of intensity, duration, and type of impact are given for each resource area examined. Professional judgment is used to reach reasonable conclusions as to the intensity and duration of potential impacts.

6.1 Soils

Methodology

Recent field site mapping from state soil scientist, SSURGO II GIS shapefiles, and site visits were used. Findings of these assessments and professional knowledge of roads and trails staff and natural resource specialist were used to estimate the effects of the actions on the soil resources.

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible**—Soil resources would not be affected or effects would be below or at the lower levels of detection. Any effects to soil erosion potential or productivity would be slight and no long-term effects would occur.
- **Minor—**The effects to soil resources would be detectable. Effects to soil erosion potential or productivity would be small, as would be the area affected (< 1 ac). If mitigation were needed to offset adverse effects, it would be relatively simple to implement and would likely be successful.
- **Moderate—**The effect on soil erosion potential or productivity would be readily apparent and likely long-term. The resulting change to soil character would cover a

relatively wide area (1-5 ac). Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.

- **Major—**The effect on soil productivity quality would be readily apparent, long-term, and substantially change the character of the soils over a large area (> 5 ac). Mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed.
- **Duration:**
  - **Short-Term—**Lasting only during the construction period or no longer than the first growing season thereafter.
  - **Long-Term**—A permanent post-construction impact.

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: The No-Action Alternative would not entail any changes to the current structures and operations at the Broadfoot staging area, toilet, roads and trails. This alternative would affect soils at the site from ongoing recreation activities. Erosion would be minimized over most of the area due to the level staging area and hardened road surfaces. Erosion in spot areas including the spur trail at the back of the staging area, trail segment (Figure 7, I), and river crossing access at the lower loop would occur, but could be mitigated by closure, rerouting, or stabilization. Nutrient additions from trail rider horse manure to sites within the staging area and along the road/trails would continue. The Broadfoot area currently receives manure additions from wild horse bands of 10-30 individuals.

Cumulative Impacts: The No-Action Alternative would not substantially add to soil erosion or reduced productivity within the scope of ongoing activities of county road use, camping, wild horse use, and agricultural mowing, except for ongoing erosion on the trail segment (Figure 7, I) which is recommended for mitigation.

Conclusion: The No-Action Alternative would have minor long-term adverse effects on soil erosion and minor long-term adverse effects on soil productivity at the Broadfoot site with recommended mitigation efforts.

Impairment: There would be no impairment of the soil from this alternative.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: This alternative recommends a number of soil restoration activities which reduce and redirect activities which can erode soils. Closure and rehabilitation of road trail segments totaling 2.5 acres would increase vegetative cover and consolidate erosive human activities on already utilized roads and trails. Removal of fill and/or addition of topsoil would increase soil productivity in rehabilitated areas. A new impact of 0.1 acres for a vehicle turn around to improve primitive campsite experience is proposed, which if hardened with chat would minimize soils loss. Nutrient additions from trail rider horse manure would continue. The Broadfoot area already receives manure additions from roaming wild horse bands.

Cumulative Impacts: The cumulative impacts of this alternative would significantly reduce the road mileage and consolidate trail use within the Broadfoot floodplain and terrace slopes, and increase vegetative cover which protects sites from soil loss.

Conclusion: This alternative would have moderate long-term beneficial effects to soil erosion and minor long-term adverse effects to soil productivity.

Impairment: There would be no impairment to soils under this alternative.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: The recommended actions under this alternative would remove the staging area function within the Broadfoot area, rehabilitate and revegetate the site by removing fill and adding plantings (0.7 acres), retain restroom facilities, and rehabilitate road and trail segments similarly to Alternative B2. Due to the additional restoration of the staging area and reduction of manure nutrient additions, this alternative has similar but improved soil benefits over Alternative B2.

Cumulative Impacts: The cumulative impacts of this alternative would not only restore the site to pre-staging area construction conditions, but it would have the additive benefit of consolidating human impacts in one corridor and controlling erosion in current problem sites.

Conclusion: This alternative would have moderate long-term beneficial effects to soil erosion and minor long-term beneficial effects to productivity.

Impairment: There would be no impairment to soils under this alternative.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: The No-Action Alternative would affect soils at the site primarily from ongoing recreational activities. Use of current trails oriented up/down slope, including the restroom access trail by thru-trail riders and the picnic area hitching rails accesses, would increase soil erosion over approximately 250 feet of grass and chat trail. Sheet runoff from approximately half of the 0.5 acre road loop and picnic area may continue to erode the earthen inboard ditch. Nutrients from horse manure would be added in spot areas within the staging area, and to more contiguous areas during surface runoff. This site currently receives some manure from roaming wild horse bands. Mitigation efforts to remove up/down slope trail configurations, retain/enhance current vegetative cover, and add vegetative barrier controls for ditch sites would improve soils retention. Periodic removal of accumulated horse manure would help to moderate nutrient additions.

Cumulative Impacts: The No-Action Alternative would continue operation of the staging area roads and trails, potentially allowing soils movement from road and trails during rain events, cumulatively combining with adjacent county road erosion within the county road ditch. Long-term addition of nutrients to site soils from horse manure is expected.

Conclusion: With the mitigation efforts of increasing and enhancing vegetation cover, increasing runoff retention, and nutrient management practices, the No-Action Alternative would have minor long-term adverse effects to soils erosion and moderate long-term adverse effects to soil productivity (use level and concentration of nutrients).

Impairment: There would be no impairment of the soil from Alternative S1.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis: This alternative proposes soil management techniques which would reduce soil erosion potential from the current conditions by retaining soils on-site, and catching soils that move off-site. These techniques include increasing vegetative cover density and buffer width through reduced mowing and increased plantings, redistributing use patterns across slopes instead of up and down, or removing it altogether (removal of hitching rails on the picnic area slope). Reducing physical impacts by installing

crossings over the inboard ditch would prevent new nick points. Soils that do move off-site are proposed to be caught by redirecting road ditch runoff into a vegetative buffer strip before reaching the Shawnee Creek flooplain. All of these actions reduce soil erosivity of the site. They would also improve nutrient retention on-site.

Cumulative Impacts: The combination of techniques would provide improved soil and nutrient retention on-site, and reduce the cumulative effects of combining runoff with the county road.

Conclusion: Alternative S2 would have minor long-term beneficial effects on soils erosion and moderate long-term adverse effects to soil productivity at the site. The adverse effects to soil productivity could be mitigated by soils tests and planting species to take up the extra nutrients.

Impairment: There would be no impairment of soils under this alternative.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis: This alternative proposes actions that would remove the staging area function of the site, but retain toilet facilities for users via horse trail access. Fill would be removed. Shrub and forest vegetation would be restored to the majority of the site, improving soil cover and reducing erosion from loop road and road activity. Horse trail access would be redesigned to utilize slope contours and reduce slope distance and erosive capacity from long slope lengths. Nutrient additions to the site would be reduced and restricted primarily along the trail corridor and at the restroom hitching rail area from trail riders, but random wild horse use and manure would occur.

Cumulative Impacts: This alternative would reduce the additive effect of the site runoff to the county road ditch, and reduce the cumulative nutrient loadings at the site.

Conclusion: This alternative would have a minor, long-term beneficial effects to soil erosion and a moderate long-term beneficial effects to soil productivity.

Impairment: There would be no impairment of soils under this alternative.

6.2 Water Quality/Quantity

Methodology

On-site visits and NPS surface water quality datasets, along with knowledge of natural resource, landscape architect, law enforcement, and road and trails staff were combined to estimate the effects of the proposed alternatives on surface water quality.

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible—**Very slight changes in surface water quality or hydrology. Impacts barely detectable.
- **Minor—**Changes in surface water quality or hydrology would be measurable, although the changes would likely be small and the effects would be localized. No mitigation measures would be necessary.
- **Moderate—**Changes in surface water quality and/or hydrology would be measurable and potentially long-term but would be relatively local. Mitigation measures would be necessary and would be effective.

- **Major—**Changes in surface water quality and/or hydrology would be measurable, long-term, and broad-scale. Mitigation measures would be necessary and their success would not be guaranteed.
- **Duration:**
  - **Short-Term—**Recovery in less than a year.
  - **Long-Term—** Permanent post-construction impact.

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: The No-Action Alternative suggests no actions that would change the amount or location of impervious surfaces or the existing drainage patterns of water discharged to the Broadfoot floodplain. Additional nutrients and bacteria from trail rider horse manure would continue to be added to the general area, which currently receives manure from wild horse herds of 10-30 individuals.

Cumulative Impacts: The staging facility trail head function would draw horse riders to the Broadfoot area, adding to the activity within the area, which has open field, road, trail riding, wild horse, and camping use. Due to the relatively low level of trailhead use and distance from water, the impacts of the cumulative addition of the facility on surface water quality or quantity is small. If use levels should increase through time, this impact may increase, and mitigation may be needed.

Conclusion: The No-Action alternative would have negligible short and long-term effects on the water quality or quantity of the Current River.

Impairment: There would be no impairment of surface water quality or quantity to the Current River from this alternative.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: This alternative would consolidate trail rider horse use along one corridor approximately 900 feet inward from the Current River from the outer road used within the floodplain. This would reduce manure amounts closer to the river. Rehabilitation of the road segment (Figure 7, C) would enhance riparian buffer integrity during floods. Additional nutrients and bacteria from trail rider horse manure would continue to be added to the general area, again which already receives manure from wild horse herds of 10-30 individuals.

Cumulative Impacts: The substantial mitigative measures associated with this alternative would reduce the cumulative impact of floodplain development and enhance overall buffer filtering capabilities within the Broadfoot floodplain.

Conclusion: When compared with current conditions, this alternative with the recommended mitigation measures would have minor long-term beneficial effects to surface water quality and negligible long-term effects to water quantity.

