National Park Service
U.S. Department of the Interior

Grand Canyon-Parashant National Monument
Regions 8, 9, 10 and 12

FINDING OF NO SIGNIFICANT IMPACT FOR THE SHIVWITS PLATEAU LANDSCAPE RESTORATION PROJECT

Recommended:

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Date: 2021.08.26 09:13:35 -07'00' 8/26/21

[FOR]: Cindy Orlando — Date
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1. Introduction

In compliance with the National Environmental Policy Act (NEPA), the Bureau of Land Management (BLM) and the National Park Service (NPS) have conducted an environmental analysis (PEPC-98370/DOI-BLM-AZ-A030-2021-0005-EA) to disclose and analyze the environmental consequences of implementing vegetation treatments within the Shivwits Plateau project area. This area is within Grand Canyon-Parashant National Monument, which is cooperatively managed by the BLM and the NPS. The project includes a combination of manual, mechanical, and prescribed fire treatments, and related design features to move the project area toward desired conditions (as described in Section 1.3 of the EA) on both BLM and NPS lands. In total, both BLM and NPS portions of the project include approximately 55,000 acres of the above-mentioned treatments across the 318,000-acre project planning area. This Finding of No Significant Impact (FONSI) informs NPS's decision making process and only applies to NPS-managed lands. Likewise, the BLM issues their own FONSI applicable to their managed lands. The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA and associated decision file. To the extent necessary, relevant sections of the EA are incorporated by reference below.

2. Selected Alternative and Rationale for the Decision

Based on the analysis in the EA, NPS and BLM selected Alternative A – Proposed Action.

The selected alternative will treat approximately 55,370 acres within the 318,000-acre project area. While the 98 treatment units total approximately 103,000 acres, approximately 29,310 acres within the treatment units would be excluded due to non-target vegetation type (such as pinyon-juniper woodland in an area where prescribed fire would be used only in ponderosa pine woodland) and approximately 10,030 acres within the treatment units would be excluded as pinyon-juniper vegetation types leave area. Actual treatment proposed is approximately 55,370 acres. Additional area may be excluded due to the presence of cultural sites, topography and sensitive species habitat (see EA Section 2.2.1 subsections Proposed Treatment Locations, Treatment Unit Specific Planning, Adaptive Management and Monitoring, and Design Features (pgs. 8-10 and 18-23).

A combination of manual, chemical and mechanical treatments, prescribed fire, and seeding (pre or post treatment) will address the purpose and need to move the project area toward desired conditions across the 98 treatment units. Several units may have mechanical or manual treatment or a mix of the two treatment types. Treatment implementation for each unit is dependent on vegetation type, Ecological Site Descriptions (these indicate the appropriate vegetative community for an area), topography, wildlife needs and a variety of other site-specific considerations. The selected alternative incorporates adaptive management to adjust unit treatment implementation to account for these variables and changes in best available science (See EA Section 2.2.1 Proposed Treatment Locations, Treatment Unit Specific Planning, Adaptive Management and Monitoring, and Design Features subsections for more details).

During Public Comment Period, the BLM and NPS further refined the treatment unit boundaries to minimize overlap and better conform to topography. This increased the treatment unit and actual treatment acres from 95,000 and 52,140 to 103,000 and 55,370 respectively. Following Public Comment Period, changes were made to clarify text in response to internal and external comments. This did not change the impact analysis in the EA.

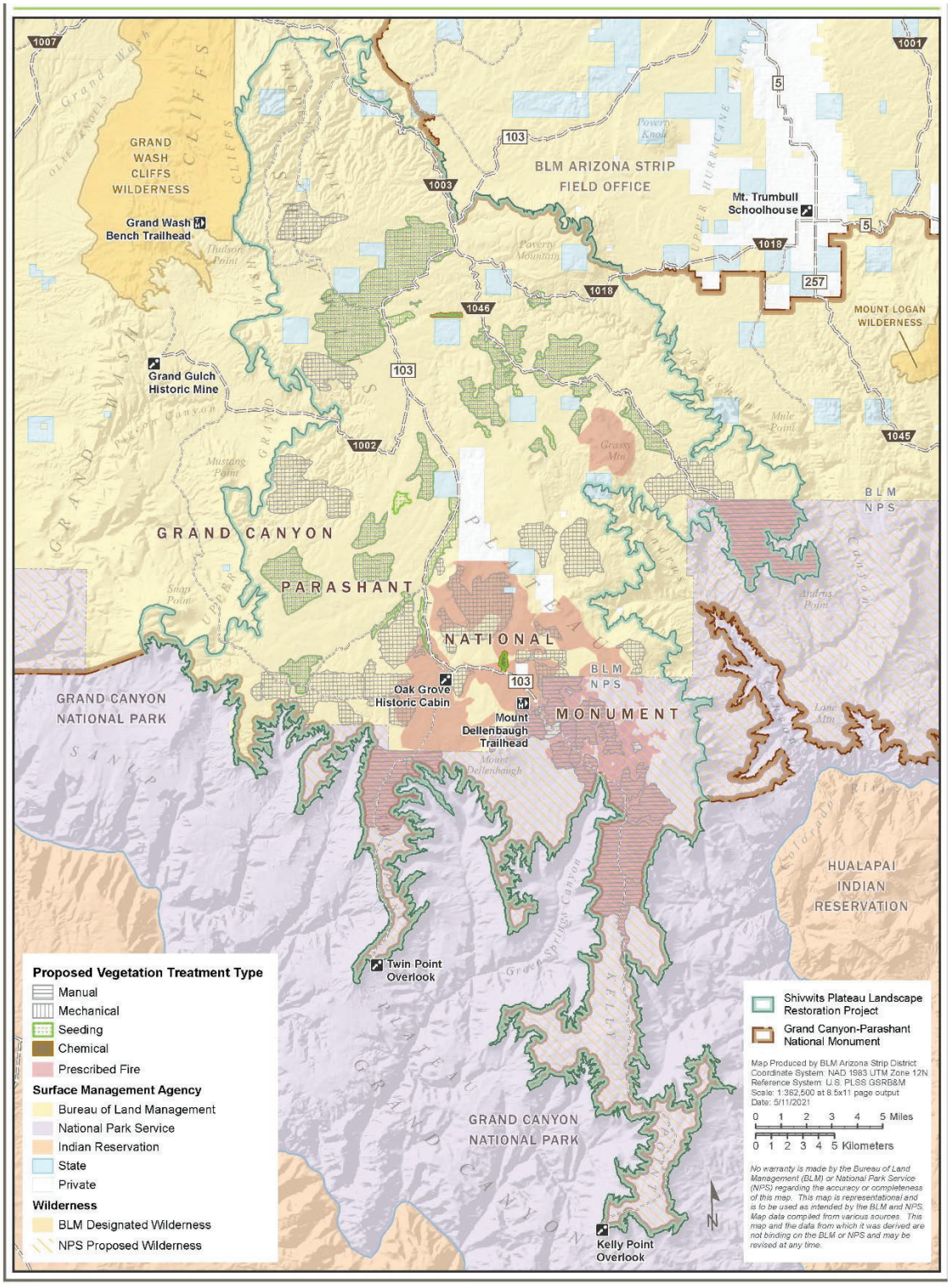
Rationale

Alternative A - Proposed Action was chosen because it best addresses the purpose and need to restore vegetation communities to improve biodiversity, ecosystem function, and fire resiliency, and to provide sustainable habitat for wildlife and limited forage for livestock. This decision has been made after considering environmental impacts to resources and resource uses, including land access, cultural resources, livestock grazing, soils, vegetation (including invasive, non-native species), and wildlife.

Alternative B - No Action does not adequately address the NPS's need to restore vegetation communities based on the limited amount of previously approved vegetation treatments that could occur. This would increase the risk of high-severity wildfire and the risk of a type conversion to annual invasive grasses. Effective ground cover would be greatly reduced, and soil erosion could be accelerated.

Figure 1. Location of Shivwits Plateau Landscape Restoration Project in Grand Canyon-Parashant National Monument

Figure Source: (BLM ASDO GIS 2021)



3. Mitigation Measures

The selected alternative includes design features in its description (see EA Section 2.2.1). No additional mitigation measures have been identified.

4. Other Alternatives Considered

Alternative B: No Action Alternative

Alternative B (no action) represents current management. This alternative continues current management in the project area, guided by the Grand Canyon-Parashant National Monument RMP and a limited number of previously approved vegetation treatment projects. None of the proposed project activities to improve woodland, range, and forest health; enhance wildlife habitat; restore fire; and improve plant community resilience would occur under this alternative.

Alternatives Considered but Eliminated from Detailed Analysis

1. Only non-ground-disturbing treatments

Limiting treatments to types with no ground disturbance was considered. These include manual, chemical, and some prescribed fire treatments included in the proposed action. While this would have partially fulfilled the purpose and need for this project, several practical issues arise. Mechanical treatments in the form of mastication and mowing of vegetation has a two-fold effect, removal of vegetative biomass and providing a light mulch layer to promote successful seeding. Successful seeding (typically a mechanical treatment) is a necessary component of treatments in certain vegetation types to bolster the local seedbank and increase the local native plant biodiversity. Seeding would help aid the restriction of invasive plant species; more herbicide application would likely be necessary to accomplish the same goal without this treatment type. For these reasons, this alternative has been dismissed from detailed analysis.

2. Use prescribed fire as the only treatment, or as the only treatment in proposed wilderness and/or areas with wilderness characteristics

Prescribed fire as the sole treatment type, either across the entire project area or at least within proposed wilderness and areas with wilderness characteristics was considered. This would partially fulfill the purpose and need for this project. Prescribed fire is part of the suite of vegetation treatments in the proposed action. In the ponderosa pine dominant areas, using only prescribed fire, if preceded by thinning or ladder fuel reduction is recommended. In other vegetation types where fire would be expected (pinyon-juniper, sagebrush, oak, chaparral, and grassland), prescribed fire would be a useful tool if not for consideration of proliferation of invasive species. In areas without robust grass and forb understory, cheatgrass and other invasive non-native plants proliferate after fire, altering the fire regime and beginning the conversion of the ecosystem to one dominated by invasive non-native plant species. The areas targeted for manual, mechanical, and chemical treatments have a poor grass and forb understory, so treatment with only prescribed fire would be generally expected to have this negative impact. This would degrade the ecosystems within the

project area, cause resource impairment, and contradict the Purpose and Need for all ecosystems within the project area. For these reasons, this alternative has been dismissed from detailed analysis.

3. No grazing

Removal of livestock grazing from the project area was proposed by various commentors during public scoping and the public comment period. However, making permanent changes to the livestock grazing permits is outside the scope of this analysis under the purpose and need for the project. The proposed action incorporates design features, monitoring, and adaptive management principles which includes temporarily resting treated areas from livestock grazing to ensure treatment success. However, these actions do not constitute the equivalency of a no-grazing alternative based on the temporary nature of the rest periods and the ability of many permittees to rest areas while grazing other parts of the allotments. Finally, the Monument Proclamation (2000) states:

> The Bureau of Land Management shall continue to issue and administer grazing leases within the portion of the monument within the Lake Mead National Recreation Area, consistent with the Lake Mead National Recreation Area authorizing legislation. Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing leases on all lands under its jurisdiction shall continue to apply to the remaining portion of the monument.

For these reasons, this alternative has been dismissed from detailed analysis.

4. Sierra Club et al Alternative

An alternative proposed by Sierra Club et al (SC) was considered. This alternative is similar to Alternative A, Proposed Action, and/or Alternative B, No Action Alternative, in most points, though different terminology was used. Some aspects, such as SC Section 1.3.3, were outside the scope of the project and refer to determinations made by other federal agencies. Other aspects, such as SC Section 1.3, 2.4 and 2.5 were not part of either Alternatives A or B. Specific points of departure from Alternatives A and B that would not fulfill the Purpose and Need or are not incorporated in other alternatives in this section are discussed below.

SC 1.2 “Pinyon pines are never removed as part of juniper removal treatments”

The pinyon-juniper woodlands of the project area are mixed with many dense shrubby pinyon trees around large diameter juniper trees (Appendix C Figures C.5 and C.6). Ignoring the overcrowding of small pinyon trees while removing only juniper trees would not result in a healthy diverse multi-age class woodland, but rather a dense shrub dominated savanna that does not align with the ESD.

SC 3.2.1 “If a site with invasive species potential is treated, hand-treatment [e.g. chainsaws] will be the preferred method…”

In areas without robust grass and forb understory, cheatgrass and other invasive non-native plants tend to be potential invaders. The areas targeted for treatment have a poor grass and forb understory. While mechanical treatment may be ground disturbing, manual treatment would necessitate the use

of large hand crews that typically are not contracted for such work because mastication is more efficient and are a potential vector for invasive species expansion from areas adjacent to the treatment area. Herbicide application and seeding (typically a mechanical treatment) are included in the proposed action to combat the expansion of invasive plants areas in treatment units.

In summary, this alternative was not analyzed in detail in the EA based on its similarity to the proposed action and that some portions of the SC alternative did not meet the purpose and need of the proposed action.

5. Public Involvement/Agency Consultation

Cooperating Agencies

Twenty-seven agencies, including all tribal agencies with whom the Monument conducts tribal consultation, were invited to collaborate for this project. Mohave County Board of Supervisors and Arizona Game and Fish Department (AZGFD) are cooperating agencies for this project, resulting in an agreed upon MOU with each agency.

Tribal Consultation

Formal tribal consultation was initiated by certified letter dated May 28, 2021 to specifically address the question of presence of places with religious or other cultural significance . Letters were sent to 18 representatives of tribes, bands and chapters with known affiliation to the Arizona Strip District. Three tribes responded, including two who provided feedback regarding consultation during public scoping. One tribe requested consultation should any prehistoric cultural resources be adversely affected by planned activities; the SPLRP contains design features to directly avoid all adverse effects to cultural resources. No tribes chose to engage in formal consultation as of August 16, 2021.

National Historic Preservation Act Section 106 Review

The project area includes a ranch listed in the National Register of Historic Places as well as numerous identified and unidentified cultural sites. As a result, the Monument, because it is a federal agency carrying out a federal undertaking that may affect these resources, is required to fulfill the provisions of Section 106 of the National Historic Preservation Act and its implementing regulations at 54 U.S.C §§300101-307108.

The Monument began informal discussions with the Arizona State Historic Preservation Officer (SHPO) regarding the SPLRP in mid-summer 2020. Formal consultation with SHPO was determined to be unnecessary as both the BLM and NPS have existing programmatic agreements regarding Section 106 compliance valid in the state of Arizona. The notification to "share with you [SHPO] how Grand Canyon-Parashant National Monument (GCPNM/PARA) intends to meet legal responsibilities under Section 106 of the National Historic Preservation Act..." was sent to SHPO by letter dated June 2, 2021.

On August 2, 2021, SHPO agreed with the determination the SPLRP would operate using two programmatic agreements based on primary land management as defined in the Monument

Proclamation (2000) following all relevant protocols in the programmatic agreements and the design features included in Alternative A.

- On BLM managed lands: Programmatic Agreement Among the Bureau of Land Management, Southwestern Region Three U.S. Forest Service, U.S. Fish and Wildlife Service, Interior Region Eight, Arizona State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Effects of Vegetation and Range Management Activities in Arizona
- On NPS managed lands: NPS Nationwide PA for Compliance with Section 106 Programmatic Agreement Among the National Park Service (U.S. Department of the Interior), the Advisory Council on Historic Preservation, the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act

6. Finding of No Significant Impact

As described in the EA, the selected alternative has the potential for adverse effects on air resources, areas managed to maintain wilderness characteristics (BLM managed lands), livestock grazing, proposed Wilderness (NPS managed lands), soil density and erosion, vegetative community composition and structure, appearance of the project area (visual resources), and wildlife habitat. Upon detailed analysis, the Selected Alternative was found to have no significant adverse effects, as defined in 40 CFR §1508.27. The detailed analysis of the potential impacts can be found in Chapter 3 of the EA. The following significance criteria were examined.

1. Impacts that may be both beneficial and adverse.

The EA considered both the beneficial and adverse impacts of the action. The action will impact resources as described in the EA. See the relevant sections cited below for more information.

The beneficial effects of the selected action include:

- Promoting the health, vigor, recruitment, and production of perennial grasses, forbs, and shrubs by opening pinyon-juniper canopies and reducing competition with trees for soil moisture, light, and nutrients (EA Section 3.9.2 Vegetation).
- Protecting soil resources and associated watershed values by rejuvenating decadent, even-aged stands of sagebrush, and improving the ecological condition of sites within the project area (EA Section 3.9.2 Vegetation).
- Improving quantity and quality of forage for wildlife and livestock, including increases in production and quality of herbaceous plant communities (EA Sections 3.6.2 Livestock Grazing and 3.11.2 Wildlife).
- Improving soil productivity/stability/fertility and reducing sediment movement by: 1) increasing ground cover/organic matter and thereby improving soil moisture-holding capacity and infiltration rates, and 2) establishing desirable grasses and forbs in place of species such as cheatgrass (EA Sections 3.8.2 Soil Resources and 3.9.2 Vegetation).
- Increasing composition diversity, age class diversity, and vigor/production of understory plants (EA Section 3.9.2 Vegetation).

- Decreasing the likelihood of invasive plant and noxious weed establishment and increase the resiliency of vegetation against such species (EA Section 3.9.2 Vegetation).
- Improved diversity and quality of wildlife habitat, resulting in an increase in the carrying capacity of the landscape and allowing it to support healthier wildlife populations – treatments will benefit mule deer in particular by removing pinyon-juniper that reduces habitat quality or thinning vegetation (primarily pinyon-juniper) (EA Section 3.11.2 Wildlife).
- Long-terms changes to the landscape that will appear more natural over time as treatment areas are designed to blend in past chaining scars along section boundary lines (EA Section 3.10.2 Visual Resources).

The adverse effects of the proposed action include:

- Short-term, localized reduction in air quality in and around each treatment unit and adjacent roads from fugitive dust close to the ground created by the operation of vehicles/equipment during mechanical, chemical and seeding treatments (EA Section 3.3.2 Air Resources).
- Short-term and localized impacts to air quality from equipment emission/exhaust fumes (EA Section 3.3.2 Air Resources).
- Temporary disruptions in wilderness character associated with treatment applications, including a decrease in the sense of solitude and displacement of recreators to other areas within the Monument (EA Section 3.4.2 Areas Managed to Maintain Wilderness Characteristics and 3.7.2 Proposed Wilderness).
- Short-term economic effect on grazing permittees due to a mandatory rest period of the treatment areas occurring in five active allotments to ensure the establishment, protection, and long-term viability of the vegetation treatments (EA Section 3.6.2 Livestock Grazing).
- Short-term rutting and localized soil erosion in and around each treatment unit associated with use of mechanical equipment (EA Section 3.8.2 Soil Resources).
- Short-term effects to soils in treatment units from vegetation removal by altering how vegetation intercepts rainfall, slows overland flow, and helps stabilize soils (EA Section 3.8.2 Soil Resources)..
- Short-term reduction in soil infiltration, increased erosion and sedimentation, and increased soil surface temperatures until understory species like grasses and forbs re-establish (EA Section 3.8.2 Soil Resources). .
- During implementation and for the short term, treatment areas (particularly burned areas) may be noticeable to the casual observer (EA Section 3.10.2 Visual Resources).
- During implementation, noise and other disruptions associated with treatment applications may cause behavioral changes in mule deer, migratory birds and bats (EA Section 3.11.2 Wildlife).
- Short-term decreases in localized prey species for bats within treatment units until understory regeneration takes effect (EA Section 3.11.2 Wildlife).

2. The degree to which the Action affects public health or safety.

The Selected Alternative will improve the safety of visitors. The mosaic design of the treatment units creates natural fuel breaks. Treatments will reduce hazardous fuel loads. The two combined will increase reduce the overall threat and extent of a catastrophic wildfire, increasing the safety of public recreating on the Monument should a wildfire occur.

No negative effects to public health and safety will result from implementing the selected action, since no chemicals subject to reporting under Superfund Amendments and Reauthorization Act, Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the project. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the project. Any trash produced will be confined in a covered container and hauled to an approved landfill. Burning of waste or oil will not be done, and human waste will be contained and disposed of at an approved sewage treatment facility.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wilderness, wild and scenic rivers, or ecologically critical areas.

