

Alternatives Comparison

A comparison of the alternatives and the degree to which each alternative fulfills the goals of the proposed project is summarized in Table 4-1.

Mitigation

The NPS places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures would be implemented as part of the preferred alternative (Table 4-2). The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving their intended results.

TABLE 4-1. ALTERNATIVES COMPARISON

Meets Project Purpose, Need, and Objectives?			
No Action Alternative	Alternative 1 Investigating and Preserving the Battle Landscape	Alternative 2 Revealing the Battlefield's Context (preferred)	Alternative 3 Reconstructing the Battle Scene
<p>The no action alternative would not fulfill the project purpose or objectives. The goals of documenting resources, conveying the historic character of the cultural landscape, and improving visitor understanding would not be met.</p> <p>Current levels of resource deterioration would continue.</p>	<p>Alternative 1 partially fulfills the project objectives. Research and investigations would be undertaken to document cultural landscape resources.</p> <p>The alternative would provide an authentic experience, but would not fully convey the complete landscape setting that existed at the time of the battle. Extant features would be preserved, stabilized and repaired but no additional elements would be added to completely reveal the full story.</p>	<p>Alternative 2 meets the project purpose and objectives by conveying the historic setting by preserving and repairing extant contributing features and marking locations of non-extant features.</p> <p>Vegetation management would be used in some areas to depict the spatial qualities of the cultural landscape.</p> <p>Research and investigations would be undertaken.</p>	<p>Alternative 3 meets the project purpose and objectives in ways similar to Alternative 2. It would provide a more immersive visitor experience by reconstructing non-extant buildings and recreating portions of non-extant landscapes.</p> <p>Research and investigations would be undertaken.</p>

TABLE 4-2. MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES GENERAL MEASURE

General Measures
<ul style="list-style-type: none"> • The park would ensure the project remains within the treatment limits and parameters established in the compliance documents and that mitigation measures are properly implemented. • Temporary signage would be placed at approach points of implementation zones to alert visitors of mechanical treatments. No implementation activities would be permitted outside these limits. • All protection measures would be clearly stated in the project specifications/special project requirements, and workers would be instructed to avoid conducting activities beyond the project limits as defined by implementation plans or marked limits. • Garbage, trash, and other solid waste associated with project operations would be disposed of weekly, or sooner if warranted, outside the park. • All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion. • Contractors would be required to properly maintain equipment used on the project (e.g., mufflers) to minimize noise from equipment use. • All equipment used on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from mechanical fluids. All equipment would be checked daily. • BMPs for drainage and sediment control, in accordance with a Stormwater Erosion and Sediment Control Plan, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas, when needed. Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements: <ul style="list-style-type: none"> ◊ Keeping disturbed areas as small as practicable to minimize exposed soil and the potential for erosion ◊ Locating waste and excess excavated materials outside of drainages to avoid sedimentation ◊ Installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) prior to implementation ◊ Conducting regular site inspections during the implementation period to ensure erosion-control measures were properly installed and are functioning effectively ◊ Storing, using, and disposing of chemicals, fuels, and other toxic materials in a proper manner
Soils
<ul style="list-style-type: none"> • Erosion and sediment control would be required (see the “General Measures” section above). • If applicable, topsoil or native soil would be removed from areas of implementation and stored for later reclamation use. The topsoil would be redistributed as near the original location as possible and supplemented with scarification, mulching, seeding, and/or planting with native genotypes.