Impairment: There would be no impairment of surface water quality or quantity to the Current River from this alternative.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: The proposed removal of the staging area, consolidation of the roads and trails use, and rehabilitation of the trail segment (Figure 7, I) would increase vegetative cover and improve rainfall

filtering capacities in some sites. Removal of the staging area function would reduce the concentrations of manure at this site.

Cumulative Impacts: With the additional restoration of the staging area, this alternative would have similar but increased benefits over Alternative B2 of enhancing overall buffer filtering capabilities within the Broadfoot floodplain and terraces.

Conclusion: This alternative would have minor long-term beneficial effects to surface water quality and negligible long-term effects to water quantity.

Impairment: There would be no impairment of surface water quality or quantity to the Current River from this alternative.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: The No-Action Alternative does not propose actions that would change the amount or location of impervious surfaces, the existing drainage patterns, or the quality or quantity of runoff water discharged from the Shawnee staging area, from present conditions. With ongoing staging and trail operation of the site, it is expected this area may contribute a currently unknown amount of bacteria and nutrients to the Shawnee Creek floodplain via sheet runoff or culvert discharge. Bacterial data from Shawnee Creek in summer 2005 show higher levels downstream than upstream from the staging area, but amount of direct contribution from the staging area operation itself is unknown. Further information needed to assess this level would include development of a runoff model from the site and adjacent County road, and testing of the model during rainfall events under various horse level use intensities. Due to the mandated timeframe for development of this EA, this information was not available.

Cumulative Impacts: The staging area was constructed to provide staging/trail head functions for horse riders, inviting use of the facility. Placement of this facility adds a concentration of horse use adjacent to an area with significant known bacteriological problems in surface waters, including a reach of the Jacks Fork River listed under section 303(d) of the Clean Water Act for the high fecal coliform levels. Summer water quality data in years following staging area construction do not show a decrease in bacterial levels within Shawnee Creek when compared to previous years. Thus, the addition of the staging area did not decrease and may increase the cumulative effect of manure levels proximal to the Shawnee Creek area from both staging and trail use. This would increase the cumulative nutrient and bacteria input to Shawnee Creek.

Conclusion: With currently available information, it is estimated that the No-Action alternative would have moderate long-term adverse effects on water quality in Shawnee Creek, and minor long-term adverse effects to water quantity. With runoff modeling and monitoring, adequate mitigation of manure levels, and implementation of water and soil retention techniques, the level of effect could be reduced or improved.

Impairment: There would be no impairment of surface water resources from Alternative S1.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis: This alternative proposes a series of actions to retain, filter and improve water quantity and quality from the Shawnee Creek staging area. They include increasing vegetation buffers, redirecting runoff to filter through this buffer, manure management, and reorienting horse trail access routes to reduce erosive forces from water and increase filtering. Implementation of these actions would improve site retention of water and increase capture of nutrient and bacterial content.

Cumulative Impacts: The mitigation recommended in this alternative would decrease the cumulative effect of runoff and nutrient/bacteria currently from the site in combination with the county road runoff.

Conclusion: With substantial mitigation of runoff, Alternative S2 would have moderate long-term beneficial effect to surface water quality and minor long-term beneficial effect to water quantity.

Impairment: There would be no impairment of surface water under this alternative.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis: Under this alternative surface water quality exiting from the staging area would likely be improved due to the reduction in concentration of horse staging activities, realignment of trails, and increased capture and filtering of runoff management by vegetative buffers.

Cumulative Impacts: This alternative would reduce the cumulative impact to Shawnee Creek by reducing both the level and proximity of horse concentration activities.

Conclusion: With substantial mitigation of runoff, Alternative S2 would have moderate long-term beneficial effect to surface water quality and minor long-term beneficial effect to water quantity.

Impairment: There would likely be no impairment of surface water under this alternative.

6.3 Wetland/Floodplain

Methodology

On-site visits, National Wetland Inventory maps, soil type maps, and professional knowledge of park staff were used to estimate the effects of the actions in the various alternatives.

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible—**Wetlands or "other waters of the U.S." neither directly impacted by fill nor indirectly impacted by changes in drainage patterns.
- **Minor—**Wetlands filled below nationwide permit thresholds (0.1 acre fill or less) and/or indirect impacts from changes in drainage patterns. Developments within floodplain restricted to minor facilities of 0.5 acre or less, which directly require proximity to stream course.
- **Moderate—**Fill of 0.1- 0.5 acre of wetland requiring a Nationwide Permit with mitigation and/or indirect impacts on wetlands of exceptional high quality from changes in drainage patterns Floodplain developments of between 0.5 and 1 acre which may not directly require proximity to stream course.
- **Major—**Fill of any size of wetlands of exceptional quality and/or any other wetlands requiring an individual Section 404 permit with mitigation (greater than 0.5 acre of impact). Floodplain developments greater than 1.0 acre which do not directly require proximity to stream course.
    - o

- **Duration:**
  - **Short-Term—**Impacts from temporary modifications to surface flows to wetland and floodplain areas during construction.
  - **Long-Term—**Permanent construction/post-construction impacts to wetlands or floodplain either directly through fill/development or indirectly through drainage changes.

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: Alternative B1 does not propose new activities or developments in wetlands or floodplain areas. Ongoing use of current roads and trails within floodplain to access campsite and river crossing by horses would continue.

Cumulative Impacts: The staging area function adds to the overall activity within the Broadfoot area, with includes open fields, campsites, roads, and horse trails. The staging area site is not within a wetland or floodplain, but may support trail riding activity to sites close to the Current River.

Conclusion: Alternative B1 would have negligible short and long-term effects to wetlands or the floodplain.

Impairment: There would be no impairment to wetland or floodplain resources from this alternative.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: Alternative B2 proposes rehabilitation and revegetation of road segments C and H which lie partially within the floodplain of the Current River. This enhances the integrity of a functioning riparian buffer strip for flood mitigation. No wetland impacts are proposed.

Cumulative Impacts: Alternative B2 would remove and revegetate approximately 0.5 acres of road/trail facilities within the floodplain and would therefore have beneficial results of reducing the cumulative effects with existing roads/trails which lie within this zone.

Conclusion: Alternative B2 would have minor long-term beneficial effects to floodplains and negligible long-term effects to wetlands.

Impairment: There would be no impairment to wetlands or floodplain resources from this alternative.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: Alternative B3 propose removal of road facilities and operation on portions of road segment C and H within floodplain areas. Reduction of disturbance stabilizes riparian corridors, particularly important during flooding events.

Cumulative Impacts: Same as Alternative B2.

Conclusion: Same as Alternative B2.

Impairment: There would be no impairment to wetland or floodplain resources from this alternative.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: Alternative S1 does not propose new structural developments in wetlands or floodplain areas. The staging area would impact floodplains primarily through proximity and use of floodplain trails from this trail head. Mitigation to control development of any new spur trails into the floodplain would reduce impact. Mitigation to control site soil runoff would reduce impacts to wetland fill via road ditch culverts (see Soils analysis section).

Cumulative Impacts: Alternative S1 could contribute additional fill to the Shawnee Creek floodplain via the road ditch, which could be mitigated through site soils retention and recapture mitigation.

Conclusion: If spur trails are contained and runoff captured, this alternative would have minor long-term adverse effects to wetlands or the floodplain.

Impairment: There would be no impairment to wetland or floodplain resources from this alternative.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis: Alternative S2 proposes to add a small amount of chat to define a realignment of the horse trail within the Shawnee Creek floodplain. The staging area would impact floodplains primarily through proximity and use of floodplain trails from this trail head. Identified mitigation to control development of any new spur trails into the floodplain would reduce impact. Proposed specific mitigation efforts at the staging area including vegetation buffers, trail realignment, and reducing nick points to control site soil runoff would reduce impacts to wetland fill via road ditch culverts.

Cumulative Impacts: Alternative S2 could contribute to soil runoff via road ditch culvert.

Conclusion: If spur trails are contained and runoff captured, this alternative would have minor long-term adverse effects to wetlands or the floodplain.

Impairment: There would be no impairment to wetland or floodplain resources from this alternative.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis: Alternative S3 would eliminate trail head use of this site, reducing physically impacted area, and potentially reducing runoff to the Shawnee Creek floodplain. Spur trails may be less likely to form within the floodplain.

Cumulative Impacts: Alternative S3 would reduce cumulative effects of runoff and physical activity from a staging area and adjacent road.

Conclusion: Minor beneficial long-term effects to wetlands and floodplains.

Impairment: There would be no impairment to wetland or floodplain resources from this alternative.

6.4 Cultural Resources (Archeology and Cultural Landscape)

Methodology

Prior to construction of both the Shawnee Creek and Broadfoot Horse Staging Areas, the ONSR Archeologist and an Archeological Technician conducted Phase I pedestrian cultural resources surveys of both tracts directly affected by soil disturbance. Section 106 documentation was completed on each of the projects. No cultural resource site was discovered within either of the subject tracts. Construction was monitored by the archeologist at each of the project areas. The park archeologist's knowledge combined with personal observation was employed to estimate the effect of the actions on the vernacular landscape.

Roads constructed outside the surveyed zone in association with the Broadfoot Staging Area crossed two prehistoric archeological sites, 23SH35 and 23SH36. As proposed, the alternative will impact the two archeological resources but mitigation measures in the form of documentation and data generation will be applied to reduce the impacts to archeological sites 23SH35 and 23SH36 if they are determined to be significant to the understanding of the past cultural history of Ozark National Scenic Riverways. A mitigation plan for these two sites will be submitted to the Missouri State Historic Preservation Officer for consultation and an agreement will be reached on the methodology to be employed to mitigate adverse impacts.