There are no prime farmlands, riparian areas/wetlands, or ecologically critical areas within treatment units. There are no river segments within the project area that are designated, eligible, or suitable as wild, scenic, or recreational under the Wild and Scenic Rivers Act.

The Monument is managed under the GMP/RMP to ensure that important Monument objects are protected. The EA analyzed impacts to Monument resources it has been determined that these resources would remain protection. The NPS will manage the vegetation treatments in compliance with Section 106 of the National Historic Preservation Act (NHPA) (36 CFR 800.3). The selected action authorizes manual treatments and prescribed fire. However, due to the project design feature of avoiding all identified cultural resources, the action will have no adverse effects on cultural resources.

No designated wilderness areas are within the project planning area. The majority of the NPS-managed lands are proposed Wilderness (actual status is unclear at this time) and are managed, in accordance with NPS policy, as Wilderness.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The effects of vegetation treatments, using the treatment methods outlined in the selected action (manual, mechanical, seeding, and prescribed fire), are known land management practices. These actions are well-documented, are not highly controversial, and are employed to meet resource objectives. The actions will restore vegetation communities in the project area to improve biodiversity, ecosystem function, and fire resiliency.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

There are no known effects of the action identified and analyzed in the EA that are considered uncertain or involve unique or unknown risks. The project is not unique or unusual. The BLM and NPS has proficiency implementing similar actions in other areas within the Monument and throughout the western United States. The environmental effects to the human environment are analyzed in Chapter 3 of the EA.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The selected action will not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration. The action includes adaptive management, which provides management options that may be needed to adjust management decisions and actions to meet desired future conditions as determined through monitoring. Adaptive management is a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative and informing process. Adaptive management recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a "trial and error" process; rather, it emphasizes informing actions during implementation. Adaptive management does not represent an end in itself; it represents a means to more effective decisions and enhanced benefits.

The principles of adaptive management will be used to ensure treatments are meeting objectives and minimizing adverse impacts over the course of project implementation while also considering other factors (such as drought and climate change) in the success of treatments and any adjustments in treatment methods that may be needed for future treatments to ensure success.

Any future projects outside the scope of this EA analysis will be analyzed on their own merits, independent of the actions currently selected. Completion of the EA, therefore, does not establish a precedent for other project decisions.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

The interdisciplinary team evaluated the possible actions in the context of past, present, and reasonably foreseeable actions. Significant cumulative effects are not predicted. Any adverse impacts identified for the selected action, in conjunction with any adverse impacts of other past, present, or reasonably foreseeable future actions, will not result in significant impacts to natural and cultural resources. A disclosure of the effects of the action (including cumulative impacts) is contained in Chapter 3 of the EA.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The selected action complies with the National Historic Preservation Act. Cultural resource inventories (intensive-level Class III inventories) will be conducted prior to the implementation of

any ground disturbing treatment, primarily mastication and prescribed fire, and use of any vehicular traffic outside of the areas proposed for ground disturbance. All cultural resources will be avoided, and treatment boundaries are designed to avoid undue attention to these locations and provide robust buffers from proposed treatment areas where ground disturbing activities are proposed. As such, there will be no intentional adverse effects on historic districts, cultural sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places from implementation of the action. It will not cause loss or destruction of significant scientific, cultural, or historical resources. Design features also provide mitigating measures for any inadvertent discovery of cultural and/or historical resources that may be found.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

The California condor is the only federally listed species with the potential to occur in the project area. The condor is listed as endangered. In 1996, California condors were re-introduced into Arizona in the Vermilion Cliffs (on the Arizona Strip) under the Endangered Species Act's 10(j) rule (non-essential experimental). The action will not alter nest sites, roost sites, or cause disturbance to these sites as condor nesting habitat is not found in the project area, although foraging habitat may exist. Scavenging opportunities will not be impacted. Project design features, including U.S. Fish and Wildlife Service conservation measures, are included to limit the potential effects to condors from disturbance or ingestion of micro trash. Thus, no effect to this species is expected from the action.

10. Whether the action threatens a violation of a federal, state, local, or tribal law, regulation or policy imposed for the protection of the environment.

The action does not violate any known federal, state, local or tribal law or requirement imposed for the protection of the environment. State, local, and tribal interests were given the opportunity to participate in the environmental analysis process. In addition, the action is consistent with applicable land management plans, policies, and programs.

7. Conclusion

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

Appendix A:
Errata Indicating Text Changes to EA

The following errata constitute changes to the Shivwits Plateau Landscape Restoration Project EA during and after public comment period. Non-substantive changes, such as page numbers, grammar, punctuation and spelling, are not included. Following the public comment period, as there were no suggested changes to treatment unit boundaries, treatment units were further refined to reduce GIS mapping errors. Changes to total acres in the relevant text are included in the errata. Updated tables and additional maps can be found in the final EA.

Additions are underlined, retractions are struck through.

Section 1.2 Purpose and Need

- Continuing to use ~~wildfire~~ prescribed fire as an integral part of the ecosystem, particularly in the ponderosa pine forest.

Section 2.2.1 Alternative A – Proposed Action

While the treatment units total approximately ~~95,000~~ 103,000 acres, approximately ~~30,140~~ 29,310 acres within the treatment units would be excluded due to non-target vegetation type (such as pinyon-juniper woodland in an area where prescribed fire would be used only in ponderosa pine woodland) and approximately ~~12,730~~ 10,030 acres within the treatment units would be excluded as pinyon-juniper vegetation types leave area. Actual treatment proposed is approximately ~~52,140~~ 55,370 acres.

Section 1.6 Identification of Issues

Proposed Wilderness (NPS managed lands only): Vegetation treatments have the potential to impact the qualities of wilderness character~~isties~~ (untrammeled, undeveloped, naturalness, outstanding opportunities for solitude or, ~~and opportunities~~ for primitive and unconfined recreation and other features of value) within NPS proposed wilderness areas.

Section 2.2.1 Proposed Action subsection Manual Treatment

Under this alternative, up to ~~48,810~~ 49,850 acres of manual treatments are proposed.

Section 2.2.1 Proposed Action subsection Mechanical Treatment

Up to ~~28,050~~ 32,590 acres of mechanical treatment are proposed.

Section 2.2.1 Proposed Action subsection Chemical Treatment

Chemical treatments are proposed for up to ~~140~~ 150 acres. In addition, other areas within the manual, mechanical, seeding, and prescribed fire treatment units may also be treated for invasive non-native plants as part of the other treatments. See Table 2.1 and Appendix B Figure B.13 for units where

herbicide treatment appears likely as of October 2020. The BLM would use the Programmatic EIS on Vegetation Treatments Using Herbicides on BLM lands in 17 Western States (BLM 2007c) and the Final PEIS for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States, (BLM 2016) to guide herbicide treatment actions for this project.

Methods of application can be broadly classified as follows:

- Foliar application where herbicide is applied to intact, green leaves
- Spot application using a precise tool such as a backpack applicator or spray bottle
- Broadcast application using boom or boomless sprayers to distribute herbicide over a relatively large area depending on the treatment area
- ~~Aerial application~~
- Basal bark application where herbicide is applied to intact bark around the circumference of the trunk

Section 2.2.1 Proposed Action subsection Prescribed Fire

Prescribed fire treatments are proposed for up to ~~23,900~~ 22,540 acres. Prescribed fire treatments would largely be focused on ponderosa pine stands. Ponderosa pine habitat is important for wildlife use, especially so-called old growth trees which are noted for their physical characteristics such as possessing large bark plates, yellow and/or red deeply furrowed bark, relatively large diameters, and drooping branches with widely flattened crowns. These trees are not targeted for treatment during prescribed fires. Rather, thinning(1) potential ladder fuels around the above described trees as well as large snags and habitat trees would be accomplished to protect these for wildlife use.
(1) Thinning in this context is defined as removal of pinyon pine, juniper, and thick small stem ponderosa pine (>1 tree/ft2) in ponderosa pine woodlands that may cause prescribed fire to damage or kill non-target vegetation. During thinning treatment duff and heavy dead and down may be removed from boles of trees to reduce fire intensity upon mature or so-called old-growth trees.

Section 2.2.1 Proposed Action subsection Seeding

Seeding treatments are proposed for up to ~~14,600~~ 17,250 acres.

Section 2.2.1 Proposed Action subsection Proposed Treatment Locations

Proposed treatment areas were developed using ~~with~~ a variety of criteria. ~~and t~~ Treatments could be implemented for ~~over a minimum of~~ up to 30 years, although similar projects have occurred during shorter timeframes. If conditions change substantially in the project area where this EA is determined to be no longer valid, the BLM and NPS may write another EA to address new issues and/or conditions.

Slopes over 30% are logistically difficult to treat and are locations where even slight ground disturbance may result in erosion (Appendix B Figure B.12).

Section 2.2.1 Proposed Action subsection Adaptive Management and Monitoring

4. (a) If post fire monitoring indicates no substantial spread of invasive plants, as determined by the vegetation specialist or their designee, or the introduction of new invasive plant species and favorable regeneration of the understory, similar units may be treated.

Section 2.2.1 Proposed Action subsection Field Logistics

Camps would use Leave No Trace© ~~and Tread Lightly©~~(2)principles.

(2)See Leave No Trace Seven Principles (U.S. National Park Service) (nps.gov) or LNT.org ~~https://treadlightly.org/~~ for more information.

Section 2.2.1 Proposed Action subsection Design Features subsection Cultural Resources

- Any cultural (historic/prehistoric site or object) or paleontological resource (fossil remains of plants or animals) discovered within the project areas that has not be determined to be previously documented and noted during project planning would immediately be reported to the Monument Manager, Monument Superintendent (Superintendent) and the Monument archeologist or their designee.
- If any human remains, funerary objects, sacred objects, or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (Public Law 101-601; 104 Stat. 3048; 25 U.S.C. 3001) are discovered, operations in the immediate area of the discovery would stop, the remains and objects would be protected, and the Monument Manager, Monument Superintendent and the Monument archeologist would be immediately notified. The immediate area of the discovery would be protected until notified by the Monument Manager or Monument Superintendent (or designee) that operations may resume.

Section 2.2.1 Proposed Action subsection Design Features subsection Wildlife

- Surveys for pinyon jays would be necessary prior to treatment if occurring during nesting season (February 1 to July 31). Identified nest sites or nesting behavior associated with a particular location would be protected during treatment by a no-treatment buffer of ~~200~~ 500 meters (~~650~~ 1640 feet) (~~Reynolds 1992~~ Somershoe 2020).
- Surveys for northern goshawks would be necessary prior to treatment if occurring during nesting season. Identified active nest sites or nesting behavior associated with a particular location would be protected during treatment by a no-treatment buffer of 200 meters (650 feet) (Reynolds 1992).
- Existing snags would be retained within the project area. In areas with dense snags in a similar state of decay and where mastication is the preferred treatment, some snags may be partially masticated to provide a more diverse habitat for wildlife. In such cases, ~~C~~criteria for retention would be larger juniper, pinyon or ponderosa snags, particularly any with existing cavities suitable for nesting (NRCS 2013), and those not presenting a hazard to personnel in the treatment area. ~~In areas with dense snags in a similar state of decay and where mastication is the preferred treatment, some snags may be partially masticated to provide a more diverse habitat for wildlife.~~

Section 2.2.1 Proposed Action subsection Design Features subsection Miscellaneous

- Vegetation treatments would not be permitted during the mule deer rifle hunting seasons, per AZGFD annual proclamation schedule, up to ~~usually 9~~10 days in November.

Section 2.3.2 Use prescribed fire as the only treatment, or as the only treatment in proposed wilderness and/or areas with wilderness characteristics

Prescribed fire is part of the suite of vegetation treatments in the proposed action. In the ponderosa pine ~~woodlands project~~ dominant areas, using only prescribed fire, if preceded by thinning or ladder fuel reduction is recommended.

Section 2.3.3 No grazing

~~Removal of livestock grazing from the project area was considered however, making changes to the livestock grazing permits is outside the scope of this analysis.~~ Removal of livestock grazing from the project area was proposed by various commentors during public scoping and the public comment period. However, making permanent changes to the livestock grazing permits is outside the scope of this analysis under the purpose and need for the project. The proposed action incorporates design features, monitoring, and adaptive management principles which includes temporarily resting treated areas from livestock grazing to ensure treatment success. However, these actions do not constitute the equivalency of a no-grazing alternative based on the temporary nature of the rest periods and the ability of many permittees to rest areas while grazing other parts of the allotments. Finally, the Monument Proclamation (2000) states:

> *The Bureau of Land Management shall continue to issue and administer grazing leases within the portion of the monument within the Lake Mead National Recreation Area, consistent with the Lake Mead National Recreation Area authorizing legislation. Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing leases on all lands under its jurisdiction shall continue to apply to the remaining portion of the monument.*

~~The proposed action incorporates design features, monitoring, and adaptive management principles including temporarily removing livestock grazing from these allotments to ensure treatment success.~~ For these reasons, this alternative has been dismissed from detailed analysis.

Section 2.3.4 Sierra Club et al Alternative

In summary, this alternative was not analyzed in detail in the EA based on its similarity to the proposed action and that some portions of the SC alternative did not meet the purpose and need of the proposed action.

Table 3.1. Elements or Resources of the Human Environment.

Resource/Issue	Determination	Rationale for Determination
Geology / Mineral Resources / Energy Production/Cave and Karst Features	**NI**	The Monument is closed to new mineral claims and energy production as per the 2000 Monument Proclamation. No existing claims are in the project area. A review of GIS data and knowledge of the area indicates that there are no cave/karst features within the proposed treatment units.

Section 3.4.1 Affected Environment

These acres are organized in nine units, with eight of these units intersecting with proposed treatment polygons, totaling approximately ~~21,373~~ 23,536 acres subject to treatment. (Appendix B Figure B.1).

Section 3.4.2 Environmental Impacts

Based on the data in Table 3.2, approximately ~~18%~~ 19% of the affected units would be treated.

Section 3.6.1 Affected Environment

~~Participants in the Land Health Evaluation process include BLM, NRCS, AZGFD, Mohave County Extension, and Grazing Permittees. Rangeland Resource Team (RRT), a diverse group of local residents formed and appointed under the Resource Advisory Committee (RAC) charter.~~ The Land Health Evaluation assessment was conducted by an interdisciplinary assessment team (IAT) of resource specialists from BLM, NRCS, AZGFD, Mohave County Extension, and grazing permittees. The IAT was assisted by the Rangeland Resource Team (RRT), a diverse group of local residents formed and appointed under the RAC charter (see appendices for a list of members on both teams). The RRT may provide informal advice to the BLM Field Manager regarding implementation of Standards and Guides, and "will have opportunities to raise any matter of concern with the resource advisory council and ... to provide information and options to the council for their consideration" as provided for by regulations at 43 CFR 1784.6-2(a)(2)(iv)(A).

Section 3.7.1 Affected Environment

While the SPLRP area does not include any designated Wilderness, approximately 80,900 acres of proposed wilderness (6) (PW) ~~do~~ occur within the SPLRP project area (Appendix B Figure B.1)…. All proposed wilderness within the project area is on NPS-managed lands and subject to NPS Management Policies 2006 (NPS 2006) and Director's Order #41, Wilderness Stewardship (2013).

The area was noted to have several roads that would be maintained or expanded to facilitate recreational and grazing access and would be contiguous with Proposed Wilderness units in Grand Canyon National Park.

In addition to the qualities of wilderness character ~~wilderness characteristics~~ incorporated in the descriptions of the PW (solitude or primitive and unconfined recreation, and natural), the wilderness boundaries were drawn to maximize the untrammeled and undeveloped wilderness characteristics of the PW.

(6)For consistency with the GMP/RMP, the wilderness areas on the NPS managed lands within the Monument are referred to as "proposed" in this EA. However, the proposed wilderness is not formally Proposed Wilderness. The area has been studied and a draft proposal and EIS was submitted to the NPS Director. No further action was taken on the sections of the proposal related to the lands on the Shivwits Plateau. As such, the exact formal wilderness status of the area is unknown but likely categorized as eligible.

Section 3.7.2 Environmental Impacts subsection Direct and Indirect Impacts of Alternative A – Proposed Action

Three types of treatments would occur on approximately ~~24,140~~ 27,958 acres within proposed wilderness.

Projects within proposed wilderness must undergo a process referred to as minimum requirements analysis (MRA) ~~(also known as Minimum Tool Analysis (MTA) or Minimum Requirement Decision Guide (MRDG))~~.

All these factors decrease the natural quality of wilderness character~~istic~~ (Appendix H MRA).

Section 3.7.3 Environmental Impacts subsection Direct and Indirect Impacts of Alternative B – No Action

Intervention to prevent spread of wildfire under climatic conditions where fire would cause damage to cultural resources and facilities adjoining the PW would negatively impact the untrammeled, undeveloped, natural and solitude or primitive and unconfined recreation qualities of wilderness character~~istics~~ to a lesser or greater degree depending on amount and duration of human intervention necessary.

Section 3.8.2 Environmental Impacts subsection Direct and Indirect Impacts of Alternative A – Proposed Action

Manual treatments – manual (lop and scatter) treatments on ~~48,810~~ 49,850 acres within the project area, which is a very selective method, mostly consist crews of chainsaw operators on foot….

Mechanical treatments – The pinyon juniper woodlands would receive the bulk of mechanical treatments in Alterative A with a proposed ~~28,050~~ 32,590 acres….

Chemical treatments – Herbicide use within the parameters of Alternative A is expected to treat ~~140~~ 150 acres, with applications such as individual plants, boom sprayers from vehicles, and pellets on stumps and roots~~, and aerial sprays~~….

Prescribed fire treatments – As with the mechanical and manual treatments, this treatment would also be focused on sections of the proposed project area, ~~25,390~~ 22,540 acres, identified as woodland soils.

Seeding treatments – Seeding would be applied onto ~~14,600~~ 17,250 acres, in conjunction with other treatments, typically afterward, such as after an herbicide treatment, using on-foot hand seeding, or mechanized drag covering range procedures, which physically disturb the upper most soil surface to allow placement of seeds, or simply by aerial scatter from aircraft.

Section 3.9.2 Environmental Impacts subsection Direct and Indirect Impacts of Alternative A – Proposed Action

Invasive Non-native Plant Species

Timing and treatment intensity would minimize the spread of invasive species as a direct result of mechanical and manual treatments. Avoiding treatment during drought would aid the native plant community in resisting invasion of non-native plants. Adding seeding and/or targeted herbicide application to these treatments, when warranted, would increase the ability of native plants to compete with established invasive plants either by increasing viable seeds or decreasing the number

of invasive plants. For most treatments, invasive plant occurrence would be surveyed for under the existing BLM ASDO Weed Program and would be spot checked and treated prior to manual or mechanical treatment implementation to minimize invasive plant spread. Unit 29, dominated to near monoculture with field bindweed on 70 acres, would be treated with herbicide specifically to remove the invasive plant and allow the site to be recolonized with native plants. Unit 41, similarly dominated to near monoculture with cheatgrass on 70 acres, would be treated to provide niches for native plants to occupy. All units may have some limited herbicide treatment to limit invasive plant spread. Prescribed fire treatments, conforming to timing and treatment intensity limits like mechanical and manual treatments, would include in their fire planning and post-fire monitoring protocols to limit spread and occurrence of invasive species. ~~Overall~~ Based on the above analysis, the proposed action would decrease the occurrence of invasive non-native plants in the project area.

Section 3.11.1 Affected Environment

Merriam's Turkey (*Meleagris gallopavo merriami*)

Merriam's turkey is an upland game species that is known to occur in the ponderosa pine and oak brush habitat of the project area. The populations of turkey across the Monument are the results of transplant efforts since the 1970s. Roosting and nesting habitat consists of large, open-crowned trees, often on steep slopes. Brood-rearing habitat includes natural or created openings, riparian areas, abundant herbaceous vegetation adjacent to forest cover, and mid-day loafing and roosting areas. Turkeys use various parts of their range throughout the year, using areas in the higher elevations during the summer and moving to lower elevations during winter, depending on annual fluctuations in weather conditions.

