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Southwestern Region
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Apache-Sitgreaves, Coconino, and Tonto National Forests
September 2022

Record of Decision

Four Forest Restoration Initiative Rim Country Project

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Record of Decision for the
Four Forest Restoration Initiative Rim Country Project

Apache-Sitgreaves, Coconino, and Tonto National Forests
Apache, Coconino, Yavapai, Gila, and Navajo Counties, Arizona

Lead Agency: **USDA Forest Service**

Cooperating Agencies: **Arizona Game and Fish Department**

Responsible Official:

JUDITH PALMER, FOREST SUPERVISOR
Apache-Sitgreaves National Forests
30 S. Chiricahua Dr.
Springerville, AZ 85938

LESLEY YEN, ACTING FOREST SUPERVISOR
Coconino National Forest
1824 South Thompson Street
Flagstaff, AZ 86001

NEIL BOSWORTH, FOREST SUPERVISOR
Tonto National Forest
2324 E. McDowell Rd.
Phoenix, AZ 85006

For Information Contact:

KARA KIRKPATRICK-KREITINGER, 4FRI NEPA PLANNER
1824 South Thompson Street
Flagstaff, AZ 86001
(928) 527-3600

Table of Contents

Introduction

The Rim Country Project includes ecosystem restoration on the Black Mesa and Lakeside Ranger Districts of the Apache-Sitgreaves National Forests, the Mogollon Rim and Red Rock Ranger Districts of the Coconino National Forest, and the Payson and Pleasant Valley Ranger Districts of the Tonto National Forest in northern Arizona. The Rim Country Project is part of the Four Forest Restoration Initiative (4FRI). The 4FRI is a planning effort designed to restore forest resilience and function across four national forests in Arizona including the Apache-Sitgreaves, Coconino, Kaibab, and Tonto National Forests (Figure 1). The 4FRI is a result of many years of planning and collaboration among interested parties, groups, and organizations, and federal, state, and local government agencies. The focus has been to restore forest landscapes and reduce the potential for uncharacteristic wildfire effects in a manner that also benefits the local economy. This record of decision (ROD) documents our selection of Alternative 2 for implementation on National Forest System lands.

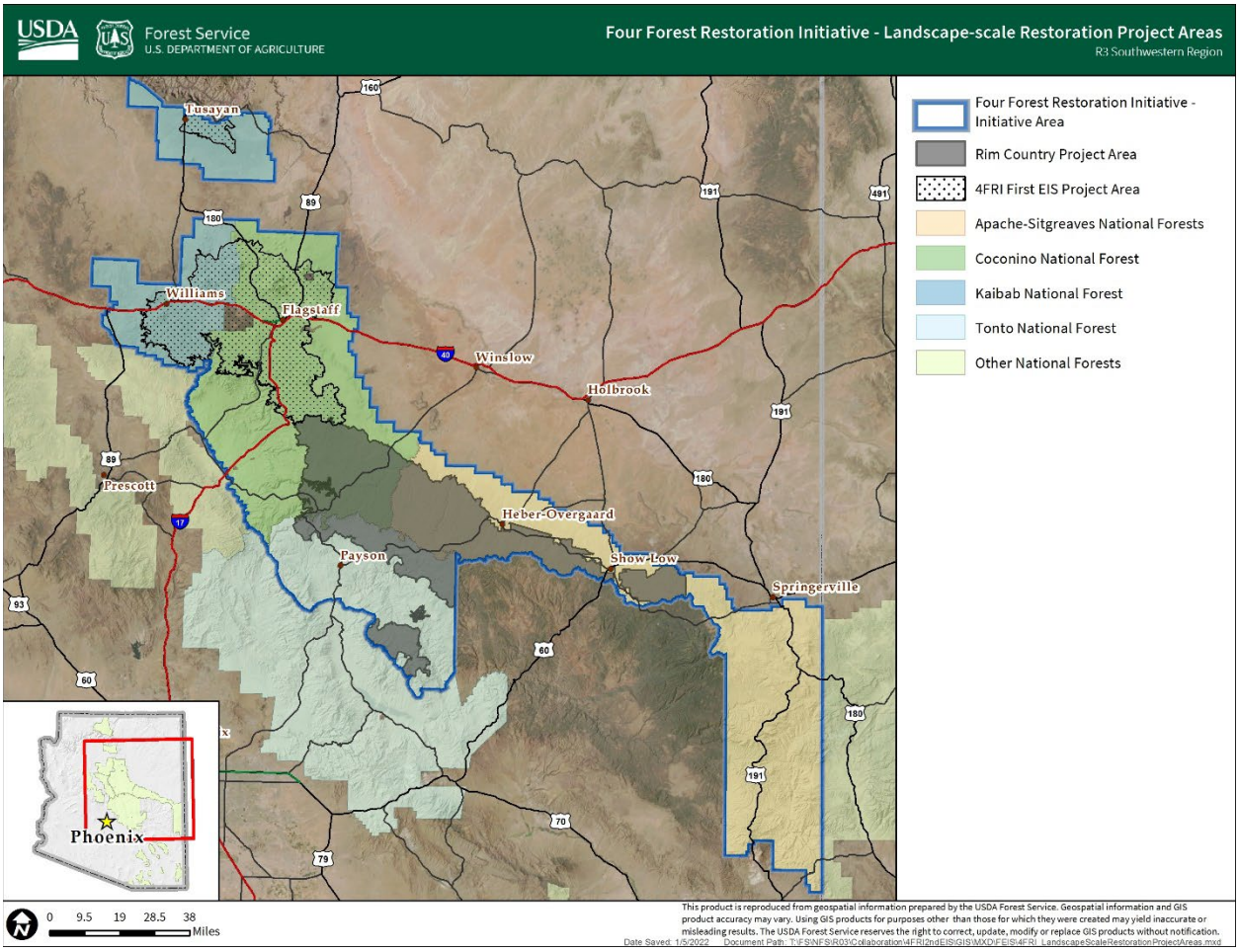

Figure 1. Four Forest Restoration Initiative Area, the 1st 4FRI EIS Project Area, and the Rim Country Project Area

Background

In 2010, stakeholders developed a comprehensive landscape restoration strategy for the 4FRI National Forests that documented existing conditions, potential treatment areas, and desired post-treatment conditions (4FRI Stakeholders 2010). In 2010, 4FRI was selected to receive 10-year funding from the Collaborative Forest Landscape Restoration Program (CFLRP). The CFLRP supports landscape restoration on National Forest System lands. In 2019, the 4FRI CFLRP funding expired, and while 4FRI is no longer receiving funding through the CFLRP, the Rim Country Project's purpose and need, alternatives, and continued collaboration efforts still meet the intent of the eligibility criteria.

In 2015, the ROD for the 1st 4FRI Environmental Impact Statement (EIS) was signed, approving forest restoration activities on the northern portion of the Coconino National Forest and the southern portion of the Kaibab National Forest. In June 2016, the Notice of Intent for the Rim Country Project was published continuing the ecosystem restoration in Northern Arizona under 4FRI. The Rim Country Project Draft Environmental Impact Statement (DEIS) was released for a 90-day comment period in October 2019. On March 18, 2022, the Final Environmental Impact Statement (FEIS) and draft ROD were released and the objection period began with the publication of the Notice of Opportunity to Object in the newspaper of record.

Purpose and Need for Action

The purpose of the 4FRI Rim Country Project is to restore and maintain the structure, pattern, health, function, composition, and diversity in forests and grasslands across the landscape to conditions within the natural range of variation, thus moving the project area toward the desired conditions in the land management plans. One outcome of restored forests and grasslands is increased ecosystem resilience. Resilience is the ability of an ecosystem to survive natural disturbances such as fire, insects, disease, and climate change without changing its inherent function (FSH 1909.12, 05; SER 2004). This project is needed to:

- Increase forest and grassland resilience and sustainability
- Reduce hazards associated with undesirable fire effects
- Improve terrestrial and aquatic species habitat
- Improve the condition and function of streams and springs
- Restore woody riparian vegetation
- Preserve cultural resources
- Support sustainable forest products industries
- Improve the motorized transportation system and provide for a more sustainable road system where poorly located roads are relocated or decommissioned.

There is also a need to except the Rim Country Project from portions of the 1985 Tonto National Forest Land Management Plan with one project-specific amendment containing three different exception areas. These exceptions are for ponderosa pine vegetation/forest cover types, Mexican spotted owl components, and mechanical treatments on steep slopes. More information about the amendment can be found below and in Appendix B of the FEIS and Chapter 3 of the FEIS contains the analysis of the land management plan amendment substantive requirements for the three exceptions.

Pre-decisional Administrative Review

The FEIS and the draft ROD were subject to review and objection pursuant to 36 CFR 218 regulations. The Rim Country Project draft ROD and the FEIS were released on March 18, 2022. Notifications of the release of the FEIS and draft ROD were sent by email and mail to interested agencies, groups, and individuals. A legal notice of the opportunity to object, initiating the 45-day objection period was published in the *Arizona Daily Sun* (legal newspaper of record) on March 18, 2022. A Notice of Availability was published in the *Federal Register* on August 12, 2022.

Five objections were received, three of which were submitted by the same objector, during the objection filing period. The objections included a wide range of issues including treatments in Mexican spotted owl and other wildlife habitat, use of the condition-based management (CBM) approach, the Tonto National Forest Land Management Plan amendment, treatments in inventoried roadless areas (IRAs), analysis of old and large trees, treatments on steep slopes (including potential for helicopter logging), livestock grazing, aspen decline, adaptive management, and smoke emissions.

During the subsequent 45-day objection review period (which was extended by 30 days, as allowed by regulations under 36 CFR 218.26(b)), the Forest Service's Southwestern Regional Office reviewed the letters of objection. On July 6, 2022, virtual objection resolution meetings were held between all three objectors, the Reviewing Officer, the Responsible Officials, and agency staff for the purposes of clarifying objection issues and discussing potential resolutions. The meetings, along with the review of the objections, culminated in a set of instructions from the Reviewing Officer that strengthen the final decision. One specific objection contention detailed a concern for helicopter logging to occur as a treatment method under this decision. This decision does not authorize the use of helicopters for logging operations; this treatment method is not outlined in the selected alternative nor is it analyzed in the FEIS. See Appendix A of this decision for a detailed overview of instructions received and how they were addressed.

On July 18, three objection responses were issued to the three objectors by the Reviewing Officer that can be found here: www.fs.usda.gov/goto/4FRIRimCountry. This decision fully incorporates the instructions from the Reviewing Officer to document clarifications and modifications to the FEIS and supporting documents. The objection Reviewing Officer determined that the project is fully compliant with all applicable laws, regulations, and policies, and the Apache-Sitgreaves, Coconino, and Tonto National Forest Land Management Plans.

Decision and Rationale

This section describes our decision and the rationale for our decision. This ROD documents two decisions: one related to the selection of the alternative and one related to a project-specific amendment to the 1985 Tonto National Forest Land Management Plan.

Decision

Based on our review of the environmental analysis disclosed in the Rim Country Project FEIS, specialist reports, associated land management plans, the project record, and in consideration of public comments received on the DEIS, we have decided to implement alternative 2, the modified proposed action (Figure 2) as presented in the FEIS. During project implementation, the Forest Service is required to adhere to all applicable design features in Appendix C of the FEIS, the Implementation Plan in Appendix D of the FEIS, the Monitoring and Adaptive Management Plan in Appendix E of the FEIS, and the Mexican Spotted Owl Conservation Recovery Framework in Appendix F of the FEIS. Documents that provide direction of management activities including land management plans, recovery plans, and conservation

agreements may be revised over time, in which case the Implementation Plan (Appendix D of the FEIS), Monitoring and Adaptive Management Plan (Appendix E of the FEIS), and the Mexican Spotted Owl Conservation Recovery Framework (Appendix F of the FEIS) may be updated.

In the selected alternative, the Apache-Sitgreaves, Coconino, and Tonto National Forests will implement a suite of restoration activities on approximately 991,060 acres over 20 years or until completed. Table 1 provides an estimate of treatments by National Forest. Figure 3 below portrays the treatments. The following activities are called out to identify treatments of interest (some treatment acres have overlap):

- Implement mechanical thinning and prescribed fire on approximately 446,020 acres including:
  - Approximately 89,880 acres of stand improvement
  - Approximately 356,130 acres of uneven-aged thinning
- Implement prescribed fire alone on approximately 103,950 acres in target vegetation cover types
- Implement approximately 7,300 acres of mechanical treatment and prescribed fire and approximately 9,600 acres of prescribed fire only in eight IRAs. Mechanical treatments in IRAs will only occur in identified areas (See IRA Specialist Report - Appendix A – Maps) and will be spatially fixed. Treatments include:
  - Approximately 6,287 acres of hand thinning and prescribed fire
  - Approximately 572 acres of comprehensive restoration mechanical thinning and prescribed fire
  - Approximately 439 acres of upland vegetation mechanical thinning and prescribed fire
  - Approximately 9,600 acres of prescribed fire only
  - Approximately 33.5 miles of general stream restoration
  - Approximately 0.07 miles of heavy mechanical stream restoration
  - Approximately 0.58 miles of road decommissioning
- Mechanically thin and/or implement prescribed fire on approximately 96,890 acres (in target and non-target vegetation cover types) of Mexican spotted owl protected activity centers including:
  - Approximately 13,450 acres of mechanical thinning and prescribed fire
  - Approximately 1,190 acres of hand thinning and prescribed fire
  - Approximately 82,250 acres of prescribed fire only
- Mechanically thin and/or implement prescribed fire on approximately 169,440 acres of Mexican spotted owl recovery habitat including:
  - Approximately 25,450 acres of mechanical thinning and prescribed fire in Mexican spotted owl replacement nest/roost recovery habitat
  - Approximately 2,830 acres of prescribed fire only in Mexican spotted owl replacement nest/roost recovery habitat
  - Approximately 133,630 acres of mechanical thinning and prescribed fire in Mexican spotted owl Foraging /Non-breeding recovery habitat
  - Approximately 7,540 acres of prescribed fire only in Mexican spotted owl Foraging /Non-breeding recovery habitat
- Conduct facilitative operations in non-target cover types to support treatments in target cover types, including:

  - Approximately 121,470 acres of facilitative thinning and prescribed fire outside of protected activity centers
  - Approximately 3,070 acres of facilitative prescribed fire only outside of protected activity centers
  - Approximately 140 acres of facilitative thinning and prescribed fire in protected activity centers
  - Approximately 8,760 acres of facilitative prescribed fire only in protected activity centers
- Restore aspen on approximately 1,200 acres.
- Restore approximately 135,360 acres that have experienced severe disturbance, including about 130 acres in protected activity centers.
- Restore approximately 18,570 acres of savanna.
- Restore approximately 36,330 acres of grassland, including maintaining or restoring montane meadow connectivity in pronghorn corridors.
- Restore hydrologic function and vegetation on approximately 6,720 acres of meadows.
- Conduct wildland-urban interface and infrastructure protection treatments on approximately 62,690 acres of National Forest System lands within a ½ mile of non-National Forest System lands with structures and critical infrastructure (Figure 4).
- Construct or improve approximately 330 miles of temporary roads (new and/or occurring on existing unauthorized roads) to facilitate mechanical treatments; and decommission all temporary roads as restoration treatments are completed.
- Decommission up to 490 miles of existing system roads.
- Decommission up to 800 miles of unauthorized roads.
- Relocate and reconstruct existing open permanent roads adversely affecting water quality and natural resources, or of concern to human safety.[1]
- Restore approximately 184 springs.
- Restore function and habitat on up to 647 miles of streams, including stream reaches that have habitat for threatened, endangered, and sensitive aquatic species. Heavy mechanical stream restoration activities could be used on 402 miles of the 647 miles.
- Construct up to 200 miles of protective barriers around springs, aspen, native willows, and big-tooth maples, as needed for restoration.
- Restore approximately 14,570 acres of riparian areas for aquatic stream habitat.
- Authorize 12 in-woods processing sites.
- Authorize expansion of 11 existing rock pits by 30 percent on the Apache-Sitgreaves National Forests.

[1] Relocation and reconstruction would occur on an "as needed" basis applying the Aquatics and Watershed Condition-based Management approach in Appendix D of the FEIS.

Table 1. Estimated treatments by National Forest

Treatment Type	Proposed Activity	Apache-Sitgreaves[1]	Coconino[1]	Tonto[1]	Grand Total[1]
Mechanical Treatments	Stand improvement thinning	41,410 acres	29,340 acres	19,130 acres	89,880 acres
Mechanical Treatments	Uneven-aged thinning	133,680 acres	111,380 acres	111,070 acres	356,130 acres
Mechanical Treatments	Aspen restoration	800 acres	400 acres	0 acres	1,200 acres
Mechanical Treatments	Facilitative operations mechanical	58,510 acres	17,650 acres	45,450 acres	121,610 acres
Mechanical Treatments	Mexican spotted owl recovery - replacement nest/roost	6,320 acres	8,860 acres	7,840 acres	23,010 acres
Mechanical Treatments	Protected activity center - hand thin	1,190 acres	0 acres	0 acres	1,190 acres
Mechanical Treatments	Protected activity center - mechanical	3,950 acres	4,800 acres	2,240 acres	10,990 acres
Mechanical Treatments	Savanna	2,750 acres	15,820 acres	0 acres	18,570 acres
Mechanical Treatments	Severe disturbance area treatment	89,360 acres	6,290 acres	39,840 acres	135,490 acres
Mechanical Treatments	Wildland Urban Interface (WUI) & Infrastructure Protection	23,580 acres	14,990 acres	24,120 acres	62,690 acres
Mechanical Treatments	Grassland restoration[2,3] Mechanical subset	6,770 acres	29,520 acres	0 acres	36,290 acres
Mechanical Treatments	Riparian restoration[2,4] Mechanical subset	4,280 acres	2,300 acres	6,200 acres	12,790 acres
Mechanical Treatments	Wet meadow restoration[2,5] Mechanical subset	3,880 acres	2,520 acres	10 acres	6,410 acres
Mechanical Treatments	**Total mechanical treatment acres**	**373,840 acres**	**243,700 acres**	**255,880 acres**	**873,420 acres**
Prescribed Fire Treatments	Prescribed fire along with mechanical treatment	373,840 acres	243,700 acres	255,880 acres	873,420 acres
Prescribed Fire Treatments	Prescribed fire only	65,480 acres	23,790 acres	28,370 acres	117,640 acres
Prescribed Fire Treatments	**Total prescribed fire treatment acres**	**439,320 acres**	**267,490 acres**	**284,260 acres**	**991,060 acres**
Various Comprehensive Restoration Treatments	Springs restored (number)	48	99	37	184
Various Comprehensive Restoration Treatments	Protective barriers around springs, aspen, native willows and bigtooth maples	As needed	As needed	As needed	200 miles
Various Comprehensive Restoration Treatments	General stream restoration (Heavy mechanical stream restoration subset)[6]	328 miles (229 miles)	268 miles (126 miles)	55 miles (27 miles)	647 miles (402 miles)

Treatment Type	Proposed Activity	Apache-Sitgreaves[1]	Coconino[1]	Tonto[1]	Grand Total[1]
Various Comprehensive Restoration Treatments	Existing road decommission	100 miles	100 miles	290 miles	490 miles
Various Comprehensive Restoration Treatments	Unauthorized route decommission	350 miles	220 miles	230 miles	800 miles
Various Comprehensive Restoration Treatments	Temporary road construction and decommission	As needed	As needed	As needed	330 miles
Various Comprehensive Restoration Treatments	Road relocation and reconstruction	As needed	As needed	As needed	As needed
Construction and Utilization	In-woods processing and storage sites	No processing sites identified	6 new sites	6 new sites	12 new sites
Expansion	Rock Pits	30% expansion of 11 existing rock pits	No expansion identified	No expansion identified	30% expansion of 11 existing rock pits

[1] Acre displayed are rounded to the nearest 10 acres and represent the most accurate available estimates based on existing data.
[2] Overlap exists between the riparian, grassland, and wet meadow restoration categories (approximately 3,120 acres). Includes mechanical and prescribed fire and prescribed fire-only treatments.
[3] Total grassland restoration using either mechanical and/or prescribed fire treatments is approximately 36,330 acres.
[4] Total wet meadow restoration using either mechanical and/or prescribed fire treatments is approximately 6,720 acres.
[5] Total riparian restoration using either mechanical and/or prescribed fire treatments is approximately 14,570 acres.
[6] Overlap exists where streams form the boundary between the Apache-Sitgreaves and Coconino National Forests.