Thresholds for Intensity, Duration, and Type of Impact:

- **Negligible** - Impact is at the lowest levels of detection, barely perceptible, and not measurable.
- **Minor - Adverse**: Disturbance of archeological site(s) and/or alteration of a pattern(s) or feature(s) of the landscape results in little, if any, loss of integrity. The determination of effect for Section 106 would be *no adverse effect*. **Beneficial**: Maintenance and preservation of an archeological site(s). For Cultural Landscapes, landscape patterns and preservation of an archeological site(s). For Cultural Landscapes, landscape patterns and features preserved in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The determination of effect for Section 106 would be *no adverse effect*.
- **Moderate - Adverse**: Disturbance of archeological sites(s) and/or alteration of a pattern(s) or feature(s) of the landscape would result in an overall loss of integrity. The determination for Section 106 would be adverse effect. A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate. **Beneficial**: Stabilization of a site and/or rehabilitation of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The determination of effect for Section 106 would be *no adverse effect*.
- **Major - Adverse**: Disturbance of archeological site(s) and/or alteration of a pattern(s) or feature(s) of the landscape would result in an overall loss of integrity. The determination of effect for Section 106 would be *adverse effect*. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory council are unable to negotiate and execute a memorandum of agreement in accordance with 36CFR800.6(b). **Beneficial**: Active intervention to preserve a site and/or restore a landscape or its patterns and features

in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The determination of effect for Section 106 would be *no adverse effect*.

- **Duration**:
  - **Short-Term -** Disturbance only during construction activities.
  - **Long-Term** - Disturbance lasting longer than construction activities.

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: Activities that are currently taking place now would continue into the future and in time would generate cumulative adverse impacts. Continued use of the roads across the two prehistoric archeological sites would gradually disturb and degrade these cultural resources.

Cumulative Impacts: Continued use of the roads would result in continued disturbance of two subsurface archeological sites, 23SH35 and 23SH36. Eventually mitigation would be required to ensure that further degradation of the sites did not occur. This mitigation would occur in consultation and concurrence with the Missouri State Historic Preservation Officer.

Conclusion: This alternative would have minor short and moderate long-term adverse effects on cultural resources located within the bounds of the defined subject area.

Impairment: The No-Action Alternative is an alternative with ongoing action through use of the roads but no new Federal action would be involved. There would be no impairment to cultural resources as a result of Alternative B1.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: This alternative would have moderate short-term adverse impacts on archeological sites since it involves closure of existing roads and closure and stabilization of a badly eroded horse trail. No historic structure is located within the direct impact zone. Modification of existing conditions will alter the Cultural Landscape and viewshed by introducing additional factors and conditions to the site. These modifications, such as tree planting, installation of barriers, closure of certain segments of roads, construction of a turn around loop, will have short-term adverse impacts on the Cultural Landscape but will have long-term beneficial impacts on an Ozark Current River rural setting Cultural Landscape of open fields traditionally used for agricultural purposes.

Under this alternative a vehicular road would be closed across prehistoric archeological site 23SH36. If closure of this road does not disturb soil on either side of the road or beneath the road, there would be no impacts on this site. If it is determined that the turn around loop being constructed in the southeastern corner of the north field will not adversely impact prehistoric archeological site, 23SH35, there would be no impacts. If it is determined that the turn around loop will disturb surface and subsurface prehistoric archeological deposits, a mitigation plan would be required with concurrence by the Missouri State Historic Preservation Officer or the turn around loop would be relocated. Closure of the road segments would have a moderate long-term beneficial impact on the Cultural Landscape since the viewshed associated with the open agricultural fields will revert to an appearance more in keeping with traditional Ozark uses of arable land.

Cumulative Impacts: This alternative would directly cause adverse impacts to two subsurface archeological sites, 23SH35 and 23SH36, if no mitigation took place since they exist within the bounds of

the undertaking involving earthmoving. No additional structure construction, other than perhaps a small informational kiosk, is part of this alternative so the high-profile viewshed would not change considerably from present conditions. However, planting of vegetation, installation of barriers, relocation of the horse trail, and other alterations would introduce low-profile changes to the Cultural Landscape and historic viewshed.

Conclusion: Ground-disturbing undertakings in this area would have a moderate adverse short-term impact on two prehistoric archeological sites, 23SH35 and 23SH36. Moderate long-term beneficial impacts on the two sites would result since a major vehicular traffic road would be removed from 23SH36 and the road across site 23SH35 would be further stabilized and hardened. A moderate beneficial long-term effect on the Cultural Landscape would result since a former old road down a hill to agricultural fields would be closed to horseback riders and after stabilization of eroded areas it would revert back to simply being the trace of a traditional Ozark farm road on the landscape. Also, closing of certain sections of roads at Broadfoot to vehicular traffic and restoring the areas where they occur would revert the large expansive fields at Broadfoot to a more rural cultural landscape associated with traditional Ozark usage.

Impairment: There would be no impairment to cultural resources as a result of Alternative B2.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: This alternative involves ground disturbance associated with the removal of hitching rails and a parking loop in the existing Broadfoot Horse Staging area. However, this action would have no adverse effect on prehistoric or historic archeological sites since none exist within the direct impact zone of this undertaking. Closure and rehabilitation of road segments that involves filling and landscaping would have no impacts to cultural resources since subsurface cultural deposits on prehistoric archeological sites 23SH35 and 23SH36 would not be disturbed. There would be no impact on any standing historic architecture since none exist within the subject tract. Removal actions would have a moderate long-term beneficial effect on the Cultural Landscape since it would restore the site and its environs to natural conditions prior to construction of the current horse staging area in the field.

Under this alternative a vehicular road would be closed across prehistoric archeological site 23SH36. If closure of this road does not disturb soil on either side of the road or beneath the road, there would be only negligible impacts on this site. If it is determined that the turn around loop being constructed in the southeastern corner of the principal Broadfoot field would not adversely impact prehistoric archeological site 23SH35, impacts would be negligible. If it is determined that the turn around loop would disturb surface and subsurface prehistoric archeological deposits, a mitigation plan would be required with concurrence by the Missouri State Historic Preservation Officer or the turn around loop would be relocated. Closure of road segments would have a moderate long-term beneficial impact on the Cultural Landscape since the viewshed associated with the open agricultural fields would revert to an appearance more in keeping with traditional Ozark uses of arable land.

Cumulative Impacts: This alternative would not cause any cumulative adverse effects to any surface or subsurface prehistoric or historic archeological site. Closing road segments would limit access to prehistoric archeological site 23SH36 and have long-term beneficial impact on that cultural resource. No new structure would be introduced to the Cultural Landscape. This would have long-term beneficial cumulative impacts on the Cultural Landscape since the subject tract would revert back to a natural Ozark agricultural field.

Conclusion: Ground-disturbing undertakings involving removal of hitching rails and a loop road would have no effect on any archeological sites or standing historic structures. Since rehabilitation of the area would involve returning the field to a rural agricultural field with its original surface contours, the action

would have a moderate beneficial long-term effect to the cultural landscape. Ground-disturbing undertakings in this area would have a moderate short-term impact on two prehistoric archeological sites, 23SH35 and 23SH36. Moderate long-term beneficial impacts on the two sites would result since a major vehicular traffic road would be removed from 23SH36 and the road across site 23SH35 would be further stabilized and hardened. A moderate beneficial long-term effect on the cultural landscape would result since a former old road down a hill to agricultural fields would be closed to horseback riders and after stabilization of eroded areas it would revert back to simply being the trace of a traditional Ozark farm road on the landscape. Also, closing of certain sections of roads at Broadfoot to vehicular traffic and restoring the areas where they occur would revert the large expansive fields at Broadfoot to a more rural cultural landscape associated with traditional Ozark usage.

Impairment: There would be no impairment of cultural resources as a result of Alternative B3.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: The No-Action alternative would result in the continuation of present activities at the Shawnee site. This would result in a continuation of the horse staging area in present Shawnee Creek Cultural Landscape, but there would be no impact on any archeological site or sites since none exist in the subject defined tract.

Cumulative Impacts: Since there would be no adverse impacts with this alternative, no mitigative measures are mandated.

Conclusion: This alternative would have a negligible short and long-term effect on cultural resources located within the bounds of the defined subject area.

Impairment: There would be no impairment to any archeological or cultural landscape resource or resources.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis: This alternative would have no impact on any prehistoric or historic archeological sites since none lie within the direct impact zone. No historic structured is located within the direct impact zone. Modification of existing conditions would alter the cultural landscape and viewshed by introducing additional factors and conditions to the site.

Cumulative Impacts: This alternative would not directly cause any adverse impacts to any subsurface archeological sites since none exist in the direct impact zone of proposed modification. No additional structure construction, other than perhaps a small informational kiosk, is part of this alternative so the high-profile viewshed would not change considerably from present conditions. However, planting of vegetation and relocation of the horse trail would introduce low-profile changes to the cultural landscape and viewshed.

Conclusion: Ground-disturbing undertakings in this area would have a minor, long-term adverse impact on the Ozark Cultural Landscape.

Impairment: There would be no impairment of cultural resources as a result of Alternative S2.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis: This alternative action involves considerable ground disturbance in removal of existing hitching rails and a parking loop. However this action would have no adverse effect on prehistoric or historic archeological sites since none exist within the direct impact zoneThis alternative would not have any adverse impact on any standing historic architecture since none exist within the subject tract. Removal actions would have a moderate beneficial impact on the Cultural Landscape since it would restore the site and its environs to natural conditions prior to construction of the current horse staging area in the field.

Cumulative Impacts: This alternative would not cause any direct adverse impacts to any surface or subsurface prehistoric or historic archeological site. No new structure would be introduced to the Cultural Landscape and one structure would be removed. This would have long-term beneficial cumulative impact on the Cultural Landscape since the site would revert back to a natural Ozark agricultural field.

Conclusion: Ground-disturbing undertakings involving removal of hitching rails and a loop road would have negligible impacts to archeological sites or standing historic structures. Since rehabilitation of the area would involve returning the field to a rural agricultural field with its original surface contours, the action would have a major beneficial long-term effect to the cultural landscape.

Impairment: There would be no impairment to cultural resources as a result of Alternative S3.