Vegetation

- Orange construction fencing or other highly visible methods for identification would be used around large and historic trees within project limits to minimize the potential for inadvertent impacts from heavy equipment during implementation. Large nontarget trees would be avoided to the extent possible during implementation.
- Temporary barriers may be provided to protect existing trees, plants, and root zones not proposed for removal. Trees or other plants would not be removed, injured, or destroyed without prior approval.
- Ground surface treatment would include grading to natural contours, conserving and replacing topsoil, and, where necessary, hand seeding or planting. In some locations, topsoil placement and mulching with litter and duff would be the primary treatment. If insufficient litter and duff is salvaged from the project area, additional litter and duff may be gathered from adjacent areas on a small scale where approved by the NPS.
- Remedial actions would include installing erosion-control structures, reseeding, conserving and replacing topsoil and/or replanting the area, and controlling nonnative plant species.
- Introduction of nonnative/noxious plant species would be minimized by implementing several BMPs, including:
 - ◊ Minimizing soil disturbance
 - ◊ Ensuring project personnel make daily checks of clothing, boots, laces, and gear to ensure no invasive plant propagates and no off-site soil is transported to the worksite
 - ◊ Pressure washing and/or steam cleaning all equipment to ensure all equipment and machinery are cleaned and weed free before entering the park; equipment used on the project would be inspected by park staff prior to entering the park to ensure compliance with cleanliness requirements and inadequately cleaned equipment would be rejected
 - ◊ Covering all haul trucks bringing fill materials from outside the park to prevent seed transport and dust deposition along the road corridor
 - ◊ Limiting vehicle parking turnouts to existing roads, parking lots, or access routes
 - ◊ Limiting project staging to existing roads, parking turnouts, and other designated areas; no machinery or equipment should access areas outside the project limits
 - ◊ Obtaining all fill, rock, or other earth materials from the project area, if possible
 - ◊ Restricting hay bales from being used during revegetation or for temporary erosion control
 - ◊ Initiating revegetation of disturbed sites immediately following implementation activities
- To maximize vegetation restoration efforts after completion of implementation activities, the following measures would be applied:
 - ◊ Salvaging available topsoil or the top several inches of native soil from project areas for reuse during restoration of disturbed areas
 - ◊ Incorporating native litter and duff layer in forested sites for replacement over salvaged topsoil
 - ◊ Ensuring the NPS surveys for, and treats, invasive plants prior to and three years after implementation and in accordance with the Exotic Pest Management Plan
 - ◊ Until established, protecting/avoiding areas previously revegetated during park-prescribed burns (in accordance with the Fire Management Plan)

Wetlands
<ul style="list-style-type: none"> Impacts on wetlands would be avoidable. No wetland fill would occur without authorization from the Corps and appropriate permitting under the Clean Water Act. Appropriate permits (404 permit and 401 certification) would be acquired should there be any impacts on wetlands.
Water Quality
<ul style="list-style-type: none"> Sediment traps, erosion checks, and/or filters would be constructed above or below all culvert drains (if such drains are required) and in all other ditches before the water (runoff) leaves the project limits. At all cut and fill areas, erosion and sediment control would be implemented to minimize impacts on water quality. Surface restoration and revegetation of disturbed soils would be implemented to minimize long-term soil erosion.
Wildlife
<ul style="list-style-type: none"> To reduce noise disturbance and limit impacts on breeding avian and mammalian species, all tree removal would be conducted from October 1 to March 1, where feasible. If trees need to be removed outside of this time frame, they would be identified for removal and evaluated for nesting or roosting use. Project personnel are prohibited from feeding or approaching wildlife. Project personnel would report to park personnel any wildlife collisions within 24 hours of an incident. The clearing limits (project limits) outside of the existing road prism would be clearly marked or flagged prior to implementation. All implementation activities, including staging areas, would be located within previously disturbed areas, if necessary. The following measures would be taken to limit noise and disturbance from vehicles and equipment used on the project: <ul style="list-style-type: none"> ◇ All motor vehicles and equipment would have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise, fumes, or smoke. ◇ Use of air horns within the park would be limited to emergencies only.
Air Quality
<ul style="list-style-type: none"> Workers would not leave vehicles idling. Debris resulting from implementation would be hauled from the park to an appropriate disposal location. Visitors would be asked to not idle their vehicles while waiting during potential traffic delays.

Cultural Resources

- All activities would comply with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716, revised).
- Cultural resource surveys would be undertaken in areas of proposed treatment that involve ground disturbance where surveys have not been previously conducted (either exploratory shovel testing or metal detection surveys).
- Cultural resources that have not been assessed for listing on the National Register would be evaluated and a determination of eligibility obtained.
- Archeological resources in the vicinity of the project area would be identified and delineated for avoidance prior to project work.
- Should any archeological resources be uncovered during implementation, as appropriate, work would be halted in the area and a NPS archeologist, SHPO, and appropriate Native American tribes would be contacted for further consultation. Plans for treatment of unanticipated discoveries would be prepared as needed.
- NPS cultural resources staff would be available during implementation to advise or take appropriate actions should any archeological resources be uncovered during implementation. In the unlikely event that human remains are discovered during implementation, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The NPS would ensure that all contractors, subcontractors, and lessees are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors, subcontractors, and lessees also would be instructed on procedures to follow in case previously unknown archeological resources are uncovered during implementation.
- Equipment and material staging areas would avoid known archeological resources.