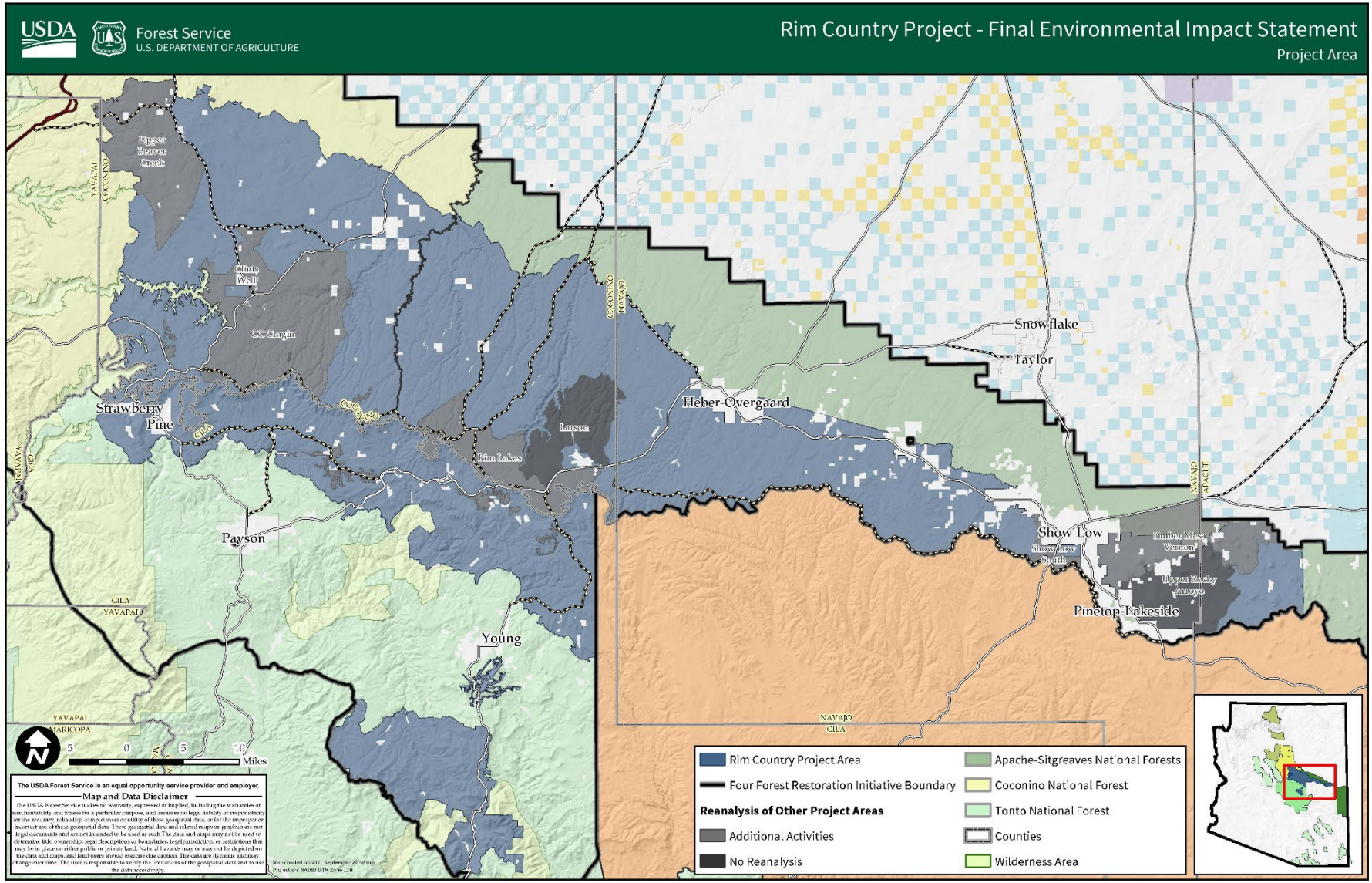

Figure 2. Rim Country Project Area

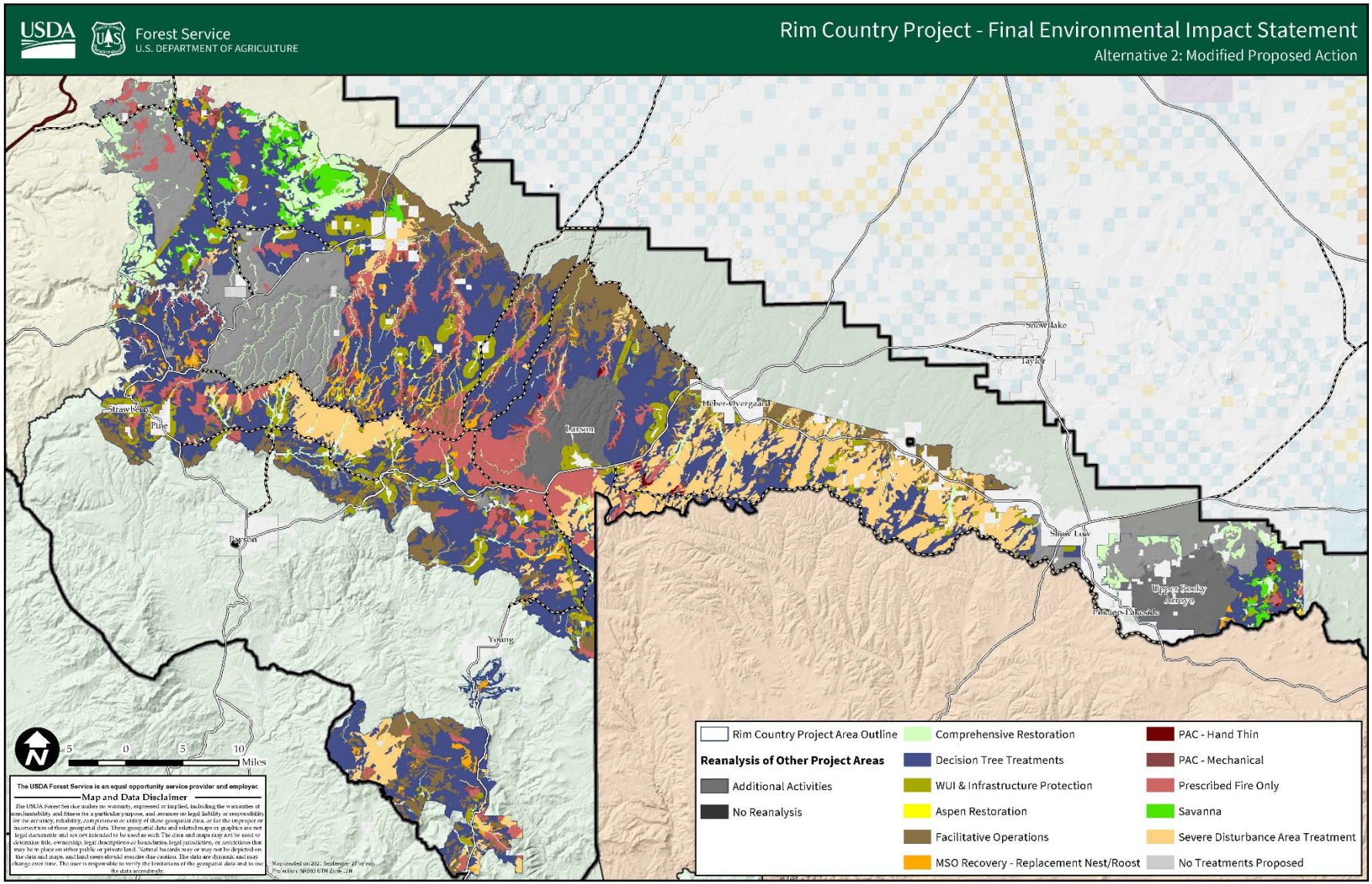

Figure 3. Alternative 2 – Modified Proposed Action (Selected Alternative) Treatments

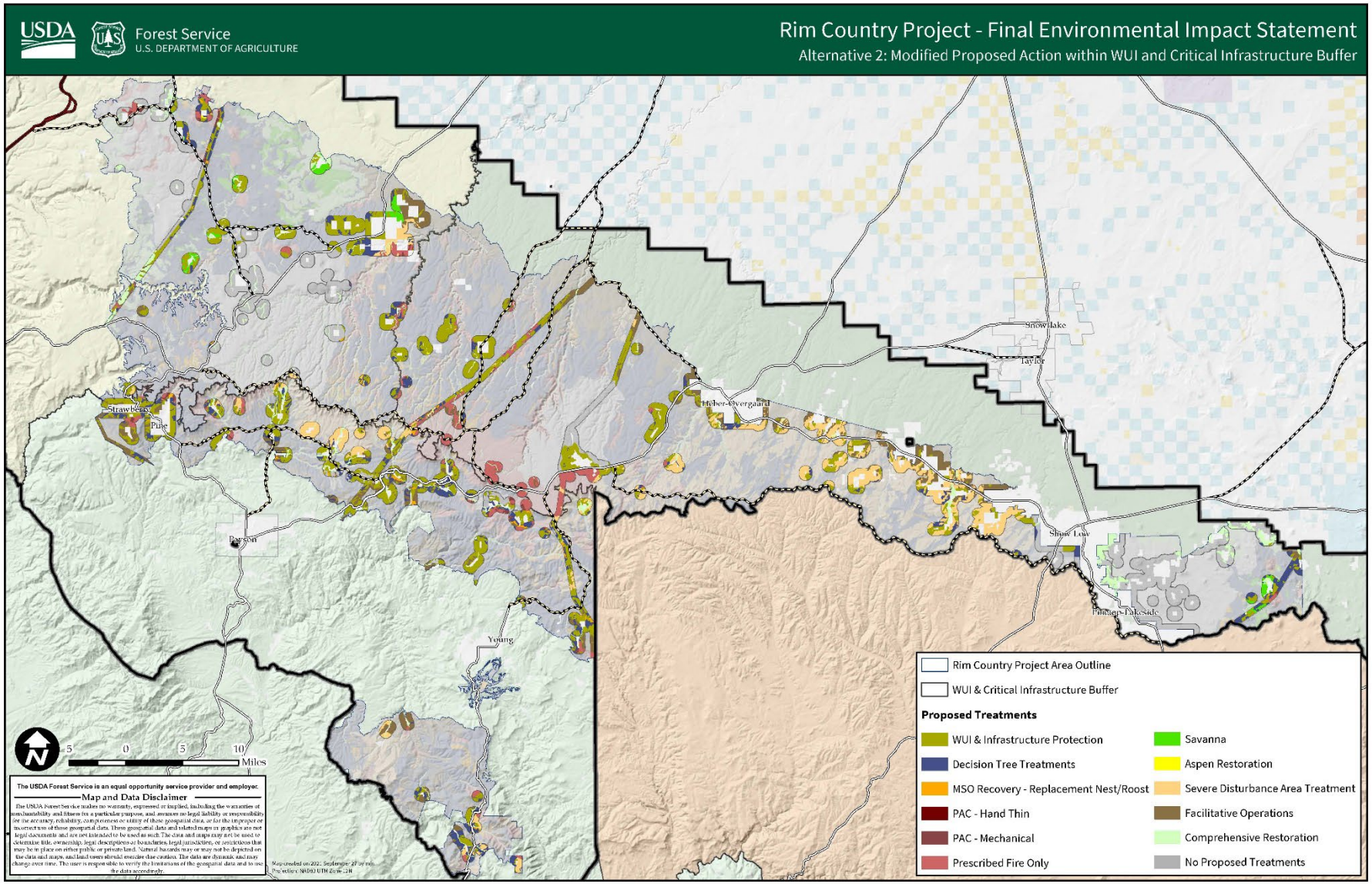

Figure 4. Alternative 2- Modified Proposed Action (Selected Alternative) Treatments within Wildland Urban Interface and Critical Infrastructure buffer of a half-mile.

Condition-based Management

Condition-based management is included in our selected alternative and will be used for mechanical treatments, prescribed fire, aquatics, and watershed restoration activities. A decision tree for the mechanical treatments will be applied based on vegetation or stand conditions to determine the appropriate mechanical and/or fire treatments to prescribe. For aquatic and watershed restoration activities, a different decision matrix for implementation and prioritization will be applied. The condition-based management decision tree and matrix are included in the Implementation Plan (Appendix D of the FEIS).

Condition-based management does not assign specific treatments to specific acres, but rather assigns treatments to a set of stand-level conditions that occur in the project area. Once these conditions are identified by an interdisciplinary team, the implementation plan will be applied to identify the appropriate treatment. Condition-based management applies adaptive management considerations and lessons learned from past related projects.

The condition-based management approach for vegetation-focused restoration treatments allows predetermined treatments to be aligned, before implementation, with current conditions on the ground. A combination of selection criteria and vegetation conditions are used to determine habitat and forest cover filters and modifiers, as well as the appropriate treatments for each. Using existing stand data, these conditions and criteria will be quantified to estimate the acreages of specific treatments. Site-specific field reviews will be conducted before implementation to verify that ground conditions match those predicted. If they do not, we expect the same selection criteria to be applied again based on the actual ground conditions to be sure that the right treatment occurs on the right acres.

The condition-based management approach for aquatic and watershed restoration enables managers and partners to find the best solutions for site-specific problems using a suite of tools available for designing restoration projects. Aquatic and watershed restoration treatments will be reviewed and evaluated by an aquatic restoration review team. Treatments will be assessed through a decision matrix to identify the need for restoration treatments, identify potential restoration options and constraints, and prioritize projects for implementation.

To ensure that the two condition-based management approaches are integrated, if an aquatic management zone is identified within or near a potential upland restoration treatment unit, riparian and aquatic values will be assessed and opportunities for upland and aquatic integration will be discussed.

Project Specific Land Management Plan Amendment

This decision approves a project-specific amendment, with three exceptions, to the 1985 Tonto National Forest Land Management Plan. The project-specific amendment applies only to National Forest System lands on the Tonto National Forest (Figure 1) within the Rim Country Project Area and will not apply to any other projects on the Tonto National Forest. The date the final Record of Decision for the Rim Country Project is signed marks the date when the amendment will be effective. A detailed description of the standards and guidelines that are amended is presented in Appendix B of the FEIS.

The amendment will not be needed if the record of decision for the Revised Tonto National Forest Land Management Plan is signed before this decision is signed. The alternatives analyzed within the FEIS for the Rim Country Project were reviewed for consistency with the draft Revised Tonto National Forest Land Management Plan and found to be in conformance, therefore, issuance of the Land Management Plan before this decision is signed will not change the analysis, proposal, or implementation of the Rim Country Project; it will only eliminate the need for the project-specific amendment.

The deciding official for the Tonto National Forest is Forest Supervisor, Neil Bosworth. His signature will approve the project-specific amendment of the 1985 Tonto National Forest Land Management Plan. A land management plan amendment is not needed for the 2015 Apache-Sitgreaves and the 2018 Coconino National Forest Land Management Plans because the activities included in our decision are consistent with the land management plans' objectives, desired conditions, standards, and guidelines.

Decision Rationale

We believe the selected alternative best meets the purpose and need of the Rim Country Project by identifying a combination of restoration treatments that will put almost 991,060 acres on a trajectory toward increased resiliency and sustainability.

Responsiveness of Alternative 2 to the Purpose and Need, Issues, and Public Input

Our decision to select alternative 2 (selected alternative) is based on how well the alternative responded to the purpose and need and public comments received during the public involvement process. Our decision facilitates a change in the current trajectory of the forests in the planning area from their current unhealthy path to one that moves them toward healthy and resilient forests while also providing a sustainable supply of wood fiber. Our decision also best meets the purpose and need to protect the Rim Country project area from uncharacteristic wildfire, while complying with applicable laws and regulations and addressing the public's concerns. In making this decision, we thoroughly considered issues identified during scoping and comments received from the public during the 90-day DEIS comment period. Our decision balances public concerns and the need to restore and promote a resilient landscape.

Furthermore, the selected alternative provides practicable environmental safeguards, including design features to avoid or reduce environmental impacts, as well as monitoring to ensure resulting impacts comply with applicable laws and regulations and are as predicted in chapter 3 of the FEIS.

Responsiveness to the Purpose and Need

The following outlines the project's responsiveness to the purpose and need as outlined in the purpose and need section above.

Increase Forest and Grassland Resilience and Sustainability: We believe the selected alternative best meets the purpose and need of the project by identifying a combination of restoration treatments that will put approximately 991,060 acres on a trajectory toward increased resiliency and sustainability. On a landscape scale, forest composition, structure, and pattern will all be improved to the greatest extent under the selected alternative. Composition will be improved by increasing understory diversity and returning species composition to within the natural range of variation. Structure will be improved by moving stands towards more uneven-aged conditions and reducing basal area and trees per acres to the desired condition. The percentage of acreage in the project area within the desired condition for basal area increases from 25 percent in the existing condition to 66 percent after 20 years of treatments. The percentage of acreage in the project area within the desired condition for trees per acres increases from 17 percent in the existing condition to 93 percent after 20 years of treatments. Pattern will be improved in the project area by creating a more natural spatial distribution of vegetation on the landscape. The distribution of trees across size classes in the project area will be more representative of a historic size class distribution as many trees in the smaller size classes will be removed or burned. Restoration treatments will also move the project area toward the desired conditions identified in the land management plans and initiate the re-establishment of fire-adapted, resilient, diverse, and sustainable forested ecosystems.

Reduce Hazards Associated with Undesirable Fire Effects: The selected alternative provides the project area with the greatest protection from the undesirable effects of fire by treating the greatest extent

of the project area with a combination of mechanical and prescribed fire treatments. Through implementation, the selected alternative will attain and maintain desired conditions, ensuring forest stands are less susceptible to uncharacteristic wildfire.