6.5 Visitor Use and Experience

Methodology

Personal observation of what is available to visitors under current management combined with information obtained from NPS personnel on visitation patterns, law enforcement problems encountered, and applicable research were used to estimate the effects of the actions in the various alternatives.

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible—**Visitors would not likely be aware of the effects associated with changes proposed for visitor use and enjoyment of park resources.
- **Minor—**Visitors would likely be aware of the effects associated with changes proposed for visitor use and enjoyment of park resources; however the changes in visitor use and experience would be slight and likely short term. Other areas in the park would remain available for similar visitor experience.
- **Moderate—** Visitors would be aware of the effects associated with changes proposed for visitor use and enjoyment of park resources. Changes in visitor use and experience would be readily apparent and likely long term. Some visitors who desire to continue their chosen activity would be required to pursue their choice in other available local or regional areas.
- **Major—** Visitors would be highly aware of the effects associated with changes proposed for visitor use and enjoyment of park resources. Changes in visitor use and experience would be readily apparent and long term. The change in visitor use and experience proposed in the alternative would preclude future generations of some visitors from enjoying park resources and values. Some visitors who desire to continue their chosen activity would be required to pursue other available local or regional areas.
- **Duration:**
    - **Short-Term —** During construction
      Long-Term — Past construction and 10 years into future.

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: No changes to the existing facilities would occur. The current experience for horse riders and the general public would continue as is. Access for sightseers hoping to see the herd of wild horses that live in this section of the park would not be changed. Access to the primitive campground would not be changed. Horse trailer parking would continue to be available for riders using the site as a starting point.

Cumulative Impacts: There would be no cumulative impacts to visitor use and experience as a result of this alternative.

Conclusion: Alternative B1 would result in negligible short-term and long-term impacts on visitor use and experience.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: Closure of the road segment on the north side of the north field would limit access to this area to only foot traffic. Visitors would be redirected to the existing road segment south of this field. Access to the primitive campground would be 0.1 mile less when using the road on the south side of the field. Closure of the Shawnee horse trail cut through would result in an additional 0.4 miles of riding for horse riders using the Shawnee loop. The re-route of this horse trail would take the same path as the existing Broadfoot loop horse trail. The closure of the road segment that enters the south field would limit access to this area to only horse riders and foot traffic. This would have some adverse impacts to visitor use and satisfaction at the site. Installation of a turn-around loop would result in beneficial impacts to campers using the primitive campground. This would limit the amount of vehicular traffic that would enter the primitive campground. Installation of a fence at the west side of the parking loop would have minimal impacts to visitor use and satisfaction. Individuals would continue to be able to access the river west of the fence by foot. Installation of a kiosk and signs would have beneficial impacts to visitor use and satisfaction as they would provide useful information to visitors to the site.

Cumulative Impacts: There would be no cumulative impacts to visitor use and experience as a result of this alternative.

Conclusion: Alternative B2 would result in minor short-term and long-term adverse impacts on visitor use and experience.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: Alternative B3 is similar to Alternative B2 in that all of the modifications described and analyzed in Alternative B2 would be the same with the exception of a few. Unlike Alternative B2, this alternative would require the placement of a gate or fence at the entrance to the parking loop to prohibit access (in Alternative B2, a fence was placed at the west end of the parking loop). The parking loop would be closed and allowed to revegetate naturally. The 12 hitching rails currently located within the parking loop would be removed. Closure of the parking loop and removal of the hitching rails would have some adverse impacts to visitor use and satisfaction. An estimated 250-500 trail riders use the Broadfoot staging area on an annual basis as a staging area or starting point to their horse rides. This facility would no longer be available to them for this purpose. This alternative would eliminate any staging area within the park boundaries near the Jerktail and Broadfoot horse trail loops. The single vault toilet and 2 hitching rails would remain and be available to visitors. The estimated 5,000-10,000 horse riders that travel through this area would continue to use this site as a stopping point with negligible

impacts to their Visitor use and Experience. Rehabilitation of the staging area by allowing the site to revegetate would be seen as beneficial to some visitors.

Cumulative Impacts: Removal of the staging area and selected infrastructure at Broadfoot under this alternative may have adverse cumulative impacts to Visitor Use and Experience. If the selected alternatives at Broadfoot and Shawnee result in the removal of both staging areas, there would be significant adverse cumulative impacts to Visitor Use and Experience. Removal of both staging areas would result in a lack of horse staging area facilities in the Two Rivers area. This area receives significant horse use and this user group is accustomed to the availability of these amenities in the area.

Conclusion: Alternative B3 would result in minor short-term and long-term adverse impacts to Visitor use and Satisfaction. However, there would be moderate short-term and long-term adverse impacts to staging area users.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: No changes to the existing facilities would occur. The current experience for horse riders and the general public would continue as is. Horse trailer parking would continue to be available for riders using the site as a starting point.

Cumulative Impacts: There would be no cumulative impacts to visitor use and experience as a result of this alternative.

Conclusion: Alternative S1 would result in negligible short-term and long-term impacts on visitor use and experience.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis: Relocating the horse trail access to the staging area further to the south along County Road 106-211 and closing the current horse trail access would have negligible impacts. Horse riders would continue to have access to the staging area. The installation of a kiosk and signs would have beneficial impacts to Visitor Use and Experience as they would provide useful information to visitors to the site. The removal of 4 hitching rails from the picnic area would result in minor adverse impacts. Horse riders would like to have somewhere at the site to tie their horses in the shade. This impact would be long-term as we have defined it above, however, planting trees in the parking loop as a part of this alternative would mitigate this impact by providing additional shade trees in the future. Monitoring the effects of our modifications under this alternative would have long-term beneficial impacts to Visitor Use and Experience. The monitoring data would allow the public to clearly see the impacts of our actions. If the runoff management strategies identified result in improved water quality in the Jacks Fork River, there may be significant beneficial impacts to Visitor Use and Experience for those using the river.

Cumulative Impacts: There would be no cumulative impacts to Visitor Use and Experience as a result of this alternative.

Conclusion: Alternative S2 would result in negligible short-term impacts and minor long-term beneficial impacts on visitor use and experience.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis: As in Alternative S2, the horse trail access to the site would be relocated further to the south along County Road 106-211, and the current horse trail access would be closed. Although horse riders

would continue to have access to the site as a stopping point, the parking loop and most hitching rails would be removed. An estimated 750-1000 trail riders use this site as a staging area or starting point. This alternative would eliminate any staging area within the park boundaries near the Shawnee and Two Rivers horse trail loops. This would have minor to moderate adverse impacts to Visitor use and Experience depending on whether or not the Broadfoot staging area would be available. The estimated 5,000-10,000 horse riders that travel through this area would continue to use the site with negligible impacts to their Visitor use and Experience. The single vault toilet and 2 hitching rails would remain. These would continue to benefit horse riders and other visitors using the site. Rehabilitation of the staging area by allowing the site to revegetate would be seen as beneficial to some visitors.

Cumulative Impacts: Removal of the staging area at Shawnee under this alternative may have adverse cumulative impacts to Visitor Use and Experience. If the selected alternatives at Broadfoot and Shawnee result in the removal of both staging areas, there would be significant adverse cumulative impacts to Visitor Use and Experience. Removal of both staging areas would result in a lack of horse staging area facilities in the Two Rivers area. This area receives significant horse use and this user group is accustomed to the availability of these amenities in the area.

Conclusion: Alternative S3 would result in minor short-term and long-term adverse impacts to Visitor use and Satisfaction. However, there would be moderate short-term and long-term adverse impacts to staging area users.

6.6 Vegetation

Methodology

Multiple site visits, ONSR vegetation community maps, ONSR Ecological Land Type maps, other available GIS data layers, various reference materials, and the professional knowledge of park staff were used to estimate the potential effects of the proposed alternatives and related visitor use on vegetation (existing vegetation and exotic plants) at each site.

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible –** Direct or indirect impacts would have perceptible but small changes in the size, integrity, or continuity of vegetation at the site.
- **Minor –** Disturbance of vegetation would be measurable or perceptible but limited in size to less than one acre. The overall viability of plant communities would not be affected and would recover. The introduction of exotic plants would be limited to those species already established at the site.
- **Moderate –** Disturbance of 1 to 5 acres of vegetation would occur. Impacts would cause a change in the plant communities (e.g. abundance, distribution, quantity, or quality), but the impacts would remain localized. May result in the introduction of non-aggressive exotic plant species not previously established in the park.
- **Major –** Disturbance of more than 5 acres of vegetation or any disturbance to federally listed plant species would occur. Would result in the introduction of aggressive exotic plant species not already established in the park.
- **Duration:**
    - **Short-term –** The physical impact from the proposed actions would require less than one growing season for the full recovery of plant communities.
    - **Long-term –** The physical impact from the proposed actions would require more than one growing season for the full recovery of plant communities

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: Additional facilities would not be constructed nor would any changes to the management of existing vegetation take place. There would be minimal impacts to existing vegetation by the No-action Alternative. There would be no change in extent or composition. Management of open grassy areas would continue through periodic mowing. The two open fields at the site would continue to be managed through periodic brush hogging or haying. Horse use in the area would continue to be facilitated by the availability of a staging area.

Cumulative Impacts: Direct impacts from horse trampling to vegetation within and adjacent to the staging area would continue and possibly increase in time. Concentrated horse use, facilitated by the existence of a horse staging area, would result in minor impacts to existing vegetation. This concentrated use may contribute to the introduction of exotic plants. Cumulative impacts on exotic plants as a result of Alternative B1 would be minor.

Conclusion: Alternative B1 would have minor long term adverse impacts on existing vegetation. Alternative B1 would have minor long term adverse impacts on exotic plants at the site. Periodic treatment of exotic plants in the vicinity of the staging area would help to mitigate their impacts to the park as a result of this alternative. However, this mitigation would be localized.