Migratory Birds

Table 3.12. Birds of Conservation Concern Associated with the Project Area.

Species	Habitat Type
~~Prairie Falcon~~	~~Typically occupy drier and more open country than peregrine falcons, but there is some overlap in habitat. Cliff faces are used for nesting. Found year-round on the Arizona Strip in low numbers.~~
~~Gray Vireo~~	~~Considered a pinyon-juniper obligate and found in pinyon-juniper forest during the breeding season. Often associated with a low woody shrub layer. Fairly common on the Arizona Strip.~~
~~Juniper Titmouse~~	~~Considered a pinyon-juniper obligate and a year-round resident of pinyon-juniper forests. Typically nests in cavities found in juniper trees. Common on the Arizona Strip.~~
~~Brewer's Sparrow~~	~~Breeds in sagebrush shrublands, but typically only nests on the Arizona Strip during years of high winter precipitation, otherwise breeding occurs further north. Fairly common in large migrating flocks in spring and fall, otherwise uncommon on the Arizona Strip.~~
Cassin's Finch	Small flocks sporadically occur in pinyon-juniper woodlands during the non-breeding season. Found in higher elevation habitat types such as ponderosa pine during the breeding season. Uncommon on the Arizona Strip.

Species	Habitat Type
Black-chinned Sparrow	Breeds in the chaparral habitat type within rocky canyons, especially where tall shrubs are present. Fairly common on the west side of the Arizona Strip within its habitat type.
Broad-tailed Hummingbird	Breeds in meadows and open woodlands, especially pinyon-juniper, pine-oak, evergreen, and montane scrub and thickets from around 5,000–10,500 feet elevation. Fairly common in the project area.
Flammulated Owl	Found primarily in mixed conifer, pine, and pine-oak habitats, but they also occur locally in woodlands of pinyon-juniper, oak, and cypress. Uncommon on the Arizona Strip.
Grace's Warbler	Nests and winters mostly in mature pine and pine-oak forests in mountainous regions. Fairly common in the project area.
Long-eared Owl	Roosts in dense vegetation and forage in open grasslands or shrublands; also open coniferous or deciduous woodlands. Uncommon on the Arizona Strip.
Virginia's Warbler	Breeds in open pinyon-juniper and oak woodlands often on steep slopes with shrubby ravines throughout most of their range. Found in the project area.
~~Ferruginous Hawk~~ ~~Golden Eagle~~ ~~Peregrine Falcon~~ Pinyon Jay	~~These species are~~ This species is also designated as BLM Sensitive Species and ~~are~~ is addressed in Sensitive Species section

The USFWS is mandated to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act. The ~~2008~~ 2021 USFWS Birds of Conservation Concern (USFWS ~~2008~~2021) is the most recent effort to carry out this mandate.

Northern Goshawk (*Accipiter gentilis*)

The project area contains ponderosa pine habitat and may support nesting. The pinyon-juniper woodlands in the project area may contain suitable nest sites for goshawks as well as components desirable for foraging or winter use. A goshawk was detected in the project area in 1993. More recent survey efforts have not detected any goshawks in the project area.

Section 3.11.2 Environmental Impacts subsection Direct and Indirect Impacts of Alternative A – Proposed Action

Mule Deer

Treatments would use a combination of manual and mechanical treatments, prescribed fire, herbicide and seeding on a maximum of approximately ~~95,000~~ 103,000 acres of mule deer habitat. The actual acres treated would likely be less.

Merriam's Turkey

Merriam's turkey habitat would be primarily affected in the ponderosa pine communities where prescribed fire is planned. Prescribed fire treatment would be enacted in small burn units, designed to

retain mature ponderosa pine trees that turkey rely on for roosting habitat. Oak brush, when subjected to prescribed fire, typically re-sprouts and is rejuvenated, creating new growth and subsequent cover for winter month use. As the proposed units would be treated over several years, much of the habitat improvements would occur in a staggered fashion, allowing turkey to adapt to the changing mosaic of habitat. Consequently, it is not anticipated that the proposed treatments would cause undue degradation of the habitat.

Migratory Birds

As discussed for mule deer, vegetation treatments are proposed on a maximum of approximately ~~95,000~~ 103,000 acres of the project area.

Pinyon-juniper forests provide important habitat components for many migratory birds including the ~~gray vireo, juniper titmouse, and~~ pinyon jay.

Although cone-producing pinyon pines have long been recognized for their benefit to wildlife, more recent studies have focused on the importance of junipers as a habitat component. Francis et al. (2011) found that 86% of nest trees used by birds in northwestern New Mexico pinyon-juniper forests were in junipers, even though the ratio of pinyon to juniper was 1:1.06. ~~Likewise, Johnson et al. (2015) found that in northwestern New Mexico, 82% of gray vireo nests were in juniper trees and that these birds showed a preference for nest sites with higher tree density and taller trees. Juniper titmice have also been reported as nesting in junipers 61% of the time in Arizona (Corman 2005).~~

Most studies of treatment effects on wildlife in pinyon-juniper habitat have focused on chaining (O'Meara 1981), a method not proposed in this EA. However, one study (Crow 2010) showed that thinned pinyon-juniper units in Grand Staircase-Escalante National Monument led to a reduction in the presence of pinyon-juniper obligate species~~, including the elimination of gray vireos~~.

Pinyon Jay

To avoid adverse impacts to nesting pinyon jays, the proposed treatment areas would be surveyed prior to implementation and any identified nest colonies would be delineated and protected from tree removal (Latta 1999), as described in the design features. A 500-meter buffer around nesting colony sites would be observed as per the wildlife design features in the proposed action should treatments take place during the nesting season (February 1-July 31).

Section 3.11.3 Cumulative Impacts

Vegetation treatments completed over the past 60 years have occurred throughout the analysis area. These past treatments had a wide array of effects, with many projects having pervasive, long-lasting impacts to mule deer, migratory birds, Merriam's turkey, and sensitive species due to the type conversion of crucial vegetation types, as well as resulting in some areas being dominated by non-native plant species.

Section 4.2 Summary of Public Participation

Public Scoping comments and responses are found in Appendix ~~L and~~ M.

Members of the public were invited to submit comments during the public review period from June 3 to July 3, 2021. Comments were submitted by email and through the NPS PEPC and BLM

ePlanning systems. Comments were received from one federal agency, one state agency, three non-profit organizations and three individual members of the public. Comments included additional information resources and requests for clarification or changes to the proposed action. For a discussion of public review comments, see Appendix N.

Section References

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Section Appendix D.

Aerial and Drill Seeding (may include mastication~~, Dixie harrow,~~ or similar)

Section Appendix H.

Minimum Requirement Analysis (MRA) ~~(also known as Minimum Tool Analysis (MTA) or Minimum Requirement Decision Guide (MRDG))~~ uses a different standard of "impact" than that used in the NEPA process.

Section MRDG Step 1

~~Existing conditions in portions of the proposed wilderness (PW), resulting from the effects of past land uses, changes to the natural fire regime, establishment and spread of invasive non-native plant species, threaten biodiversity. Some of the wilderness resources could be at risk due to the current conditions of the vegetation resource. The Monument is proposing to address resource needs in the PW using an adaptive management approach and use of prescribed fire and manual treatments to reduce hazardous fuel loads, reduce vegetation density to stimulate the growth of understory species (grasses and forbs) and increase diversity in plant composition.~~

Parashant Monument staff have identified portions of the proposed wilderness (PW) where desired conditions for species diversity, vegetative cover, and wildlife habitat are not being achieved based on rangeland health evaluations, survey plots, trend state, and field observations... These conditions are the result of the effects of past land uses, changes to the natural fire regime, and establishment and spread of invasive non-native plant species. Restoring ecosystem health and reducing hazardous fuel loading is integral to achieving the vegetation management objectives and goals for wildlife habitat and vegetation resources in the 2008 GMP/RMP (Appendix A) for the SPLRP.

A. Section Valid Existing Rights or Special Provisions of Wilderness Legislation

~~There are no valid existing rights or special provisions that require action in the project area.~~

The Wilderness Act, Special Provisions, Section 4(d)(1) allows that "such measure may be taken as may be necessary to control fire, insects, and diseases, subject to such conditions as the Secretary deems desirable." Within ponderosa pine woodland areas that have not been previously treated, fire regimes do not conform to historic information. These areas are more prone to catastrophic wildfire instead of single stand, or single tree, fires than expected. Appropriate treatment would reduce the risk of large-scale fire.

Section Is administrative action necessary in wilderness?

Action is necessary to ~~protect the naturalness~~ preserve the Natural Quality of wilderness character ~~the vegetative community by making stands more fire resilient and increase the currently depauperate understory community components.~~ by making stands more fire resilient, increasing the currently depauperate understory community components, protecting mature trees and snags and promoting a mosaic of ecosystems.

Section Alternative 1

Natural Fire Ignitions ~~(No Action)~~ with limited management intervention.

See Glossary of Prescribed Fire Terminology Used in MRA for definitions of tools and techniques.

In common to Alternative 2-5:

Section Description of the Alternative

In addition to the activities described in Alternative 1, this alternative includes the following actions. See Glossary of Prescribed Fire Terminology Used in MRA and EA section 2.2.1 for definitions of tools and techniques.

In common to Alternative 2-6:

Section Undeveloped Explain

The use of motor vehicles and/or motorized ~~mechanical~~ equipment negatively impacts the undeveloped quality of wilderness character.

In common to Alternative 3 and 4:

Prescribed fire (B), including pile burns(C), preceded by thinning treatment (A) to protect non-target vegetation. Target vegetation are ladder fuels: Pinyon pine, juniper, thick small stem ponderosa pine (>1 tree/ft2). During thinning treatment duff and heavy dead and down maybe be removed from boles of trees to reduce fire intensity. Drip line of save trees (also known as old-growth trees, for a description of this type of tree see Section 2.2.1 Prescribed Fire Treatment) will be cleared of vegetation that could impact the crown. Large snags suitable as habitat trees will also receive pre-treatment preparation. Some units would also have Pile Burning.

Glossary of Prescribed Fire Terminology Used in MRA (BLM nd, NWCG nd, NWCG 1996)

Brush Hook: A heavy cutting tool designed primarily to cut brush at the base of the stem. Used in much the same way as an axe and having a wide blade, generally curved to protect the blade from being dulled by rocks.

Drip Torch: Hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline.

Fusee: A handheld disposable ground ignition device with a self-contained ignition system. A colored flare designed as a railway warning device, widely used to ignite backfires and other prescribed fires.

Helitorch: An aerial ignition device hung from or mounted on a helicopter to disperse ignited lumps of gelled gasoline. Used for backfires, burnouts, or prescribed burns. Includes: Delayed Aerial Ignition Devices; Ping-Pong Ball System; Plastic Sphere Dispenser.

Hose Lay: Arrangement of connected lengths of fire hose and accessories on the ground, beginning at the first pumping unit and ending at the point of water delivery.

Ladder Fuels: Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

Pile Burn: A prescribed fire used to ignite hand or machine piles of cut vegetation resulting from vegetation or fuel management activities. Piles are generally burned during the wet season to reduce damage to the residual trees and to confine the fire to the footprint of the

pile. Pile burning allows time for the vegetative material to dry out and will produce less overall smoke by burning hot and clean.

Plastic Sphere Dispenser (PSD): Device installed, but jettisonable, in a helicopter, which injects glycol into a plastic sphere containing potassium permanganate, which is then expelled from the machine and aircraft. This produces an exothermic reaction resulting in ignition of fuels on the ground for prescribed or wildland fire applications.

Pulaski: A combination chopping and trenching tool widely used in fireline construction, which combines a single-bitted axe blade with a narrow adze-like trenching blade fitted to a straight handle.

UTV torch: A ground ignition device designed for mounting on the rear cargo platform of an UTV. It has a fuel tank, a system to dispense fuel, and an ignition source. The tank may be fabricated from carbon steel, stainless steel, or aluminum. Fuel may be dispensed by gravity, electric pump, or pressurized gas. The ignition source may be a lighted wick, propane torch, or electric spark.

Very Pistol: A hand pistol varying in diameter from 12 gauge to 25 mm. Most effective in dry, light, continuous ground fuels, and allows remote ignition.

Appendix B:
Response to Substantive Public Comments

Substantive comments are organized by issue in the table. Comments in common to several groups or individuals were combined into one comment, where applicable, and subsequently addressed in one response. Comments received after the comment period closed were not considered. Several comments contained non-substantive or open-ended questions. Per the BLM NEPA Handbook and NPS NEPA Handbook these were not responded to.

Commenter	Comment Number	Category	Comment	Response
Sierra Club et al	1	Alternatives	At least one alternative should forego the use of herbicides. The BLM/NPS must consider an actual IPM approach. If the BLM/NPS deployed an IPM approach in addressing noxious weed issues, it would have to include an alternative that addressed the role of grazing in the spread of weeds and other alternatives for addressing concerns around the role of exotic grasses and wildfire risk. Simply deploying herbicides while continuing to allow cows to spread noxious weeds fails to comport with IPM.	The BLM and NPS do use an IPM approach as noted in Section 2.2.1 subsection Chemical Treatment, Section 3.9.2, including subsection Invasive Non-Native Plants, and Appendix H MRDG Step 2 of the EA. The existing BLM ASDO invasive and noxious weed program and terms and conditions in grazing permits are designed to address these issues. These programs operate under their own NEPA. The grazing program is outside the scope of this project and the related NEPA documents separately. Design features in this EA have additional terms and conditions that assist the BLM and NPS in invasive non-native plant treatment.
AZGFD Sierra Club et al	2	Analysis - Birds	The EA utilizes and references the US Fish and Wildlife Service's (Service) list of "Birds of In Conservation Concern" for the project's migratory bird species analysis. In June 2021, the Service published a new "Birds of Conservation Concern". This new list includes many more migratory bird species that could require further analysis within the project footprint when compared to the 2008 version that was utilized in the creation of the EA. The Department recommends the Monument utilize the Service's 2021 version for this project, as it is the most current list that the Monument can use for analyzing migratory bird impacts. However, the EA does not adequately explain how the project would accomplish this for migratory birds. In fact, the Migratory Birds section of the EA presents outdated information. It	The list "Birds of Conservation Concern" was published during public comment period. Section 3.11 was updated to reflect the changes in the list.

Commenter	Comment Number	Category	Comment	Response
			is based on the 2008 version of the USFWS Birds of Conservation Concern, which has recently been updated.	
Sierra Club et al	3	Analysis - Goshawk	Based on the EA, we are usure(sic) if the goshawk occurs within the project area…. ….incorporate the findings of Dickson et al (2014) who found that across 895 nest sites northern goshawks preferred to nest in areas with high canopy-bulk density, intermediate canopy-base heights, and low variation in tree density. They theorized that higher canopy bulk densities likely occurred in areas characterized by an abundance of larger trees interspersed with dense groups of younger trees, and that goshawks preferred areas with fairly homogeneous structure. Please explain how proposed treatments in and around nest areas maintain these characteristics.	The language in the EA regarding goshawk was updated for clarity (Section 3.11.1 subsection Northern Goshawk (*Accipiter gentilis*)). See comment response #36.
Sierra Club et al	4	Analysis - Invasive Plants	Please provide justification for the statement, "Overall, the proposed action would decrease the occurrence of invasive non-native plants in the project area." (EA at p. 58).	The sentence was reworded for clarity. "Based on the above analysis, the proposed action would decrease the occurrence of invasive non-native plants in the project area."
Sierra Club et al	5	Analysis - Kaibab Squirrel	The EA deletes the portions of this Management Action that refer to the Kaibab Squirrel. We understand that it is believed that no Kaibab squirrels currently occupy the project area, although that is not proven. However, Kaibab squirrels may have occupied the project area prior to intensive historic commercial logging and hunting, and they could be restored to the project area's ponderosa pine forests which are in fact the species habitat.	The Kaibab squirrel population on the Monument is introduced. Naturally occurring populations occur only in the North Kaibab National Forest and the adjoining Grand Canyon National Park, over 20 miles away in noncontiguous habitat. Introduction of Kaibab squirrel beyond the species range is not part of this EA.

Commenter	Comment Number	Category	Comment	Response
Sierra Club et al	6	Climate Change	• BLM should explain how climate predictions are expected to impact the vegetation resources to be treated under this project. Ideally, this would include modelling. • The Purpose and Need should acknowledge the role of climate change in contributing to current landscape conditions, and the challenge that climate will play in restoring ecosystems. • The document should include a discussion of how reasonably certain climate predictions can impact the priorities for, and success of, this project. • Include an analysis of the role of climate change in creating the current conditions, and how to work with the climate to create healthy habitat conditions.	Design features such as limited treatment during drought and the adaptive management planning are included in the proposed action to respond to climatic variability, whether directly tied to climate change or other forces. Air Quality, including greenhouse gas emissions, is addressed in Section 3.3.1.
Spotts	7	Cumulative Impacts	…the cumulative effects analysis for wildlife is deficient because it does not address the serious impacts from the current prolonged drought.	See Section 2.2.1 subsection Design Features subsection Vegetation. Analysis of the impacts of current drought is speculative at this point as impacts are unknown. Cumulative effects analysis is for past, present and reasonably foreseeable actions, not conditions. Expansion of this discussion to conditions would be unwieldy.
WWP	8	Cumulative Impacts	Please disclose and analyze the cumulative impacts from any vegetation treatments in and adjacent to the project area in the past 20 years.	The cumulative impacts analysis is included in the EA at the end of each resource issue section. In NEPA, the requirement for cumulative impacts is to disclose past, present and reasonably foreseeable actions. An analysis is not required and would result in in an unwieldy list. In addition, not all information is available for treatments conducted over the last 20 years

Commenter	Comment Number	Category	Comment	Response
				(40 CFR 1500.22). See pg. 61 of the BLM NEPA Handbook and 40 Most Asked Questions Concerning the CEQ's National Environmental Policy Act (energy.gov)
WWP	9	Grazing	In the same section wherein BLM and NPS state that making changes to the livestock grazing permits is outside the scope of this project, they also say that the "proposed action incorporates design features, monitoring, and adaptive management principles including temporarily removing livestock from these allotments to ensure treatment success." Clearly, making changes to the permits is within the scope of this project.	This project is not a long-term change to the permit but serves as a short-term mitigation measure to ensure treatment success. Any short-term rest or rotation of livestock is allowed for within current grazing permits.
WWP	11	Grazing - Cumulative Effects	In our previous comments we asked the BLM to include livestock grazing authorizations surrounding the project area as part of the cumulative impacts analysis. The Mt. Logan, Lizard and Wolfhole, Mosby Nay, Mt. Trumbull and Belnap allotments have all recently been authorized and/or had range infrastructure projects approved. The impacts of these authorizations on vegetation communities must be included in the forthcoming analysis because the non-native invasive plants on these allotments will impact adjacent allotments, including those in the project area. Similarly, any vegetation management projects on lands that are adjacent to the project area must be disclosed and analyzed for cumulative effects.	None of these named allotments are adjacent to or within the project area.

Commenter	Comment Number	Category	Comment	Response
Sierra Club et al	12	Monument Object - Turkey	Other than citing components from the Monument Management Plan, the EA provides no discussion of wild turkey although they are objects of the Monument.	The Merriam's turkey is found in the project area. Subsections, entitled "Merriam's Turkey", can now be found in Sections 3.11.1 and 3.11.2. of the EA in order to address this omission.
Sierra Club et al	13	Not In Proposed Action	We urge you to eliminate harrow seeding from the project.	We are not proposing using harrow seeding in this project. The reference to Dixie harrow was removed from Appendix D for clarification.
Sierra Club et al	14	Not In Proposed Action	We are concerned that the proposed action will negatively impact these sensitive vegetation types, based on our experience in these landscapes and the EA's recognition of the sensitivity of these sites. Our concern is further warranted in that the EA does not provide assurance that the Desired Future Conditions or Management Actions for these vegetation types as specified in the Management Plan will be conformed to, including at Table 2.3, DFC-VM-34 through MA-FM- 12. In this case, it appears that the Shivwits Project does not conform to the Monument Management Plan. To make matters worse, the Management Plan clearly states at MA-VM-31 that "Up to 100 acres may be treated with prescribed fire on BLM-administered lands if associated with scientific research." Table J.3 in the EA shows that 126 acres of Mojave Transition Shrubland are targeted for prescribed fire, but no associated scientific research is discussed. In this case, it appears that the Shivwits Project does not conform to the Monument Management Plan.	See Table 2.1 and Section 2.2.1 subsection Proposed Treatment Locations. Treatment units include these types of vegetation, as indicated in Table J.3, however actual acres treated in each unit exclude Mojave transition shrubland, blackbrush mixed shrubland and cliff and scree slope vegetation.