The selected alternative best meets the purpose and need by moving the project area towards the desired condition by 1) reducing the potential for active crown fire under extreme conditions from 30 percent to less than 10 percent, 2) decreasing the fire hazard index from 36 percent to 21 percent within the moderate to extreme fire hazard index and increasing the area rated as very low-low fire hazard index, and 3) reducing surface fuel loading after prescribed burns are implemented in areas that exceed recommended fuel loadings, from 60,023 acres to 23,984 acres of ponderosa pine and 12,262 acres to 8,763 acres of mixed conifer frequent fire vegetation types. The reductions in the potential for active crown fire, fire hazard index, and surface fuel loading are the greatest under the selected alternative and will lessen post-fire detrimental effects, create a safer and more effective firefighting environment in the project area, and reduce the potential for home and asset loss from crown fires, high-intensity surface fires, and ember lofting from fires on National Forest System lands. Our selected alternative will also help protect the wildland-urban interface (Figure 4) areas on National Forest System lands across the treatment area as they will become more fire-adapted.

We also recognize there will be an increase in smoke from prescribed fires to communities. Although smoke emissions will occur as a result of this decision, the degree (intensity and duration) of emissions will be variable. During implementation, we will work with ADEQ to ensure that smoke impacts on human health are avoided or minimized to the degree possible. Although the selected alternative will not reduce prescribed fire emissions to the greatest extent, this is an acceptable tradeoff for reducing the potential for uncharacteristic wildfire in the project area that would have detrimental effects on resources and the nearby communities.

Improve Aquatic and Terrestrial Species Habitat

Aquatic Habitat: The selected alternative will improve overall watershed condition as well as riparian condition by moving forests towards desired conditions and the natural range of variation. The selected alternative will also reduce the risk to aquatic habitat quality, quantity, and populations from uncharacteristic wildfire by conducting mechanical and prescribed fire treatments on the greatest extent of the landscape. The selected alternative will also improve stream habitat and stream function through comprehensive restoration activities. Comprehensive restoration activities will limit the loss or decline of wetland, riparian, or aquatic plant species and restore native and/or rare wetland, riparian, and aquatic plant species. Projects will be designed to protect or restore existing native biodiversity, aid in erosion control and restore soil function, or create wildlife forage and habitat. Overall, restoration activities will provide for long-term habitat, population viability, and species recovery.

Activities will follow the Aquatics and Watershed Restoration Condition-based Management approach and the Integration of Aquatic and Upland Management Activities section of the implementation plan outlined in Appendix D of the FEIS. In the short-term, negative effects such as increased sedimentation and direct disturbance to occupied habitat may result in displacement of individuals, and a temporary reduction of riparian vegetation cover and change in channel structure. Our decision to select alternative 2 includes the design features in Appendix C which will be especially important to mitigate effects to aquatic species habitat during the successful implementation of the project.

The selected alternative addresses the high road density in the project area which is a major factor in the current condition of aquatic species habitat. The relocation and decommissioning of these existing roads will improve stream function and morphology. The long-term benefits of reduced road density will include many beneficial effects such as improved riparian condition from a reduction in runoff and sedimentation, fewer road crossings, and restored riparian vegetation.

Terrestrial Habitat: The selected alternative best meets the purpose and need by reducing the risk of uncharacteristic wildfire and potential for large-scale disturbances that can result in the loss of terrestrial species habitat to the greatest extent of the landscape. Mechanical thinning, prescribed fire, and comprehensive restoration activities will move the project area toward re-establishment of a fire-dependent, resilient, diverse, and sustainable forest ecosystem and overall, maintain or improve desired conditions. This alternative will benefit terrestrial wildlife the most because it lowers the risk of high severity wildfire to the greatest extent and restores the most habitat through silvicultural prescriptions and comprehensive restoration. Short-term effects include but are not limited to noise disturbance, alteration of understory and habitat that cause displacement, and effects on water quality. Design features are expected to minimize these short-term impacts.

Habitat for terrestrial species will benefit from improved individual tree growth rates, retention and recruitment of old and large trees, and improved forest structure. The selected alternative improves this habitat the most while also reducing the risk of high severity wildfire across the landscape. Improving resilient late-successional forests will increase habitat diversity and improve nesting habitat for species such as Mexican spotted owls and northern goshawks, among others. Moving towards a forest structure with all age and size classes represented and retaining large snags will improve Mexican spotted owl recovery habitat and overall habitat for northern goshawks. Retaining large trees in accordance with the Large Tree Implementation Plan (Appendix D of the FEIS) and targeting young to mid-aged trees for removal will improve the health, vigor, and longevity of large trees as the selected alternative is implemented.

Our selected alternative will improve forest structure for Mexican spotted owls as defined in the 2012 Mexican spotted owl Recovery Plan per the condition-based management approach for mechanical treatments included in the Implementation Plan (Appendix D of the FEIS). Treatments will also reduce the overall wildfire threat to Mexican spotted owl habitat and reduce the threat of high-severity fire starting within the project area and potentially burning Mexican spotted owl habitat outside the project area.

Improve the Condition and Function of Streams and Springs: The restoration of approximately 184 springs that are in declining or degraded condition is authorized using the Aquatic and Watershed Condition-based Management approach outlined in Appendix D of the FEIS. Treatments will include reducing tree encroachment, returning fire to the system (through prescribed fire), placing protective barriers, restoring flow to historic areas of influence, restoring or repairing damaged infrastructure, and removing dilapidated or non-functioning infrastructure where appropriate. Approximately 647 miles of streams will be restored to improve stream and spring function and threatened endangered, and sensitive species habitat. Specific treatments will be identified before mechanical thinning and prescribed fire treatments to ensure riparian and aquatic values are integrated into the overall timber and fuels restoration designs.

We included stream and spring restoration activities in our decision to reestablish hydrological processes such as increasing subsurface storage and groundwater levels as well as increasing frequency and duration of floodplain inundation Hammersmark et al. (2008). A more stable hydrologic regime will move streams and springs in the project area towards desired conditions under our selected alternative.

Restore Woody Riparian Vegetation: The selected alternative best meets the purpose and need because it will improve riparian, stream channel, wetland, and spring conditions and functionality through the use of a suite of tools such as mechanical thinning, prescribed burning, and comprehensive restoration activities including spring and stream restoration, relocating existing roads, and construction of protective barriers. The project design features will limit the extent and degree of effects from mechanical thinning, prescribed burning, and comprehensive restoration activities. Specifically, treatments under the selected

alternative will reduce high fuel loads on the landscape to the greatest extent, therefore reducing the potential for high severity fires that can reduce riparian vegetation abundance and diversity.

Our selected alternative will improve riparian vegetation and increase ecosystem resilience by making riparian areas less susceptible to invasion by noxious and invasive weeds, reducing the potential for high severity effects to riparian vegetation from uncharacteristic wildfires, and mitigating the effects from a changing climate. Healthy riparian areas provide habitat for a diverse community of plant and wildlife species including cover, forage, available water, microclimate, and nesting/breeding/transport habitat. The selected alternative will restore the riparian functioning condition throughout the watershed meeting desired conditions by providing the quantity and quality of riparian habitat within the natural range of variation.

Preserve Cultural Resources: Uncharacteristic fire behavior poses a high risk to cultural resources by increasing soil erosion, physically damaging artifacts, and indirectly, fire suppression actions can damage or destroy sites. Mechanical thinning and/or prescribed fire on up to 991,060 acres will result in improved protection to cultural resources because the potential for high severity fires will be lessened to the greatest extent. By reducing the unnatural fuel loading in and around archaeological sites, site and artifact damage will be reduced in our selected alternative. The likelihood of erosion on cultural resources will be minimal as reduced fuel loads and low to moderate-severity prescribed fires do not cause soil sterilization or hydrophobic soils like high-severity wildfires.

Ground disturbing treatments have the potential to adversely affect cultural resources and traditional uses of areas or resources by Native American tribes. These concerns will be addressed through ongoing consultation and the design features identified in appendix C of the FEIS. The design features will minimize effects on cultural resources through avoidance or prescription modification. The physical removal of encroaching trees and other fuels will have the added benefit of protecting sites from the effects of wildfire. Road closures included in the decision will also reduce unauthorized access to some of these areas.

Support Sustainable Forest Products Industries: Our selected alternative increases forest product supplies to the greatest extent, which will contribute to the development of the local forest products industry in northern Arizona. Increasing wood volume will increase the amount of economic contributions that stay in the region as the activity boosts the infrastructure and capacity to process the harvested wood.

The selected alternative will also improve the financial viability of locating forest product industries, including logging firms, sawmills, and biomass facilities, in northern Arizona. This will lower the costs of transporting wood products for secondary processing thereby increasing the financial viability of treatments. The local forest products industries will increase local employment and labor income from restoration activities and will also contribute to the growth of supporting industries. The treatments included in the decision are also estimated to reduce wildfire suppression costs in the project area by reducing the risk and hazard of uncharacteristic wildfire.

Improved Motorized Transportation System and Provide for a More Sustainable Road System Where Poorly Located Roads are Relocated or Decommissioned: Our selected alternative will provide an improved and more sustainable motorized transportation system in the project area by performing road maintenance, reconstruction, decommission, relocation, and temporary road construction to support forest thinning and other restoration activities.

System road maintenance and/or construction will occur on up to 79 percent, 86 percent, and 94 percent of the roads in the project area on the Apache-Sitgreaves, Coconino, and Tonto National Forests respectively. In total, up to 5,127 miles of current, permanent roads used for hauling of forest products will be maintained or reconstructed to meet road management standards under National Best Management

Practices for Water Quality Management (USDA FS 2012) on National Forest System lands. Up to 800 miles of unauthorized roads currently causing resource damage within the project area will be decommissioned under our decision. National Forest Systems roads that are not open to the public and/or no longer needed for administrative and/or permittee use and unauthorized roads, all of which are not open for public use, could be decommissioned. Any unauthorized roads within the project area on all forests could be decommissioned. Approximately 490 miles of existing roads that are not open for public use on all three forests will be decommissioned under the selected alternative. Transportation Analysis Process reports and Travel Management decisions for the Apache-Sitgreaves, Coconino, and Tonto National Forests and site-specific on-the-ground evaluations would be adhered to in selecting roads for decommissioning. Roads currently designated as open on a forest's Motor Vehicle Use Map would not be decommissioned or closed under the action alternatives. Roads not identified for decommissioning in the Transportation Analysis Process or Travel Management decisions for the forests would require an additional NEPA analysis for decommissioning. Roads may be relocated as needed under the selected alternative to reduce adverse resource effects, facilitate use for restoration activities, and improve public safety. Overall, road decommissioning will aid in improving watershed conditions.

Our decision includes maintenance and reconstruction of roads that will protect or improve soil and water quality and improve access for timber harvest, recreation, administration, and other uses. Following implementation, the combination of road maintenance and reconstruction will provide long-term public and administrative access within the project area. As part of our decision, these improvements will leave the road system in a more stable and functional condition, minimizing adverse resource impacts. Road decommissioning will also improve surface conditions, drainage feature functions, and provide long-term resource benefits to all resource areas. Road relocation will result in less resource damage by moving existing roads to a location that will require less maintenance. When roads are relocated, their former location will be decommissioned, and this will result in little, if any, net gain or loss in road mileage. The analysis did not identify specific road segments for relocation, rather it provided the basis to relocate roads and road segments at the time task orders or other activities are implemented.

Our decision also authorizes the construction or utilization of up to 330 miles of temporary road to facilitate mechanical treatments. Although the selected alternative represents the most miles of temporary road construction, all temporary roads will be decommissioned immediately following thinning and related restoration work, and required design features and best management practices will be followed for minimization of adverse effects. Temporary roads will also be placed in locations that minimize environmental effects to the greatest possible degree and constructed in the shortest distance possible.

Responsiveness to the Issues

The public comments received during the scoping period from June 27 to August 11, 2016, presented seven significant issues that are within the scope of the analysis, and relevant to the decision to be made. These significant issues and their accompanying statements were used to modify the proposed action and formulate a new action alternative. The selected alternative is responsive to the significant issues regarding; treatments in Mexican spotted owl protected activity centers and northern goshawk habitat, large tree retention, dwarf mistletoe mitigation, and economics. Alternative 3 responded to the other significant issues of smoke and air quality and roads.

Issue 1 Treatments in Mexican spotted owl Protected Activity Centers

> *The proposed action may have negative effects on Mexican spotted owls by cutting trees up to 18 inches in diameter in Mexican spotted owl protected activity centers. The Forest Service should act conservatively to protect Mexican spotted owl habitat and consider all cautions identified in the revised Recovery Plan for Mexican spotted owl (USDI Fish and Wildlife Service 2012). There was a concern about how Mexican spotted owls will respond to the removal of trees up to 18 inches in diameter, given a lack of monitoring data.*

The selected alternative will reduce encroached forest conditions while increasing the number of trees in the larger tree size classes. The current condition shows that trees in the intermediate size classes are highly departed from the natural range of variation and the selected alternative will restore the most acres of this habitat. In Mexican spotted owl protected activity centers, the stands will be thinned and/or burned to improve the structure, maintain and develop large trees, and reduce the risk of high-severity fire. The objective of Rim Country Project treatments in Mexican spotted owl protected activity centers is to reduce fire hazard while maintaining habitat for Mexican spotted owls as defined in the 2012 Mexican spotted owl Recovery Plan and condition-based management approach for mechanical treatments (Appendix D of the FEIS). The selected alternative Forest Vegetation Simulator modeling shows that all tree classes are represented and that the number of trees in each size class will more closely resemble desired conditions after implementation.

Treatment in protected activity centers will be consistent with the land management plans and the 2012 Mexican spotted owl Recovery Plan management recommendations and desired conditions which include a diversity of trees with the goal of trees greater than 16 inches diameter at breast height contributing greater than 50 percent of the stand basal area (Table C.2 from the Revised Mexican spotted owl Recovery Plan, 2012). Forest Vegetation Simulator modeling for the selected alternative demonstrated average basal area is reduced for both mixed conifer and ponderosa pine-oak cover types. Estimates of canopy cover indicate treatments will align with the 2012 Mexican spotted owl Recovery Plan recommendations with post-treatment canopy cover at 58 percent in ponderosa pine-oak and 61 percent in mixed conifer. Design features in appendix C of the FEIS will mitigate disturbance to the Mexican spotted owl, including maintaining trees 18 inches DBH and larger, timing restrictions for completing activities, prohibiting temporary roads in protected activity centers, completing surveys before implementation, protection of nest trees, and coordination with the United States Fish and Wildlife Service (USFWS) before prescriptions and marking. Old and large trees will be managed per the Old and Large Tree Implementation Plans (Appendix D of the FEIS) and condition-based management will follow special management considerations to ensure treatments achieve management objectives.

In protected activity centers, the fire hazard index under the selected alternative will decrease the moderate, high, and extreme fire hazard index treatment categories to 49 percent from the existing condition of 62 percent. The high and extreme need for treatment categories are reduced from 45 percent of all protected activity centers modeled in the existing condition to 27 percent. The selected alternative will reduce the fire hazard index to the greatest extent, therefore, benefiting Mexican spotted owl protected activity centers by reducing the potential for high severity fire that could result in a loss of occupied habitat for Mexican spotted owls. The potential for active and conditional crown fire in protected activity centers is decreased in the selected alternative compared to the existing condition from 51 percent to 34 percent. Reducing active and conditional crown fires by this magnitude is a benefit to the Mexican spotted owl that will conserve foraging and non-breeding recovery habitat over time.

Short-term disturbance to Mexican spotted owls is expected, however, overall, the effects of treatments will benefit the Mexican spotted owl and its habitat. The selected alternative treatments will put forested stands on a trajectory toward desired conditions, making them more diverse and resilient to disturbances such as fire, disease, insects, and climate change. These treatments will promote irregular tree spacing to create canopy gaps more conducive to treatment with prescribed fire, retain old-growth attributes, protect large oaks, and ensure snags and coarse woody debris post-treatment. Improved forest structure, composition, pattern, and process will improve resiliency thereby benefiting Mexican spotted owl habitat.

Issue 2 Treatments in Northern Goshawk Habitat

> *The proposed action may have negative effects on northern goshawk and canopy-dependent prey species by reducing late seral, dense understory, and old-growth habitat. Specifically, there was a concern that treatments will reduce the mix of densities and cover types, including later seral stages.*

The selected alternative will reduce encroached forest conditions while increasing the number of trees in the larger tree size classes. The current condition shows that trees in the intermediate size classes are highly departed from the range of natural variation and the selected alternative will restore the most acres of this habitat. The habitat variables important to the northern goshawk will be retained or improved to the greatest extent with our selected alternative. The combination of thinning and prescribed burning will improve species richness in the herbaceous understory, increase plant abundance, improve fruit and seed production, sustain old forest structure over time, and move forest structure toward desired conditions. Treatments will also reduce the risk of crown fire in northern goshawk habitat and reduce fuel loads. Overall, restoration treatments will contribute toward improving forest health, vegetation diversity, and vegetation composition in northern goshawk habitat.

Design features in Appendix C[2] in the FEIS have been included to reduce effects on northern goshawks. Old and large trees will be managed per the Old and Large Tree Implementation Plans (Appendix D of the FEIS) and condition-based management will follow decision tree modifiers to ensure treatments achieve management objectives.

In northern goshawk post-fledging family areas, the Forest Vegetation Simulator modeling demonstrated the averages of all basal area and canopy cover will decrease from 134 square feet (existing) to 76 square feet, which will move toward desired conditions. Trees greater than 18 inches will increase from 27 percent of all trees in these age classes to 57 percent. Snags of all size classes important to prey species will also continue to increase. Coarse woody debris and downed logs important to prey species will increase over 20 years and the understory herbaceous and shrub layers will increase over time. Improvements in these variables are important because large trees are valuable for nesting opportunities and this alternative treats the most acres across the landscape.

The selected alternative reduces the potential for high or extreme severity fire in post-fledging family areas from 28 percent in the existing condition to 7 percent. The selected alternative reduces the risk of crown fire in post-fledging areas from 36 percent in the existing condition to 12 percent. Fuel loads in post-fledging family areas will decrease from 17 tons per acre (existing condition) to less than 10 tons per acre. The fire hazard index and risk of crown fire will decrease by 36 percent in post-fledging family areas. The selected alternative reduces these variables to the greatest extent and moves the largest extent of the landscape toward desired conditions, thereby providing the greatest benefit to northern goshawk habitat.

Issue 3 Large Tree Retention

> *The proposed action may cause the loss of large trees which may significantly affect old-growth recruitment. Proposed management actions in old-growth, future old trees (large young trees), and high-canopy patches should be very explicit, and no old trees should be cut.*

The issue of conserving large trees has been recognized in our decision. A Large and Old Tree Implementation Plan (see Appendix D of the FEIS) is incorporated into our decision that will conserve these features on the landscape. Under our selected alternative, old and large trees will only be cut under certain conditions, as specified in the large and old tree implementation plans (see Appendix D of the FEIS). Removal of old trees will be rare, regardless of diameter. However, rare exceptions will be made for threats to human health and safety and where necessary to prevent habitat degradation caused by operations associated with thinning and burning operations (i.e. cutting an old tree instead of rerouting a road and causing increased habitat degradation). Old trees will not be cut for forest health reasons or to

[2] Unless subsequent finalized revised Land Management Plan Species of Conservation Concern determinations do not include northern goshawk, design features pertaining to northern goshawks will apply.

balance age or size class distributions. Large diameter, post-settlement trees will be managed following the guidelines in the Large Tree Implementation Plan (Appendix D of the FEIS).