Impairment: There would be no impairment of vegetation from Alternative B1.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: Additional facilities would not be constructed and plant communities would be restored in some areas. There would be minimal direct impacts to existing plant communities as a result of Alternative B2. Installation of a turn-around loop would impact approximately 2000 square feet of open field, primarily tall fescue and other pasture grasses. Approximately 2.5 acres of road and horse trail corridor would be allowed to revegetate naturally. The construction of barriers (e.g. fences, gates, etc.) to close roads and horse trail segments would have minimal impact on plant communities. The two open fields at the site would continue to be managed through periodic brush hogging or haying. However, the permittee would be required to leave a 300 foot buffer from the river corridor and a 15 foot buffer around giant cane stands within which no brush hogging or haying would occur. Horse use in the area would continue to be facilitated by the availability of a staging area.

Cumulative Impacts: Concentrated horse use, facilitated by the existence of a horse staging area, would result in minor impacts to existing vegetation. This concentrated use may contribute to the introduction and spread of exotic plants. Cumulative impacts on exotic plants as a result of Alternative B2 would be minor.

Conclusion: Alternative B2 would have negligible short term impacts and minor long-term beneficial impacts to existing vegetation. Alternative B2 would have minor long term adverse impacts on exotic plants at the site. Periodic treatment of exotic plants in the vicinity of the staging area would help to mitigate their impacts to the park as a result of this alternative. However, this mitigation would be localized.

Impairment: There would be no impairment of vegetation from Alternative B2.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: Additional facilities would not be constructed and plant communities would be restored in some areas. Because the installation of a turn-around loop and closure and rehabilitation of road and trail corridors proposed under Alternative B3 are the same activities proposed under Alternative B2, this portion of the analysis is the same as that discussed under Alternative B2. Alternative B3 is different from Alternative B2 in that, in addition to the above mentioned activities, the parking loop would be closed and the associated hitching rails would be removed. Rehabilitation of the parking loop would allow approximately 1.5 acres of road corridor and grassy field to revegetate naturally. Horse use would continue in the area but would not be facilitated by the availability of a staging area.

Cumulative Impacts: Horse use would continue in the area but would not be facilitated by the availability of a staging area. The potential for the introduction and spread of exotic plants would exist at the level that was present in the area prior to the construction of the staging area. Cumulative impacts on existing vegetation as a result of Alternative B3 would be negligible. Cumulative impacts on exotic plants as a result of Alternative B3 would be negligible.

Conclusion: Alternative B3 would have negligible short term impacts and moderate long term beneficial impacts to existing vegetation. Alternative B3 would have negligible long term impacts to exotic plants at the site.

Impairment: There would be no impairment of vegetation from Alternative B3.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: Additional facilities would not be constructed nor would any changes to the management of existing vegetation take place. There would be little change to the extent or composition of plant communities as a result of the No-Action Alternative. Existing activities related to horse use within the staging area would continue. Management of open grassy areas within and immediately surrounding the parking loop would continue through periodic mowing. Continued use of the picnic area and hitching rails upslope of the parking loop would result in some minor impacts to vegetation.

Cumulative Impacts: Direct impacts from horse trampling to vegetation within and adjacent to the staging area would continue and possibly increase in time. Concentrated horse use, facilitated by the development of a horse staging area, would result in minor impacts to existing vegetation. This concentrated use may contribute to the introduction and spread of exotic plants. Cumulative direct impacts to existing vegetation as a result of Alternative S1 would be minor. Cumulative impacts on exotic plants as a result of Alternative S1 would be minor.

Conclusion: Alternative S1 would have minor long term adverse impacts on existing vegetation. Alternative A would have minor long term adverse impacts on exotic plants at the site. Periodic treatment of exotic plants in the vicinity of the staging area would help to mitigate their impacts to the park as a result of this alternative. However, this mitigation would be localized.

Impairment: There would be no impairment of vegetation from Alternative S1.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis: The relocation of the horse trail access to the staging area would impact less than 0.25 acres of deciduous shrubby old field south of the current trail access. This may result in the removal of a few small trees (e.g. eastern red cedar, locust, black walnut, etc.). The existing 300 feet of horse trail access to the staging area would be closed and allowed to revegetate naturally. This would result in the restoration of approximately 0.1 acres of vegetation to the site.

The construction of a small earthen berm would impact less than 0.1 acres of deciduous shrubby old field downslope and northwest of the staging area. A few signs and a kiosk would be installed and would result in minimal impact to vegetation. The installation of three hardened crossings and culverts for access to the picnic area would also result in minimal impacts to vegetation. Closure of the picnic area to horses would prohibit direct impacts to ground vegetation from trampling and indirect impacts to trees used for securing horses. Trees would be planted in the center of the parking loop to provide additional shade to visitors.

Cumulative Impacts: Direct impacts from horse trampling to vegetation within and adjacent to the staging area would continue and possibly increase in time. Concentrated horse use, facilitated by the development of a horse staging area, would result in minor impacts to existing vegetation. This concentrated use may contribute to the introduction and spread of exotic plants. Cumulative direct impacts to existing vegetation as a result of Alternative S2 would be negligible. Cumulative impacts on exotic plants as a result of Alternative S2 would be minor.

Conclusion: Alternative S2 would have negligible short term and long term impacts to existing vegetation. Alternative S2 would have minor long term adverse impacts on exotic plants at the site. Periodic treatment of exotic plants in the vicinity of the staging area would help to mitigate their impacts to the park as a result of this alternative. However, this mitigation would be localized.

Impairment: There would be no impairment of the vegetation as a result of Alternative S2**.**

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis: The horse trail access would be re-routed and would impact less than 0.25 acres of deciduous shrubby old field south of the current trail access. This may result in the removal of a few small trees (e.g. eastern red cedar, locust, black walnut, etc.). This re-route would direct horse riders up to the vault toilet which, under this alternative, would remain. The existing 300 feet of horse trail access to the staging area would be closed and allowed to revegetate naturally. This would result in the restoration of approximately 0.1 acres of vegetation to the site.

The construction of a small earthen berm would impact less than 0.1 acres of deciduous shrubby old field downslope and northwest of the staging area. To service the vault toilet, a narrow access would remain (gated at the county road). The existing parking loop would be pulled, graded to the original contour of the site, and allowed to revegetate naturally. This would result in the restoration of approximately 0.8 acres of vegetation to the site. The existing picnic area upslope from the parking loop would be removed and allowed to revegetate naturally.

Cumulative Impacts: Horse use would continue in the area but would not be facilitated by the availability of a staging area. The potential for the introduction and spread of exotic plants would exist at the level that was present in the area prior to the construction of the staging area. Cumulative impacts on existing vegetation as a result of Alternative S3 would be negligible. Cumulative impacts on exotic plants as a result of Alternative S3 would be negligible.

Conclusion: Alternative S3 would have negligible short term impacts and minor long term beneficial impacts to existing vegetation. Alternative S3 would have negligible long term impacts to exotic plants at the site.

Impairment: There would be no impairment of vegetation as a result of Alternative S3**.**

6.7 Wildlife

Methodology: On-site visits, Ecological Classification System data, wildlife references, and available research on horse impacts were used to estimate the effects of the proposed actions in the various alternatives.

Thresholds for Intensity, Duration, and Type of Impact:

- **Negligible—** Wildlife would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the wildlife species' population.
- **Minor—**Disturbance of native terrestrial and/or aquatic wildlife habitat would be limited to one acre or less for terrestrial communities and to highly localized aquatic areas of small tributaries to the Current or Jacks Fork River.
- **Moderate—**Disturbance of regionally typical native terrestrial and/or aquatic wildlife habitat would occur. The area of disturbance would be from over one to five acres of terrestrial habitat and the localized areas along length of a Current or Jacks Fork River tributary from the point of construction disturbance to the Current or Jacks Fork River.
- **Major—**Disturbance of more than five acres of regionally typical terrestrial wildlife habitat. Disturbance of both a tributary of the Current or Jacks Fork Rivers and a measurable portion of the rivers themselves.
- **Duration:**
  - **Short-Term—**Complete disturbance recovery in less than five years.
  - **Long-Term**—Disturbance recovery requiring more than five years to return to pre-disturbance levels.

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: The No Action alternative would leave the existing Broadfoot Staging Area and its associated fields, trails and roads (a total of seventy acres) unchanged. Potential for erosion and impacts to water quality through sediment and manure runoff would continue, and possibly increase with additional public use. Direct contact between horses, visitors, and wildlife would continue, and possibly escalate. The area also has a significant amount of giant cane which provides potential habitat for the state endangered Swainson's warbler. A small section of one of the Broadfoot fields is currently mowed to the edge of the cane, preventing expansion of the cane habitat. Continued direct contact between wildlife and horses/visitors would likely result in changes to wildlife movement, forage, and nesting patterns (McClaran and Cole 1993, Leung and Marion 2000).

Cumulative Impacts: Alternative B1 would result in cumulative impacts to wildlife as a result of increased soil erosion and decreased water quality from concentrated horse use.

Conclusion: Alternative B1 would have minor short and long-term adverse impacts to wildlife at the Broadfoot site.

Impairment: There would be no impairment of the park's wildlife as a result of Alternative B1.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: Activities associated with Alternative B2 would involve removal and rehabilitation of two existing road segments and installation of a gate to limit vehicle traffic. A portion of the existing (badly eroded) horse trail would be closed and re-routed along the Broadfoot Loop horse trail. Additional signage and interpretive materials would encourage ethical equestrian use, and enforce the day use designation of this area. A monitoring program would be implemented to gauge the effectiveness of these efforts. Approximately 2.5 acres of the existing staging area and trails would be rehabilitated, and the present land use would not change. Mowing would be reduced along the cane stands.

Immediate and direct impacts to wildlife through rehabilitation activities would be minor, but short-term. The removal of existing road and trail segments would increase runoff in the interim before the construction is complete. Reduced mowing would allow cane habitat to increase.

Cumulative Impacts: Continued direct contact between wildlife and horses/visitors would likely result in changes to wildlife movement, forage, and nesting patterns. Alternative B2 would not result in cumulative impacts to wildlife at the Broadfoot site.