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			Any subsequent NEPA document should eliminate treatments in the Blackbrush Mixed Shrubland and Mojave Transition Shrubland plant communities unless they are associated with scientific research.	
Belles Sierra Club et al	15	Not In Proposed Action	The description of Mechanical Treatment method in the Proposed Alternative, while not using the word "chaining" closely resemble this past practice… We would like to see any subsequent NEPA document clearly state that chaining, tipping, and grubbing will not occur as part of this project.	The proposed action does not propose chaining, tipping, and grubbing. See Section 2.2.1.
Sierra Club et al	16	Not In Proposed Action	Thinning treatments are commonly proposed in many forests as mitigation against drought and climate change with the goal to remove biomass so it is less likely to be removed by fire. Promoting massive herbicide use following thinning treatments ignores the cumulative effects of thinning and chemicals on the health of the forest and its biota.	Units 29 and 41 are the only units that appear, at this time, to need other than spot treatments with herbicide. See Section 2.2.1 subsection Prescribed Fire for a description of thinning. See sections 3.9 and 3.11 for a discussion of relevant cumulative effects.
Sierra Club et al	17	Not In Treatment Units	By failing to identify cave and karst resources, or determining their significance per 43 CFR Part 37, the EA has not shown that such resources are protected from surface disturbance, fires, or project-related management actions.	The Geology section of Table 3.1 has been updated to include a comment regarding cave and karst features. These features are not located within the proposed treatment units.
Sierra Club et al WWP	55	Project Area	….the project area does not overlap the Lake Mead NRA, so this assertion in the EA is irrelevant. Furthermore, the Lake Mead Recreational Area appears to be well outside the project area and the	The Monument Proclamation clearly acknowledges the relationship to grazing and lands within the Lake Mead NRA that are administered through the Grand Canyon-

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			language regarding BLM's management of livestock grazing in the Recreational Area is completely irrelevant to the analysis in this EA.	Parashant National Monument. The proclamation states: *The Secretary of the Interior shall manage the monument through the Bureau of Land Management and the National Park Service, pursuant to applicable legal authorities, to implement the purposes of this proclamation. The National Park Service and the Bureau of Land Management shall manage the monument cooperatively and shall prepare an agreement to share, consistent with applicable laws, whatever resources are necessary to properly manage the monument; however, the National Park Service shall continue to have primary management authority over the portion of the monument within the Lake Mead National Recreation Area, and the Bureau of Land Management shall have primary management authority over the remaining portion of the monument.* *The Bureau of Land Management shall continue to issue and administer grazing leases within the portion of the monument within the Lake Mead National Recreation Area, consistent with the Lake Mead National Recreation Area authorizing legislation. Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing leases on all lands under its jurisdiction shall continue to apply to the remaining portion of the monument* Consequently, the NPS-managed lands on Grand Canyon-Parashant National Monument are tied to Lake Mead NRA. As such, many management decisions made by Lake Mead NRA apply on the NPS-managed portions of the Monument.

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WWP	19	Proposed Action	Of the 52,140 acres of "actual treatment" area, the BLM has not yet identified which of those acres will be excluded from treatment because of the presence of cultural sites, topography, or sensitive habitat types.	Areas that are to be excluded from treatment apply to a variety of categories, including topography, sensitive nesting habitat for pinyon jays (should treatments be proposed during the nesting season), historic sites, cultural sites, and needed "leave" areas to be consistent with mule deer habitat guidelines as described in the Treatment Unit Specific Planning subsection of Section 2.2.1 of the EA. This iterative process results in a mosaic across the treatment areas and is represented in Figure C.8 of Appendix C of the EA. As the project implementation progresses, treatment polygons will be subject to a number of inventories to inform the final polygons selected for treatment. Cultural inventory and special status species survey results are not intended for public viewing based on the need to protect these resources. A map of topographic exclusion areas (Figure B.12) was added to the EA in Appendix B, to show areas that would not receive treatment.
Sierra Club et al	20	Proposed Action	In a comprehensive review of more than 300 sources from the published peer-reviewed literature on pinyon-juniper vegetation treatments, Jones (2019) found that: • 64% of treatments had no significant effect on perennial grasses and forbs, while more than half showed increases in non-native annuals. • While studies of the relationship between pinyon-juniper treatments and fire are rare, surface disturbances may encourage cheatgrass invasion and increase fire risk. The reviewer did not find evidence to support the	Design features, to mitigate invasive non-native plant spread, are described in the Adaptive Management and Monitoring Section of 2.2.1 of the EA. Specifically, prescribed fire treatments in pinyon-juniper woodlands are being treated in small areas. These treatment plots would be monitored before and after treatment to determine the viability of future work using prescribed fire in pinyon-juniper woodlands. The intent of prescribed fire treatments is not to decrease fire occurrence but to reduce the intensity of fire effects.

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			idea that removing pinyon and juniper decreased fire occurrence. • Mechanical removal tends to not produce statistically significant results on wildlife behavior, though pinyon-juniper dependent bird species are negatively impacted by removal of these species. Grassland dependent birds can benefit from removal of these trees, particularly in the longer term. • Most often, mechanical treatments cause no significant change to soil stability, but they can destroy soil crusts and/or increase non-native species invasions, which could lead to soil loss. • Treatments do not tend to increase water yield at a watershed scale. • "The increase in exotic annuals that has been reported from many studies may be a primary threat to persistence of ecosystems. The alarming possibility that treatments may facilitate continued expansion of these populations and degrade native communities calls for further scrutiny."	In terms of soil crust in the area, field reconnaissance indicates that the most common types of soil crust are mosses in the rugose category, not the more fragile and well developed pinnacled or rolling types (see Section 3.9.1 subsection Biological Soil Crust). Should areas of soil crust be found (in excess of 30 percent cover), treatments would be avoided. See the soils design features subsection to Section 2.1.1 of the EA. In terms of water yield, the project is not intended to increase water yield, rather, the project is being proposed to improve vegetation conditions as described in the purpose and need in Section 1.2.
EPA	21	Proposed Action - Birds	The Draft EA states that surveys for migratory birds "would occur prior to treatment if occurring during nesting season and identified nest sites would be protected during treatment by a no-treatment" (p. 69). It is unclear if the surveys would account for other evidence of nesting observed, including mating pairs, territorial defense, carrying nesting material, transporting of food, etc. The EPA recommends committing to area avoidance for all disturbance activities if	The surveys would account for other evidence of nesting. See Section 2.2.1 subsection Design Features subsection Wildlife for clarification.

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			active nests are located and other evidence of nesting is observed.	
Sierra Club et al	22	Proposed Action - BSC	• To remediate the lack of information on the impact of herbicide treatments to soil crusts, if it is determined that herbicides must be used, more research should be conducted in small study plots in the project area before it is applied on a larger scale.	See second paragraph in response to comment #20. See 40 Most Asked Questions Concerning the CEQ's National Environmental Policy Act (energy.gov)
Sierra Club et al	23	Proposed Action - BSC	• The agencies should not conduct soil surface disturbing projects in habitats of rare biological soil crust species, where biological soil crust diversity is high, or where removal of biological soil crust will degrade soil, hydrology, or biology ecosystem functions. The following management prescriptions for biocrust (Belnap et al. 2001) and newer techniques should be adopted. • Areas where biological soil crust is abundant within the Project Area should be located, mapped, and avoided. Biological soil crust in areas scheduled for treatment should be salvaged for use in posttreatment seeding (Belnap 1993). • Include a biological crust component in plant monitoring and inventory projects.	See second paragraph in response to comment #20. In addition, information regarding which biological soil crust species is rare is extremely limited worldwide. See 40 Most Asked Questions Concerning the CEQ's National Environmental Policy Act (energy.gov) regarding limited information circumstances in NEPA analysis. The disturbance associated with salvage of an entire treatment area would be much higher than the few tracks created by heavy equipment.
AZGFD AZSFWC	24	Proposed Action - Design	We further recommend that implementation focus on the smallest prescribed burn only units first for monitoring and adaptive management. By focusing and adapting treatments on the smallest units first, there will be better refinement of desired implementation results that can be used to calibrate treatments on the larger prescribed fire only units.	Design features, to mitigate invasive non-native plant spread, are described in the Adaptive Management and Monitoring Section of 2.2.1 of the EA. Specifically, prescribed fire treatments in pinyon-juniper woodlands are being treated in small areas. These treatment plots would be monitored before and after treatment to

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			AZSFWC …. recommends that initial units in pinyon-juniper be representative of variation within that type to the extent possible, and on the smaller side of those available for prescribed fire treatment.	determine the viability of future work using prescribed fire in pinyon-juniper woodlands.
AZGFD	25	Proposed Action - Design Feature	Department staff have verified the referenced mule deer rifle hunting season takes place over 10 days as opposed to the nine days referenced in the EA. The Department requests that this reference be corrected to 10 days to accurately capture the length of mule deer rifle season that will not overlap with active vegetation treatments.	This design feature was updated from 9 days to 10 days for accuracy in the EA.
Sierra Club et al	26	Proposed Action - Drought	Multiple studies have found that large and mature pinyons are more drought susceptible than smaller pinyons (Mueller et al. 2005; Huffman et al. 2008)…	Based on recent field observations, young pinyon and juniper seedlings and saplings appear to be negatively responding to drought at a more visible rate than mature trees.
Sierra Club et al	27	Proposed Action - Goshawk	We agree that such restrictions are commonplace for goshawk habitat management, but no specific restrictions for goshawks are mentioned in the EA. Any subsequent NEPA document should clarify that no treatment activity in goshawk habitat (ponderosa pine forest) can proceed during the breeding season unless non-breeding is confirmed by a wildlife biologist.	See Section 2.2.1 subsection Design Features subsection Wildlife.
AZGFD EPA	28	Proposed Action - Herbicide	There are two points the Department would like to gain further clarity regarding this topic. First, the extent of cheatgrass within the project footprint is not outlined in any of the accompanying maps within the EA. The EA states that herbicide usage will predominantly occur in treatment units 29 and 41 but suggests that other areas within the	See Figure B.13 in Appendix B for a map of treatment units where cheatgrass was measured during the 2020 survey at over 10 percent cover and/or known invasive non-native plant locations. Canopy cover in the treatment units makes accurate mapping of cheatgrass difficult using current technology. Units 29 and 41 are

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			project footprint where cheatgrass comprises an area above 10%, may receive herbicide application. Without knowing the extent of cheatgrass expansion within the project area, it is difficult to extrapolate the amount of herbicide usage and adaptive management requirements that may be necessary. The Department requests the Monument include a map delineating the acreage coverage of cheatgrass within the project footprint that can assist stakeholders in getting an accurate picture of how many acres may actually be treated. We recognize that surveying cheatgrass across the entire project area may be difficult, however, the use of remote sensing techniques may be helpful in gaining clarity to the cheatgrass acreage. Specifically, the Department recommends using satellite imagery such as Landsat to calculate the Normalized Difference Vegetation Index (NDVI) during cheatgrass "green up" periods. The Draft EA states that chemical treatments are proposed for up to 140 acres on Units 29 and 41 (p. 6, 11) and that "other areas within the manual, mechanical, seeding, and prescribed fire treatment units may also be treated for invasive non-native plants as part of the other treatments" (p. 6). Table 2.1 indicates that these other areas comprise 22,821 acres across 25 units (p. 10-13); however, it is unclear how many acres of these units may receive chemical treatments. The EPA recommends providing an estimated treatment acreage for each of the 25 units in the Final EA.	the only units that appear, at this time, to need other than spot treatments with herbicide. However, units would be surveyed prior to treatment implementation to determine unit-specific herbicide application needs.

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AZGFD AZSFWC	29	Proposed Action - Herbicide	Second, with the duration of this project being unclear, the Department recommends the Monument be adaptive in the availability of different herbicides for future treatments. Currently, the programmatic EIS for herbicide usage referenced in the EA does a good job in covering many of the herbicide needs for invasive species control for this project. New herbicides are always becoming available to treat invasive weeds. When the best available science dictates, the Department requests that future herbicides not included in this EIS be considered for application on this project; especially if the duration of this project has a long time horizon that makes it likely that new herbicides/science will lend itself to more effective treatments. In the final EA, it would be helpful to indicate if there is a mechanism by which new herbicide products that are not included in the cited 2007 EIS could [be] used in the future.	See Section 2.2.1 subsection Chemical Treatment for clarification.
EPA	30	Proposed Action - Herbicide	In the Final EA, we encourage including the Programmatic EIS Record of Decision from 2016 (1) which additionally approves aminopyralid, fluroxypyr, and rimsulfuron for use on public lands, if applicable. (1) Bureau of Land Management. December 2016. BLM National NEPA Register: Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS. Available at https://eplanning.blm.gov/eplanning-ui/project/70301/570.	See Section 2.2.1 subsection Chemical Treatment and References for addition and amended link in References for the 2007 document.

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Sierra Club et al	31	Proposed Action - Herbicide	The EA states that "Herbicide treatment would be incorporated into any treatment unit planning where cheatgrass or red brome (*Bromus tectorum* or *rubens*) exceeds 10 percent cover." Please justify this apparently arbitrary benchmark in the final EA.	Based on local field observations over several years by vegetation specialists on the Monument, cheatgrass and red brome appear to either occur in fairly stable populations of 5-10 percent cover or be the dominant understory species. In areas above 10 percent cover, large-scale disturbance of any type tends to result in *Bromus* spp. dominance of the understory component of the ecosystem.
Sierra Club et al	32	Proposed Action - Herbicide	Any subsequent NEPA document should disclose the types of herbicides to be used, and the types and abundance of non-target vegetative species present in each of the proposed treatment areas and the degree to which they will be reduced by the proposed herbicide applications.	See Section 2.2.1 subsection Chemical Treatment for documents and procedures to determine appropriate herbicides for this project. Herbicides used will vary based on approved herbicides, target invasive non-native plants, season of use, and other treatments paired with herbicide treatment.
Sierra Club et al	10	Proposed Action - Monitoring	• …Clear standards for vegetation recovery will be essential because the agencies will have overwhelming pressure from some permittees to let livestock back on after the end of the two-year period, regardless of the stage of recovery, unless specific, measurable parameters are established to define recovery. • To avoid damaging the treatment by allowing livestock use too early, the agencies should stipulate clear objectives measures for forbs, perennial grass, and biological soil crust cover, as well as indicators of soil erosion such as percent cover of bare ground, that must be met before resumption of grazing.	See Section 2.2.1 subsections Adaptive Management and Design Features, Chapter 3, and Appendices D through G for objectives.

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AZSFWC Sierra Club et al	33	Proposed Action - Pinyon Jay	AZSFWC recommends that the final EA incorporate the most current information and recommendations for this species, as outlined in the Partners in Flight "Conservation Strategy for the Pinyon Jay (Gymnorhinus cyanocephalus)" which can be found at: https://partnersinflight.org/resources/conservation-strategy-for-pinyon-jay/ As guidance to prevent loss of pinyon jay colonies, the EA states on page 21, "Surveys for pinyon jays would be necessary prior to treatment if occurring during nesting season (February 1 to July 31). Identified nest sites would be protected during treatment by a no-treatment buffer of 200 meters (650 feet.) (Reynolds 1992)."….However, more recent scientific sources suggest strongly that the 200 meters buffer is inadequate. For example, Johnson et al. (2017, 2018) and Somershoe et al. (2020) recommend 500-meter buffers around colony sites to allow for future shifting of the colony to suitable nearby habitat. The Great Basin Bird Observatory, in its "Recommendations for Avoiding Impacts to Pinyon Jay Colonies in Nevada" recommends a 1,200-meter buffer free of vegetation treatment (cite).	See Section 2.2.1 subsection Design Features subsection Wildlife for an updated buffer size to 500 meters to reflect updated scientific information.
Sierra Club et al	34	Proposed Action - Pinyon Jay	Another concern raised in our scoping comments and not addressed in the EA, is that not only should existing colonies be protected by buffers, but so should recently active but currently abandoned sites. Researchers have recommended that colony sites inactive during the previous ten	Information regarding past pinyon jay colony sites was not available. Design features (Section 2.2.1 subsection Design Features subsection Wildlife) were included to account for this lack of information. See 40 Most Asked Questions Concerning the CEQ's National Environmental

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			years also be protected because jays may return to previous colony sites as resource conditions change (Marzluff and Balda 1992, Johnson et al. 2018).	Policy Act (energy.gov) regarding limited information circumstances in NEPA analysis.
Sierra Club et al	35	Proposed Action – Pinyon Juniper areas	The Monument Management Plan (DFC-VM-29) states that "Individual old growth trees will be present and will be protected during treatment implementation" but we are concerned that the EA fails to define the age for old growth pinyon and juniper trees, and the prescribed diameter limits are not adequate to ensure old trees are protected. In this regard the EA does not provide the guidelines needed to ensure that old growth woodland structure and individual old trees are retained for their biodiversity, habitat, fire-resistance, and cultural values.	The proposed diameter limits apply in areas where treatment would occur within a treatment unit. No trees, regardless of diameter or age, would be treated in 25 percent of the unit.
Sierra Club et al	36	Proposed Action – Ponderosa areas	Therefore, any tree that is approximately 150 years or older should be retained. Forest restoration practitioners in Arizona generally agree that 150 years is the threshold of an old tree, and many NEPA projects on US Forest Service lands include protections for trees over 150 years old. Because it is difficult and time consuming to age trees during treatment design, any tree that exhibits morphological characteristics of advanced age (yellow/red bark, large diameter, deeply furrowed bark, large bark pates (sic), broad flattened crown, drooping branches, cat-face fire scars, and other features) should be retained regardless of diameter. We ask that any subsequent NEPA document clearly state that "old trees (>150 years) will be	Agreed, older ponderosa trees would be retained with these characteristics. See Section 2.2.1 subsection Prescribed Fire for clarification. Ponderosa pine trees expected to be removed would be during pre-treatment of the areas expected to be burned and would be limited to thick small stem ponderosa pine (>1 tree/ft2) and hazard trees.

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			retained" and that "old trees (>150 years) will not be cut." In addition, the EA should be clear that no large trees will be cut. Large trees are generally those 16" dbh and larger.	
AZSFWC Sierra Club et al	37	Proposed Action – Ponderosa areas	We request that the final EA include language indicating that large, old ponderosa pine trees (which are particularly important to wildlife and greatly valued by monument visitors) will not be removed during manual treatments. Our second concern with ponderosa pine forest treatments is that the EA is not totally clear on what treatments are proposed. In the section under the heading "Treatment Unit Specific Planning," the EA's only statement specifying what trees will be cut is this, at page 9: "Trees targeted for removal would be smaller diameter junipers (up to 20-inch diameter at root crown (DRC)) and pinyon trees (up to 10 inches diameter at breast height (DBH)). Larger diameter trees would be left in place (junipers over 20-inch DRC and pinyon trees over 10 inches DBH) in the entire treatment unit." This statement makes it seem like the only trees to be cut following this decision will be junipers and pinyons, and not ponderosa pine. Further, reviewing Table 2.1 seems to indicate that prescribed fire is the only proposed treatment for ponderosa pine. We ask that any subsequent NEPA document clearly describe the proposed ponderosa pine treatments; if they are fire-only or include tree cutting; what trees (species, size, age, canopy	Ponderosa pine treatments are prescribed fire treatments. Pre-treatment of the areas expected to be burned include thinning of ladder fuels to minimize the possibility of crown fire, vegetation clearing around mature ponderosa pine trees, and pretreatment to protect large snags and habitat trees. Thinning can be defined as removal of pinyon pine, juniper, and thick small stem ponderosa pine (>1 tree/ft2). During thinning treatment duff and heavy dead and down maybe be removed from boles of trees to reduce fire intensity (Appendix H). Note that in Appendix H the use of the term "mechanical" is in reference to power tools, not mastication, as the description of the alternative in the MRDG is in relation to wilderness character, comparing powered and unpowered tools and actions. The statement on Page 37 of the EA ("The thinning of the canopy, both by mechanical and prescribed fire…") applies as appropriate to ponderosa pine woodlands and pinyon-juniper woodlands and savanna. Mechanical or prescribed fire treatments are proposed in different pinyon-juniper woodland and savanna treatment units within the project area. Prescribed fire treatments are proposed in ponderosa pine woodland.