Environmentally Preferable Alternative

The environmentally preferable alternative is the alternative identified in a record of decision, that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historic, cultural, and natural resources (40 CFR 1505.2(b)). The “Environmentally Preferable Alternative” is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources (43 CFR 46.30).

Although an environmentally preferable alternative is identified, it may not be the NPS preferred alternative. The preferred alternative is the alternative the NPS believes would best fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors.

While the no action alternative would maintain existing conditions and levels of maintenance, it would not be considered the environmentally preferable alternative because it would not meet environmental goals in the same manner as the action alternatives. Although it would not result in new disturbance to natural resources, the no action alternative would not preserve important cultural landscapes as well as the action alternatives because of the continued gaps in knowledge of the cultural landscape and presence of overgrown vegetation. The no action alternative would not meet the goals and objectives of the project, which include rehabilitating the cultural landscape to protect cultural landscape features and to better convey the historic character of Pea Ridge NMP. The no action alternative is not the environmentally preferable alternative because the other alternatives better protect, preserve, and enhance historic, cultural, and natural resources.

Alternatives 1, 2, and 3 each provide somewhat similar environmental advantages. They differ in the extent of cultural landscape preservation and treatment that will reveal patterns and features that existed at the time of the battle. Alternative 1 would have the least effect on the landscape, but would not preserve or convey the appearance of the landscape during the period of significance as well as the other action alternatives. Alternative 3 would have the highest level of reconstruction and changes to existing conditions, but would also have the greatest effect on natural resources. Alternative 2 would provide the best balance between the preservation of historic and cultural resources and the protection of the natural resources within the park; for this reason, Alternative 2 is the environmentally preferable alternative.

Impact Summary

A summary of potential environmental effects for the alternatives is presented in Table 4-3.

TABLE 4-3. IMPACT SUMMARY

Impact Topic	No Action Alternative	Alternative 1	Alternative 2 (preferred)	Alternative 3
Cultural Resources	<p>The deterioration of some cultural landscape features under the no action alternative would result in parkwide, moderate, long-term, adverse effects on cultural resources.</p> <p>The cumulative effects would be parkwide moderate and adverse.</p>	<p>Alternative 1 would have parkwide moderate long-term beneficial effects on cultural resources by restoring some aspects of the cultural landscape and stabilizing and preserving some cultural landscape features.</p> <p>Alternative 1 would have local moderate beneficial cumulative effects on cultural resources.</p>	<p>Alternative 2 would have a local moderate long-term beneficial effect on cultural resources by restoring some aspects of the cultural landscape and gathering archeological data from investigation.</p> <p>Alternative 2 would have local moderate beneficial cumulative effects on cultural resources.</p>	<p>Alternative 3 would have a local moderate long-term beneficial effect on cultural resources by rehabilitating the Pea Ridge landscape to closely resemble what the fighting soldiers witnessed.</p> <p>Alternative 3 would have beneficial cumulative effects on cultural landscapes.</p>
Vegetation	<p>Because vegetation health in the park would slightly improve over time, the no action alternative would have parkwide long-term minor beneficial effects on vegetation. Cumulative effects would be parkwide, moderate, and beneficial.</p>	<p>Under Alternative 1, the minor modifications in existing vegetation management in the landscape character areas would result in local, long-term, minor, beneficial effects on vegetation. Cumulative effects would be parkwide, moderate, and beneficial.</p>	<p>Alternative 2 would include modifications to vegetation in the landscape character areas that would have local minor long-term beneficial effects. Cumulative effects would be parkwide, moderate, and beneficial.</p>	<p>Alternative 3 would include modifications to vegetation in the landscape character areas that would have local minor long-term beneficial effects. Cumulative effects would be parkwide, moderate, and beneficial.</p>

Impact Topic	No Action Alternative	Alternative 1	Alternative 2 (preferred)	Alternative 3
Wildlife	The effects from the no Action alternative on wildlife and wildlife habitat would occur over a long period and would not likely cause a decrease in wildlife populations. The no action alternative would result in both beneficial and adverse parkwide long-term minor impacts on wildlife. Cumulative impacts on wildlife would be both beneficial and adverse, parkwide, and minor.	Because the effects on wildlife and wildlife habitat under Alternative 1 would be indistinguishable from those of the no action alternative, Alternative 1 would have both beneficial and adverse parkwide long-term minor impacts on wildlife. Cumulative impacts on wildlife would be both beneficial and adverse, parkwide, and minor.	Because the effects on wildlife and wildlife habitat under Alternative 2 would be indistinguishable from those of the no action alternative, Alternative 2 would have both beneficial and adverse parkwide long-term minor impacts on wildlife. Cumulative impacts on wildlife would be both beneficial and adverse, parkwide, and minor.	Because the effects on wildlife and wildlife habitat under Alternative 3 would be indistinguishable from those of the no action alternative, Alternative 3 would have both beneficial and adverse parkwide long-term minor impacts on wildlife. Cumulative impacts on wildlife would be both beneficial and adverse, parkwide, and minor.