Conclusion: Alternative B2 would result in negligible short-term and long-term impacts to wildlife.

Impairment: There would be no impairment of the park's wildlife as a result of Alternative B2.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: This alternative would consist of complete removal of all staging area facilities, with the exception of the existing vault toilet, part of the road accessing the toilet, a camping area, and the connecting horse trails. Rehabilitation would include plantings and removal of fill.

With the removal of the staging area there would be a reduced amount of standing horse traffic (and correspondingly reduced soil and manure runoff) and rehabilitation of the area would improve wildlife habitat. The presence of a staging area is an invitation to horse use, and would result in increased horse traffic in the area. Removal of the stating area does not remove the presence of horses, and horse and wildlife contact will continue.

Cumulative Impacts: As horse use would not be discontinued, it would be difficult to assess the cumulative impacts of Alternative B3. Continued direct contact between wildlife and horses/visitors would result in changes to wildlife movement, forage, and nesting patterns and those patterns would not change appreciably with the implementation of this alternative. Alternative B3 would result in negligible long-term cumulative impacts to wildlife at the Broadfoot site.

Conclusion: Alternative B3 would result in negligible short-term and long-term impacts to wildlife.

Impairment: There would be no impairment of the park's wildlife as a result of Alternative B3.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: The No Action alternative would leave the existing 5-acre Shawnee staging area and its associated trails unchanged. Erosion of ditches and presumed impacts to water quality (Shawnee Creek and the Jacks Fork River) through sediment and manure runoff would continue, and possibly increase as public awareness about the availability of this facility increases. Direct contact between horses, visitors, and wildlife would continue, and possibly intensify. Impacts to water quality in the Jacks Fork River would have a direct effect on fish and aquatic wildlife such as the Ozark hellbender.

Cumulative Impacts: This alternative would result in long-term and collective impacts to water quality (in the Shawnee Creek and Jacks Fork river) and soil at the site. The concentration of horse use at this site would result in additional water quality impacts in a stretch of the Jacks Fork River that has already been designated as an impaired waterway under the Clean Water Act. Any impacts to water quality, vegetation, or soils in the area would result in indirect impacts to the wildlife that depends on these resources (Kauffman and Krueger 1984). Continued direct contact between wildlife and horses/visitors would result in changes to wildlife movement, forage, and nesting patterns.

Conclusion: Alternative S1 would have minor short-term adverse impacts and moderate long-term adverse impacts to the wildlife at the site.

Impairment: There would be no impairment of the park's wildlife as a result of Alternative B3.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis: Activities associated with Alternative S2 would involve construction of berms, culverts, and switchbacks to decrease erosion and runoff. A portion of the existing horse trail would be relocated to a more gradual slope than what is currently in use, to reduce erosion. Additional signage and interpretive materials would encourage ethical equestrian use, and enforce the day use designation of this area. A monitoring program would be implemented to gauge the effectiveness of these efforts. Construction activities would disturb approximately 0.25 acre of the existing staging area, and the present land use would not change.

Immediate and direct impacts to wildlife through construction activities would be negligible, and short-term. Construction of berms, culverts, etc. would increase runoff in the interim before the construction is complete. Long term impacts to soil and water quality (and thus wildlife and habitat) would be reduced when compared with Alternative S1. It is unknown whether these measures would completely mitigate the effects of horse use in this area. The monitoring program would help with that determination.

Cumulative Impacts: Continued direct contact between wildlife and horses/visitors would result in changes to wildlife movement, forage, and nesting patterns. If mitigation measures were unsuccessful at eliminating the erosion and runoff problems, water quality would continue to be compromised.

Conclusion: Alternative S2 would result in negligible short term impacts and minor beneficial long-term impacts to wildlife.

Impairment: There would be no impairment of the park's wildlife as a result of Alternative B3.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis: This alternative would consist of complete removal of all staging area facilities, with the exception of the existing vault toilet, part of the road accessing the toilet, and the connecting horse trails. Rehabilitation of the area would include plantings and removal of fill.

As horse use would not be discontinued, it is difficult to assess or even hypothesize about the impacts of Alternative S3. The reduced amount of standing horse traffic (and correspondingly reduced soil and manure runoff) along with rehabilitation of the disturbed area would improve wildlife habitat. Regardless of whether the staging area is present, horse and wildlife contact would continue, because the trails would remain in place. Continued direct contact between wildlife and horses/visitors would result in changes to wildlife movement, forage, and nesting patterns. If mitigation measures were unsuccessful at eliminating the erosion and runoff problems, water quality would continue to be compromised.

Cumulative Impacts: There would be minor beneficial cumulative effects from the removal of the staging area under Alternative S3. This would result from the loss of additional runoff associated with existing concentrated horse use at the staging area.

Conclusion: Alternative S3 would result in minor short-term adverse and minor long-term beneficial impacts to wildlife.

Impairment: Removal of the staging area alone would not result in impairment to wildlife.

6.8 Park Operations

This topic includes a broad analysis of park operations---providing an assessment of services and infrastructure which are required to support existing and/or proposed visitor facilities associated with equestrian use in Ozark National Scenic Riverways in a manner that promotes health and safety for both staff and visitors and provides protection of the park's resources as well as an enhanced visitor experience.

Methodology

Operational efficiency, for the purpose of this analysis, refers to the adequacy of assigned staffing tasks and the necessary procurement of materials for routine maintenance and repair of the existing and/or proposed facilities and the adjacent grounds. It also includes Law Enforcement and Resource Protection services provided by park rangers. The goal is to provide for a successful visitor experience---while making a concerted effort to execute the necessary park operations in accordance with the park's mission to protect and preserve vital park resources. Facilities include access roads, trails, parking, vault toilets, trash receptacles, signage, interpretative information, hitching posts, picnic tables, and associated grounds maintenance. Park staff knowledge was used to evaluate the impacts of each alternative and is based on the current description of park operations presented in section 4.0 of this document.

Thresholds for Intensity, Duration, and Type of I Effect::

- **Negligible**—Changes to stated requirements for park maintenance operations, facility functioning, and Ranger presence would be barely detectable and create no noticeable difference in existing conditions.
- **Minor—**Staffing requirements would change to some extent but not unduly impact the routine maintenance regime or protection ranger operations. Facility functioning in terms of visitor services and infrastructure would change to some extent but impacts to park staff workloads and expenditures would be minimal---and unlikely to adversely affect the visitor's experience or overburden staff.
- **Moderate—** There would be noticeable changes in terms of visitor services and facilities. Maintenance staff levels, routine maintenance requirements, and ranger protection services could be affected and may need to be altered in response to such changes.
- **Major—** Changes would be substantial in all areas of operational efficiency.
- **Duration:**
    - **Short-Term**—one-time finite definitive changes occur due to construction and/or modification. Once tasks are completed---staff return to an established routine maintenance regime and ranger patrol operations.

- **Long-Term**—changes which are instituted that alter the standard operating procedures (for Maintenance & Ranger Protection) and are expected to remain in effect 5 or more years.

ALTERNATIVE B1 – No-Action at Broadfoot

Analysis: Under Alternative B1, the No-Action alternative, there would be no alteration to the existing routine maintenance regime. Staffing levels (both Maintenance & Ranger Patrol) would remain the same for the immediate future, pending any changes to present visitation patterns. Shannon County would continue to maintain the roads into and around this site as prescribed in the 2005 MOU. The WHL would continue to mow/brush hog the fields as stipulated in the 2004 General Agreement.

Cumulative Effects: Existing Maintenance and Ranger Protection staffing levels and assigned routine tasks associated with park operations at Broadfoot would not be altered in the absence of any decisions to alter site conditions. Shannon County would continue to assume all road maintenance and repair at Broadfoot per the stipulated guidelines for road maintenance standards as stated in the 2005 MOU. The WHL would continue to mow/brush hog the Broadfoot fields as stipulated in the 2004 General Agreement.

Conclusion: The No-Action alternative would have a negligible short and long-term impact on park operations at Broadfoot.

ALTERNATIVE B2 – Modification to staging area and selected infrastructure at Broadfoot

Analysis: The following construction/rehabilitation tasks would be required of the park's Maintenance staff above and beyond the existing maintenance operations. The actions taken could affect Ranger patrol schedules.

Maintenance:
Actions proposed for modifications to the horse staging area include the installation of a barrier across the west side of the staging area to curtail access by vehicles or equestrians to the riparian area along the stream which feeds into the Current River to the northwest of the staging area. An interpretive board would be installed somewhere within the staging area which provides an area map and "Leave No Trace" information for riders.

The segment of the Shawnee Horse Trail (approximately 500') that currently descends the slope into Broadfoot through the woods would be pulled and rehabilitated. Sections of deeply eroded surface would be filled with a clay/aggregate mixture, drainage routed off to the side to disperse and slow surface flow, then seeded and mulched (as needed) to stabilize it prior to constructing barriers at both ends. Signs would be installed to reroute trail riders along this segment of the Shawnee Trail onto the Broadfoot Trail. Stabilization of the equestrian trail on the approach to the river ford would entail hardening the tread with clay/aggregate.

Two road segments would be decommissioned. Reduction of vehicular access within the Broadfoot fields would entail the installation of physical barriers which would block all vehicle access; 1) to the outer loop road which parallels the river on the north side of the north field (up to the campsite), and 2) at the point along the tree line where vehicles now access the road leading into the smaller south field and down to the river ford. The road in the south field (which terminates in a loop) would be rehabilitated by top dressing

with fill (where needed) then finish graded, seeded, and mulched allowing 4 foot of tread to remain which would continue to accommodate equestrians traveling on the Broadfoot & Shawnee trails up to the point of ford. To provide vehicles a means to turn around at the far southeast end of the north field a turning loop would be constructed. Signs would be installed at each of the physical barriers to inform visitors that these routes are no longer to be maintained and that vehicular access (beyond access to the horse staging area) is to be restricted to the existing gravel road that runs east-west along the toe of the slope on the south side of the north Broadfoot field, and the spur road leading out to the campsite. A sign would be installed at the spur road near the proposed turnaround which leads to the existing camping site that informs visitors that it is 'not a through road'.