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			position, etc.) are targeted for cutting and if they are to be removed as wood products; what equipment would be used for ponderosa pine treatments; and what restrictions apply (old and large tree retention guidelines, diameter caps, for example). However, elsewhere the EA states that small diameter ladder fuel thinning may be coupled with prescribed fire. For example, at page 23 the EA states: "In the ponderosa pine woodlands project area, using only prescribed fire, if preceded by thinning or ladder fuel reduction is recommended." This suggests that maybe there is thinning in ponderosa pine? Then, on page 44-45, the EA states: "In ponderosa pine woodlands, ladder fuel reductions would precede prescribed fire." This certainly implies that only small diameter thinning would occur. But then the EA sows confusion. At page 37, the EA states that "The thinning of the canopy, both by mechanical and prescribed fire, would create a more open stand that will not support crown fire, even if the fire could climb from the surface into isolated trees throughout the stand post-treatment." This statement mentions mechanical thinning of canopy, which clearly implies much more intensive operations that hand thinning of small diameter ladder fuels. This section in fact implies that there would be commercial logging in the ponderosa pine, which seems to contradict the statement on page 9 that the only trees targeted for removal are pinyons and pines.	Timber harvest on the Monument is restricted by the Proclamation (2000) - "Sale of vegetative material is permitted only if part of an authorized science-based ecological restoration project". There is no commercial logging of any trees proposed in this EA.

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Sierra Club et al	38	Proposed Action – Ponderosa areas	Our confusion should not come as a surprise, as we said this in our scoping comments: "Mechanical treatments are not proposed for ponderosa pine (Project Summary at 3) but the Project Summary goes on to say, "Prescribed fire typically would follow a mechanical or manual treatment to prepare the site for favorable treatment outcomes or may take place with limited pre-treatment site preparation." (Project Summary at 5) This is confusing and should be clarified. (Table J.4)."	The project summary provided during public scoping was a preliminary proposed action summary. Since public scoping , the proposed action was refined and clarified.
Sierra Club et al	39	Proposed Action – Ponderosa areas	Plan component DFC-VM-11, which states "There will be no net loss of total acres within the ponderosa pine plant communities (i.e., long-term or permanent removal from the landscape)." This DFC is not listed as a plan component that the project is in accordance with. This suggests to us that the proposed fire treatments may result in a net loss of ponderosa pine.	Note Section 1.4 Conformance with Land Use Plans. The alternatives are required to be in conformance with all decisions in the GMP/RMP. Omission of a DFC or Management Action from Appendix A does not imply it will not be adhered to.
EPA	40	Proposed Action - Seeding	The EPA appreciate that "[s]eed mixes would primarily be composed of native species" (p. 8). We further recommend obtaining seeds from local sources, to the extent practicable, to reflect the evolutionary and adaptive capability of plants in the area. (2) (2) Plant Conservation Alliance. 2014. National Seed Strategy for Rehabilitation and Restoration 2015-2020. Available at https://www.blm.gov/sites/blm.gov/files/program_natural%20resources_seed%20strategy_quick%20link_seed%20stregy.pdf.	Agreed. The BLM seed warehouse generally works with BLM and NPS offices/contractors throughout the west to collect native seeds and make them available to then reseed BLM and NPS lands. GCPNM does not have a seed collecting program specific to this Monument so the next best option is to use what is available through the BLM seed warehouse.

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Sierra Club et al	41	Proposed Action - Seeding	The EA states (at p. 8) that "Seed mixes would primarily be composed of native species, although non-native species may be used per NPS and BLM policy (Appendix A)." As we expressed in scoping, this project must use only native seed, or risks violating agency direction and the use of the best available science.	See Appendix A MA-VM-04 for further guidance as to seed mix policy.
Sierra Club et al	42	Proposed Action - Snag	This quoted statement also suggests large snags will be retained but the size of "large" is never actually proposed anywhere. The EA (at p. 21) says: "Existing snags would be retained within the project area. Criteria for retention would be larger juniper, pinyon or ponderosa snags, particularly any with existing cavities suitable for nesting (NRCS 2013), and those not presenting a hazard to personnel in the treatment area." But what is "larger" defined as? Is it just 24" diameter and up?	See Section 2.2.1 subsection Design Features subsection Wildlife for clarification. Existing snags would be kept except in the rare circumstances where they pose a hazard to personnel or in areas with dense snags in a similar state of decay and where mastication is the preferred treatment. In the latter case, snags that would not be partially masticated are larger juniper, pinyon or ponderosa snags, particularly any with existing cavities suitable for nesting. According to the cited NRCS (2013) resource, large snags are defined as 21 inches or greater DBH.
AZGFD AZSFWC Sierra Club et al	43	Proposed Action - Timeline	However, the EA is still ambiguous as to the duration of this project. For example, the EA does not stipulate how long the NEPA analysis will cover various implementation activities. The Department requests that the Monument state the expected duration that this EA and the other supporting NEPA documents would be valid, to facilitate funding and other implementation planning logistics for this project. We note that it would be helpful for the final EA to indicate the expected duration of the project.	See Section 2.2.1 subsection Proposed Treatment Locations for clarification.

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			The EA is not clear on the timeframe for implementation, suggesting that this decision would be implemented over a minimum of 30 years. Any subsequent NEPA document should narrow the project implementation timeframe to fifteen years, as that is a reasonable period to be able to evaluate the environmental effects of the proposed treatments. Only seven of the treatment areas described in Table H.1 have proposed treatments past the fifteen-year date, so there does not appear to be a real need to provide such broad discretion in such a long duration for the entire project area. In fifteen years, the landscape is likely to have changed dramatically as a result of long-term climate changes and the current acute megadrought and the proposed treatments. A new NEPA analysis and evaluation of site-specific conditions must happen at that time….By reducing the timeframe to 15 years, it is much more likely to stay within the bounds of the current management plan.	
Sierra Club et al	44	Proposed Action - Trees	The EA sows some confusion as to the details of the proposed treatments and whether the treatments would preserve old and large trees. Any subsequent NEPA document must ensure that the Shivwits Project conforms to the Monument Management Plan objective "to remove brush and small diameter trees while maintaining, or contributing to the restoration of, the structure and composition of old-growth forest stands."	See comment responses to #35, 36 and 37.

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Sierra Club et al	45	Proposed Action - Trees	Any subsequent NEPA document must provide data to support the diameter limits proposed.	Experience has shown that leaving smaller trees does not meet the purpose and need for providing heterogeneous mule deer and sagebrush-dwelling bird habitat (see Section 2.2.1 subsection Treatment Unit Specific Planning). The purpose and need for this project considered multiple resource issues. See also comment response #35.
AZSFWC	46	Proposed Action - Unit Design	If circumstances permit, we encourage GPCNM (sic) to include some treatment units with a larger proportion of untreated woodland (e.g., 50%) and include them in post-treatment monitoring. We also note and appreciate that the EA includes cutting criteria for pinyon and juniper that should effectively retain old growth trees.	Per individual treatment unit planning, some units may have larger proportions of untreated areas. Wildlife presence, cultural resources, topography, higher proportions of large diameter trees, and target vegetation distribution within the unit may result in less than 75% of a unit being treated, consistent with design features in Bender (2012). See Appendix C Figure C.8 for a potential treatment design.
Sierra Club et al	47	Proposed Action - Vegetation	Because the EA does not clearly describe treatments in ponderosa pine habitats, we are concerned that reducing canopy cover, eliminating old and large trees, and increasing stand openness and the proportion of small/young trees will harm northern goshawk in the project area by eliminating preferred habitat features and reducing nest productivity.	See comment response #36.
Sierra Club et al	48	Proposed Action - Vegetation	The EA fails to determine if the project conforms to Management Plan component MA-VM-18, which states that "[u]p to 13,800 BLM acres and 7,000 NPS acres of Ponderosa Pine Ecological Zone will be treated over the life of this Approved Plan (approx. 75% of available habitat)." Extensive treatments have already occurred around Mount Trumbull. Table H.1 in the EA also	Using available GIS data, approximately 2,335 acres of BLM-managed lands and no acres on NPS-managed lands on areas defined as Ponderosa Pine in the GMP/RMP (2008) have been treated to date. This project proposes treatment units composed of approximately 0 acres of NPS-managed lands and 1,585 acres of BLM-managed lands defined as Ponderosa Pine

Commenter	Comment Number	Category	Comment	Response
			lists areas in the project area which have been treated. Nowhere, however, confirms that the maximum acreage given in the Monuments (sic) Management Plan have or have not been met.	in the GMP/RMP (2008). The treatment unit acreage includes areas modern mapping has defined as a different vegetation type than mapping available in 2008 and areas that would not be treated per the individual treatment unit design planning in Section 2.2.1. Note modern mapping reveals ponderosa pine woodlands in areas mapped in 2008 as Pinyon-Juniper.
Sierra Club et al	49	Proposed Action - Vegetation	The EA fails to determine if the project conforms to Management Plan component MA-VM-21 which states that "[u]p to 25,000 BLM acres of sagebrush habitat can be treated over the life of this Approved Plan (approx. 15% of available habitat)." The EA does not evaluate if the proposed treatments are within the bounds of the Plan, meaning we cannot know if the project is within the bounds of the Plan.	Using available GIS data, approximately 210 acres of areas defined as Sagebrush in the GMP/RMP (2008) have been treated to date. This project proposes treatment units composed of approximately 19,900 acres of lands defined as Sagebrush in the GMP/RMP (2008). The treatment unit acreage includes areas modern mapping has defined as a different vegetation type than mapping available in 2008 and areas that would not be treated per the individual treatment unit design planning in Section 2.2.1.
Sierra Club et al	50	Proposed Action - Vegetation	The EA fails to determine if the project conforms to Management Plan component MA-VM-24 that "Up to 102,000 BLM acres and 34,000 NPS acres of pinyon-juniper habitat can be treated over the life of this Approved Plan (approx. 50% of available habitat)."	Using available GIS data, approximately 18,100 acres of BLM-managed lands and no acres on NPS-managed lands on areas defined as Pinyon-Juniper in the GMP/RMP (2008) have been treated to date. This project proposes treatment unit composed of approximately 21,800 acres of NPS-managed lands and 56,700 acres of BLM-managed lands defined as Pinyon-Juniper in the GMP/RMP (2008). The treatment unit acreage includes areas modern mapping has defined as a different vegetation type than mapping available in 2008 and areas that would not be treated per the individual treatment unit design planning in Section 2.2.1.

Commenter	Comment Number	Category	Comment	Response
Sierra Club et al	51	Proposed Action - Vegetation	… the Management Plan at MA-VM-34 states that "Up to 1,500 BLM acres of Interior Chaparral Ecological Zone will be treated over the life of this Approved Plan (approx. 15% of available habitat)," but the EA does not address the overall tally of treatment across the Monument during the life of the Plan.	Using available GIS data, no areas defined as Interior Chaparral in the GMP/RMP (2008) have been treated, nor are they proposed to be treated in this project. The treatment unit acreage includes areas modern mapping has defined as a different vegetation type than mapping available in 2008 and areas that would not be treated per the individual treatment unit design planning in Section 2.2.1.
Sierra Club et al	52	Proposed Action - Wildlife	The EA fails to assure that the project conforms to most Desired Future Conditions for wildlife, only identifying one out of 12 DFC's. (sic)	Appendix A lists more decisions with regard to Wildlife and Fish. This list includes DFCs and Management Actions. The most applicable decisions have been listed in the EA and Appendix A. It is also listed in the EA that the project is in conformance with the plan (see Section 1.4 Conformance with Land Use Plans).
Sierra Club et al	53	Proposed Action-Herbicide	Adoption of any herbicide use as contemplated in the EA triggers the need for Section 7 consultation for the unique threatened and endangered plants and animals that cling to existence across the vast project area.	The only known ESA Threatened and Endangered species in the project area is California condor. The use of herbicide does not in itself trigger Section 7 consultation.
Sierra Club et al	54	Proposed Action-Herbicide	We strongly object to the aerial application of herbicides…	Aerial application was removed from the Proposed Action as no need for this method was identified during alternative development.
Sierra Club et al	18	Purpose and Need - Herbicide	…the BLM/NPS must establish a purpose or need for the herbicide spraying proposals. A proposal to use herbicides when there isn't even an established problem necessitating their use would be arbitrary, capricious, and contrary to the law.	Herbicide use is within the scope of the purpose and need for the project. Section 1.2 of the EA describes the purpose and need of moving vegetation toward a more natural range of composition, structure, and function. Invasive plant/noxious weed control measures are proposed in Section 2.2.1 to work toward

Commenter	Comment Number	Category	Comment	Response
				meeting the purpose and need. The EA also references existing herbicide use procedures that were analyzed and disclosed to the public in the Arizona Strip District Herbicide Application Plan for the Control and Eradication of Noxious and Invasive Species (DOI-BLM-AZ-A000-2016-001-EA), and the Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States (PEIS DOI-BLM-WO-WO2100-2012-0002-EIS).

Appendix C:
A Non-Impairment Determination

Shivwits Plateau Landscape Restoration Project

Grand Canyon-Parashant National Monument

National Park Service

DETERMINATION OF NON-IMPAIRMENT

The NPS has discretion to allow impacts on Park resources and values when necessary and appropriate to fulfill the purposes of a Park (NPS 2006 sec. 1 .4.3). However, the NPS cannot allow an adverse impact that will constitute impairment of the affected resources and values (NPS 2006 sec 1.4.3). An action constitutes an impairment when its impacts "harm the integrity of Park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006 sec 1.4.5). To determine impairment, the NPS must evaluate "the particular resources and values that will 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" (NPS 2006 sec 1.4.5).

This determination on impairment has been prepared for the Selected Alternative described in the Finding of No Significant Impact. An impairment determination is made for all resource impact topics analyzed for the Selected Alternative with the exception of “Areas Managed to Maintain Wilderness Characteristics”. An impairment determination was not made for aspects of resource impact topics occurring on the Bureau of Land Management (BLM) managed lands within the project area; this includes the entire resource issue “Areas Managed to Maintain Wilderness Characteristics”.

Air Resources

Manual, chemical and prescribed fire treatments would have minimal impacts on air resources and not result in impairment. Short term effects would primarily be the production of fugitive dust and smoke. The dust would be largely localized to roadways and present only when transporting equipment and personnel. Smoke, including greenhouse gasses, would occur during prescribed fire treatment. Smoke production would be limited using techniques listed in the design features of the Selected Alternative.

Cultural Resources

The Selected Alternative will not result in impairment of cultural resources because the Selected Alternative includes design features to avoid all cultural resources, including completion of a pre-treatment cultural resource inventory. This resource was not specifically analyzed during the NEPA process due to the avoidance prescription. Inadvertent discovery during ground disturbing activities was also addressed in the Selected Alternative design features.

Fuels/Fire Management and Fire Safety

Prescribed fire treatments would not result in impairment of vegetation. Rather, the treatments would move the ponderosa pine woodlands closer to the historic fire cycle of frequent low intensity fire. In pinyon-juniper woodlands and savanna, the prescribed fire treatments are designed to return the area to a more open, multi-age woodland. Adaptive management for the prescribed fire treatments in pinyon-juniper areas includes a program to minimize the potential for the increase or incursion of invasive non-native plant species in the area.

Livestock Grazing

The historic and on-going livestock grazing, as described in the Monument Proclamation, would not be impaired by the Selected Alternative. In the only area on NPS-managed lands currently open to grazing, the Selected Alternative would not result in any actions unless the area is retired from grazing use.

Proposed Wilderness (NPS managed lands only)

While localized impacts on wilderness character will occur under the Selected Alternative, impairment of these characters would not occur. Use of motorized equipment has been minimized to types that are primarily related to safety (such as gasoline powered water pumps). An adaptive management framework will be used to promote ecosystem health and natural resilience and resistance to wildfire and invasive non-native plant species. The use of prescribed fire in ponderosa pine woodlands will allow the area to return to natural processes dominating without loss of complete ecosystems. Impacts to solitude, recreation, and undeveloped wilderness characters would be short-term and not result in an impairment.

Soils

The Selected Alternative will not result in impairment to soils. Manual treatments (lop and scatter) would avoid high erosion areas and steep slopes and would not cause soil compaction or erosion. Prescribed fire treatment would have minimal and short-term soil compaction at burn sites. Post burn vegetation growth would minimize potential erosion caused by the soil compaction. Design features in the Selected Alternative would limit soil compaction and erosion outside of treatment units by limiting travel when soils are wet.

Vegetation (including Special Status Plants and Invasive, Non-native Species)

The Selected Alternative will not result in impairment of vegetation because the actions in the Selected Alternative are designed to bolster the native plant community and restore the natural ecosystem mosaic appropriate for the Shivwits Plateau. Invasive non-native species would

decrease. Special status plants known to occur in or adjacent to treatment units would be surveyed for and avoided during treatment. The dominant ecosystems of the project area would more fully exhibit characteristics currently limited with in the project area, namely multi-age class vegetation and all major vegetation lifeforms, including grasses and forbs. Design features for project implementation in the Selected Alternative include direction on timing, treatment unit planning, seed mixes and other aspects to limit the potential for any adverse effects.

Visual Resources

Impairment to visual resources would not occur, the area would remain a Class 1 viewshed. This would be accomplished by creating natural looking edges between vegetation types, resembling natural openings and clearings. Treatment areas (particularly burned areas) may be noticeable to the casual observer during implementation and during the short term, but in the long term, when communities of uneven-aged vegetation and a less homogeneous mix of vegetation are established, the visual variety would result in a more varied visual landscape reflecting a healthy mix of native ecosystems.

Wildlife (including BLM Sensitive Species and Migratory Birds)

Wildlife may be temporarily impacted by treatment implementation, however design features in the Selected Alternative will result in no impairment to wildlife or their habitat. These design features include pre-treatment surveys, unit treatment design to preserve favorable habitat for closed canopy and snag dwelling species and treatment timing to avoid nesting season. Treatments may temporarily reduce ideal habitat in the area being treated, however the surrounding areas, including adjoining treatment units will provide enough forage, roosting, nesting, etc. habitat. Wildlife species favoring a mosaic of cover types and densities would benefit from the vegetation treatments. Design features are in place to avoid any potential impacts to the single known endangered species in the area, California condor.

CONCLUSION

The NPS has determined that the implementation of the Shivwits Plateau Landscape Restoration Project will not constitute an impairment of the resources or values of Grand Canyon-Parashant National Monument. As described above, adverse impacts anticipated as a result of implementing the selected alternative on a resource or value whose conservation is necessary to fulfill specific purposes identified in its establishing legislation, key to their natural or cultural integrity or to opportunities for enjoyment, or identified as significant in relevant NPS planning documents, will not constitute impairment. This conclusion is based on consideration of the monument's purpose and significance, a thorough analysis of the environmental impacts described in the EA, the comments provided by the public and others, and the professional judgment of the park manager guided by the direction of the NPS *Management Policies 2006.*

Appendix D:
Minimum Requirements Analysis

ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

MINIMUM REQUIREMENTS DECISION GUIDE

WORKBOOK

"...except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act..."

-- The Wilderness Act of 1964

Project Title: Shivwits Plateau Landscape Restoration Project

MRDG Step 1: Determination

*Determine if Administrative Action is **Necessary***

Description of the Situation

What is the situation that may prompt administrative action?

Parashant Monument staff have identified portions of the proposed wilderness (PW) where desired conditions for species diversity, vegetative cover, and wildlife habitat are not being achieved based on rangeland health evaluations, survey plots, trend state, and field observations. These conditions are the result of the effects of past land uses, changes to the natural fire regime, and establishment and spread of invasive non-native plant species. Restoring ecosystem health and reducing hazardous fuel loading is integral to achieving the vegetation management objectives and goals for wildlife habitat and vegetation resources in the 2008 GMP/RMP (Appendix A) for the SPLRP.