Impact Topic	No Action Alternative	Alternative 1	Alternative 2 (preferred)	Alternative 3
Visitor Experience	The natural and man-made changes that have altered the park from its 1862 appearance would not be substantially managed or changed under the no action alternative. These current and continuing changes would lead to a reduced interpretation value and visitor understanding of the Battle of Pea Ridge. As a result, the no action alternative would have parkwide long-term minor adverse impacts on visitor experience because. The no action alternative would have parkwide moderate beneficial and minor adverse cumulative impacts on visitor experience.	The additional knowledge and understanding of the cultural landscape of the park and select preservation, stabilization, and repair of extant features would have a parkwide long-term minor beneficial effect on visitor experience. Cumulative effects of Alternative 1 would be parkwide, moderate, and beneficial and parkwide minor and adverse.	More accurately depicting the historic character of the park during the period of significance under Alternative 2 would have parkwide long-term moderate beneficial effects on visitor experience. Cumulative effects of Alternative 2 would be parkwide, moderate, and beneficial and parkwide, minor, and adverse.	More accurately depicting the historic character of the park during the period of significance under Alternative 3 would have parkwide long-term moderate beneficial effects on visitor experience. Cumulative effects of Alternative 3 would be parkwide, moderate, and beneficial and parkwide, minor, and adverse.

Impact Topic	No Action Alternative	Alternative 1	Alternative 2 (preferred)	Alternative 3
Park Operations	Current maintenance and operation activities would continue under the no action alternative. The continued cultural landscape management actions would result in the continued deterioration in cultural resources, interpretation, and education value of the park, which would result in a parkwide long-term minor adverse impact on park operations by preventing park staff from being able to adequately convey the Battle of Pea Ridge. Cumulative effects on park operations would be parkwide, minor, and adverse.	The additional knowledge and understanding of the cultural landscape of the park and select preservation, stabilization, and repair of extant features would have parkwide long-term minor beneficial and adverse effects on park operations. Cumulative effects of Alternative 1 would be parkwide, minor, and beneficial and parkwide minor and adverse.	The focus of Alternative 2 would be on depicting the spatial qualities of the historic setting during the period of significance, which would have parkwide long-term minor beneficial and adverse effects on park operations. Cumulative effects of Alternative 2 would be parkwide, minor, and beneficial and parkwide minor and adverse.	The focus of Alternative 3 would be on rehabilitating the Pea Ridge landscape to closely resemble what the fighting soldiers witnessed, which would have parkwide long-term minor beneficial and adverse effects on park operations. Cumulative effects of Alternative 3 would be parkwide, minor, and beneficial and parkwide minor and adverse.

Impact Topic	No Action Alternative	Alternative 1	Alternative 2 (preferred)	Alternative 3
Visual Resources	Under the no action alternative, the visual character of the cultural landscape would not be substantially changed. Views of the battlefield would not accurately convey the historic character of cultural landscape during the period of significance. As a result, the no action alternative would have a parkwide long-term minor adverse effect on visual resources of the park.	The additional knowledge and understanding of the cultural landscape of the park and select preservation, stabilization, and repair of extant features would have a parkwide long-term minor beneficial effect on visitor experience. Cumulative effects of Alternative 1 would be parkwide, moderate, and beneficial and parkwide minor and adverse.	More accurately depicting the historic character of the park during the period of significance under Alternative 2 would have parkwide long-term moderate beneficial effects on visual resources. Cumulative effects of Alternative 2 would be parkwide, moderate, and beneficial and parkwide, minor, and adverse.	More accurately visually depicting the historic character of the park during the period of significance under Alternative 3 would have parkwide long-term moderate beneficial effects on visual resources. Cumulative effects of Alternative 3 would be parkwide, moderate, and beneficial and parkwide, minor, and adverse.