Under the selected alternative, forest structure and tree arrangement will be improved through the creation of openings, interspaces, and tree groups and clumps to the greatest extent. This improved structure will result in reduced fire severity and facilitate the reintroduction of low to moderate severity fire, which is necessary for the maintenance of openings and interspaces. Under our selected alternative, the acreage of stands with an abundance of large trees will increase from 44,742 acres to 77,397 acres in the next 20 years. Trees meeting the large and old tree implementation plan criteria will be retained, resulting in more old and large trees being left. In comparison to alternatives 1 and 3, the selected alternative will decrease the susceptibility of old and large diameter trees mortality due to drought, insects, disease, and wildfire to the greatest extent.

Issue 4 Dwarf Mistletoe Mitigation

> *Commenters were concerned that the treatments presented for scoping and the DEIS comment period may remove the largest trees in some stands and that the scale and intensity of mistletoe mitigation should be more clearly defined as far as scale, that where it occurs at natural levels it be allowed to remain to provide essential food and occupancy needs to wildlife, and that the mitigation treatments not focus on removing the largest trees.*

After a review of comments on the DEIS and subsequent collaboration, dwarf mistletoe treatments were removed from the Rim Country Project. Dwarf mistletoe will instead be managed through individual tree removal to increase the resilience and sustainability of ponderosa pine ecosystems in the selected alternative. The management of dwarf mistletoe through individual tree removal will focus on southwestern dwarf mistletoe, and its most common host, ponderosa pine.

Issue 5 Economics

> *The proposed action does not include measures to make it economically viable. A wide range of options should be considered in the action alternatives that will allow for biomass removal where economically feasible but will also allow other options to dispose of uneconomically feasible biomass.*

One objective for 4FRI is to create, support, and sustain a wood products industry. Our selected alternative will provide a stable supply of forest products to encourage private sector engagement in forest restoration activities, which will in turn reduce the cost to taxpayers. A stable and increased supply of forest products could improve the financial viability of locating forest product industries including logging firms, sawmills, and biomass facilities in northern Arizona. The selected alternative will produce approximately 5.4 million cubic feet of forest products over the life of the project with approximately 269,280 hundred cubic feet harvested annually. As a result, 2,040 jobs and $86 million dollars in labor income, or approximately $43,000 per job, on an average annual basis over the life of the Rim Country Project are possible.

The treatments included are most likely to reduce wildfire suppression costs in the project area. The costs of a single large wildfire routinely amount to millions of dollars in direct suppression expenditures alone and the selected alternative costs for restoration will result in reduced risk of high severity wildfire.

The increase in jobs and labor income during the implementation of our selected alternative will add to job contributions from other current and foreseeable projects in the area adding to positive economic impacts overall. The increased forest product supply from implementing the selected alternative will contribute to the development of a local forest products industry and local economic benefits. These benefits include lower costs of transporting wood products for secondary processing thereby increasing

the financial viability of treatments, increasing the probability that employment and labor income associated with forest restoration activities will occur in the local area, and contribution to the growth of supporting industries.

While the area of northern Arizona where the Rim Country Project is located has seen limited growth of jobs and income from 4FRI phase one implementation activities, with the implementation of our selected alternative there will be an increase of wood volume available to the market, thus increasing wood utilization employment opportunities, and increasing the number of economic contributions that stay in this region as the activity boosts the infrastructure and capacity to process the harvested wood in the region.

Issue 6 Smoke/Air Quality

> *The proposed prescribed burning may have negative effects on air quality and human health. Some commenters are concerned that the smoke from prescribed burns will degrade the air quality and the health of northern Arizona residents.*

All prescribed fire included in our selected alternative will comply with National Ambient Air Quality Standards. Smoke and associated impacts on air quality will primarily result from prescribed fire, and smoke from wildfires will continue to occur, but per acre emissions for wildfires occurring post-treatment will be reduced as a result of the implementation of our selected alternative. Variability from year to year in total smoke-related emissions will be high, but overall, smoke effects will be more predictable and less concentrated. The selected alternative will result in the greatest reduction of risk of high severity wildfire, which is most likely to result in high impact events to smoke-sensitive individuals in nearby communities.

Issue 7 Roads

> *The miles of temporary roads in the proposed action may negatively affect watershed and stream conditions, and wildlife habitat and connectivity. Commenters asked that the Forest Service limit road networks to those roads needed for access and management. Commenters requested an alternative that dramatically reduces temporary road mileage.*

Our selected alternative does include construction of up to 330 miles of temporary roads and while the selected alternative does not reduce temporary road mileage as compared to alternative 3, the advantage of implementing the selected alternative is that it will result in the greatest extent of forest mechanical restoration treatments, and result in a higher proportion of resilient acres that are fire-adapted. The greater number of acres treated mechanically under our selected alternative will result in a corresponding increase in short-term adverse effects to soils, water quality, and watershed condition for 3 to 5 years. However, these treatments will also result in long-term benefits by reducing the risk of high-severity fire and increasing understory vegetation and ground cover, which will support watershed function and wildlife habitat.

The selected alternative includes design features to mitigate the short-term and long-term effects of implementation. With the implementation of design features, no long-term effect on water quality and quantity will occur concerning the road activities. In the short-term, sediment inputs to area watercourses will increase slightly from re-opened roads, constructed temporary roads, or improved roads. However, all re-opened roads and temporary roads will be closed and decommissioned, respectively, immediately after restoration treatments are completed. Short-term effects on water quality will be minimized by employing the design features including best management practices from Appendix C in the FEIS which are effective in preventing sediment from reaching streams when followed.

Project Specific Land Management Plan Amendment Rationale

Exception 1: This exception will align the 1985 Tonto National Forest Land Management Plan standards and guidelines for ponderosa pine/bunchgrass, ponderosa pine/Gambel oak, ponderosa pine/evergreen oak, dry mixed conifer, and old-growth with the best available science (e.g., Reynolds et al. 2013) and with the Apache-Sitgreaves and Coconino National Forests Land Management Plans and Tonto National Forest's proposed revised Land Management Plan. The 2015 Apache-Sitgreaves and the 2018 Coconino National Forests revised land management plans currently reflect the change in conditions and ecological understanding that have occurred since the 1980s that acknowledge vegetation conditions (structure, composition, and function) are divergent from reference conditions and the natural fire regime. The Tonto National Forest's proposed revised plan provides for old-growth through desired conditions and objectives for restoring fire-adapted ponderosa pine in the Southwest. This exception also clarifies the current interpretation for meeting the canopy cover requirements in the land management plan (Reynolds, 2013).

Exception 2: This exception will align the 1985 Tonto National Forest Land Management Plan with the 2012 Mexican Spotted Owl Recovery Plan, First Revision and replace the direction, from the former (1995) recovery plan including the outdated and unaligned definitions and management direction, with current management direction and best available science. The exception updates definitions and management direction for protected activity centers, recovery habitat, and other forest and woodland types, updates language and management direction related to prescribed cutting and fire treatments in protected activity centers to be consistent with the current recovery plan, and updates survey information. and excepts the project from the land management plan requirements for population and habitat monitoring. The exception also excepts the Rim Country Project from the direction for treating habitat in incremental percentages. The exception will ensure the greatest protection for Mexican spotted owls to ensure continued occupancy, reproduction, and survival.

Exception 3: This exception will update the 1985 Tonto National Forest Land Management Plan to be consistent with advances in technology for operations on steep slopes. Since 1985, specialized equipment has been developed that can cut and remove trees and mechanically treat other vegetation on steep slopes without adverse effects to soil and water resources (Holzfeind et al 2020). The exception for treatment on steep slopes will ensure that implementation of the Rim Country Project will meet desired conditions on steeper slopes and allow for advances in technology into the future. The exception also allows for continuity of treatments throughout the Rim Country Project area because the Apache-Sitgreaves and Coconino National Forest Land Management Plans allow for treatments on steep slopes.

Other Alternatives Considered in Detail

In addition to the selected alternative, we considered two other alternatives, which are discussed below. A more detailed comparison of these alternatives can be found in chapter 2 of the FEIS.

Alternative 1 – No Action

Alternative 1 is the no action alternative as required and represents no changes to current management. The current land management plans would continue to be implemented. Ongoing vegetation treatments and fire management activities, as well as road maintenance, recreation, firewood gathering, authorized livestock grazing, and other activities already authorized in separate decisions, would continue. There would be no other restoration activities approved with the Rim Country Project. The no action alternative was the baseline for assessing the action alternatives.

Reasons for Not Selecting Alternative 1

Alternative 1 does not improve forest structure, and forests in the project area would continue to remain in a closed canopy condition, lacking groups, openings, and randomly spaced trees. Grasses, forbs, and shrubs would continue to be underrepresented, and forest structure would continue to be departed from historic conditions.

With no treatment, high severity fire effects would become more widespread, and extreme fire behavior would become more common. In recent years, fires in the general area have destroyed homes, property, and infrastructure, and produced high severity effects across large areas not adapted to high severity fire including the 2002 Rodeo/Chediski fire (469,000 acres), 2011 Wallow fire (538,000 acres), and 2012 Whitewater Baldy Complex fire (~297,000 acres). There is broad consensus that such fires will continue to burn in this area if no action is taken. Wildland urban interface areas across the project area would continue to be threatened by the increasing extent of high severity wildfires. Wildfires would produce the most emissions in the project area under this alternative. On a per-acre basis, potential smoke emissions would increase by 10 to 20 percent, due to the increase in surface fuel loadings, lingering smoke, stand densities, and fire behavior intensity.

Terrestrial species habitat would continue to be at high risk for severe effects from wildfire. Riparian and watershed condition would remain the same or degrade over time. The hazard of undesirable fire behavior and negative fire effects to aquatic resources would remain, and riparian condition and instream aquatic habitat would remain in the current state or degrade further over time. Employment and labor income in the project area would not be improved, and this alternative would not provide for a sustainable forest products industry. The motorized transportation system would not improve or provide for a more sustainable road system where poorly located roads are relocated or decommissioned. There would be no decrease in road density or improvement of riparian condition from decommissioning or relocating roads, and degrading contributors to water quality would continue to persist.

Alternative 3 – Focused Restoration

Alternative 3 was designed to focus restoration treatments in areas that are the most highly departed from the natural range of variation of ecological conditions, and/or that put communities at risk from undesirable fire behavior and effects. High-value assets near areas identified for treatment under alternative 3 would have been protected to a similar degree as compared with alternative 2. However, high-value assets that exist outside of those areas would not have been protected. Focusing on the higher priority ecological restoration would have resulted in fewer acres being treated.

Alternative 3 responded to the smoke/air quality, and roads issues. Restoration activities in alternative 3 include vegetation treatments (mechanical thinning and prescribed burning) and comprehensive restoration treatments such as grassland and meadows, springs, streams, riparian habitat restoration. Alternative 3 includes the same comprehensive restoration activities as the selected alternative. In areas already covered by National Environmental Policy Act (NEPA) decisions, comprehensive restoration activities such as spring and stream channel restoration and road decommissioning were proposed to complement the activities already analyzed in the project areas.

Reasons for Not Selecting Alternative 3

Alternative 3 was not selected because fewer acres would be treated at a landscape scale, therefore the purpose and need would be met to a lesser extent than the selected alternative. Forest composition, structure, pattern, and process would be improved to a lesser extent than our selected alternative. Stand and landscape resilience to disturbances such as multi-year drought, pests, and diseases such as bark beetle and mistletoe, and wildfire would increase (Abella, et al. 2007), although to a lesser extent than with the selected alternative. While short-term effects from disturbance would be reduced in Alternative 3

from fewer acres treated and less miles of temporary roads, the long-term effects and risk of habitat degradation from stand-altering wildfire or insect infestations would be greater than under our selected alternative.

After 20 years, Alternative 3, would 1) reduce the potential for active crown fire under extreme conditions from 30 percent to 18 percent, 2) decrease the fire hazard index from 36 percent to 26 percent within the moderate to extreme fire hazard index and increase the area rated as very low-low fire hazard index, and 3) reduce surface fuel loading after prescribed burns are implemented in areas that exceed recommended fuel loadings, from 60,023 acres to 46,894 acres of ponderosa pine and 12,262 acres to 9,846 acres of mixed conifer frequent fire vegetation types. Under alternative 3, wildland urban interface areas on Forest Service lands across the treatment area would be more fire-adapted because of the alternative's treatment focus, however, increasing smoke from prescribed fires would be present next to homes. The potential for home and asset loss from crown fires, high-intensity surface fires, and ember lofting from fires on Forest Service land would decrease.

Smoke and associated effects on air quality would come primarily from prescribed fire and be less than the selected alternative for Alternative 3. Smoke from untreated areas would be greater from wildfires than under the selected alternative.

Terrestrial species habitat would continue to be at high risk for severe effects from wildfire where treatments would not occur. Alternative 3 would treat fewer acres of Mexican spotted owl habitat as compared to the selected alternative with 24,045 fewer acres thinned and burned in protected activity centers. In Recovery Nest/Roost Habitat, 7,545 fewer acres would be treated in alternative 3 as compared to the selected alternative. Riparian and watershed condition would be improved over time, however to a lesser extent than the selected alternative, because portions of the project area would remain at risk of high severity wildfire, erosion, and sediment delivery from roads that are not decommissioned.

Alternative 3 would produce a somewhat lower wood product volume of approximately 3.6 million cubic feet of forest products over the life of the project than the selected alternative. Therefore, alternative 3 would support fewer jobs and less labor income than the selected alternative. Alternative 3 is estimated to support approximately 1,360 jobs and $58 million in labor income, approximately 33 percent less than the selected alternative. Alternative 3 could also increase the costs associated with high severity wildfire and post-fire effects such as flooding and sedimentation compared to the selected alternative.

Consideration of Unavoidable Adverse Effects

We considered the tradeoffs between short-term adverse effects (i.e., environmental harm) and long-term benefits when we made our decision and recognize there will be adverse effects from implementing the selected alternative. These will be limited in extent and duration because the activities are consistent with standards and guidelines from the land management plans. Project design features, found in Appendix C of the FEIS, along with mitigations and protocols in Appendix J of the Programmatic Agreement between the Southwestern Region of the Forest Service, the Arizona, New Mexico, Texas, and Oklahoma State Historic Preservation Offices, and the Advisory Council on Historic Preservation, and the Mexican Spotted Owl Conversation Recovery Framework in Appendix F of the FEIS, will apply to our selected alternative and will provide additional means and mitigations to avoid or minimize adverse effects while still meeting the purpose and need of the project.

Implementation of activities in our selected alternative could result in some of the following unavoidable, short-term, adverse effects: individuals of some threatened and endangered species, as well as some sensitive species, may be harmed; habitat for some threatened and endangered species, as well as some sensitive species, may be temporarily adversely affected; short-term disturbances to grasses, forbs, shrubs, and small trees may occur; air quality may temporarily decrease; erosion and soil compaction may

temporarily increase; water quality may be temporarily affected; cultural artifacts, features, and sites may be disturbed or damaged; tribal access to traditional cultural properties and forest products may be temporarily hindered during the implementation of treatments; temporary decreases in access to recreation opportunities and deviations from scenic integrity objectives may occur; forage availability may decrease temporarily; and noxious weed infestation may increase.

The selected alternative does not have any expected energy requirements or conservation potential (40 CFR 1502.16(e)). Nor will the selected alternative affect the design of the built environment. The effects of implementing the selected alternative on urban quality and historic and cultural resources (40 CFR 1502.16(g)) are displayed in chapter 3 of FEIS.

There could be short-term, temporary effects on land special uses and mineral projects as site-specific restoration activities were implemented. For example, access to sites may be temporarily restricted while thinning or burning is occurring. The duration of these effects will be only as long as the site-specific activities were occurring; for example, the amount of time that thinning was occurring in the vicinity of a particular permit area or mineral site. Before any site-specific implementation, the Forest Service will work with affected permit or claim holders to determine site-specific concerns, such as timing restoration activities to avoid periods of high use or access needed by the permit holders. Such mitigation will minimize potential adverse effects on these resources.

We considered all comments received during public meetings, field trips, and formal notice and comment periods when making our decision. Our selected alternative also considers the input received from stakeholders throughout the process. We recognize that there is a range of public opinion regarding the variety of treatments identified in the selected alternative, particularly the use of mechanical thinning and prescribed fire. However, we have concluded that our decision is an informed one that best meets the project's purpose and need, moves the project area toward desired conditions, and considers the environmental consequences (both positive and negative) of the restoration activities. Monitoring, evaluation, and the use of condition-based management and adaptive management during implementation will continue to inform us of the effects of this decision.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be undone, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time but are reversible, such as the long-term loss of canopy cover in forested areas that are kept clear for use as a power line right-of-way or road. See discussions of environmental consequences for individual resources in chapter 3 of the FEIS for more detail.

Our selected alternative includes mechanical thinning and prescribed burning on up to 991,060 acres. Potential cultural resource damage from thinning, prescribed burning, and related activities represent an irreversible commitment of these resources, however, design features and established mitigation measures and protocols will help avoid and minimize potential negative effects on cultural resources.

Our decision includes the construction of up to 330 miles of temporary roads. Decreases in soil and vegetation productivity, while these roads are used, will represent irretrievable commitments of resources however, all temporary roads will be decommissioned after restoration treatments are completed. Inadvertent damage to cultural resources from construction and use of temporary roads will be an irreversible commitment of these resources. Design features, along with established mitigation measures and protocols to protect cultural resources, will help avoid and minimize the potential negative effects of construction and the use of temporary roads.

The selected alternative includes the expansion of 11 existing rock pits to provide adequate sources of road surfacing material for project-related activities. The expansion of these pits will represent an

irretrievable commitment of resources due to the removal of developed soils needed for vegetative growth on approximately 29 acres. The differences in soil productivity within the pit and in the surrounding area will be distinct and unavoidable, though effects on other resources will be mitigated through design features. The loss of productive topsoil from rock pit expansion will be offset by decreases in soil erosion on and along roads from the proper maintenance of road surfaces to manage runoff. The effects on minerals will be permanent, as consumption of non-renewable mineral resources in our decision will remove the availability of these resources in the future.

The selected alternative includes the potential for the creation of up to 12 in-woods processing and storage sites to facilitate the use of forest resources, increase transportation efficiencies, and reduce implementation costs. The surface area for all 12 processing sites will be approximately 127 acres, with individual sites ranging in size from 4 to 21 acres. Sites were chosen to minimize potential effects on soils and water quality, and design features were developed to further mitigate potential effects on these and other resources. Nonetheless, the clearing and preparation for use of any of these sites will result in irretrievable commitments of vegetation and soil productivity resources, since vegetation will be cleared, and topsoil displaced and compacted if any of these sites are used.