Options Outside of Wilderness

Can action be taken outside of wilderness that adequately addresses the situation?

☐ YES	**STOP – DO NOT TAKE ACTION IN WILDERNESS**
☒ NO	**EXPLAIN AND COMPLETE STEP 1 OF THE MRDG**

Explain:

While vegetation treatments (i.e. a combination of manual, mechanical, chemical, and prescribed fire) occur outside of the PW to restore ecosystem health, actions taken outside the PW will not address the management objectives to restore conditions inside the PW. Hazardous fuel loads and reduced vegetative diversity will continue unless treatments are conducted.

Criteria for Determining Necessity

Is action necessary to meet any of the criteria below?

B. Valid Existing Rights or Special Provisions of Wilderness Legislation

*Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that **requires** action? Cite law and section.*

☒ YES	☐ NO

Explain:

The Wilderness Act, Special Provisions, Section 4(d)(1) allows that "such measure may be taken as may be necessary to control fire, insects, and diseases, subject to such conditions as the Secretary deems desirable." Within ponderosa pine woodland areas that have not been previously treated, fire regimes do not conform to historic information. These areas are more prone to catastrophic wildfire instead of single stand, or single tree, fires than expected. Appropriate treatment would reduce the risk of large-scale fire.

C. Requirements of Other Legislation

*Is action necessary to meet the requirements of **other federal laws**? Cite law and section.*

☐ YES ☒ NO

Explain:

There are no other legislation requirements that require action in the project area.

D. Wilderness Character

Is action necessary to preserve one or more of the five qualities of wilderness character?

UNTRAMMELED

☐ YES ☒ NO

Explain:

This project is not necessary to preserve the untrammeled wilderness character.

UNDEVELOPED

☐ YES ☒ NO

Explain:

This project is not necessary to preserve the undeveloped wilderness character.

NATURAL

☒ YES ☐ NO

Explain:

This project is necessary to maintain the natural quality of wilderness character by reintroducing a natural fire regime to the woodlands. Current conditions within ponderosa pine woodlands are the result of overgrazing and nearly 100 years of fire suppression. This has allowed ladder fuels to build up and increase the likelihood that a natural fire start in ponderosa pine woodland would result in a catastrophic stand-replacing fire instead of the relatively low intensity burn 3-4 year (small fire) or 7-16 year (large fire) fire interval (Ireland 2012).

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

☐ YES ☒ NO

Explain:

This project is not necessary to preserve the solitude or primitive and unconfined recreation wilderness character.

OTHER FEATURES OF VALUE

☐ YES ☒ NO

Explain:

No other features of value were identified in the Monument's Proclamation for this proposed wilderness area. Therefore, this project is not necessary to preserve other features of value.

Step 1 Determination

*Is administrative action **necessary** in wilderness?*

Criteria for Determining Necessity

A. Existing Rights or Special	☒ YES	☐ NO
B. Requirements of Other Legislation	☐ YES	☒ NO
C. Wilderness Character		
Untrammeled	☐ YES	☒ NO
Undeveloped	☐ YES	☒ NO
Natural	☒ YES	☐ NO
Solitude/Primitive/Unconfined	☐ YES	☒ NO

Other Features of Value	☐ YES ☒ NO

Is administrative action **necessary** in wilderness?

☒ YES	**EXPLAIN AND COMPLETE STEP 1 OF THE MRDG**
☐ NO	**STOP – DO NOT TAKE ACTION IN WILDERNESS**

Explain:

Action is necessary to preserve the Natural Quality of wilderness character by making stands more fire resilient, increasing the currently depauperate understory community components, protecting mature trees and snags and promoting a mosaic of ecosystems.

MRDG Step 2

*Determine the **Minimum** Activity*

Other Direction

*Is there "special provisions" language in legislation (or other Congressional direction) that explicitly **allows** consideration of a use otherwise prohibited by Section 4(c)?*

AND/OR

Has the issue been addressed in agency policy, management plans, species recovery plans, or agreements with other agencies or partners?

☒ YES	**DESCRIBE OTHER DIRECTION**
☐ NO	**SKIP AHEAD TO TIME CONSTRAINTS BELOW**

Describe Other Direction:

Direction exists in the Grand Canyon-Parashant National Monument General Management Plan/Resource Management Plan (2008).

LA-FM-06 and MA-WM-07: Prescribed fire and fire use will (or can) be used in areas classified as Wildland Fire Use within…NPS proposed wilderness to achieve DFCs and wilderness area management objectives described in each agency's Fire Management Plan. Vegetation can also be treated manually if minimum tool requirements are met.

LA-FM-10 (in part): Selection of vegetation treatment methods in designated and proposed wilderness will be consistent with minimum tool requirements and non-impairment standards.

MA-VM-04: Treatment methods and tools appropriate to the land use allocation and protection of Monument objects can be authorized to achieve DFCs, DPCs, or Vital Sign standards. Treatment methods can include, but are not limited to mechanical, chemical, biological, and fire or any combination thereof. Vegetation treatments and uses will be monitored as part of an adaptive management process. Seed priming and other enhancement techniques can be used to increase germination rates. Treatments will be designed so that they do not encourage an increase in any invasive species. Minimum requirement analysis will be used in…. NPS proposed wilderness.

MA-FM-04 (ponderosa pine ecological zone) and MA-FM-06 (great basin ecological zone (sagebrush communities: vm)) and MA-FM-08 (Great Basin ecological zone (pinyon-juniper community: vm)): On NPS-administered lands, all acres can be considered for Wildland Fire Use, prescribed fire, fire suppression, and mechanical and chemical treatment to achieve resource objectives, consistent with land use allocations, minimum tool requirement for proposed wilderness, and to protect Monument values.

MA-FM-12: On NPS-administered lands, the Andrus Plain area is currently described as Mojave Transition. All acres can be considered for Wildland Fire Use, prescribed fire, fire suppression, and mechanical and chemical treatment to achieve resource objectives, consistent with land use allocations, minimum tool requirement for proposed wilderness, and to protect Monument values.

DFC-WM-06: …NPS proposed wilderness will be managed to be ecologically sustainable and resilient to natural and human caused perturbations. The NPS and BLM will strive to preserve or restore the natural quiet and natural sounds associated with the physical and biological resources of…proposed wilderness.

MA-WM-01: Lands within…NPS proposed wilderness can be restored where ecological integrity is outside the range of natural variability and where compatible with wilderness objectives…. The Minimum Requirement Decision Guide (Arthur Carhart National Wilderness Training Center, most recent version) will be used by the BLM and NPS in all decisions, giving greatest weight to accomplishing objectives via natural processes and non-mechanized/nonmotorized means. When fire will be managed in…NPS proposed wilderness, MIST will be used. Fire management actions will be consistent with the wilderness management objectives and guidelines described in the BLM and Lake Mead Fire Management Plans.
MA-WM-08: Natural processes will be primarily relied on to restore areas of pre-existing human imprints in…NPS proposed wilderness. Where proactive restoration of wilderness conditions is desirable, BLM and NPS will require conformance with…NPS Director's Order 41, and may require restoration plans to address restoration of preexisting human impacts.
MA-WM-09: In conformance with…NPS policies (NPS Director's Order 41) for proposed wilderness, the best mix of manual, chemical, biological, or mechanical means, with fire and natural processes, will be determined in order to restore ecological functions and structure in wilderness.

NPS Vegetation Treatment Tools and Methods

On NPS-administered lands, individual restoration plans will be prepared, and compliance conducted, for each restoration project. Tools that may be considered include;
1. Manual – as written for BLM lands, including chain saws and power brush saws.
2. Chemical – as written for BLM lands, except NPS will use EPA and NPS approved pesticides in accordance with NPS Integrated Pest Management (IPM) Policy and Guidelines.
3. Biological – as written for BLM lands, except the use of cattle, sheep, and goats. NPS use will be in accordance with NPS IPM Policy and Guidelines.
4. Fire – as written for BLM lands, except in accordance with NPS policies.
5. Seeding – As written for BLM, except only native species will be applied to NPS lands in accordance with NPS policies.
6. Mechanical -- As written for BLM, except no disk plowing, chaining or cabling will be used on NPS lands. Appropriateness of the tool and method may be required on a project-to-project basis.

Time Constraints

What, if any, are the time constraints that may affect the action?

None.

Components of the Action

What are the discrete components or phases of the action?

Component Number	Description
1	Transportation of personnel to site
2	Transportation of materials to site
3	Treatment Part A – vegetation type X
4	Treatment Part B - vegetation type X
5	Treatment Part C - vegetation type X
6	Transportation of unused materials from sites
7	Transportation of personnel from site

Proceed to the alternatives.

MRDG Step 2: Alternatives

Alternative 1: Natural Fire Ignitions with limited management intervention

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Naturally ignited fires would be allowed to play their role in the wilderness ecosystems except where these activities threaten human life, property, historic structures, or high value resources on adjacent non-wilderness lands. Natural fire ignitions caused by lightning strikes generally take place between May and September. Natural fires usually require on the ground activity to monitor risks of fire escaping onto neighboring lands and may include suppression activities due to unnaturally intense fires burning as a result of excess fuel buildup from past suppression efforts. In some instances, management-ignited fire is used to control natural fire from impacting lands within and outside wilderness boundaries. In all cases of naturally ignited fires, environmental conditions including weather, fire danger, and other biological, and geographical variables will be monitored to determine if the fire will be allowed to burn for ecosystem benefit.

See Glossary of Prescribed Fire Terminology Used in MRA for definitions of tools and techniques.

Component Activities

How will each of the components of the action be performed under this alternative?

Comp #	Component of the Action	Activity for this Alternative
1	Transportation of personnel to project sites.	Personnel travel on established routes and then by foot to fire monitoring sites.
2	Transportation of materials to project site.	Materials are transported by vehicle to closest point and then moved by personnel to fire monitoring sites.
3	Treatment Part A – all vegetation types	Fire management tactics used by firefighting personnel may include: Direct attack using fire personnel. Helicopter bucket drops. Indirect attack using fire lines and back burning Tools to be used: Cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, and axe, chain saws.

Comp #	Component of the Action	Activity for this Alternative
4	Treatment Part B – all vegetation types	none
5	Treatment Part C – all vegetation types	none
6	Transportation of unused materials from project sites	Materials are moved by personnel on foot from fire monitoring sites and then transported by vehicle on established routes.
7	Transportation of personnel from project sites	Personnel travel by foot to established routes and then by vehicle.

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to fire monitoring sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to fire monitoring sites.	☐	☐	☒
3	Fire management tactics used by firefighting personnel may include: Direct attack using fire personnel. Helicopter bucket drops. Indirect attack using fire lines and back burning Tools to be used: Cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, and axe, chain saws.	☐	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel on foot from fire monitoring sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle.	☐	☐	☒

Total Number of Effects	0	1	NE
Untrammeled Total Rating	-1		

Explain:

Direct attack fire management tactics, such as bucket drops, back burning, and constructing fire lines affects the untrammeled quality because it includes using mechanized transportation and fire lines may affect the natural quality of the ecosystem. The Untrammeled quality is impacted when there is manipulation or control of the natural processes in wilderness.

As defined in Keeping It Wild 2 (2015): Agency-authorized trammeling actions

2. Actions taken inside the wilderness on a physical resource or natural process to intentionally affect "the earth and its community of life." Example…

a. Suppressing naturally ignited fire.

UNDEVELOPED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to fire monitoring sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to fire monitoring sites.	☐	☐	☒
3	Fire management tactics used by firefighting personnel may include: Direct attack using fire personnel. Helicopter bucket drops. Indirect attack using fire lines and back burning Tools to be used: Cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, and axe, chain saws.	☐	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel on foot from fire monitoring sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle.	☐	☐	☒
	Total Number of Effects	0	1	NE

Undeveloped Total Rating	-1

Explain:

Fire lines can be permanent or temporary installations and have a negative impact on this quality. Allowing the use of chainsaws for fire suppression decreases the undeveloped quality by leaving evidence of landscape manipulation in the form of sawn tree trunks.

NATURAL

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to fire monitoring sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to fire monitoring sites.	☐	☐	☒
3	Fire management tactics used by firefighting personnel may include: Direct attack using fire personnel. Helicopter bucket drops. Indirect attack using fire lines and back burning Tools to be used: Cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, and axe, chain saws.	☒	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel on foot from fire monitoring sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle.	☐	☐	☒
	Total Number of Effects	1	1	NE
	Natural Total Rating	0		

Explain:

Cutting trees, constructing fire lines, and using back burning tactics adversely impact the natural quality. Limiting natural fire in all three ecosystems would decrease the natural effects of fire (including 400-600 year interval complete stand replacement in pinyon-juniper woodlands and savannas) but may also preserve the naturalness by reducing the potential of burned areas to be dominated by invasive non-native species.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to fire monitoring sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to fire monitoring sites.	☐	☐	☒
3	Fire management tactics used by firefighting personnel may include: Direct attack using fire personnel. Helicopter bucket drops. Indirect attack using fire lines and back burning Tools to be used: Cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, and axe, chain saws.	☒	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel on foot from fire monitoring sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle.	☐	☐	☒
	Total Number of Effects	1	1	NE
Solitude or Primitive & Unconfined Rec. Total Rating		0		

Explain:

Solitude is impacted by the use of helicopters in direct firefighting management and transportation of crews and supplies. Large fire crews and the use of power tools would impact the sense of solitude in the proposed wilderness. Closures to parts of the wilderness during wildfires also limit and impact the ability for visitors to engage in primitive and unconfined recreation. Allowing natural fire to restore natural ecosystem processes and remove exotic and invasive species may improve recreation experiences in a more natural environment.

OTHER FEATURES OF VALUE

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to fire monitoring sites.	☐	☐	☒

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
2	Materials are transported by vehicle to closest point and then moved by personnel to fire monitoring sites.	☐	☐	☒
3	Fire management tactics used by firefighting personnel may include: Direct attack using fire personnel. Helicopter bucket drops. Indirect attack using fire lines and back burning Tools to be used: Cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, and axe, chain saws.	☐	☐	☒
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel on foot from fire monitoring sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle.	☐	☐	☒
	Total Number of Effects	0	0	NE
Other Features of Value Total Rating		NE		

Explain:

No other features of value were specifically identified in conjunction with vegetation treatments.

Summary Ratings for Alternative 1

Wilderness Character	Rating Summary
Untrammeled	-1
Undeveloped	-1
Natural	0
Solitude or Primitive & Unconfined Recreation	0
Other Features of Value	NE
Wilderness Character Summary Rating	-2

MRDG Step 2: Alternatives

Alternative 2: Ponderosa Pine Woodland Treatment with Motorized Equipment

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In addition to the activities described in Alternative 1, this alternative includes the following actions.

Ponderosa Pine Woodland

Prescribed fire (B), including pile burns(C), preceded by thinning treatment (A) to protect non-target vegetation. Target vegetation are ladder fuels: Pinyon pine, juniper, thick small stem ponderosa pine (>1 tree/ft2). During thinning treatment duff and heavy dead and down maybe be removed from boles of trees to reduce fire intensity. Drip line of save trees (also known as old-growth trees, for a description of this type of tree see Section 2.2.1 Prescribed Fire Treatment) will be cleared of vegetation that could impact the crown. Large snags suitable as habitat trees will also receive pre-treatment preparation. Some units would also have Pile Burning.

Generally, one crew of 5 to 7 personnel for thinning. Occasionally, 2 crews of up to 14 personnel maybe employed for thinning.

Prescribed fire operations will consist of up to 20 personnel. A team of 20 or less personnel can treat approximately 300 acres per day with prescribed fire.

Generally, one crew of 3-5 for pile burn operations. One crew of 3-5 personnel can burn approximately 100 piles (6'x 6' x 6') in three days.

Schedule three treatments for Ponderosa units approximately 10 years apart (natural return interval is 3-15 years). Duff/woody debris layer must be monitored before reentry to ensure there is enough biomass to spread ground fire. Similarly, the duff/woody debris layer must not be so deep that, when burned, it "cooks" the root system. If there is a heavy duff layer, more entries need to be made with a higher duff fuel moisture to limit duff smoldering and heat transfer.

General practices:

The goal is to return stand densities to their natural range of variability (NRV) through a combination of mechanical and prescribed fire means. After a unit is within its NRV natural ignitions can be allowed to maintain the stand density and composition.

Areas that have a high concentration of non-native annuals should not be treated with prescribed fire or treated with prescribed fire before the seed is allowed set- usually late spring.

Herbicide may be applied using a backpack sprayer or hand spreader prior to or following a treatment to minimize the spread of invasive non-native plant species within and adjoining a treatment unit.

See Table H.1 for treatment unit specifics. See Glossary of Prescribed Fire Terminology Used in MRA and EA section 2.2.1 for definitions of tools and techniques.

Component Activities

How will each of the components of the action be performed under this alternative?

Comp #	Component of the Action	Activity for this Alternative
1	Transportation of personnel to project sites.	Personnel travel on established routes and then by foot to treatment sites.
2	Transportation of materials to project site.	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.
3	Treatment Part A – Ponderosa Pine Woodland	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.
4	Treatment Part B – Ponderosa Pine Woodland	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
5	Treatment Part C – Ponderosa Pine Woodland	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
6	Transportation of unused materials from project sites	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.
7	Transportation of personnel from project sites	Personnel travel by foot to established routes and then by vehicle

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE
Untrammeled Total Rating		-3		

Explain:

Large scale vegetation manipulation would inherently negatively impact the untrammeled nature of the area. The Untrammeled quality is impacted when there is manipulation or control of the natural processes in wilderness. As defined in Keeping It Wild 2 (2015): Agency-authorized trammeling actions

1. Actions taken inside the wilderness on a biological resource to intentionally affect "the earth and its community of life." Example…

a. Removing or killing indigenous or non-indigenous vegetation….
c. Using chemicals … to control … non-indigenous vegetation.

2. Actions taken inside the wilderness on a physical resource or natural process tointentionally affect "the earth and its community of life." Example…

b. Lighting fire (under management prescription) for any purpose.

UNDEVELOPED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE

Undeveloped Total Rating	-3

Explain:

The use of motor vehicles and/or motorized equipment negatively impacts the undeveloped quality of wilderness character. The effect should be relatively short term and highly localized as the work would only occur in small stands of ponderosa pine woodland and the appearance of mechanized work would be disguised once Activity 5 is complete.

NATURAL

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☒	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☒	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☒	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	3	3	NE
Natural Total Rating		0		

Explain:

In the short term, especially in the time between steps 3 and 4 or 5, the woodland would be unnatural with piled tree trimmings and cleared areas under tree driplines. Pile burns (activity 5) would create unnatural high intensity fire areas with likely decreases in viable native seeds, mycorrhizae and altered soil chemistry if the burn intensity is not limited (Korb 2004). Over time, however, the reintroduction of fire into a fire adapted ecosystem by artificial means would allow natural ignitions to behave in a manner where minimal monitoring or suppression would be necessary. Natural ignitions are expected to result in relatively low intensity burn 3-4 year (small fire) or 7-16 year (large fire) fire interval (Ireland 2012) in the Mt. Dellenbaugh region.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE

Solitude or Primitive & Unconfined Rec. Total Rating	-3

Explain:

During operations, the sense of solitude would be negatively impacted by loud noises during Activities 3, 4 and 5, and large crews. During Activity 3, chainsaw noise would carry to a distance where the person operating the chainsaw would not be seen. However, this would not continue after Activity 7 was complete. Also, during operations, access to the area may be limited, reducing recreation opportunities.

OTHER FEATURES OF VALUE

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☐	☒
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	0	NE

Other Features of Value Total Rating	NE

Explain:

No other features of value were specifically identified in conjunction with vegetation treatments.

Summary Ratings for Alternative 2

Wilderness Character	Rating Summary
Untrammeled	-3
Undeveloped	-3
Natural	0
Solitude or Primitive & Unconfined Recreation	-3
Other Features of Value	NE
Wilderness Character Summary Rating	-9

MRDG Step 2: Alternatives

Alternative 3: Ponderosa Pine Woodland Treatment with Minimized Motorized Equipment

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In addition to the activities described in Alternative 1, this alternative includes the following actions.