2005 MOU with Shannon County would need to be amended or rewritten such that both parties (County & Park) concur as to the redefined road maintenance requirements at Broadfoot once vehicular access at this site is restricted. The existing mowing regime as described in the 2004 General Agreement with the WHL for the management of the Broadfoot fields would need to be reexamined and redefined. Among other considerations to be evaluated would be the need to augment revegetation which would function as a visual buffer along the newly constructed barriers helping to deter vehicular access to the road which parallels the river along the outer edge of the north field.

Ranger Protection:
Ranger patrols may be more frequent during construction, particularly if portions of the site are closed during the period of time when site work is occurring. Continued heightened need for Ranger presence may be expected as the visiting public becomes accustomed to the site changes that affect vehicular circulation patterns and restricted access.

Cumulative Effects: Maintenance tasks and staffing levels would increase during the period of rehabilitation and construction in the Broadfoot area. Additional costs accrued (labor & materials) to execute the modifications would impact park base funding dispersal during that fiscal year, redirecting money that would otherwise be used for other purposes. If the Broadfoot area is closed during the construction period, assigned routine maintenance tasks associated with park operations at Broadfoot would temporarily be put on hold. Following the completion of the recommended modifications to the site, the routine park maintenance regime at Broadfoot would be reinstated. With new modifications in place routine maintenance tasks would be lessened given the reroute of 500' of the Shawnee Trail. Shannon County would, or would not, (as agreed upon by both parties) continue to assume road maintenance and repair at Broadfoot on the remaining segments of roads open to public vehicles. The WHL would, or would not, (as agreed upon by both parties per the 2004 General Agreement) continue, or modify, the mowing regime in the Broadfoot fields. Ranger Protection would continue to monitor the site on routine patrol. Initially it may be estimated that incidents at Broadfoot might require additional ranger contact as the visiting public becomes acquainted with the new modifications, particularly restricted access.

Conclusion: Implementing the proposed modifications presented in this alternative would have moderate short-term adverse effect on park operations (Maintenance & Ranger Protection). In the long term however, these actions are expected to allay any short term adverse effects resulting in minor to moderate beneficial effects.

ALTERNATIVE B3 – Removal of staging area and selected infrastructure at Broadfoot

Analysis: The following construction/rehabilitation tasks would be required of the park's Maintenance staff, above and beyond the existing maintenance operations. The actions taken could affect Ranger patrol schedules.

Maintenance: Modifications resulting in restricted vehicular access to the Broadfoot roads in both the north and south fields would be implemented, as described in Broadfoot Alternative B3 (above). The 500' segment of Shawnee Trail that descends the slope south of the Broadfoot fields would also be rehabilitated and that segment of the Shawnee Trail rerouted to join the Broadfoot Trail as described in Alternative B2. As in Alternative B2, both the 2005 Road Maintenance MOU with Shannon County and the 2004 General Agreement with the WHL to the manage (mow) fields would need to be reviewed and appropriate changes identified pending the agreement of all parties. In addition Alternative B2 calls for the removal of the horse staging area (i.e. the parking loop road and hitching posts within the loop). Barriers would be installed to restrict access to the staging area following decommission. The vault toilet and two hitching posts outside the loop would remain for equestrian users who ride the Shawnee and Broadfoot Trails. Following an intensive period of construction/rehabilitation activity, routine maintenance functions would be resumed. Work load for maintenance staff would be further reduced from Alternative B2 in that repairs and replacement of the minimal facilities within the staging area would no longer need to be addressed. The maintenance regime required to keep the vault toilet clean and serviced would remain the same.

Ranger Protection: It may be expected that following the implementation of the restricted vehicular access that until the visiting public becomes accustomed to the new circulation pattern that additional time, and materials, would need to be expended to maintain barriers. An increased need for Ranger patrol may be temporarily required after the site work is completed.

Cumulative Effects: As described in Alternative B2 maintenance tasks and staffing levels would increase during the period of rehabilitation and construction in the Broadfoot area which would impact park base funding and workloads. Following the removal of the horse staging area, modifications to vehicular circulation and trail reroute (as described in the analysis) routine maintenance workload would be decreased. Removal and modifications to vehicular access and the mowing regime would consequently affect changes to the standing Shannon County Roads MOU & General Agreement with the WHL. Ranger Protection would continue to monitor the site on routine patrol with an initial need to work with the visiting public as they acquaint themselves with the changes to the site.

Conclusion: Removal of the Broadfoot Horse Staging Area accompanied by restricting vehicular access with the rehabilitation of selected segments of the existing roads within the Broadfoot area as presented in this alternative would have moderate short-term adverse effect on park operations (Maintenance & Ranger Protection). Over time, these actions are expected to allay any short term adverse effects resulting in minor to moderate long term beneficial effects.

ALTERNATIVE S1 – No-Action at Shawnee

Analysis: Under Alternative S1, the No-Action alternative, there would be no alteration to the existing routine maintenance regime. Staffing levels (both Maintenance & Ranger Patrol) would remain the same for the immediate future, pending any changes to present visitation patterns.

Cumulative Effects: Existing Maintenance and Ranger Protection staffing levels and assigned routine tasks associated with park operations at the Shawnee Horse Staging Area would not be altered in the absence of any decisions to alter site conditions.

Conclusion: The No-Action alternative would have a negligible short and long-term impact on park operations at the Shawnee Horse Staging Area.

ALTERNATIVE S2 – Modification to staging area and selected infrastructure at Shawnee

Analysis:

Maintenance: The following construction/rehabilitation tasks would be required of the park's Maintenance staff altering the existing maintenance operations. Existing drainage patterns would be modified. Run-off which exits the site from a ditch along the upslope side of the staging loop road would be diverted to the depression in the brushy field downslope and northwest of the loop. An earthen berm would be created to further detain flow acting as a catchment basin until runoff is absorbed into the vegetated ground cover before reaching the Shawnee Creek riparian area. On the north side of the loop road where sheet flow is causing minor erosion on the road surface, park road crews would harden the surface. If this does not resolve the problem, a culvert would be set in to drain runoff into the dense brush at the edge of the site. On the southern side (upslope) of the loop road three short culverts would be set in and armored with rock at the outlets along this inboard ditch to curtail further erosion of the channel and allow the creation of a hardened access to the picnic area and also the hitching posts located at the far northeast of the loop. The segment of the Shawnee Horse Trail that currently brings riders upslope from the Shawnee Creek riparian zone to the staging area vault toilet would be rerouted to send equestrian traffic along a new trail alignment that would traverse the wooded slope west of the site at angles diagonal to the gradient, decreasing erosion and dispersing runoff. The existing segment of trail would be pulled, revegetated, and the access blocked (physically and visually). A formal entrance sign would be installed that denotes the Shawnee Staging area is a "Day Use" area. A traffic regulatory sign would be installed directing all vehicle traffic around the loop road in a counter-clockwise direction with instructions to park along the outer (right) side of circulating traffic. An Interpretive Information board would be installed in the staging area providing a site map and information re "Leave No Trace" practices as they pertain to equestrians. The four horse hitching posts located in the picnic area upslope from the loop road would be removed and two of them may be reinstalled within the parking loop island. Appropriate signage alerting equestrians that horses are not allowed in the picnic area would be installed. The current mowing regime at Shawnee Staging Area would be pulled back, most notably to the northeast where the site slopes down towards the Shawnee Creek riparian area. The lower brushy field (downslope to the northeast of the loop road) would be allowed (encouraged) to return to woodland. Designated areas would be cordoned off and planted with young saplings (native trees) within the parking island and downslope of the loop road past the lower hitching posts.

Ranger Protection: Ranger patrols may be more frequent during construction, particularly if portions of the site are closed during the period of time when site work is occurring.

Cumulative Effects: Maintenance tasks and staffing levels would increase during the period of rehabilitation and construction at the Shawnee Horse Staging Area. Additional costs accrued (labor & materials) to execute the modifications would impact park base funding dispersal during that fiscal year redirecting money that would otherwise be used for other purposes. If the Shawnee Staging Area is closed during the construction period assigned routine maintenance tasks associated with park operations at Broadfoot would temporarily be put on hold. Following the completion of the recommended modifications to the site a revised routine park maintenance regime at Shawnee would be instated. With new modifications in place routine maintenance tasks would remain much the same however, there would be added culverts to keep free of debris, and temporarily new plantings to monitor and water during the first season or two. Ranger Protection would continue to monitor the site on routine patrol as before.

Conclusion: Implementing the proposed modifications presented in this alternative would have moderate short-term adverse effects on park operations (Maintenance & Ranger Protection). In the long term, these actions are not expected to impact operations much beyond that of existing operations resulting in negligible to minor adverse effects.

ALTERNATIVE S3 – Removal of staging area and selected infrastructure at Shawnee

Analysis:

Maintenance: Provisions for parking horse trailers would no longer be provided at Shawnee. The segment of the Shawnee Horse Trail that currently brings riders upslope from the Shawnee Creek riparian zone to the staging area vault toilet would be rerouted (as in Alternative S2) to send equestrian traffic along a new trail alignment that would traverse the wooded slope west of the site at angles diagonal to the gradient, decreasing erosion and dispersing runoff. The existing segment of trail would be pulled, revegetated, and the access blocked (physically and visually). The vault toilet and nearby hitching posts would be retained to accommodate equestrians riding the trail. To service the vault toilet (routine cleaning and pumping the vault), a narrow service access would be remain (gated at the county road). Selective entry at the gate would allow horses to exit the site to catch the trail across the county road to the northeast. The existing gravel loop road and parking area would be pulled, and the surrounding landscape would be graded to return the surrounding area to the original contours. All areas of soil disturbance would be seeded and mulched post construction and until vegetation is well established horses would be temporarily routed along the county road. It is important to note that it would be necessary to provide a single inboard ditch on the upslope side of the service road, but flow from this drainage would be directed to disperse within the vegetated old-field to the west of the site Flow that reaches the county road ditch (the access drive culvert would be retained) would be diverted into the depression in the lower brushy field to the northwest as in Alternative S2. The existing picnic area upslope from the loop road would be removed. Hitching posts which are located on this sloped terrain would be pulled and pending consideration, several could be reinstalled on level ground in the center of the island for equestrians stopping to use the vault toilet (there are two in place near the toilet at present).