Environmentally Preferable Alternative

Under the National Environmental Policy Act, the USDA Forest Service is required to identify the environmentally preferable alternative (40 CFR 1505.2(b)). This is interpreted to mean the alternative that would cause the least damage to the biological and physical components of the environment, and which bests protects, preserves, and enhances, historic, cultural, and natural resources (Council on Environmental Quality, Forty Most Asked Question Concerning CEQ's National Environmental Policy Act Regulations, 46 Federal Register 18026).

In the short term, it could be argued that alternative 1 would best meet the definition of "environmentally preferable" because it would not alter the existing biological and physical environment and, thus, would not result in any short-term impacts to vegetation, water, wildlife, or social values. In addition, it does not have any of the impacts associated with building temporary roads or of the increased traffic associated with treatments. However, in the long-term, alternative 1 does not address the pressing environmental issues identified in purpose and need. Further, taking no action would likely lead to undesirable and unintended consequences because the environmental conditions of the area would continue to trend away from the desired watershed, wildlife habitat, and fuel loading conditions.

When considering the long-term, alternative 2, is the environmentally preferred alternative because it balances the short-term impacts with the long-term benefits that will result from implementing the project and meets the purpose and need, and moves the landscape towards directed conditions as identified in the land management plans. The alternative will restore and maintain the structure, pattern, health, function, composition and diversity in vegetation cover types to conditions within the natural range of variation, thus moving the project area toward the desired conditions in the land management plans.

Alternatives Considered and Eliminated from Detailed Study

Federal agencies are required by the NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives not developed in detail (40 CFR 1502.14). The range of alternatives includes both those considered in detail and those eliminated from detailed study. Alternatives not considered in detail may include, but are not limited to, those that are

outside the scope of the project, fail to meet the purpose and need, are technologically infeasible or illegal, or would result in unreasonable environmental harm.

Under 40 CFR 1502.14, a Federal agency must analyze those alternatives necessary to permit a reasoned choice. CEQ regulations direct that an EIS "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives that were eliminated from detailed study, briefly discuss the reasons for their having been eliminated" (40 CFR 1502.14(a)). The range of alternatives discussed in environmental impact statements shall encompass those to be considered by the ultimate agency decision maker (40 CFR 1502.2(e)). Section 102(2)(C) provides only that an agency should prepare a detailed statement addressing, among other things, ''alternatives to the proposed action'' (42 U.S.C. 4332(2)(C)). Section 102(2)(E) requires that agencies ''study, develop, and describe appropriate alternatives to recommended courses of action'' (42 U.S.C. 4332(2)(E)). Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses. 40 CFR 1502.1 specifically directs agencies to consider reasonable alternatives to avoid or minimize adverse environmental impacts.

The FEIS documented four alternatives recommended in public comments that were considered and eliminated from detailed study, including alternatives that would: (1) eliminate the use of prescribed fire, (2) use the original Large Tree Retention Strategy, (3) return the forest to historic reference conditions, and (4) prioritize strategic treatments for fire use. Each alternative was evaluated to determine how well the proposal would have meet the purpose and need for the Rim Country Project.

Eliminate the Use of Prescribed Fire

Chapter 2 of the FEIS (pg. 64-66) contains additional details on the consideration of this alternative. Some public comments suggested eliminating all prescribed fire (broadcast burns, pile burns, jackpot burning) to reduce hazards from particulate matter and other substances released during burning, to protect the health of the public, to provide cleaner air, and to reduce carbon emissions. Recommendations for alternatives to prescribed fire include logging for fire breaks, chipping, thinning, and goat or cattle grazing. After an initial review, it was determined that it would not meet various elements of the purpose and need for the Rim Country Project or move toward the desired conditions in the Land Management Plans.

This alternative would respond to Issue 6—Smoke/Air Quality, and while it would have been possible to use mechanical treatments to move biomass offsite and reduce surface fuels that would have been burned and produced smoke, the costs to implement biomass removal could be significant. There would have also been a large increase in truck traffic that would increase emissions, dust, and degradation to roads. Additionally, mechanical treatment would not replace the role fire has in improving vegetation composition and diversity. The use of alternative fuel reduction methods in lieu of prescribed fire could reduce some surface fuels, but would not meet the ecological need for a fire-dependent landscape and would add significantly to the cost of restoration. Fire that did occur on the landscape would only be wildfire, and the effects and behavior would be more severe than on a landscape which prescribed fire had been part of the restoration treatments.

Use the Original Large Tree Retention Strategy (LTRS)

Scoping comments recommended incorporating the LTRS as written by the 4FRI Stakeholder Group for the 1st 4FRI EIS analysis. The Forest Service used the original strategy to inform the development of the Rim Country Project Large Tree Implementation Plan (Appendix D of the FEIS). The Large Tree Implementation Plan has the same eight categories as the LTRS but is more straightforward, incorporates specifics of the Rim Country Project, and will facilitate more effective implementation (Appendix D FEIS).

Return the Forest to Historic Reference Conditions

Chapter 2 of the FEIS (pg. 66-67) contains additional details on the consideration of this alternative. An alternative that analyzes the effects of returning the forest to a state closely approximating historic reference conditions and incorporates an aggressive strategy to achieve the stated goal of comprehensive landscape restoration was proposed during public scoping. This proposal would have complied with requirements such as the Endangered Species Act. The comments suggested a full restoration alternative would treat the landscape to the fullest extent that mimics historic conditions based on studies that projected far fewer trees per acre.

This type of alternative was considered similar to the evidence-based full restoration alternative considered and evaluated in the 1st 4FRI EIS. The exception was that it provided additional provisions to meet current direction for retention and improvements to certain habitat types (such as in the Endangered Species Act). Part of the purpose and need for the Rim Country Project was to support sustainable forest product industries that in turn help the Forest Service gain and retain desired forest conditions, provides jobs, and provides products to the American people. The best model for industry sustainability is to provide flow of wood, and there was concern this alternative would demand treatment of a large area of the project near term resulting in a small acreage available longer term (boom-bust model). This does not provide for industry long-term sustainability, which is needed to help maintain the forest over time and would not meet the purpose and need for supporting sustainable forest product industries. The alternative was also eliminated from detailed study because it would warrant more open conditions than desired and may lead to removal of larger trees to meet the prescription.

Strategic Treatments for Fire Use Alternative

A commenter submitted an alternative for consideration in the Rim Country Project analysis that proposed expanded use of prescribed and resource benefit fire, coupled with strategic placement of mechanical treatments using a three-tiered management area system (as defined in FEIS Chapter 2). The alternative as submitted to the Forest Service was reviewed and we determined that the alternatives necessary to permit a reasoned choice were analyzed (40 CFR 1502.14) and in accordance with 40 CFR 1502.2(e), we also determined we had enough information to consider and eliminate from detailed study the Strategic Treatments for Fire Use Alternative. The FEIS Chapter 2 pgs. 67-70 contain more detailed consideration of the alternative and rationale for our decision to eliminate this submitted alternative from detailed study.

After review, it was determined that the Strategic Treatments for Fire Use Alternative would not meet the purpose and need as well as the selected alternative because it proposed to 1) mechanically treat fewer acres, moving the landscape toward desired conditions to a lesser degree and 2) and also has the potential to slow the pace of movement towards desired conditions in the areas identified in the proposal as tier 3. Additionally, relative to alternative 2, this proposal would have supported fewer jobs and provided less labor income in the local economies from reduced forest product removal. Although the Strategic Treatments for Fire Use Alternative may ameliorate some conflicts over mechanical harvest, there is some concern that it would have raised the risk of some forms of environmental damage resulting from an increased use of prescribed fire and susceptibility to unplanned ignitions in areas that have not been mechanically treated. Additionally, the Strategic Treatments for Fire Use Alternative did not address whether actions such as road decommissioning or aquatic restoration were included. If these treatments were not included, then the purpose and need for aquatic species habitat would not have been met.

There is the potential for alignment with the selected alternative, including alignment of prescribed fire only acres and prioritization of treatments around non-Forest Service land with structures and critical infrastructure. There is clear alignment between treatments on what would be tier 1 acres in the Strategic Treatments for Fire Use Alternative and the WUI/critical infrastructure areas of the two action

alternatives. Conversely, there is little alignment in management strategy on most of the landscape proposed for treatment. The proposed mechanical treatments would have occurred primarily on areas of the landscape with the highest probability to propagate undesirable fire effects. As a result, the proposal did not focus mechanical treatments within stands where primary objectives are to improve forest health such as stand structure, age class diversity, and species diversity. In some places, it would have been more difficult to control fire behavior, fire severity, and resulting undesirable post-fire effects in areas where mechanical treatments are needed in the proposal.

Smoke and its impact to communities was raised as a key issue during scoping and alternative 3 was developed partially in response to this issue. The Strategic Treatments for Fire Use Alternative may have required more burning days and increased burn acreages in comparison to alternative 3. Common to all action alternatives, broader windows for burning would have had to meet the requirements of Arizona Department of Environmental Quality especially in areas that would affect large populations. This could have restricted the opportunities for burning in some areas and/or under certain weather conditions.

Under the Strategic Treatments for Fire Use Alternative, Tier 3 acres may be on a slower or less certain trajectory towards the natural range of variation, especially if implementation of prescribed fire treatments lags in these areas. As with all alternatives, ultimate progress toward desired conditions will depend not only on the pace and prioritization of implementation, but also on the extent and severity of wildfire. Some forest stands in Tier 3 areas may remain outside of the historic range of variation with regard to structure, pattern, and composition for a longer period and therefore may slow progression towards desired conditions.

Public Involvement and Collaboration

Collaboration with interested publics, agencies, tribes, and other organizations has been critical to shaping the planning process and alternatives analyzed. Collaboration and public involvement have occurred consistently throughout the development of the Rim Country Project through informal and formal opportunities. Informal opportunities have consisted of 4FRI Stakeholder and Working Group meetings, field trips, and feedback provided to the Forest Service interdisciplinary team. Formal opportunities have consisted of the scoping and comment period, public meetings, workshops, and opportunities for document review and a more detailed list of these opportunities is presented in Chapter 2 of the FEIS.

The Rim Country Project has been published in the Apache-Sitgreaves, Coconino, and Tonto National Forests' Schedule of Proposed Actions (SOPA) since January of 2016. The notice of intent to prepare an EIS was published in the Federal Register on June 27, 2016 (81 FR 41517) initiating a 45-day scoping period. Public workshops were held on July 14, 2016 in Show Low, AZ and on July 21, 2016 in Payson, AZ to discuss the proposed action and accept comments. Fifty responses (e-mails, letters, and public meeting comment forms) were received from this scoping effort. Preliminary alternatives considered for Rim Country were first posted to the Forest Service 4FRI website and shared with the 4FRI Stakeholder Group in March of 2017. Alternative development workshops were held on April 13, 2017 in Payson, AZ and on April 18, 2017 in Show Low, AZ to gain input on the preliminary alternatives.

On October 19, 2019, a notice of availability for the DEIS was published in the Federal Register (ER–FRL-9047-5) initiating a 90-day comment period. The Forest Service hosted three public meetings on November 12, 2019 in Payson, AZ, on December 2, 2019 in Overgaard, AZ, and on December 3, 2019 in Flagstaff, AZ. The Forest Service received 52 comment letters and emails regarding the DEIS from individuals, Tribal governments, Federal, State, and local agencies, organized interest groups, and businesses. Comments were received from several government agencies including Coconino County, Arizona Department of Environmental Quality, US Environmental Protection Agency, and Arizona Game

and Fish Department. Changes between Draft and Final are outlined in the FEIS, Chapter 2, Changes from the DEIS to the FEIS section (pp. 30-32).

Stakeholder Involvement

As part of CFLRP eligibility and to ensure the project was developed and implemented through a collaborative process, the 4FRI has an active stakeholder group that is transparent, nonexclusive, and includes many interested persons representing diverse interests. The stakeholder group, and in particular their associated work groups, have been active and worked tirelessly to ensure the success of the Rim Country Project. Throughout the lifetime of the 4FRI, the extensive engagement between the Forest Service and the 4FRI Stakeholder Group has resulted in a high level of agreement surrounding landscape-scale forest restoration that is unprecedented. This tireless work and success has resulted in recommendations for landscape-scale restoration, spatial priorities for treatments, general intensities for treatments, overall scale of restoration needed, and the need for and quantity of wood and biomass available for appropriately scaled wood products industries.

A memorandum of understanding (MOU) between the Forest Service and the 4FRI Stakeholder Group was signed in February 2011. The MOU outlines a framework of collaboration by all parties involved and interested in the restoration of northern Arizona's forests and grasslands, and the cooperative relationship among the parties, in accordance with three main goals. The MOU states that the Forest Service, the 4FRI Stakeholder Group, along with the public at large, will work together at multiple stages prior to, during, and following the NEPA process to establish expectations for landscape-scale restoration and on such products as the purpose and need statement, proposed action, alternatives, collection and use of data, and development of monitoring and adaptive management processes, subject to/consistent with applicable federal laws, regulations, land management plans, and other management direction. The 4FRI forests and the interdisciplinary team have worked closely with the stakeholder group to meet the intent of the MOU for the Rim Country Project.

Large and old tree retention has been a central focus of the 4FRI Stakeholder Group as expressed in The Path Forward (March 24, 2010), the Old Growth Protection and Large Tree Retention Strategy (September 13, 2011), The Statewide Strategy for Restoring Arizona’s Forests (Governor’s Forest Health Council 2007), and in developing guidance for Stands with a Preponderance of Large Young Trees (September 27, 2017).

The 4FRI Stakeholder Group has also worked with researchers and managers to incorporate monitoring science within the collaborative planning processes. A collaborative, science-driven, monitoring and adaptive management strategy was developed to address long-term ecological questions through systematic, applied, and question-driven science (Appendix E of the FEIS). Results of such efforts will be used to inform ongoing planning and implementation of the Rim Country Project.

After the DEIS comment period, from 2019 to 2021, extensive collaboration between the 4FRI Stakeholder Group and the Forest Service occurred to respond to the comments received from the 4FRI Stakeholder Group. The 4FRI Stakeholder Group formed a FEIS working group that included stakeholders, USFWS, the Arizona Game and Fish Department (AZGFD), and other partners that met regularly with the Rim Country Project interdisciplinary team to address concerns including the condition-based management approach, openness, old and large trees, dwarf mistletoe treatments, pre-treatment conditions, and the need for collaborative implementation. Extensive collaboration with the 4FRI Stakeholder Group’s Multi-Party Monitoring Board also occurred including input and review of Appendix E in the FEIS: Monitoring and Adaptive Management Plan.

Cooperating Agency

On July 15, 2015, the AZGFD became a cooperating agency for the Rim Country Project. The AZGFD specialists served on the interdisciplinary team for the Rim Country Project, helped develop the proposed action and other action alternatives, provided existing conditions for species and their habitat, and reviewed, edited, and augmented species analysis. The AZGFD specialists attended interdisciplinary team meetings, held workshops to gather aquatics and terrestrial wildlife data, and provided existing condition and location information (tabular and spatial) for priority species.

Coordination with Federal, State, County, and Other Organizations

The Forest Service coordinated with relevant federal, state, county, local, and non-governmental organizations throughout development of the Rim Country Project. Most notably, the AZGFD and U.S. Fish and Wildlife Service played key roles in the project. Both agencies participated in many of the interdisciplinary meetings and field trips and provided input throughout the project. The Forest Service also collaborated extensively with the U.S. Fish and Wildlife Service throughout all phases of project development, particularly as it pertains to conservation of threatened and endangered species, including the Mexican spotted owl, Chiricahua leopard frog, and narrow-headed gartersnake.

A complete list of agencies consulted is found in Chapter 5 of the FEIS. Some organizations include the U.S. Fish and Wildlife Service, AZGFD, Arizona State Historic Preservation Office, Arizona Department of Environmental Quality, and the 4FRI Stakeholder Group. Continued coordination with Federal, State, and County representatives, and other organizations will be an important component of implementing the project.

Tribal Consultation

The Rim Country Project Forests' each coordinated with specific tribes to avoid redundancy of outreach and collection of information while ensuring that all affected Tribes were consulted. Seventeen Tribes, including ten Navajo Nation chapters received invitations to consult on the project, they include: the Hopi Tribe, Havasupai Tribe, Hualapai Tribe, Kaibab Band of Paiute Indians, San Juan Southern Paiute Tribe, Fort McDowell Yavapai Nation, Yavapai-Apache Nation, Yavapai-Prescott Indian Tribe, Mescalero Apache Tribe, San Carlos Apache Tribe, Tonto Apache Tribe, White Mountain Apache Tribe, Pueblo of Acoma, Pueblo of Zuni, Gila River Indian Community, Salt River Pima–Maricopa Indian Community, Navajo Nation, and Navajo chapters in proximity to the project area including; the Alamo, Bodaway/Gap, Cameron, Coalmine Canyon, Dilkon, Lechee, Leupp, Ramah, Tolani Lake, and To'Nanees'Dizi Chapters. Consultation with the tribes will be ongoing prior to and during implementation of specific projects or treatment areas under this decision.

On July 1, 2016 the Rim Country Project proposed action was sent to each Tribe along with an invitation to formally consult with the Forest Service. This initial outreach was followed by phone calls, emails, and numerous consultation meetings. One written scoping response was received from the Hopi Tribe, in requesting continued consultation on implementation and review of cultural resource surveys, Traditional Cultural Properties, and ethnographic studies.

As a result of consultation, design features were added to protect and enhance traditionally used plants, (including Emory oak, sumac berries, tobacco) that are at risk or have been identified as culturally, medicinally, or economically important to tribal communities. Opportunities to harvest plants before implementation will be provided to Federally recognized tribes whose traditional territory is within the project area.

During tribal consultation, tribes expressed their desire to work collaboratively with the Forest Service within the 4FRI footprint through the use of tribal crews on a variety or forestry protection projects such as fire prevention, fuels management, insect and disease control, tree planting and seeding, erosion control, water testing and projection, and land restoration. A request was also made to identify and protect Emory oak (Quercus emoryi), a critical traditional food. In response to tribal concerns, the three national forests are continuing to work with tribes to explore methods to address these concerns.

The tribal relations section in chapter 3 of the FEIS provides more information and complete documentation of consultation and engagement opportunities through the project.

Findings Required by Other Laws and Regulations

Our decision to select alternative 2 is consistent with the intent of the three national forest land management plans' long-term goals and objectives. The Rim Country Project was designed to be in conformance with land management plan standards and incorporates appropriate land management plan guidelines. After considering the environmental effects analysis documented in Chapter 3 of the FEIS, we have determined that the selected alternative is consistent with applicable federal laws, executive orders, and regulations. The following is not an all-inclusive listing, but summarizes conformance with laws and other authorities most relevant to this decision:

National Forest Management Act

The National Forest Management Act (NFMA) requires the development, maintenance, amendment, and revision of land and resource management plans for each unit of the National Forest System. Under NFMA, the Forest Service is to ensure coordination of the multiple uses and sustained yield of products and services under the National Forest System.

There is a need to amend the Tonto National Forest Land Management Plan to fully implement the project[3]. The amendment is described in the "Decision Rationale" section above. The evaluation of substantive requirements for the amendment are analyzed in Chapter 3 of the FEIS. The public was notified of the amendment as required at 36 CFR 219.13(b)(2).