Ponderosa Pine Woodland

Prescribed fire (B), including pile burns(C), preceded by thinning treatment (A) to protect non-target vegetation. Target vegetation are ladder fuels: Pinyon pine, juniper, thick small stem ponderosa pine (>1 tree/ft2). During thinning treatment duff and heavy dead and down maybe be removed from boles of trees to reduce fire intensity. Drip line of save trees (also known as old-growth trees, for a description of this type of tree see Section 2.2.1 Prescribed Fire Treatment) will be cleared of vegetation that could impact the crown. Large snags suitable as habitat trees will also receive pre-treatment preparation. Some units would also have Pile Burning.

Generally, one crew of 5 to 7 personnel for thinning. Occasionally, 2 crews of up to 14 personnel maybe employed for thinning.

Prescribed fire operations will consist of up to 20 personnel. A team of 20 or less personnel can treat approximately 300 acres per day with prescribed fire.

Generally, one crew of 3-5 for pile burn operations. One crew of 3-5 personnel can burn approximately 100 piles (6'x 6' x 6') in three days.

Length of time for thinning activities likely 3-4 times the length using powered tools.

Schedule three treatments for Ponderosa units approximately 10 years apart (natural return interval is 3-15 years). Duff/woody debris layer must be monitored before reentry to ensure there is enough biomass to spread ground fire. Similarly, the duff/woody debris layer must not be so deep that, when burning, it "cooks" the root system. If there is a heavy duff layer, more entries need to be made with a higher duff fuel moisture to limit duff smoldering and heat transfer.

General practices:

The goal is to return stand densities to their natural range of variability (NRV) through a combination of mechanical and prescribed fire means. After a unit is within its NRV natural ignitions can be allowed to maintain the stand density and composition.

Areas that have a high concentration of non-native annuals should not be treated with prescribed fire or treated with prescribed fire before the seed is allowed set- usually late spring.

Component Activities

How will each of the components of the action be performed under this alternative?

Comp #	Component of the Action	Activity for this Alternative
1	Transportation of personnel to project sites.	Personnel travel on established routes and then by foot to treatment sites
2	Transportation of materials to project site.	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites
3	Treatment Part A – Ponderosa Pine Woodland	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.
4	Treatment Part B – Ponderosa Pine Woodland	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
5	Treatment Part C – Ponderosa Pine Woodland	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
6	Transportation of unused materials from project sites	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.
7	Transportation of personnel from project sites	Personnel travel by foot to established routes and then by vehicle

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE
Untrammeled Total Rating		-3		

Explain:

Large scale vegetation manipulation would inherently negatively impact the untrammeled nature of the area. The Untrammeled quality is impacted when there is manipulation or control of the natural processes in wilderness. As defined in Keeping It Wild 2 (2015): Agency-authorized trammeling actions

1. Actions taken inside the wilderness on a biological resource to intentionally affect "the earth and its community of life." Example…

a. Removing or killing indigenous or non-indigenous vegetation….

c. Using chemicals … to control … non-indigenous vegetation.

2. Actions taken inside the wilderness on a physical resource or natural process to intentionally affect "the earth and its community of life." Example…

b. Lighting fire (under management prescription) for any purpose.

UNDEVELOPED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☐	☒
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	2	NE

Undeveloped Total Rating	-2

Explain:

The use of motor vehicles and/or motorized equipment negatively impacts the undeveloped quality of wilderness character. The effect should be relatively short term and highly localized as the work would only occur in small stands of ponderosa pine woodland and mechanized work would be only occur during Activities 4 and 5.

NATURAL

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☒	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☒	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☒	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	3	3	NE

Natural Total Rating	0

Explain:

In the short term, especially in the time between steps 3 and 4 or 5, the woodland would be unnatural with piled tree trimmings and cleared areas under tree driplines. Pile burns (activity 5) would create unnatural high intensity fire areas with likely decreases in viable native seeds, mycorrhizae and altered soil chemistry if the burn intensity is not limited (Korb 2004). Over time, however, the reintroduction of fire into a fire adapted ecosystem by artificial means would allow natural ignitions to behave in a manner where minimal monitoring or suppression would be necessary. Natural ignitions are expected to result in relatively low intensity burn 3-4 year (small fire) or 7-16 year (large fire) fire interval (Ireland 2012) in the Mt. Dellenbaugh region.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE

Solitude or Primitive & Unconfined Rec. Total Rating	-3

Explain:

During operations, the sense of solitude would be negatively impacted by loud noises during Activities 4 and 5, and large crews. However, this would not continue after Activity 7 was complete. During Activities 4 and 5 access to the area may be limited, reducing recreation opportunities.

OTHER FEATURES OF VALUE

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☐
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☐	☒
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	0	NE
Other Features of Value Total Rating		NE		

Explain:

No other features of value were specifically identified in conjunction with vegetation treatments.

Summary Ratings for Alternative 3

Wilderness Character	Rating Summary
Untrammeled	-3
Undeveloped	-2
Natural	0
Solitude or Primitive & Unconfined Recreation	-3
Other Features of Value	NE
Wilderness Character Summary Rating	-8

MRDG Step 2: Alternatives

Alternative 4: Pinyon-juniper Woodland and Savanna with Motorized Equipment

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In addition to the activities described in Alternative 1, this alternative includes the following actions.

Pinyon-juniper Woodland and Savanna

Prescribed fire (B), including pile burns(C), preceded by thinning treatment (A) to protect non-target vegetation and carry fire through ecosystem. Target vegetation: Pinyon pine, juniper. Typical unit would have 2 years of thinning prior to prescribed fire.

Generally, one crew of 5 to 7 personnel for thinning. Occasionally, 2 crews of up to 14 personnel maybe employed for thinning.

Prescribed fire operations will consist of up to 20 personnel. A team of 20 or less personnel can treat approximately 300 acres per day with prescribed fire.

Generally, one crew of 3-5 for pile burn operations. One crew of 3-5 personnel can burn approximately 100 piles (6'x 6' x 6') in three days.

General practices:

The goal is to return stand densities to their natural range of variability (NRV) through a combination of mechanical and prescribed fire means. After a unit is within its NRV natural ignitions can be allowed to maintain the stand density and composition.

Areas that have a high concentration of non-native annuals should not be treated with prescribed fire or treated with prescribed fire before the seed is allowed set- usually late spring.

Herbicide may be applied using a backpack sprayer or hand spreader prior to or following a treatment to minimize the spread of invasive non-native plant species within and adjoining a treatment unit.

See Table H.1 for treatment unit specifics. See Glossary of Prescribed Fire Terminology Used in MRA and EA section 2.2.1 for definitions of tools and techniques.

Component Activities

How will each of the components of the action be performed under this alternative?

Comp #	Component of the Action	Activity for this Alternative
1	Transportation of personnel to project sites.	Personnel travel on established routes and then by foot to treatment sites.
2	Transportation of materials to project site.	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.
3	Treatment Part A – Pinyon-Juniper Woodland and Savanna	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.
4	Treatment Part B – Pinyon-Juniper Woodland and Savanna	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
5	Treatment Part C – Pinyon-Juniper Woodland and Savanna	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
6	Transportation of unused materials from project sites	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.
7	Transportation of personnel from project sites	Personnel travel by foot to established routes and then by vehicle

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE
Untrammeled Total Rating		-3		

Explain:

Large scale vegetation manipulation would inherently negatively impact the untrammeled nature of the area. The Untrammeled quality is impacted when there is manipulation or control of the natural processes in wilderness. As defined in Keeping It Wild 2 (2015): Agency-authorized trammeling actions

1. Actions taken inside the wilderness on a biological resource to intentionally affect "the earth and its community of life." Example…
    a. Removing or killing indigenous or non-indigenous vegetation….
    c. Using chemicals … to control … non-indigenous vegetation.

2. Actions taken inside the wilderness on a physical resource or natural process to intentionally affect "the earth and its community of life." Example…
    b. Lighting fire (under management prescription) for any purpose.

UNDEVELOPED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE

Undeveloped Total Rating	-3

Explain:

The use of motor vehicles and/or motorized equipment negatively impacts the undeveloped quality of wilderness character. The effect of Activity 3 would be visible for approximately 2 years before it would be disguised by Activities 4 or 5.

NATURAL

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE
Natural Total Rating		-3		

Explain:

Tree ring data for the interval 1460-2008 found a high degree of asynchronous fire within the ponderosa pine woodlands in the pinyon-juniper savanna and woodland (PJWS) matrix of the Mount Dellenbaugh and Kelly Point area, indicating that natural fire did not carry often through the PJWS. Increased fire frequency in the PJWS Proposed Action would not mimic a natural fire regime for the area. Anecdotal evidence from fire lookouts found typical natural fire in the PJWS is single tree. In PJWS in the Southwest, the alternate natural fire regime is complete stand replacement, not a mosaic of low intensity burned and unburned areas (Romme 2009). Two years of Activity 3 is proposed to build enough fuel to force fire to move beyond single tree burns.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒

	Total Number of Effects	0	3	NE
Solitude or Primitive & Unconfined Rec. Total Rating		-3		

Explain:

During operations, the sense of solitude would be negatively impacted by loud noises during Activities 3, 4 and 5, and large crews. During Activity 3, chainsaw noise would carry to a distance where the person operating the chainsaw would not be seen. However, this would not continue after Activity 7 was complete. Also, during operations, access to the area may be limited, reducing recreation opportunities.

OTHER FEATURES OF VALUE

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites.	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites.	☐	☐	☒
3	Mechanical thinning treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☐	☒
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	0	NE

Other Features of Value Total Rating	NE

Explain:

No other features of value were specifically identified in conjunction with vegetation treatments.

Summary Ratings for Alternative 4

Wilderness Character	Rating Summary
Untrammeled	-3
Undeveloped	-3
Natural	-3
Solitude or Primitive & Unconfined Recreation	-3
Other Features of Value	NE
Wilderness Character Summary Rating	-12

MRDG Step 2: Alternatives

Alternative 5: Pinyon-juniper Woodland and Savanna with Minimized Motorized Equipment

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In addition to the activities described in Alternative 1, this alternative includes the following actions.

Pinyon-juniper Woodland and Savanna

Prescribed fire (B), including pile burns(C), preceded by thinning treatment (A) to protect non-target vegetation and carry fire through ecosystem. Target vegetation: Pinyon pine, juniper. Generally, one crew of 5 to 7 personnel for thinning. Occasionally, 2 crews of up to 14 personnel maybe employed for thinning.

Prescribed fire operations will consist of up to 20 personnel. A team of 20 or less personnel can treat approximately 300 acres per day with prescribed fire.

Generally, one crew of 3-5 for pile burn operations. One crew of 3-5 personnel can burn approximately 100 piles (6'x 6' x 6') in three days.

General practices:

The goal is to return stand densities to their natural range of variability (NRV) through a combination of mechanical and prescribed fire means. After a unit is within its NRV natural ignitions can be allowed to maintain the stand density and composition.

Areas that have a high concentration of non-native annuals should not be treated with prescribed fire or treated with prescribed fire before the seed is allowed set- usually late spring.

Herbicide may be applied using a backpack sprayer or hand spreader prior to or following a treatment to minimize the spread of invasive non-native plant species within and adjoining a treatment unit.

See Table H.1 for treatment unit specifics. See Glossary of Prescribed Fire Terminology Used in MRA and EA section 2.2.1 for definitions of tools and techniques.

Component Activities

How will each of the components of the action be performed under this alternative?

Comp #	Component of the Action	Activity for this Alternative
1	Transportation of personnel to project sites.	Personnel travel on established routes and then by foot to treatment sites
2	Transportation of materials to project site.	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites
3	Treatment Part A – Pinyon-Juniper Woodland and Savanna	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.
4	Treatment Part B – Pinyon-Juniper Woodland and Savanna	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
5	Treatment Part C – Pinyon-Juniper Woodland and Savanna	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.
6	Transportation of unused materials from project sites	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.
7	Transportation of personnel from project sites	Personnel travel by foot to established routes and then by vehicle

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE
Untrammeled Total Rating		-3		

Explain:

Large scale vegetation manipulation would inherently negatively impact the untrammeled nature of the area. The Untrammeled quality is impacted when there is manipulation or control of the natural processes in wilderness. As defined in Keeping It Wild 2 (2015): Agency-authorized trammeling actions

1. Actions taken inside the wilderness on a biological resource to intentionally affect "the earth and its community of life." Example…
    a. Removing or killing indigenous or non-indigenous vegetation….
    c. Using chemicals … to control … non-indigenous vegetation.

2. Actions taken inside the wilderness on a physical resource or natural process to intentionally affect "the earth and its community of life." Example…
    b. Lighting fire (under management prescription) for any purpose.

UNDEVELOPED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☐	☒
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	2	NE

Undeveloped Total Rating	-2

Explain:

The use of motor vehicles and/or motorized equipment negatively impacts the undeveloped quality of wilderness character. The effect should be relatively short term and highly localized as the work would only occur in small stands of ponderosa pine woodland and mechanized work would be only occur during Activities 4 and 5.

NATURAL

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	-3	NE
Natural Total Rating		-3		

Explain:

Tree ring data for the interval 1460-2008 found a high degree of asynchronous fire within the ponderosa pine woodlands in the pinyon-juniper savanna and woodland (PJWS) matrix of the Mount Dellenbaugh and Kelly Point area, indicating that natural fire did not carry often through the PJWS. Increased fire frequency in the PJWS Proposed Action would not mimic a natural fire regime for the area. Anecdotal evidence from fire lookouts found typical natural fire in the PJWS is single tree. In PJWS in the Southwest, the alternate natural fire regime is complete stand replacement, not a mosaic of low intensity burned and unburned areas (Romme 2009). Two years of Activity 3 is proposed to build enough fuel to force fire to move beyond single tree burns.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☒	☐
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☒	☐
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	3	NE

Solitude or Primitive & Unconfined Rec. Total Rating	-3

Explain:

During operations, the sense of solitude would be negatively impacted by loud noises during Activities 4 and 5, and large crews. However, this would not continue after Activity 7 was complete. During Activities 4 and 5 access to the area may be limited, reducing recreation opportunities.

OTHER FEATURES OF VALUE

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☐	☒
4	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
5	Prescribed fire using drip torch, fusee, very pistol, helitorch, PSD or UTV torch (from road system). Fire Engines and/or UTVs/ATVs will be operated only from the road system. Gasoline powered portable pumps operated from portable water tanks to supply water to hose lays within the fire area.	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	0	NE
Other Features of Value Total Rating		NE		

Explain:

No other features of value were specifically identified in conjunction with vegetation treatments.

Summary Ratings for Alternative 5

Wilderness Character	Rating Summary
Untrammeled	-3
Undeveloped	-2
Natural	-3
Solitude or Primitive & Unconfined Recreation	-3
Other Features of Value	NE
Wilderness Character Summary Rating	-11

MRDG Step 2: Alternatives

Alternative 6: Sagebrush Shrubland and Grassland with Motorized Equipment

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Sagebrush Shrubland and Grassland

Cut, buck and scatter (lop and scatter) (A) of all pinyon trees and juniper trees less than 15". Generally, one crew of 5 to 7 personnel for thinning. Occasionally, 2 crews of up to 14 personnel maybe employed for thinning. Due to a lower stand density, one crew of 5-7 personnel can typically thin 75 acres of a meadow to a 0% stand density in 7 days.

General practices:

The goal is to return stand densities to their natural range of variability (NRV) through a combination of mechanical and prescribed fire means. After a unit is within its NRV natural ignitions can be allowed to maintain the stand density and composition.

Herbicide may be applied using a backpack sprayer or hand spreader prior to or following a treatment to minimize the spread of invasive non-native plant species within and adjoining a treatment unit.

See Table H.1 for treatment unit specifics.

Component Activities

How will each of the components of the action be performed under this alternative?

Comp #	Component of the Action	Activity for this Alternative
1	Transportation of personnel to project sites.	Personnel travel on established routes and then by foot to treatment sites
2	Transportation of materials to project site.	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites
3	Treatment Part A – Sagebrush Shrubland and Grassland	Mechanical treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.
4	Treatment Part B – Sagebrush Shrubland and Grassland	none
5	Treatment Part C – Sagebrush Shrubland and Grassland	none

Comp #	Component of the Action	Activity for this Alternative
6	Transportation of unused materials from project sites	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.
7	Transportation of personnel from project sites	Personnel travel by foot to established routes and then by vehicle

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Mechanical treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	1	NE
Untrammeled Total Rating		-1		

Explain:

Large scale, long term vegetation manipulation would inherently negatively impact the untrammeled nature of the area The Untrammeled quality is impacted when there is manipulation or control of the natural processes in wilderness. As defined in Keeping It Wild 2 (2015): Agency-authorized trammeling actions

1. Actions taken inside the wilderness on a biological resource to intentionally affect “the earth and its community of life.” Example…
    a. Removing or killing indigenous or non-indigenous vegetation….
    c. Using chemicals … to control … non-indigenous vegetation.

UNDEVELOPED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Mechanical treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
Total Number of Effects		0	1	NE
Undeveloped Total Rating		-1		

Explain:
The use of motor vehicles and/or motorized equipment negatively impacts the undeveloped quality of wilderness character. The effect should be relatively short term and highly localized as the work would only occur when pinyon or juniper trees were detected within the sagebrush shrubland or grassland area.

NATURAL

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Mechanical treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☒	☐	☐
4	none	☐	☐	☒
5	none	☐	☐	☒

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	1	0	NE
Natural Total Rating		1		

Explain:
Treatments to maintain vegetation to align with the Ecological Site Description using techniques that would mimic natural wind disturbance would maintain and enhance the natural character of sagebrush areas.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☒	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Mechanical treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	1	NE
Solitude or Primitive & Unconfined Rec. Total Rating		-1		

Explain:

Chainsaw noise would carry to a distance where the person operating the chainsaw would not be seen, impacting the sense of solitude.

OTHER FEATURES OF VALUE

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Mechanical treatment utilizing gas or electric powered chainsaws, pole saws, leaf blowers and/or brush cutter/weed eater.	☐	☐	☒
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
Total Number of Effects		0	0	NE
Other Features of Value Total Rating		0		

Explain:

No other features of value were specifically identified in conjunction with vegetation treatments.

Summary Ratings for Alternative 6

Wilderness Character	Rating Summary
Untrammeled	-1
Undeveloped	-1
Natural	1
Solitude or Primitive & Unconfined Recreation	-1
Other Features of Value	NE
Wilderness Character Summary Rating	-2

MRDG Step 2: Alternatives

Alternative 7: Sagebrush Shrubland and Grassland without Motorized Equipment

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Sagebrush Shrubland and Grassland

Cut, buck and scatter (lop and scatter) (A) of all pinyon trees and juniper trees less than 15". Generally, one crew of 5 to 7 personnel for thinning. Occasionally, 2 crews of up to 14 personnel maybe employed for thinning. Due to a lower stand density, one crew of 5-7 personnel can typically thin 75 acres of a meadow to a 0% stand density in 7 days.

General practices:

The goal is to return stand densities to their natural range of variability (NRV) through a combination of mechanical and prescribed fire means. After a unit is within its NRV natural ignitions can be allowed to maintain the stand density and composition.

Herbicide may be applied using a backpack sprayer or hand spreader prior to or following a treatment to minimize the spread of invasive non-native plant species within and adjoining a treatment unit.

See Table H.1 for treatment unit specifics.

Component Activities

How will each of the components of the action be performed under this alternative?

Comp #	Component of the Action	Activity for this Alternative
1	Transportation of personnel to project sites.	Personnel travel on established routes and then by foot to treatment sites
2	Transportation of materials to project site.	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites
3	Treatment Part A – Sagebrush Shrubland and Grassland	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.
4	Treatment Part B – Sagebrush Shrubland and Grassland	none
5	Treatment Part C – Sagebrush Shrubland and Grassland	none

Comp #	Component of the Action	Activity for this Alternative
6	Transportation of unused materials from project sites	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.
7	Transportation of personnel from project sites	Personnel travel by foot to established routes and then by vehicle

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	1	NE
Untrammeled Total Rating		-1		

Explain:

Large scale, long term vegetation manipulation would inherently negatively impact the untrammeled nature of the area. The Untrammeled quality is impacted when there is manipulation or control of the natural processes in wilderness. As defined in Keeping It Wild 2 (2015): Agency-authorized trammeling actions

1. Actions taken inside the wilderness on a biological resource to intentionally affect “the earth and its community of life.” Example…

a. Removing or killing indigenous or non-indigenous vegetation….

c. Using chemicals … to control … non-indigenous vegetation.