The picnic area would be allowed to revegetate naturally, except where grading is required, in which case disturbed soils would be seeded and mulched. An interpretive information board would be installed within the island providing site map and information regarding “Leave No Trace” practices as they pertain to equestrians. The amount of mowing required to keep the area surrounding the vault toilet cleared and the service drive corridor open would be minimal. Mowing would be curtailed to the level area of the site (excepting the need to keep the inboard ditch along the service road clear). Designated areas would be cordoned off and planted with young saplings (native trees) to provide future shade for horses tied to the hitching posts.

Ranger Protection: Rangers would continue to patrol the Shawnee area during the period of intense rehabilitation. Following completion of the staging area removal, it may be expected that Ranger patrol would need to be increased (at least temporarily) to handle safety issues related to vehicular parking along the county road. Until the visiting public becomes acquainted with the changes to this site there would be a need to increase visitor/ranger contact.

Cumulative Effects: Maintenance tasks and staffing levels would increase during the intense period of rehabilitation and demolition and would impact park base funding and staff work loads. Following an intensive period of rehabilitation activity routine maintenance functions associated with the upkeep of the vault toilet would be resumed. The maintenance regime required to keep the vault toilet clean and service is not expected change appreciably. It should be expected that routine maintenance of the toilet would increase during trail rides. The reduced mowing regime, coupled with the absence of continued loop road and picnic area maintenance would lessen staff work load. Ranger Protection would continue to monitor the site on routine patrol. Equestrians pulling horse trailers may, once again, park along the county road and this may increase the need for ranger patrol.

Conclusion: Removal of the Shawnee horse staging area and the rehabilitation of the surrounding landscape as presented in this alternative would have moderate short-term adverse effect on park

operations (Maintenance & Ranger Protection). Over time, these actions are expected to allay any short term adverse effects to park operations resulting in minor to moderate long term beneficial effects.

7.0 CONSULTATION AND COORDINATION

7.1 Public Involvement

On February 16, 2006, the National Park Service notified local, state, and federal agencies, other interested organizations, and the general public of the proposed actions at the Broadfoot and Shawnee horse staging areas through a public scoping letter. This letter was posted on the Ozark National Scenic Riverways website, posted on the National Park Service's Planning, Environment, and Public Comment (PEPC) website, and mailed out to individuals and groups on the park's mailing list. In addition, a news release was sent out on February 17, 2006 announcing the availability of the scoping document on the PEPC website. As of the end of the review period on March 3, 2006, the park had received 62 comments on the PEPC system and 7 written comments.

7.2 Agency Consultation

Section 7 – Endangered Species Act Consultation

On February 14, 2006, a letter was sent notifying the U.S. Fish and Wildlife Service Ecological Services office in Columbia, Missouri of the development of this Environmental Assessment. The letter requested any information on federally listed species and/or their habitats that may be located in the vicinity of the Shawnee and Broadfoot staging areas.

Ethnographic Review

An ethnographic tribal identity study has been completed for Ozark National Scenic Riverways by Dr. Maria Zedeno which identified those Native American tribes that have historic cultural affiliation with lands now included in the park. Native American groups having demonstrable affiliation to the region are:

Cherokee Nation
Keetoowah Band Cherokee
Osage Nation
Delaware Tribe
Delaware Nation
Eastern Shawnee Tribe
Shawnee Tribe
Absentee Tribe

In August 2003, Noel Poe, Superintendent of ONSR, and James E. Price, Ph.D., Archeologist, ONSR, consulted with leaders of these tribes in Oklahoma in compliance with Section 101(d)(6)(b) of the NHPA. No historic accounts or archeological evidence have been found associating these tribes with the subject tracts of land.

Section 106 – State Historic Preservation Officer Consultation

Archeological sites have previously been identified at each of the two staging area sites. Consultation for mitigation of any adverse impacts to these sites will be submitted to the State Historic Preservation Officer (SHPO) for concurrence.

U.S. Corps of Engineers

In a March 2006 USCOE initial review of the scoping letter actions for wetlands potential impacts, no significant wetlands were noted. However, a copy of the draft EA was requested for further review and consultation.

8.0 REFERENCES

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9.0 LIST OF PREPARERS

The following persons assisted with the preparation of this document:

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APPENDIX

Appendix 1: Public Scoping Letter

United States Department of the Interior

NATIONAL PARK SERVICE
Ozark National Scenic Riverways
404 Watercress Drive
P.O. Box 490
Van Buren, Missouri 63965

IN REPLY REFER TO:

D18(xL76)

February 16, 2006

Greetings:

The National Park Service (NPS) seeks your input on proposed actions relates to the Broadfoot and Shawnee horse staging areas located in Shannon County, Missouri. Attached you will find the Public Scoping Notice containing background information, preliminary alternatives, and a draft planning timeline. If inclined, please respond to the proposed actions by **March 3, 2006**, via the methods listed in the attached scoping notice. Ozark National Scenic Riverways is interested in hearing from you on this topic. Thank you for your time and consideration and we look forward to collaborating with you on this project and others.

Sincerely,

Noel R. Poe
Superintendent

Enclosure

Appendix 1: continued

PUBLIC SCOPING NOTICE

Broadfoot and Shawnee Horse Staging Areas Environmental Assessment

National Park Service, Ozark National Scenic Riverways

Overview

The National Park Service (NPS) is preparing an Environmental Assessment of the Broadfoot and Shawnee horse staging areas (see attached maps) within Ozark National Scenic Riverways (ONSR), Missouri. The purpose of this Environmental Assessment is to evaluate the impacts from construction of their infrastructure and ongoing use and maintenance. The preferred alternative identified in this process will be used to ensure protection and consideration of the natural and cultural resources within the vicinity of the Broadfoot and Shawnee staging areas while providing for appropriate visitor experience.

This notice seeks public input on issues and alternatives that should be considered in our analysis as well as any additional information or concerns about the proposal. The National Park Service will be taking these public comments from **February 16 – March 3, 2006** with an additional opportunity to comment on the Environmental Assessment occurring in May 2006. Please focus your comments on identifying issues that you feel are important to consider, identifying alternatives that have not been considered, and providing any additional comments you feel may assist us in the preparation of this Environmental Assessment.

Please visit the National Park Service **Planning, Environment and Public Comment (PEPC)** site (http://parkplanning.nps.gov) to submit comments or you may submit written comments to: Superintendent, Ozark National Scenic Riverways, P.O. Box 490, Van Buren, MO 63965.

Background

In 1991, NPS staff at ONSR published a Roads and Trails Study in which the preferred alternative included a recommendation to create three day-use staging areas in the park; one in the lower Current River area, one in the upper Current River area, and one in the Jacks Fork River area. Horse use within the park continued to increase over the years, and in the late-1990's ONSR management began to develop the concept of a Horse Use Management Plan. Although this plan was never developed, one of the initial tasks identified was to "define the need and location of day-use staging areas, including facilities and links to trail systems". In 2001, the decision was made to begin construction of two day-use staging areas in the Two Rivers area

(one at Broadfoot and one at Shawnee). Construction was completed in 2002. The Shawnee staging area is located approximately 3 miles east of the town of Eminence off of County Road 211 on the south side of the Jacks Fork River. The Broadfoot staging area is located approximately 4 miles northeast of the town of Eminence off of County Road 235 on the south side of the Current River. Each of these staging areas consists of a vault toilet, gravel parking loop, and wooden hitching posts to accommodate trail riders using the nearby NPS designated horse trails.

In August 2005, a lawsuit was filed against the park by the Missouri Coalition for the Environment (MCE) alleging that the park did not properly follow the National Environmental Policy Act (NEPA) in the establishment of horse staging areas (trailheads) or in administering scenic easements. The settlement agreement that has been prepared as a result of this lawsuit stipulates that, among other things, the park must complete an environmental assessment of the Shawnee and Broadfoot staging areas and provide a decision document by June 1, 2006. The National Park Service intends to evaluate the impacts associated with the construction of infrastructure, maintenance, and ongoing use of these staging areas.

Preliminary Alternatives

A site visit and internal scoping meeting were conducted on February 7th and 8th with members of an interdisciplinary team (ID Team) to assess the current conditions, identify issues and concerns, and to begin developing a range of alternatives. Although they have not been fully developed, some preliminary alternatives were reviewed by the ID Team to determine whether or not they met the purpose and needs of this proposal.

The preliminary list of alternatives includes:

1. No action

2. Modification to one or both of the existing staging areas to mitigate any associated impacts

3. Removal of one or both of the existing staging areas and rehabilitation of the impacted area(s)

4. Relocation of one or both of the existing staging areas to another site in the immediate vicinity

Resource Considerations
Some resources identified by the ID Team as important to consider in the analysis process include:

- Geological (soils, etc.)

- Water Quality

- Recreational Resources
- Floodplains/Wetlands
- Cultural Landscapes and Land Use
- Vegetation
- Archeological Resources
- Wildlife

NEPA Timeline

This planning process is anticipated to evolve over the next 4 months. The draft timeline includes the following milestones:

Internal Scoping	February – May 2006
Public Scoping	February 16 – March 3, 2006
Alternative Development	February – March 2006
Impact Analysis	February – March 2006
EA Preparation	March – May 2006
Public Review of EA	May 2006
Final Decision Document	May 2006