The Rim Country Project was reviewed for consistency with the direction in the Apache-Sitgreaves National Forests Revised Land Management Plan as amended (USDA Forest Service 2015), the Coconino National Forest Revised Land Management Plan (USDA Forest Service 2018), and the Tonto National Forests Land Management Plan, as amended (USDA Forest Service 1985). Land management plan consistency evaluations can be found in the project record. Additionally, this project was reviewed for consistency with the revised Tonto National Forest Land Management Plan and will be consistent when it goes into effect.

National Environmental Policy Act

On July 16, 2020, the Council on Environmental Quality published a final rule to amend its regulations implementing the National Environmental Policy Act of 1969 (Council on Environmental Quality 2020). The final rule went into effect on September 14, 2020. In accordance with 40 CFR 1506.13, the amended regulations apply to any National Environmental Policy Act review process begun after September 14, 2020; however, an agency may apply the amended regulations to ongoing activities and environmental

[3] The amendment will not be needed if the record of decision for the Tonto National Forest Land Management Plan Revision is signed, selecting the draft land management plan or other action alternatives detailed in the FEIS for this project.

documents begun before September 14, 2020. For this project, the Council on Environmental Quality 1978 regulations, as amended, are the guiding regulations for this NEPA process.

The National Environmental Policy Act (NEPA) requires public involvement and consideration of potential effects to the quality of the human environment of implementing federal actions. The environmental analysis and public involvement process outlined in the FEIS for the Rim Country Project comply with the requirements set forth by the Council on Environmental Quality for implementing NEPA (40 CFR 1500-1508 (prior to 2020)). These include: 1) considering a range of reasonable alternatives; 2) disclosing direct, indirect, and cumulative effects; 3) using best available scientific information; 4) considering long-term and short-term effects; and 5) disclosing unavoidable adverse effects.

Clean Air Act

The Clean Air Act of 1970 and its amendments provide for protecting and enhancing the nation's air resources. Implementation of our selected alternative for the Rim Country Project will comply with the Clean Air Act of 1970 and at the state level with the Arizona Department of Environmental Quality's regulations that require the project to not cause exceedances of the National and State Ambient Air Quality Standards. This decision is consistent with the Clean Air Act.

Clean Water Act

The Federal Clean Water Act provides the structure for regulating pollutant discharges into waters of the United States. In Arizona, the designated agency for enforcement of the Clean Water Act is the Arizona Department of Environmental Quality. Design features, best management practices, and soil and water conservation practices are included as part of our decision. These resource protection measures will minimize nonpoint source pollution as outlined in Memorandum of Understanding between the Arizona Department of Environmental Quality and the Forest Service Southwestern Region (ADEQ 2019). These measures will minimize or mitigate most adverse effects to water quality or riparian areas at the site-specific or localized scale. Based on the water quality and riparian analysis, we find the selected alternative is consistent with the Clean Water Act.

Endangered Species Act

The Endangered Species Act (ESA) provides for the conservation of endangered and threatened species and the ecosystems upon which they depend. As described in the FEIS, the Rim Country Project area contains critical habitat for, and populations of, several species listed under the ESA. This decision is compliant with the legal requirements set forth under Section 7 of the ESA. The Forest Service prepared a biological assessment, and formal consultation with the U.S. Fish and Wildlife Service under Section 7 of the ESA was conducted for project effects on listed species and critical habitat. The biological opinion (BO # 2022-0013274-S7-001) for the project was signed on March 4th, 2022. The U.S. Fish and Wildlife Service concurred with the following determinations: may affect, likely to adversely affect the Gila trout, Little Colorado spinedace and critical habitat, Chiricahua leopard frog and critical habitat, narrow-headed gartersnake, Mexican spotted owl and critical habitat, and Western yellow-billed cuckoo; May affect, not likely to adversely affect for loach minnow critical habitat, spikedace and critical habitat, and Gila topminnow; Not likely to adversely modify or destroy for Narrow-headed gartersnake critical habitat; Not likely to Jeopardize the Continued Existence for the nonessential experimental population of Mexican gray wolf; and no effect determinations for loach minnow, Gila Chub and critical habitat, and Western yellow-billed cuckoo critical habitat. Our decision is compliant with the legal requirements under Section 7(a)(2) of the ESA.

Bald and Golden Eagle Protection Act

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act. As described in Chapter 3 of the FEIS, implementing the Rim Country Project will not result in take as defined by the Bald and Golden Eagle Protection Act. Golden eagles occur in the project area and under the selected alternative, there will be no direct adverse effects on nesting eagles as project design features will eliminate disturbance near known nesting sites. Bald eagles are a Forest Service Sensitive Species and nest in the project area, there will be no direct adverse effects on nesting eagles as project design features will eliminate disturbance near known nesting sites. This decision is compliant with the Bald and Golden Eagle Protection Act.

Migratory Bird Treaty Act and Executive Order 13186

Under the Migratory Bird Treaty Act, agencies shall identify potential effects of actions on migratory birds and their habitats, avoid or minimize adverse effects, and restore and enhance habitats. Management direction and resource protection measures included in the analysis will support protection of migratory birds. As described in Chapter 3 of the FEIS, treatments will improve habitat for most bird species associated with the ponderosa pine cover type in the long term (for example, bark gleaners, woodpeckers, and flycatchers), but may negatively affect foliage gleaners in the short term (Patton and Gordon 1995, George et al. 2005). Overall, habitat will be improved for migratory birds in the long term.

Regional Forester Sensitive Species

Regional Forester Sensitive Species are analyzed in Chapter 3 of the FEIS. Effects to these sensitive species may occur, but management direction and resource protection measures will support protection of Forest Service sensitive species and it is not anticipated these effects will cause a trend toward listing or loss of viability of these species.

Forest Service Management Indicator Species

The Tonto National Forest is the only forest that includes management indicator species in its land management plan (USDA 1985). Effects to Forest Service management indicator species may occur, but management direction and resource protection measures will support protection of Forest Service sensitive species and it is not anticipated these effects will cause a trend toward listing or loss of viability of these species.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to conduct inventories and evaluate the potential effects of a preferred alternative on historic, architectural, or archaeological resources that are eligible for inclusion on the National Register of Historic Places (NRHP).

Because of the size of the undertaking, implementation will be phased over several years. Appendix J, of the Programmatic Agreement (PA) between the Southwestern Region the New Mexico Historic Preservation Office, and the Arizona State Historic Preservation Office Regarding Historic Property Protection and Responsibilities allows for the phasing of compliance with Section 106 of the National Historic Preservation Act of 1966. Appendix J of the Programmatic Agreement and the Rim Country Sampling Strategy (Hangan 2022), developed in consultation with tribes and the Arizona SHPO, describes the methods to be used to achieve a no adverse effect determination for the Rim Country analysis as a whole, while providing a strategy for a phased Section 106 evaluation for individual undertakings. All other undertakings, that are not addressed in Appendix J, such as road maintenance and

expanding existing borrow pits can be addressed through other provisions contained within the Programmatic Agreement or by using the provisions in 36 CFR 800, the implementing regulations for the NHPA.

Individual undertakings will be inventoried when each specific project area is identified and all stipulations of the NHPA will be complied with prior to implementing the undertaking.

Executive Orders 12898, 13985, 13990, 14008

Executive Order 12898 directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on low-income and minority populations, to the greatest extent practicable and permitted by law. The order is also intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide low-income and minority communities access to public information and public participation. Low-income and minority populations are present within the Rim Country Project area. All sectors of the public were provided equal opportunity to participate throughout the project development process. Employment and labor income may have a small, but positive, effect on economic opportunities in low-income and minority communities; smoke emissions may have a disproportionate effect on low-income and minority communities.

On January 25, 2021, Executive Order 13985 (Advancing Racial Equity and Support for Underserved Communities Through the Federal Government) was published in the Federal Register and states "…Federal Government should pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. Affirmatively advancing equity, civil rights, racial justice, and equal opportunity is the responsibility of the whole of our Government" (p. 7009). Currently, the analysis in the FEIS and our consideration in this decision demonstrate compliance with this Executive Order.

Also published to the Federal Register on January 25, 2021 was Executive Order 13990 (Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis), which states "…the policy of my Administration to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change; to restore and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals" (p. 7037). Currently, the analysis in the FEIS and our consideration in this decision demonstrate compliance with this Executive Order.

Then on February 1, 2021, Executive Order 14008 (Tackling the Climate Crisis at Home and Abroad) was published to the Federal Register and states, "It is the policy of my Administration to organize and deploy the full capacity of its agencies to combat the climate crisis to implement a Governmentwide approach that reduces climate pollution in every sector of the economy; increases resilience to the impacts of climate change; protects public health; conserves our lands, waters, and biodiversity; delivers environmental justice; and spurs well-paying union jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure" (p. 7622). Currently, the analysis in the FEIS and our consideration in this decision demonstrate compliance with this Executive Order.

Executive Order 14072

On April 22, 2022, Executive Order 14072 (Strengthening the Nation's Forests, Communities, and Local Economies) was published to the Federal Register and states in Section 1 “we will seek opportunities, consistent with the IIJA, to conserve our mature and old-growth forests on Federal lands and restore the health and vibrancy of our Nation's forests by reducing the threat of catastrophic wildfires through ecological treatments that create resilient forest conditions using active, science-based forest management and prescribed fires; by incorporating indigenous traditional ecological knowledge; and by scaling up and optimizing climate-smart reforestation.” Section 2 states “my Administration will manage forests on Federal lands, which include many mature and old-growth forests, to promote their continued health and resilience; retain and enhance carbon storage; conserve biodiversity; mitigate the risk of wildfires; enhance climate resilience; enable subsistence and cultural uses; provide outdoor recreational opportunities; and promote sustainable local economic development.” The FEIS and our consideration in this decision demonstrates compliance with this executive order.

2001 Roadless Area Conservation Rule

The 2001 Roadless Area Conservation Rule (36 CFR Part 294, Subpart B) established inventoried roadless areas (IRA) within the National Forest System. IRAs protect one or more of the nine roadless area characteristics (36 CFR 294.11). Prohibited actions in IRAs include road construction/reconstruction and timber cutting. To allow timber cutting in IRAs, exception circumstances must exist (36 CFR 294.13(b)) and must maintain or improve one or more of the roadless characteristics ((36 CFR 294.13(b)(1)). The timber activities proposed within IRAs in the project area have been reviewed by the Regional Forester to ensure consistency with implementation of the 2001 Roadless Area Conservation Rule. The Regional Forester has the delegated authority to approve exceptions for prohibited actions within IRAs. On November 2, 2021, the Southwestern Region Regional Forester concurred that the activities proposed as part of the Rim Country Project qualify for a Roadless Rule exception under 36 CFR § 294.13 (b)1(ii) - Timber, (Ecosystem); and will protect and maintain the nine roadless area characteristics and approved the project to proceed within the IRAs under this exception. The Southwestern Regional Forester’s concurrence and approval of the exception is documented separately in the Rim Country Regional Forester exception briefing paper that is in the project record.

Following the objection process, and in response to the March 18, 2022 Reviewing Officer instruction’s the Forest Service made modifications to treatments within IRAs. Mechanical treatments in IRAs were reviewed considering stand density, feasibility based on steep slopes, and accessibility to roads. The review resulted in a reclassification of the mechanical treatments. The modifications assigned three specific mechanical treatment types (hand thinning, upland vegetation, and comprehensive restoration) to specific IRA acres that are spatially fixed (see appendix A).

Implementation and Monitoring

The project implementation plan (Appendix D of the FEIS) describes the connection from the FEIS to the project specific work, generally without the need for additional NEPA decisions. It must be considered in conjunction with appendix C of the FEIS which provides the design features, best management practices, and mitigation measures. The implementation plan provides guidance for Forest Service personnel to ensure treatments and activities are implemented to meet the purpose and need for Rim Country Project and follow land management plan standards and guidelines. The implementation plan includes: the implementation checklist, the old tree implementation plan, the large tree implementation plan, description of condition-based management for mechanical and aquatic and watershed restoration activities, desired conditions and treatment design, the Arizona Game and Fish Department aquatic restoration treatment priority table, and permits and other laws, regulations and policy requirements the project will follow.

In order to ensure that the acreage and intensity of implemented treatments are within the scope of the effects analysis, a robust treatment tracking system is necessary and will be summarized at the Forest scale. This decision directs that a treatment tracking process be finalized within two years of this decision. This decision also recognizes that the tracking process may be modified over time to accommodate future needs, but must track the minimum requirements outlined below.

The system will track several key elements of the proposed treatment from the planning process through to implementation for all projects. The system will be maintained at the administrative unit scale and in as close to real time as feasible. This system will be used to track the acres of particular treatments implemented and ensure that treatments are not applied on a greater number of acres than were analyzed in the EIS. At the minimum, this system would track:

- Spatially, area covered proposed for treatment under the Rim Country EIS, including stand ID and treatment type
- Actual assigned treatment post-IDT walkthrough, from the prescription
- Actual cut unit polygon, post layout, including stand ID and treatment type
- Miles of temporary road built and decommissioned

We recognize that ground conditions may change over time. As part of the interdisciplinary review during implementation, while projects are being chosen and design elements being verified, if new information or changed circumstances are discovered, procedures at FSH 1909.15 part 18 would be followed, commonly called a Supplemental Information Report (SIR). The SIR would determine if the new situation is within the scope and range of effects considered in this analysis; if not, a supplement, correction, or revision may be required. New information or changed circumstances might include such situations as a large wildfire, other large-scale disturbance events, or a change in special status species lists.

The 4FRI Stakeholder Group and the Forest Service collaborated on the design of the monitoring and adaptive management plan to guide monitoring and inform adaptive management. A Multi-party Monitoring Board will work with the 4FRI Stakeholder Group and the Forest Service to prioritize monitoring, implementation, data storage, and data assessment. Based on monitoring information, the Multi-party Monitoring Board may make recommendations to the Forest Service on adaptive management. All monitoring information, including progress toward desired conditions and unexpected benefits or challenges, will be used for stakeholder and Forest Service learning.

To meet the requirements of Section 106 of the National Historic Preservation and its implementing regulations 36 CFR. 800, initiation of all work under this FEIS will be contingent upon completion of the identification and protection of historic properties and consultation with the State Historic Preservation Office and Tribes, as appropriate, prior to implementation. Appendix J (Standard Consultation Protocol for Large Scale-Fuels Reduction Vegetation Treatment and Habitat Improvement Projects) of the 2004 Amended Region 3 Programmatic Agreement was developed specifically to provide guidance for large fuels reductions projects. All other activities can be addressed using other provisions contained within other portions of the Region 3 Amended Programmatic Agreement, or the provisions contained in 36 CFR 800.

The Rim Country Project also includes a biophysical and socioeconomic monitoring and adaptive management plan (Appendix E of the FEIS) designed to be integral to the successful implementation of the selected alternative and activities and details the framework and process for monitoring. The included monitoring indicators for ecosystem response and social and economic factors will determine if desired

effects are achieved and will inform treatment implementation and ongoing management within the Rim Country Project area through an adaptive management framework.

Effective Date

Per 36 CFR 218.11 (b), the ROD may be signed when all instructions identified by the Reviewing Officer in the objection response letters have been addressed (see Appendix A). Implementation may begin immediately following the date of the signed decision.

Contact Person

For additional information concerning this decision or the Forest Service objection process, contact,

Kara Kirkpatrick-Kreitinger,
Four Forest Restoration Initiative NEPA Planner
Kara.kirkpatrick-kreit@usda.gov
(928) 526-3600

Responsible Official Signatures

JUDITH PALMER
Forest Supervisor
Apache-Sitgreaves National Forests

09/19/2022
Date

LESLEY YEN
Acting Forest Supervisor
Coconino National Forest

19 Sept 2022
Date

NEIL BOSWORTH
Forest Supervisor
Tonto National Forest

9/19/22
Date

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Forest Service
U.S. DEPARTMENT OF AGRICULTURE

MB-R3-04-37
Southwestern Region

August 2022
Apache-Sitgreaves, Coconino, and Tonto National Forests

4FRI Rim Country Project

Final Environmental Impact Statement

Errata

Cover photo: Storm on the Rim, Apache-Sitgreaves National Forests

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Contents

4FRI Rim Country Project Final Environmental Impact Statement Errata Document

Introduction

The Rim Country Project Draft Record of Decision and the Final Environmental Impact Statement (FEIS) were released on March 18th, 2022. This errata sheet documents corrections to the text of the March 18th published FEIS, and should be reviewed along with the FEIS. These corrections reflect instructions provided by the Deputy Regional Forester in the three responses to objections dated July 18th, 2022, and additional clarifications. These corrections are consistent with the direction given in Forest Service Handbook 1909.15, Chapter 10, Section 18. There are no changes to the project or significant new circumstances identified in this errata sheet that affect the analysis and conclusions in the Rim Country Project FEIS, therefore, a supplement to or revision of the FEIS is not needed. These changes also apply to the Rim Country Project specialist reports.

How to Navigate This Errata

The following errata is broken out by chapters and appendices. The errata applies to Chapters 2 and 3, the References, and Appendices A, C, D, E, and H of the Final Environmental Impact Statement. The errata outlines the FEIS volume, chapter or appendix, section, and the page number where the change applies. In most cases, additions are outlined in bold. However, due to formatting, some changes are outlined in gray highlights, or there is no formatting. Each errata section outlines the specific additions' formatting.

Chapter 2

1. **FEIS Volume 1, Chapter 2, Alternative Development (p. 35)** the following paragraph is added as the last paragraph in the *Alternative Development* section and above the *Areas Covered Under Other NEPA Decisions for Inclusion of Restoration Activities* section:

> An estimate of 20 years for project completion is strictly an estimate and not to be considered a fixed timeline or represent the validity of the environmental analysis or Record of Decision. This estimate is solely based on the number of acres analyzed for treatment and current industry capacity at the time of the release of the Record of Decision.

Significance: The analysis is not affected. The added text provides clarity as to why 20 years was chosen as an estimate.

2. **FEIS Volume 1, Chapter 2, Elements and Activities Common to Alternatives 2 and 3, Implementation Plan, Condition-based Management Approach, Table 14 (p. 40)** the following text outlined in the gray highlights is added to the table:

Table 14. Condition-based Management Approach for Vegetation and Aquatics and Watershed Restoration Activities: Considerations for prioritizing vegetation and aquatics and watershed restoration activities

Condition-based Management Approach	Consideration	Description
Vegetation-focused	Wildland Urban Interface and USFS Infrastructure	Wildland-urban interface (WUI) includes those areas of resident populations at imminent risk from wildfire, and human developments having special significance. These areas may include critical communication sites, municipal watersheds, high voltage transmission lines, church camps, scout camps, research facilities, and other structures that, if destroyed by fire, would result in hardship to communities.