UNDEVELOPED

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☐	☒
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	0	NE
Undeveloped Total Rating		NE		

Explain:

Vegetation treatment without mechanized tools or installations does not negatively impact the undeveloped quality.

NATURAL

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☒	☐	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	1	0	NE
Natural Total Rating		1		

Explain:

Treatments to maintain vegetation to align with the Ecological Site Description using techniques that would mimic natural wind disturbance would maintain and enhance the natural character of sagebrush areas.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☒	☐
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	1	NE
Solitude or Primitive & Unconfined Rec. Total Rating		-1		

Explain:

For a short time, while treatment is occurring, visitors in close proximity to the work site would notice a group of people. This would diminish the sense of solitude.

OTHER FEATURES OF VALUE

Activity #	Component Activity for this Alternative	Positive	Negative	No Effect
1	Personnel travel on established routes and then by foot to treatment sites	☐	☐	☒
2	Materials are transported by vehicle to closest point and then moved by personnel to treatment sites	☐	☐	☒
3	Manual treatment with cross-cut saws, shovels, pulaskis, brush hooks, scraping tools, loppers, and ax.	☐	☐	☒
4	none	☐	☐	☒
5	none	☐	☐	☒
6	Materials are moved by personnel from treatment sites and then transported by vehicle on established routes.	☐	☐	☒
7	Personnel travel by foot to established routes and then by vehicle	☐	☐	☒
	Total Number of Effects	0	0	NE
Other Features of Value Total Rating		0		

Explain:

No other features of value were specifically identified in conjunction with vegetation treatments.

Summary Ratings for Alternative 7

Wilderness Character	Rating Summary
Untrammeled	-1
Undeveloped	NE
Natural	1
Solitude or Primitive & Unconfined Recreation	-1
Other Features of Value	NE
Wilderness Character Summary Rating	-1

MRDG Step 2: Alternatives Not Analyzed

Alternatives Not Analyzed

What alternatives were considered but not analyzed? Why were they not analyzed?

Alternatives not analyzed include different combinations of treatment types based on vegetation type. These were not analyzed because they were already considered in the alternatives considered – reaction to natural fire starts, vegetation treatment using motorized equipment and vegetation treatment minimizing the use of motorized equipment.

A fully non-motorized alternative was considered for the three vegetation types. In the case of prescribed fire in ponderosa pine woodland and pinyon-juniper woodland and savanna, fire safety required the use of gasoline powered pumps, therefore no prescribed fire treatment could be entirely without the use of motorized equipment. Alternatives 3 and 5 represent this minimized motorized equipment approach. A fully non-motorized alternative was possible in the sagebrush areas, Alternative 7 describes this.

During Step 2: Determination, it is anticipated that the decision maker may choose a combination of the alternatives analyzed.

MRDG Step 2: Alternative Comparison

Alternative 1:	Natural Fire Ignitions with limited management intervention
Alternative 2:	Ponderosa Pine Woodland Treatment with Motorized Equipment
Alternative 3:	Ponderosa Pine Woodland Treatment with Minimized Motorized Equipment
Alternative 4:	Pinyon-juniper Woodland and Savanna with Motorized Equipment

	Alternative 1	Alternative 1	Alternative 2	Alternative 2	Alternative 3	Alternative 3	Alternative 4	Alternative 4
Wilderness Character	+	-	+	-	+	-	+	-
Untrammeled	0	1	0	3	0	3	0	3
Undeveloped	0	1	0	3	0	2	0	3
Natural	1	1	3	3	3	3	0	3
Solitude/Primitive/Unconfined	1	1	0	3	0	3	0	3
Other Features of Value	0	0	0	0	0	0	0	0
Total Number of Effects	2	4	3	12	3	11	0	12
Wilderness Character Rating	-2		-9		-8		-12	

Alternative 5:	Pinyon-juniper Woodland and Savanna with Minimized Motorized Equipment
Alternative 6:	Sagebrush Shrubland and Grassland with Motorized Equipment
Alternative 7:	Sagebrush Shrubland and Grassland without Motorized Equipment

	Alternative 5	Alternative 5	Alternative 6	Alternative 6	Alternative 7	
Wilderness Character	+	-	+	-	+	
Untrammeled	0	3	0	1	0	1
Undeveloped	0	2	0	1	0	0
Natural	0	3	1	0	1	0
Solitude/Primitive/Unconfined	0	3	0	1	0	1
Other Features of Value	0	0	0	0	0	0
Total Number of Effects	0	11	1	3	1	2
Wilderness Character Rating	-11		-2		-1	

MRDG Step 2: Determination

Selected Alternative

☒ Alternative 1:	Natural Fire Ignitions with limited management intervention
☐ Alternative 2:	Ponderosa Pine Woodland Treatment with Motorized Equipment
☒ Alternative 3:	Ponderosa Pine Woodland Treatment with Minimized Motorized Equipment
☐ Alternative 4:	Pinyon-juniper Woodland and Savanna with Motorized Equipment
☒ Alternative 5:	Pinyon-juniper Woodland and Savanna with Minimized Motorized Equipment
☐ Alternative 6:	Sagebrush Shrubland and Grassland with Motorized Equipment
☒ Alternative 7:	Sagebrush Shrubland and Grassland without Motorized Equipment

Explain Rationale for Selection:

The project area incorporates three different vegetation types. Appropriate treatment design to achieve desired conditions for species diversity, vegetative cover, and wildlife habitat necessarily varies between these vegetation types. The selection of multiple alternatives reflects the complexity of the project area.

The alternatives selected best preserve wilderness character while minimizing negative effects to wilderness character. Fire operations in the area are unable to operate safely or contain severe and unusually large fire without the option to use some form of mechanized support in the wilderness (Alternative 1). The selection of Alternative 3 for ponderosa pine woodlands is in conformance with Wilderness Act section 4(d)1 to control fire while operating safely as in Alternative 1 and minimizing motorized equipment. Alternative 5 is consistent with the best available science in pinyon-juniper woodlands and savanna for the area and includes adaptive management parameters, including those in the below Monitoring and Reporting Requirements section, to use an iterative approach to ensure ecosystem restoration while again minimizing motorized equipment use. Alternative 7, fully non-motorized, protect areas that, according to best available science, should remain meadows. The meadows are natural fire breaks and an important component of the pre-settlement mosaic in the project area.

Describe Monitoring & Reporting Requirements:

All fire treatments and monitoring will be entered into the appropriate national, regional and local databases. Post fire and/or fiscal year results of treatment and monitoring will be collated into a written report and made available to appropriate staff including fire and vegetation programs personnel and the Monument Superintendent.

All units proposed for this type of treatment will be monitored using the FMH (NPS 2003) protocol. Two to five units will initially be treated after the following decision-making process is employed.

1. Determine the extent of invasive plant distribution and characterize the vegetative community of the site within one year prior to treatment.
2. (a) In areas where invasive plants are found at a greater than 10% frequency, pretreat with herbicide prior to treatment.
   (b) In areas where little to no invasive plants are found (less than 10% frequency), commence prescribed fire treatment.
3. Post-fire monitor in one, two, and five years as part of the FMH protocol.
4. (a) If post fire monitoring indicates no substantial spread of invasive plants, as determined by the vegetation specialist or their designee, or the introduction of new invasive plant species and favorable regeneration of the understory, similar units may be treated.
   (b) If post fire monitoring indicates substantial spread of invasive plants, as determined by the vegetation specialist or their designee, the unit would be evaluated for follow-up herbicide or other invasive plant eradication treatments and no additional prescribed fire treatment would occur in the unit. Similar units would be reevaluated for treatment and may not receive a prescribed fire treatment.
   (c) If post fire monitoring indicates substantial spread of invasive plants and no to minimal regeneration of the understory, similar units would be reevaluated for treatment.

All treatments will adhere to the selected alternative and its design features as described in the Shivwits Plateau Landscape Restoration Project Environmental Assessment (PEPC-98370/DOI-BLM-AZ-A030-2021-0005-EA).

Approvals

Which of the prohibited uses found in Section 4(c) of the Wilderness Act are approved in the selected alternative and for what quantity?

Approved?	Prohibited Use	Quantity
☐	Mechanical Transport:	
☒	Motorized Equipment:	As described in selected alternative
☐	Motor Vehicles:	
☐	Motorboats:	
☐	Landing of Aircraft:	
☐	Temporary Roads:	
☐	Structures:	
☐	Installations:	

Record and report any authorizations of Wilderness Act Section 4(c) prohibited uses according to agency policies or guidance.

Refer to agency policies for the following signature authorities:

Prepared:

Name Jennifer E. Fox Position Ecologist

Signature JENNIFER FOX Digitally signed by JENNIFER FOX Date: 2021.08.18 16:59:22 -06'00' Date _____

Recommended:

Name Position

Signature _____ Date _____

Recommended:

Name Position

Signature _____ Date _____

Approved:

Name Brenda K. Todd Position Superintendent

Signature BRENDA TODD Digitally signed by BRENDA TODD Date: 2021.08.19 09:46:02 -06'00' Date _____

Glossary of Prescribed Fire Terminology Used in MRA (BLM nd, NWCG nd, NWCG 1996)

Brush Hook: A heavy cutting tool designed primarily to cut brush at the base of the stem. Used in much the same way as an axe and having a wide blade, generally curved to protect the blade from being dulled by rocks.

Drip Torch: Hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline.

Fusee: A handheld disposable ground ignition device with a self-contained ignition system. A colored flare designed as a railway warning device, widely used to ignite backfires and other prescribed fires.

Helitorch: An aerial ignition device hung from or mounted on a helicopter to disperse ignited lumps of gelled gasoline. Used for backfires, burnouts, or prescribed burns. Includes: Delayed Aerial Ignition Devices; Ping-Pong Ball System; Plastic Sphere Dispenser.

Hose Lay: Arrangement of connected lengths of fire hose and accessories on the ground, beginning at the first pumping unit and ending at the point of water delivery.

Ladder Fuels: Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

Pile Burn: A prescribed fire used to ignite hand or machine piles of cut vegetation resulting from vegetation or fuel management activities. Piles are generally burned during the wet season to reduce damage to the residual trees and to confine the fire to the footprint of the pile. Pile burning allows time for the vegetative material to dry out and will produce less overall smoke by burning hot and clean.

Plastic Sphere Dispenser (PSD): Device installed, but jettisonable, in a helicopter, which injects glycol into a plastic sphere containing potassium permanganate, which is then expelled from the machine and aircraft. This produces an exothermic reaction resulting in ignition of fuels on the ground for prescribed or wildland fire applications.

Pulaski: A combination chopping and trenching tool widely used in fireline construction, which combines a single-bitted axe blade with a narrow adze-like trenching blade fitted to a straight handle.

UTV torch: A ground ignition device designed for mounting on the rear cargo platform of an UTV. It has a fuel tank, a system to dispense fuel, and an ignition source. The tank may be fabricated from carbon steel, stainless steel, or aluminum. Fuel may be dispensed by gravity, electric pump, or pressurized gas. The ignition source may be a lighted wick, propane torch, or electric spark.
Very Pistol: A hand pistol varying in diameter from 12 gauge to 25 mm. Most effective in dry, light, continuous ground fuels, and allows remote ignition

Table H.1. Detailed Unit Treatment Proposal. *Pinus edulis* includes *P. monophylla*. *Juniperus osteosperma* includes *J. monosperma*.

Unit No.	Name	Acres	Predominate Fuel Types	Past Treatment Dates	Approx. Future Activity 3 Treatment Date*	Approx. Future Activity 4 or 5 Treatment Date*	Activity	Notes
5	Ambush	382	*Pinus ponderosa*	2007, 2016	2030	2031	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
6	Ambush North	557	*Juniperus osteosperma*, low density *Pinus edulis,* low density *P. ponderosa*	N/A	2029, 2030	2031	2	Two consecutive years of mechanical treatments followed up a prescribed fire treatment.
7	Andrus	5830	*J. osteosperma*, *Artemisia tridentata*, low density *P. edulis*	2007, 2017	TBD	TBD, see note.	2	Do not implement a prescribed fire treatment if unit remains an active cattle grazing allotment.
8	Boundary	127	*P. ponderosa*	2005, 2016	2030	2030	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
9	Buster	653	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2035, 2036, 2037	2038	2	Three consecutive years of mechanical treatments followed up a prescribed fire treatment.
12	Dellenbaugh	227	*J. osteosperma*, low density *P. edulis*	Thinning completed 2020	TBD	2022	2	Joint treatment with AZ-ASD. Cancelled Rx in F20 over COVID concerns; rescheduled for FY21 or FY22
13	Fire Camp	85	*P. ponderosa*	1995, 1997, 2012	2032	2032	1, 4	Constantly evaluate and treat as necessary to maintain low duff/woody debris levels as

Unit No.	Name	Acres	Predominate Fuel Types	Past Treatment Dates	Approx. Future Activity 3 Treatment Date*	Approx. Future Activity 4 or 5 Treatment Date*	Activity	Notes
								defensible space for administrative facilities.
14	Fire Camp Extension	27	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2031	2032	2	Mechanical treatment followed up a prescribed fire treatment. Will require multiple implementations.
15	Fire Camp South	879	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2037, 2038, 2039, 2040	2040	2	Four consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations.
19	Green Springs	59	*P. ponderosa*	199,720,112,017	TBD	TBD	1	Evaluate before future implementations are scheduled.
20	Green Springs East	326	*P. ponderosa*	2002, 2014	2028	2029	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
21	Green Springs North	680	*P. ponderosa*	2003, 2015	2028	2029	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
22	Halfway	200	*P. ponderosa*	2012, 2012	2025	2026	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
25	Horse Valley	67	*P. ponderosa*	19,982,011	2027	2028	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled

Unit No.	Name	Acres	Predominate Fuel Types	Past Treatment Dates	Approx. Future Activity 3 Treatment Date*	Approx. Future Activity 4 or 5 Treatment Date*	Activity	Notes
26	Horse Valley Meadow	211	*A. tridentata*, *J. osteosperma*	2015/2011	2026	N/A	3	No fire treatment
27	Horse Valley North	532	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2028, 2029	2030	2	Two consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations.
28	Kelly	2776	*J. osteosperma*, low density *P. edulis*	N/A	2031, 2032, 2033, 2034	2035	2	New unit west of Kelly East, Kelly East Extension, and Shanley units
30	Kelly East	1954	*J. osteosperma*, low density *P. edulis*	2011, 2019	2031, 2032, 2033, 2034	2034	2	Unit will require multiple implementations.
31	Kelly East Extension	540	*J. osteosperma*, low density *P. edulis*	2011, 2019	2031, 2032, 2033, 2034	2034	2	Complete as part of Kelly East. Unit will require multiple implementations.
32	Kelly West	526	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	2019	2031, 2032, 2033, 2034	2034	2	Four consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations.
38	Middle Ambush	1078	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2029, 2030, 2031	2031	2	Three consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations.
40	Nutter	425	*J. osteosperma*, low density *P. edulis*	N/A	2037, 2038	2039	2	Two consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations.

Unit No.	Name	Acres	Predominate Fuel Types	Past Treatment Dates	Approx. Future Activity 3 Treatment Date*	Approx. Future Activity 4 or 5 Treatment Date*	Activity	Notes
47	Peter's Pocket	537	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2024, 2025	2026	2	Two consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations.
48	Pine Valley East	1213	*P. ponderosa*	2018, 2017	2032	2033	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
49	Pine Valley Loop	41	*P. ponderosa*	1999, 2011, 2009	2032	2033	1	Constantly evaluate and treat as necessary to maintain low duff/woody debris levels as defensible space for historic cabin
50	Pine Valley Meadow	66	*A. tridentata*, *J. osteosperma*	2014, 2011	2024	N/A	3	No fire treatment
51	Pine Valley Ranch	293	*P. ponderosa*	2002, 2014	2032	2033	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
52	Pine Valley West	170	*P. ponderosa*	1999, 2012	2032	2033	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
54	Pleasant Valley	174	*P. ponderosa*	1999, 2012	2026	2027	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
55	Pleasant Valley East	146	*P. ponderosa*	2002, 2014	2026	2027	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled

Unit No.	Name	Acres	Predominate Fuel Types	Past Treatment Dates	Approx. Future Activity 3 Treatment Date*	Approx. Future Activity 4 or 5 Treatment Date*	Activity	Notes
56	Pleasant Valley Meadow	21	*A. tridentata*, *J. osteosperma*	2012	2026	N/A	3	No fire treatment
57	Pleasant Valley South	849	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2035, 2036, 2037	2038	2	New unit southeast of Pleasant Valley. Three consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations
64	Sawmill	30	*P. ponderosa*	1995, 2016	2030	2030	2	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
65	Sawmill Meadow	16	*A. tridentata*, *J. osteosperma*	2016	2030	N/A	3	No fire treatment
66	Sawmill South	82	*P. ponderosa*	2005, 2016	2030	2030	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
67	Shanley	358	*J. osteosperma*, *A. tridentata,* low density *Pinus ponderosa*	N/A	2023	2024	2, 4	Unit will require multiple implementations.
68	Slim	199	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2022	2023	2	Unit will require multiple implementations.

Unit No.	Name	Acres	Predominate Fuel Types	Past Treatment Dates	Approx. Future Activity 3 Treatment Date*	Approx. Future Activity 4 or 5 Treatment Date*	Activity	Notes
70	Twin I	407	*J. osteosperma*, low density *P. edulis*	1995, 2018	2034, 2035, 2036, 2037	2037	2	Unit will require multiple implementations.
71	Twin Creek	429	*J. osteosperma*, low density *P. edulis*	1999, 2015, 2019	TBD	2022	2	Unit will require multiple implementations.
72	Twin II	1759	*J. osteosperma*, low density *P. edulis*	1997, 2016	2023, 2024, 2025	2025	2	Unit will require multiple implementations.
73	Twin North	1215	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	2015, 2019	TBD	2022	2	Part of Twin Boundary, Twin Creek and north portion of Twin II, acres not reflected in total treatment PARA acreage.
74	Twin Spring Boundary	622	*J. osteosperma*, low density *P. edulis*	1999, 2007 mechanical treatment, 2013/2019 mechanical treatment	TBD	2022	2	Unit will require multiple implementations.
75	Twin West	1385	*J. osteosperma*, low density *P. edulis*	1999, 2018	2034, 2035, 2036, 2037	2037	2	Unit will require multiple implementations.
76	Waring	168	*P. ponderosa*	1997, 2005, 2014	2027	2028	1, 4	Constantly evaluate and treat as necessary to maintain low duff/woody debris levels as defensible space for historic Waring Ranch
77	Waring Ranch East	327	*J. osteosperma*, low density *P. edulis*, low	Thin complete 2021	TBD	2022	2	Mechanically treated in 2020, 2021. Need to complete with prescribed burn. Unit will

Unit No.	Name	Acres	Predominate Fuel Types	Past Treatment Dates	Approx. Future Activity 3 Treatment Date*	Approx. Future Activity 4 or 5 Treatment Date*	Activity	Notes
			density *P. ponderosa*					require multiple implementations.
78	Waring South	432	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2038, 2039	2039	2	Two consecutive years of mechanical treatments followed up a prescribed fire treatment. Unit will require multiple implementations.
86	Yellow John East(NPS)	143	*P. ponderosa*	2006, 2017	TBD	TBD	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled
89	Yellow John South	175	*J. osteosperma*, low density *P. edulis*, low density *P. ponderosa*	N/A	2032	2033	2	One mechanical treatment followed up a prescribed fire treatment. Unit will require multiple implementations.
90	Yellow John West	211	*P. ponderosa*	2004, 2015	2027	2027	1	After next (3rd implementation) unit should be evaluated before future treatments are scheduled. Was completed as a joint project with the BLM on last two implementations.

* Prior to implementation date, conditions must be evaluated on site to confirm target date or possible extend into the future as necessary