Condition-based Management Approach	Consideration	Description
Vegetation-focused	High risk for uncharacteristic fire behavior	These fires result as a consequence of more continuous canopy cover, ladder fuels, and accumulated live and dead woody material.
Vegetation-focused	Candidate or sensitive species	The presence of these species and improving their habitat could increase the prioritization of a project over a site that had none present.
Vegetation-focused	Integrated aquatic and watershed restoration activities	Incorporating aquatic and watershed restoration activities in an area with other restoration treatments whenever possible is one way to create efficiencies with heavy equipment and personnel.
Vegetation-focused	Public, stakeholder, and partner values	Projects that already have partners or interested partners, particularly if funding is available, should be considered.
Aquatic and Watershed	Watershed Condition Framework and priority watersheds.	Areas or activities within existing Watershed Restoration Action Plans can increase opportunities to move watersheds into a higher condition class. Maintaining or improving watershed condition where feasible should be taken into consideration. Projects in priority watersheds should be considered.
Aquatic and Watershed	Projects that improved impaired waters	Projects that improve water quality in ADEQ TMDL (water quality improvement plan) or 303b listed streams.
Aquatic and Watershed	Vegetation restoration activities within the area.	Incorporating aquatic and watershed restoration activities in an area with other restoration treatments whenever possible is one way to create efficiencies with heavy equipment and personnel.
Aquatic and Watershed	Partner Interest	Projects that already have partners or interested partners, particularly if funding is available, should be considered.
Aquatic and Watershed	Benefits to federally listed or candidate species	The presence of these species and improving their habitat could increase the prioritization of a project over a site that had none present.
Aquatic and Watershed	Wet meadows, cienegas, and other similar habitats.	These habitat types store water in upper watersheds and maintain baseflow to other aquatic habitats. They also cool water and can provide for lower stream water temperatures. Maintaining and improving these areas can have great downstream beneficial impacts.
Aquatic and Watershed	Upper watershed vs. lower	Restoration in upper portions of watersheds can have beneficial impacts downstream such as reduced sedimentation, maintaining baseflow, and cooling stream temperatures. They will have a larger range of beneficial impacts than projects lower in a watershed.
Aquatic and Watershed	Issues that are new, easily treated, or could quickly spread.	Newer issues have not yet caused that much damage; restoration treatments of these are more cost and time effective as well as preventing more degradation. Projects such as these are 'low-hanging fruit' when compared to larger or more widespread issues. In addition, new infestations of noxious weeds or aquatic invasive plants are easier to treat early rather than after they spread.
Aquatic and Watershed	Force account, contracted, and partner implementation	All three categories have merit but may have differing financial or oversight costs. These should be considered differently amongst options and assessed. Prioritization may depend upon which category a project occurs in when weighed against workload, capacity, and financial considerations.
Aquatic and Watershed	Process versus form-based projects	Projects that enhance site conditions, but do not restore the processes that create habitat or site conditions are considered form-based. These types of projects can require more maintenance than projects that restore the processes that create and maintain habitat. Projects that restore processes may be more of a priority than those that address a specific issue rather than the larger problem.

Significance: The analysis is not affected. The additions provide a guide for project prioritization and provide consistency with the Aquatic and Watershed Condition-based Management Approach.

3. **FEIS Volume 1, Alternatives Considered in Detail, Alternative 2 – The Modified Proposed Action, Proposed Activities (p. 56)** the following bolded text is added to the bulleted list of proposed activities:

- Implement approximately 7,300 acres of mechanical treatment and prescribed fire and approximately 9,600 acres of prescribed fire only in eight IRAs (See Chapter 3, IRA section for information on treatments by IRA). **Mechanical treatments in IRAs will only occur in identified areas (See Appendix – A Maps) and are spatially fixed. Treatments include:**
  - **Approximately 6,287 acres of hand thinning and prescribed fire**
  - **Approximately 572 acres of comprehensive restoration mechanical thinning and prescribed fire**
  - **Approximately 439 acres of upland vegetation mechanical thinning and prescribed fire**
  - **Approximately 9,600 acres of prescribed fire only**
  - **Approximately 33.5 miles of general stream restoration**
  - **Approximately 0.07 miles of heavy mechanical stream restoration**
  - **Approximately 0.58 miles of road decommissioning**

Significance: The analysis is not affected. This is not significant because the number of acres proposed for treatment falls within the range of effects analyzed. The modifications assign specific mechanical treatment types (chain saw thinning vs. conventional ground-based harvest systems) to IRA acres that are spatially fixed. Mechanical treatments will not occur outside of areas identified in this analysis (IRA Specialist Report Appendix A – Maps). The impacts would be lesser than what was previously stated because less mechanical thinning using conventional ground-based harvest systems would occur. These changes reflect spatially explicit assignments of mechanical treatments, rather than a condition-based management approach for treatment assignment that could include hand thinning, comprehensive restoration, and upland vegetation treatment.

4. **FEIS Volume 1, Alternatives Considered in Detail, Alternative 3 – Focused Restoration, Proposed Activities (p. 63)** the following bolded text is added to the bulleted list of proposed activities:

- Implement approximately 1,760 acres of mechanical treatment and prescribed fire and approximately 6,320 acres of prescribed fire only in eight inventoried roadless areas (see chapter 3, inventoried roadless area section for information on treatments by inventoried roadless area, **and IRA Specialist Report Appendix A - Maps**).

Chapter 3

1. **FEIS Volume 2, Air Quality, Affected Environment (p. 11)** the following section is added after the *Smoke Emissions – Greenhouse Gas Emissions* section:

Radioactive Emissions

In northern Arizona, there are several types of radioactive elements. Most of these are naturally occurring, such as radon, potassium, and thorium. Northern Arizona also has rich deposits of uranium, which can and have been used for commercial purposes. In addition, northern Arizona, like much of the world, also has traces of man-made radioactive material, primarily from weapons testing conducted in the Cold War era. These radioactive elements include cesium and strontium. When a fire burns through an area, it may re-suspend radioactive particles present in

forest surface fuels (Hejl et al., 2012). Some are naturally occurring chemicals that have always been present at some level in wildfire smoke and some have resulted from the weapons testing that occurred in the mid-20th century. Implementation of prescribed burning would comply with the Federal Clean Air Act and at the state level with the Arizona Department of Environmental Quality's regulations that require the project to not cause exceedances of the National and State Ambient Air Quality Standards. At the level of exposure the public is subjected to as a result of prescribed fire treatments, radionuclides do not pose as great a risk as wildfire. Radioactive material that may be carried in the smoke plume carries a risk of human health concerns of less than 1 chance in 10 million ((personal communication Graham 2012-2014) and Risk Assessment Corporation, (2002)) and the greatest health risk is from breathing high concentrations of particulate matter in the smoke.

Communication with the Environmental Protection Agency (personal communication Gerdes 2012 - 2014; Graham 2012-2014), and studies (see below) that addressed these emissions indicate that radioactive isotopes and other undesirable chemicals are present in wildfire emissions. Studies have shown that the levels of radioactive material that could be released in a prescribed burn or wildfire are very low and do not present a health risk. The following is a review of the literature discussing the public health concern related to radionuclide emissions from fires:

During the Cerro Grande fire of 2000, there was considerable public concern regarding the potential release of radionuclides from fires burning on lands managed by the Los Alamos National Laboratory (LANL). The following risk summary is from the 2002 Summary Report Analysis of Exposure and Risks to the Public from Radionuclides and Chemicals Released by the Cerro Grande Fire at Los Alamos (Risk Assessment Corporation, 2002):

> "The primary health risks during the Cerro Grande fire were associated with breathing materials released into the air. It was estimated the risk of cancer from breathing any LANL-derived chemical or radioactive material that may have been carried in the smoke plume to be less than 1 chance in 10 million. Potential exposures in the surrounding communities to LANL-derived chemicals that are not carcinogenic were about 10 times lower than acceptable intakes established by the U.S. Environmental Protection Agency (EPA). The risk of cancer from breathing chemicals and radioactive materials in and on the natural vegetation that burned in the Cerro Grande Fire was greater than that from LANL-derived materials, but still less than 1 chance in 1 million. The vegetation that burned contained naturally occurring chemicals and radioactive materials and fallout produced during atmospheric tests of nuclear weapons. These materials and the risks they posed are present during any forest fire. The evidence suggests that some adverse health effects did result from breathing high concentrations of particulate matter in the smoke. Such exposures are associated with any forest fire. Deposition of LANL-derived chemicals and radioactive materials from the smoke plume to the soil was minimal."

Schollnberger et al., 2002 found that radiation doses from inhaled airborne radionuclides to individuals inside and outside the Los Alamos area from the Cerro Grande fire were likely very small, and health effects would be unlikely.

Following the Cerro Grande fire that burned through the city of Los Alamos and the Los Alamos National Laboratory (LANL) in New Mexico in 2000, the US Environmental Protection Agency (EPA), New Mexico Environment Department (NMED), and LANL partnered with Department of Energy to operate radiological monitoring systems as well as to initiate several studies to assess the impacts of the fire. The results of these efforts with regard to air quality and human health impact indicated that radionuclides originating from the LANL site during the Cerro Grande Fire were restricted to naturally occurring radionuclides.

LANL, the Department of Energy, and NMED-monitored radionuclide concentrations in smoke from the Las Conchas fire that burned through the Los Alamos area in the summer of 2011 and reported no significant detection levels (Michelotti et al., 2013).

A collaborative research effort was carried out between the U.S. Environmental Protection Agency and the U.S. Forest Service to simulate emissions in laboratory fires of pine needles and duff doped with nonradioactive cesium (Cs) (Hao et al., 2018). Following a radiological release event, nuclear power plant incident, improvised nuclear device, nuclear testing site, or hazardous waste site a wide area may be contaminated by radiological materials, including significant forest areas. There is a potential for emissions of radionuclides such as cesium-137 from a wildfire over a radionuclide-contaminated forest. The paper reports on a laboratory simulation study of a wildfire with two types of biomass doped with nonradioactive cesium. This simulation suggests that only 1 to 2.5 percent of the cesium in the biomass would be emitted from the wildfire, while the rest would reside in the residual ash. In the study, pine needles were the only contributor to the air emissions of cesium; duff was not a source of cesium emissions. In the study, cesium emitted from the simulated wildfire was concentrated in particle sizes larger than 10 micrometers (Hao et al. 2018). Laboratory testing of wildfire combustion suggests Cs fate is largely associated with ash (>99%) rather than air emissions. Hao (2018) confirms that cesium and other radionuclides that would be emitted by the Rim Country Project would not reach unsafe levels.

Baker et al., 2021 modeled emissions from a large hypothetical wildfire in a wildland-urban interface (WUI) impacted by a hypothetical radiological release event. “While ambient concentrations tended to be highest near the fire, the highest population committed effective dose equivalent by inhalation to an adult from ^{137}Cs over an hour was downwind where wind flows moved smoke to high population areas. Seasonal variations in meteorology (wind flows) can result in differential population impacts even in the same metropolitan area. Modeled post-incident ambient levels of ^{137}Cs both near these wildfires and further downwind in nearby urban areas were well below levels that would necessitate population evacuation or warrant other protective action recommendations such as shelter-in-place. These results suggest that 1) the modeling system captures local- to regional-scale transport and levels of PM2.5 from wildfire and 2) first responders and downwind population would not be expected to be at elevated risk from the initial inhalation exposure of ^{137}Cs re-emission and are more likely to have negative health impacts from other pollutants (e.g., carbon monoxide and total PM2.5 mass) emitted by wildfire (Adetona et al., 2013) rather than legacy radioactive ^{137}Cs emitted at levels similar to this assessment.”

Evangeliou and Eckhardt, 2020 and Talerko et al., 2021 assessed the emissions from the unprecedented April 2020 wildfires in the Chernobyl Exclusion Zone and examined their dispersion and impact on the population. The assessment detailed that all doses of radionuclides are radiologically insignificant and no health impact on the European population is expected from the April 2020 fires.

A study that included Lockett Meadow, an area near Flagstaff, AZ, found levels of radioactive materials in the soil were no different than background levels, and would provide no added human health risk (Ketterer et al., 2004).

Significance: The additional literature review does not change the conclusions in the analysis that prescribed fire treatments would not result in health effects from the re-suspension of radioactive particles. A radioactive emissions analysis was present within the DEIS and was inadvertently deleted. Additional literature updates include the best available science.

2. **FEIS Volume 2, Cultural Resources, Assumptions and Methodology (pp. 47-48)** the following bolded text is added to the last paragraph on page 47 into page 48, and text is deleted:

Original: The Programmatic Agreement would guide the analysis for the remaining activities proposed in the Rim Country EIS. The one exception would be road improvement and decommissioning. Some Forest roads are known to cross archaeological sites and they often have exposed artifacts and cultural features in the roadbeds. Improving or decommissioning roads could involve some level of mechanical work such as grading or ripping roadbeds. The forests, in consultation with the Arizona SHPO and tribes, developed a road plating protocol. This protocol outlines procedures for "plating" or covering the portions of sites within roadbeds that have remaining features or intact cultural deposits. This would help to protect intact cultural remains in the roads from blading or other types of maintenance or decommissioning activities.

Errata: The Programmatic Agreement would guide the analysis for the remaining activities proposed in the Rim Country EIS. One **example** would be road improvement and decommissioning. **In some cases, roads could be decommissioned separately or unrelated to vegetation treatments. In these cases, the procedures in the main body of the Programmatic Agreement, and not Appendix J of the Programmatic Agreement would apply.** Some Forest roads are known to cross archaeological sites and they often have exposed artifacts and cultural features in the roadbeds. Improving or decommissioning roads could involve some level of mechanical work such as grading or ripping roadbeds. The forests, in consultation with the Arizona SHPO and tribes, developed a road plating protocol. This protocol outlines procedures for "plating" or covering the portions of sites within roadbeds that have remaining features or intact cultural deposits. This would help to protect intact cultural remains in the roads from blading or other types of maintenance or decommissioning activities.

Significance: The added text provides clarity as to the relationship of when the main body of the Programmatic Agreement between the Southwestern Region of the Forest Service, the Arizona, New Mexico, Texas and Oklahoma State Historic Preservation Offices and the Advisory Council on Historic Preservation or Appendix J of the Programmatic Agreement would apply in project implementation and does not change the analysis.

3. **FEIS Volume 2, Cultural Resources, Assumptions and Methodology, Phased Section 106 Compliance (p. 48)** the following bolded text is added to the first paragraph in the *Phased Section 106 Compliance* section:

Because of the size of the undertaking, implementation would be phased over several years **in individual project areas that would be defined by the Forest Service Ranger District completing the restoration activities**. **The assigned restoration activities and project size would vary by the individual project**. Appendix J, reviewed by the Arizona, New Mexico, Texas, and Oklahoma SHPOs, the ACHP, and tribes, allows for the phasing of compliance with Section 106 of the National Historic Preservation Act of 1966. Appendix J of the Programmatic Agreement and the Rim Country Sampling Strategy (Hangan 2021), developed in consultation with tribes and the Arizona SHPO, describes the methods to be used to achieve a no adverse effect determination for the Rim Country analysis as a whole, while providing a strategy for a phased Section 106 evaluation for individual task orders. Individual task orders, or undertakings, would be inventoried when each specific project area is identified. A Section 106 report would be produced for each proposed individual undertaking, and all consultation with the Arizona SHPO and appropriate tribes would be completed prior to implementing the task order.

Significance: The added sentence provides additional clarity between the terms project area and analysis area and does not change the analysis.

4. **FEIS Volume 2, Socioeconomics, Affected Environment, Environmental Justice (pp. 67-68)** the following bolded text is added to the paragraphs in the Environmental Justice section:

   Apache, Coconino, Gila, and Navajo Counties have high concentrations of American Indian residents, due to the large share of tribal lands in these three counties. The majority of land in Navajo County is tribal land. Yavapai County also contains tribal lands, though the areas are quite small. 12 As a result, environmental justice issues are more likely to occur in Coconino, Gila, and Navajo Counties than Yavapai County. However, a finding of low racial or ethnic diversity does not eliminate the need to consider potential disproportionate impacts of Forest Service management actions. A county may have a low overall concentration of minority residents, but still have areas with a high concentration of minority residents who could be adversely affected by management actions.

   Apache, Gila, and Navajo Counties have meaningfully greater 13 shares of people living in poverty than the state overall. More than one-fifth of Gila County residents, ~~and~~ more than one-quarter of Navajo County, and 33.5% of Apache County residents live in poverty.

   ~~Based on the minority status and poverty data presented above,~~ **Apache,** Coconino, Gila, and Navajo counties appear most at risk for environmental justice issues. The largest minority group in these counties— American Indians—also experiences a very high poverty rate. Between one-third and one-half of American Indians in the planning area counties live in poverty (U.S. Census Bureau 2016a).

   The conditions described in this section underscore the importance of evaluating environmental justice consequences. The economic data suggest that **Apache and** Navajo counties are both the most underserved county (in terms of economic opportunities) and also reliant on forest-related employment in the study area. Therefore, **Apache and** Navajo counties may be particularly influenced by economic changes related to 4FRI. The potential for disproportionately high and adverse impacts on minority and low-income individuals due to Forest Service management actions are evaluated in the environmental consequences section of this document.

Significance: The addition of Apache County in the paragraphs is consistent with the Socioeconomics Specialist Report. The additions are not new information but are added for consistency between the specialist report and FEIS. Apache County was inadvertently left out of this section of the FEIS.

5. **FEIS Volume 2, Range, Environmental Consequences, Effects Common to Both Action Alternatives (p. 87)** the following bolded text is added to the 1st full paragraph on the page, and text is deleted:

   Original: The increase in forage within treatment areas would improve allotment conditions and allow for more flexibility in grazing management systems. Livestock distribution would improve because forage is more available in uplands. An increase in pasture graze periods would allow for additional pasture rest or deferment in other pastures within an individual allotment.

   Errata: The increase in forage within treatment areas would improve allotment conditions and allow for more flexibility in grazing management systems. **While this project does not propose**

to increase total livestock numbers or change the **seasons-of-use beyond those previously authorized, there could be secondary benefits related to livestock management.** Livestock distribution **c**ould improve because forage **could be** more available in uplands, **potentially reducing grazing impacts to riparian areas. Timing and rotation of pasture use within an allotment may gain flexibility by allowing for** pasture rest or deferment **where needed, due to potential increased availability of forage in treated pastures. Additionally, livestock could be utilizing a lower percentage of the total produced forage on the allotment, thus reducing the overall potential impacts of grazing.**

Significance: The additions provide additional clarification to the potential benefits of project implementation to grazing management systems.

6. **FEIS Volume 2, Range, Environmental Consequences, Effects Common to Both Action Alternatives (p. 88)** the following sentence is deleted:

Stream and riparian area restoration would have a long-term benefit to livestock grazing management by increasing forage and by improving bank stability.

Significance: The errata (#5 directly above) includes impacts to riparian areas.

7. **FEIS Volume 2, Inventoried Roadless Areas, Environmental Consequences, Assumptions (pp. 161-162)** the following bolded bulleted items are added, deleted, or modified from the bulleted list of assumptions:

- **Slopes of 40% or more would receive hand thinning mechanical treatments where assigned.**
- **Mechanical treatments in IRAs will only occur in the identified areas and will be spatially fixed (see IRA Specialist Report Appendix A - Maps).**
- **Mechanical treatments in IRAs are broken out by hand thinning, comprehensive restoration, and upland vegetation treatments (See Appendix G - Glossary term mechanical treatments). Hand thinning treatments are typically completed with a chainsaw. Upland vegetation treatments are typically conducted using heavy equipment (conventional ground-based harvest systems). Comprehensive treatments could be a combination of hand thinning and the use of heavy equipment.**
- The Rim Country Project would use a condition-based management approach for **upland vegetation** mechanical and aquatic treatments within IRAs. Condition-based management ensures that the right treatment is applied to the right location to meet desired conditions most effectively. The approach does not assign specific treatments to specific areas, but rather assigns treatments to a set of conditions that occur on the landscape. Appendix D of the FEIS contains the Rim Country Implementation Plan. The plan outlines procedures for condition-based management and the old and large tree implementation plans. IRAs would be evaluated for resource protection considerations when activities are within IRAs **to** be consistent with the 2001 Roadless Area Conservation Rule Exception Criteria (Appendix D, Implementation Plan Checklist and Section D, Decision Tree Modifiers), **a** requirement of additional notification and approvals including line officer approval and coordination with the Regional Inventoried Roadless Area Lead (Appendix D, Implementation Plan Checklist), and incorporation design features (Appendix C). Treatments in Inventoried Roadless Areas shall be designed to maintain the overall roadless character of inventoried roadless areas. Additionally, in accordance with the Old and Large Tree Implementation Plans (Appendix

D), removal of old and large trees would be rare. Exceptions for removal of old and large trees are outlined in the plans, however exceptions for removal of old trees would be rare.

- **Deleted bulleted item:**
  - ~~**The amendment exception for treatment of slopes over 40 percent is incorporated into the analysis.**~~

Significance: The added and deleted text provides additional clarity on the reclassification assignments of mechanical treatments in Inventoried Roadless Areas and does not change the analysis conclusions. Mechanical treatments on slopes over 40 percent would be hand thinning treatments and would not include timber harvest, therefore the amendment exception does not apply to the treatments outlined to occur in IRAs.

8. **FEIS Volume 2, Inventoried Roadless Areas, Environmental Consequences, Alternative 2 – Modified Proposed Action, Table 48 (p. 172)** is modified in its entirety as follows:

Table 48. Proposed treatments within IRAs for Alternative 2

Inventoried Roadless Area	**Mechanical Treatment:** Upland Vegetation Mechanical Thinning and Prescribed Fire (acres)	**Mechanical Treatment:** Comprehensive Restoration Mechanical Thinning and Prescribed Fire (acres)	**Mechanical Treatment:** Hand Thinning and Prescribed Fire (acres)	**Prescribed Fire Only (acres)**	**General Stream Restoration (miles)**	**Heavy Mechanical Stream Restoration (miles)**	**Road Decommission-ing (miles)**
Chevelon Canyon	104	17	251	4,816	1.35	0.01	-
Leonard Canyon	335	94	296	1,083	10.14	-	-
Barbershop Canyon	-	156	305	850	12.13	-	-
East Clear Creek	-	204	348	1,058	9.79	0.06	-
Jacks Canyon	-	79	1,090	548	-	-	-
Hellsgate	-	2	336	-	0.11	-	-
Mazatzal	-	-	316	-	-	-	0.50
Sierra Ancha Wilderness Contiguous	-	20	3,346	1,247	-	-	0.08
Grand Total	**439**	**572**	**6,287**	**9,602**	**33.52**	**0.07**	**0.58**

Significance: The change provides additional clarity on the reclassification assignments of mechanical treatments in Inventoried Roadless Areas and does not change the analysis conclusions.

References

The following references are added to the reference section of the FEIS (pp. 195-238):

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United States Department of Justice (USDOJ). 2022. Radiation Exposure Compensation Act. https://www.justice.gov/civil/common/reca. Date accessed: 7/19/2022

Appendix C – Design Features, Best Management Practices, Mitigation, and Conservation Measures

1. **FEIS Volume 2, Appendix C (p. 261)** the following bolded text is added to the 1st paragraph:

> Table C-1 lists design features, best management practices, and mitigation and conservation measures (collectively referred to as design features) that are designed to minimize or avoid effects common to all action alternatives. They are integral parts of the action alternatives that help align proposed activities with land management plan objectives, desired conditions, standards, and guidelines. As such, they have been included in the analysis presented in this FEIS. **Applicable design features for each implementation activity would be identified during the Initial Project Review period, as part of conducting the Implementation Plan Checklist (Appendix D). Depending on their nature, implementation of these design features may take place during project planning, layout, implementation, or post-implementation.** Design features in the table are organized by resource.

Significance: The added text provides additional clarity on when the design features in Appendix C would be reviewed and implemented.

2. **FEIS Volume 2, Appendix C: Design Features (p. 307)** the following bolded text is added to design feature WL014, and text is deleted:

> ***Original:*** WL014: Survey all potential Mexican spotted owl areas including protected and recovery nest/roost, within the implementation area plus the area 0.5 mile to all habitat up to 0.5 mile beyond the perimeter of the proposed treatment area. Surveys should be conducted for two years, with the second-year survey either the year before or the year of (but prior to) project implementation. If more than five years have elapsed between the last survey year and the initiation of the proposed action, then one additional year of survey will be conducted prior to project implementation.
>
> ***Errata:*** WL014: Survey all potential Mexican spotted owl areas including protected and recovery **habitat**, within the implementation area plus the area **including any habitat within a 0.5-mile area around the project area, per the USFWS survey protocol**. Surveys should be conducted for two years, with the second-year survey either the year before or the year of (but prior to) project implementation. If more than five years have elapsed between the last survey year and the initiation of the proposed action, then one additional year of survey will be conducted prior to project implementation. **If surveys cannot be completed, the Forest Service will assume owl presence within the project area, plus a buffer of 0.5 miles.**

Significance: The added text clarifies that the Forest Service will follow the USFWS Mexican Spotted Owl survey protocol and will assume occupancy unless there is a circumstance where this assumption would not apply (e.g., the area is no longer habitat post-fire).

Appendix D – Implementation Plan for Alternatives 2 and 3

1. **FEIS Volume 2, Appendix D: Implementation Plan, Table D-1. Implementation Plan Checklist, Table D-1 (p. 314)** the following highlighted text is deleted or added to the table:

Table D-1. Implementation Plan Checklist

Implementation Plan Checklist	Yes	No	N/A
Is treatment consistent with the Rim Country Project selected alternative and analysis and the applicable Land Management Plan components?			
Have project objectives been developed in an interdisciplinary manner?			
Is the treatment on a line officer approved 5 year plan? (for vegetation/fuels projects only)			
An approved prescribed fire plan: (1) will be completed for all burning units and an ADEQ burn plan (2) will be submitted to the ADEQ for approval. All prescribed fire operations would be coordinated with and approved by the ADEQ prior to burning.			
For thinning operations, are sale prep checklist, sale folder checklist, and sale package complete? Are sales reviewed through a plan-in-hand process and signed off by district interdisciplinary team?			
Are treatment silviculture prescriptions completed and signed? • Objectives are consistent with management direction? • Have silviculturists signed off on desired forest conditions in burn plans?			
Have opportunities for upland and aquatic integration been explored?			
Original: Is treatment consistent with project design features? ***Errata:*** Have the applicable design features been identified and are they consistent with the treatment?			
Are wildlife surveys, if necessary, complete? In threatened and endangered species habitat, are the actions consistent with the FWS biological opinion?			
Has the Pre-implementation Compliance Review for the Regional Mexican Spotted Owl Recovery Strategy been completed (see appendix K) and made publicly available as applicable?			
Are botanical surveys, if necessary, complete? Necessary design features (Appendix C) for botany included?			
Are heritage surveys complete?			
Tribal outreach and consultation (if undertaken) complete?			
Is the action consistent with the letter of concurrence from Arizona SHPO?			
Are rights-of-way and land lines located and surveyed in place (if applicable)?			
Are treatments consistent with desired conditions and implementation strategies in the Implementation Plan?			
Has implementation monitoring and adaptive management strategies been documented and used/planned for higher quality outcome?			
For any project work occurring in an IRA: (1) is the treatment plan consistent with the approved 2001 Roadless Area exception criteria indicated in the Rim Country project Regional Forester Brief and (2) has the coordination with the Regional Office IRA Lead occurred (3) have IRA treatments been planned in accordance with the IRA treatment maps (see IRA Specialist Report Appendix A – Maps)?			
Are road packages completed for timber sales?			

Significance: The added text does not change the analysis. The text adds clarification and reiterates the current Forest Service Region 3 direction.

2. **FEIS Volume 2 Appendix D: Implementation Plan, Section C - Large Tree Implementation Plan, Aspen Stands and Patches (p. 321)** the following bolded text is added to the 3rd paragraph in the section:

The lack of fire as a natural disturbance regime in southwestern frequent-fire forests since European settlement has caused much of the aspen dominated lands to cede to conifers (Bartos 2001). Other factors contributing to gradual aspen decline over the past 140 years include reduced regeneration from browsing **by livestock and introduced and native wild ungulates in the absence of natural predators like wolves** (Pearson 1914, Larson 1959, Martin 1965, Jones 1975, Shepperd and Fairweather 1994, Martin 2007). More recently, aerial and ground surveys indicate more rapid decline of aspen, with very high mortality occurring in low and mid-elevation aspen sites. Major factors thought to be causing this rapid decline of aspen include frost events, severe drought, and a host of insects and pathogens (Fairweather et al. 2008) that have served as the "final straws" for already compromised stands.

Significance: The added sentence does not change the analysis. The sentence further defines the factors contributing to aspen decline.

3. **FEIS Volume 2, Appendix D Implementation Plan, Section D – Rim Country Condition-based Management Approach, Rim Country EIS Tracking Process (p. 326)** the following bolded text and bulleted list are added to the *Rim Country EIS Tracking Process* section:

Rim Country EIS Tracking Process

In order to ensure that the acreage and intensity of implemented treatments would be within the scope of the effects analysis, a robust treatment tracking system would be necessary and summarized at the Forest scale. A system would be put in place that would track several key elements of the proposed treatment from the planning process through to implementation. The system would be maintained at the administrative unit scale and in as close to real time as feasible. This system would be used to track the acres of particular treatments implemented and ensure that treatments are not applied on a greater number of acres than were analyzed in the EIS. **Tracking should ensure mileages of road actions do not exceed those allowed by the selected alternative as well as ensure the application of the Appendix C design features for roads actions. For more information on roads, including temporary road construction, road decommissioning, road relocation, and road maintenance, consult the roads section of the aquatic and watershed restoration condition-based management section (Appendix D) below.** At the minimum, this system would track:

- Spatially, area covered proposed for treatment under the Rim Country EIS, including stand ID and treatment type
- Actual assigned treatment post-IDT walkthrough, from the prescription
- Actual cut unit polygon, post layout, including stand ID and treatment type
- **Miles of temporary road built and decommissioned**

Significance: The added sentences do not change the analysis. The bullet point adds another minimum requirement for treatment tracking to ensure the miles of temporary roads built do not exceed those analyzed. The addition also refers the reader to the newly added roads section in the Aquatic and Watershed Condition-based management approach, ensuring consistency for road activities between the two approaches.

4. **FEIS Volume 2, Appendix D Implementation Plan, Section D – Rim Country Condition-based Management Approach, Initial Resource Review (p. 328)** the following bolded text is added and the strike-through text is deleted from the *Initial Project Resource Review* section:

Initial Project Resource Review

The first step in any project implementation approach would be the initiation of a pre-project review. This would include a review of existing conditions, **NEPA and** land management plan components, federally-listed species recovery plans, and the ~~current land management plan~~ **Rim Country Project** Biological Opinion. A review of the project design features, best management practices, project checklists, and mitigation measures would also occur. **Depending on their nature, implementation of these design features may take place during project planning, layout, implementation, or post-implementation. Consideration of the design features at each step of the process will ensure that the design features are appropriately incorporated into project implementation. A review of the design features, as well as this implementation plan, should take place at every step of implementation.** Additionally, this review process would identify upland vegetation as well as aquatic and watershed focused restoration priorities in the project area. For more information on the integration of these two components of the Rim Country Condition-based Management Approach, see the section below Integration of Aquatic and Upland Management Activities.

As part of the interdisciplinary review during implementation, while projects are being chosen and design elements being verified, if new information or changed circumstances are discovered, procedures at FSH 1909.15 part 18 would be followed, commonly called a Supplemental Information Report (SIR). The SIR would determine if the new situation is within the scope and range of effects considered in this analysis; if not, a supplement, correction, or new NEPA decision may be required. New information or changed circumstances might include such situations as a large wildfire, other large-scale disturbance events, or a change in special status species lists.

Significance: The added text does not change the analysis. The added text provides additional clarity on when design features and the implementation plan would be reviewed in project implementation. The addition also provides additional information as to Forest Service procedures for changed circumstances or new information.

5. **FEIS Volume 2, Implementation Plan, Condition-based Management Approach for Vegetation-focused Restoration Treatments (p. 330)** the following section in its entirety is added before the *Evaluate Special Management Considerations* section:

Prioritization

Upland restoration activities would be prioritized at the forest and district level in coordination with partners and in accordance with applicable agreements. Many considerations could be used to prioritize proposed locations and timing of upland vegetation restoration activities including areas with: wildland urban interface and USFS or USFS permitted infrastructure, highest risk for uncharacteristic fire behavior, important habitat for federally listed, candidate or sensitive species, integrated aquatic and watershed restoration activities, and additional areas that represent public, stakeholder, and partner values.

Table D.2-errata Condition-based Management Approach for Vegetation Activities: Considerations for prioritizing vegetation restoration activities

Consideration	Description
Wildland Urban Interface and USFS authorized Infrastructure	Wildland-urban interface (WUI) includes those areas of resident populations at imminent risk from wildfire, and human developments having special significance. These areas may include critical communication sites, municipal watersheds, high voltage transmission lines, church camps, scout camps, research facilities, and other structures that, if destroyed by fire, would result in hardship to communities.
High risk for uncharacteristic fire behavior	These fires result as a consequence of more continuous canopy cover, ladder fuels, and accumulated live and dead woody material.
Candidate or sensitive species	The presence of these species and improving their habitat could increase the prioritization of a project over a site that had none present.
Integrated aquatic and watershed restoration activities	Incorporating aquatic and watershed restoration activities in an area with other restoration treatments whenever possible is one way to create efficiencies with heavy equipment and personnel.
Public, stakeholder, and partner values	Projects that already have partners or interested partners, particularly if funding is available, should be considered.

Significance: The analysis is not affected by this change. The added section provides a guide for project prioritization and consistency with the Aquatic and Watershed Condition-based Management Approach.

6. **FEIS Volume 2, Appendix D, Implementation Plan, Condition-based Management Approach for Vegetation-focused Restoration Treatments, Treatment Assignment Decision Tree, Decision Tree Modifiers, Inventoried Roadless Areas (p. 337)** the following bolded bullet points are added:

Inventoried Roadless Areas

All or portions of eight Inventoried Roadless Areas exist in the project area. Restoration activities within IRAs would be consistent with the 2001 RACR Exception Criteria (see the Inventoried Roadless Area Specialist Report – Regional Forester IRA Briefing Paper), require additional notification and approvals, and incorporate design features (appendix C). Treatments in Inventoried Roadless Areas shall be designed to maintain the overall roadless character of inventoried roadless areas. Additional considerations for management activities in IRAs are listed below:

- Temporary roads shall not be built in Inventoried Roadless Areas. No road realignment or reconstruction is allowed in Inventoried Roadless Areas;
- Strive to make stump heights 8 inches above ground (uphill side) or lower, with 12-inch heights the exception and rarely occurring;
- Slash must be treated or removed;
- Use existing barriers (roads) and natural barriers as control lines whenever possible;
- Cable operations shall not be conducted in Inventoried Roadless Areas.
- **Slopes of 40% or more will receive hand thinning treatments where assigned.**
- **Mechanical treatments in IRAs will only occur in the identified areas and are spatially fixed (see IRA Specialist Report Appendix A - Maps for locations).**

Significance: The added text provides consistency with the Inventoried Roadless Area considerations and does not change the analysis conclusions.

7. **FEIS Volume 2, Appendix D, Implementation Plan, Aquatics and Watershed Restoration Condition-based Management (p. 341)** the following section in its entirety is added after the *Aquatics and Watershed Restoration Condition-based Management* section and before the *Introduce Evaluation Methods* section:

Roads

Temporary Roads: Temporary roads may be new and/or can occur on existing unauthorized roads to facilitate mechanical treatments. Temporary roads will require concurrent implementation of all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C including, but not limited to, SW013, SW021, SW048, SW056, SW057, SW059, SW063, SW069, AQ014, AQ019, BT008, CT001, CT010, NW001-NW008, RM001, RM003, RS001-RS002, RS004-RS006, RS010, RS013, SW017, SW031, SW039, SW040, SW058, SW060, SW062, SW065, SW080, TR001-TR013, WL006, WL010, WL016, WL022, WL025. Per design feature TR008, as a condition of approval for use of a temporary road under any contract involving mechanical thinning, temporary roads would be decommissioned, using any one or combination of appropriate methods (FSM 7734.1, also see TR007), by the purchaser/contractor immediately after mechanical treatments and restoration work are completed.

Road Decommissioning: Road decommissioning is defined as: "Activities that result in the stabilization and restoration of unneeded roads to a more natural state" (36 CFR 212.1, FSM 7705 – Transportation System). The Forest Service Manual (7734.1) identifies five levels of treatments for road decommissioning which can achieve the intent of the definition. These include:

- Block entrance
- Revegetation and water barring
- Remove fills and culverts
- Establish drainage ways and remove unstable road shoulders
- Full decommissioning, recontouring and restoring natural slopes

These five treatments provide a wide range of options to stabilize and restore unneeded roads. Depending on ground conditions and road location, restoration may be achieved by a combination of the treatments listed.

National Forest Systems roads that are not open to the public and/or no longer needed for administrative and/or permittee use and unauthorized roads, all of which are not open for public use, could be decommissioned. Any unauthorized roads within the project area on all forests could be decommissioned. Transportation Analysis Process reports and Travel Management decisions for the Apache-Sitgreaves, Coconino, and Tonto National Forests and site-specific on-the-ground evaluations would be adhered to in selecting roads for decommissioning. Roads currently designated as open on a forest's Motor Vehicle Use Map would not be decommissioned or closed under the action alternatives. Roads not identified for decommissioning in the Transportation Analysis Process or Travel Management decisions for the forests would require an additional NEPA analysis for decommissioning.

Roads for decommissioning would be selected during project planning and all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C would be implemented during the decommissioning of the roads. The Restoration Assessment Framework (pp. 349-360) would be used for decommissioning activities.

Road Relocation: Road relocation is defined as moving an existing road from its current location and relocating it to a new location. When roads are relocated, their former location would be decommissioned. Roads or road segments would be identified for relocation at the time that task orders and other projects are implemented. Roads for relocation would be selected during project planning and all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C would be implemented during the relocation. The Restoration Assessment Framework (pp. 349-360) would be used for relocation activities.

Road Maintenance and Reconstruction: Road maintenance is defined as, "The upkeep of the entire transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-control devices as are necessary for its safe and efficient utilization. This work includes brushing of roadside vegetation, falling danger trees, road blading, cleaning ditches, cleaning culvert inlets and outlets, etc." (36 CFR 212.1).

Some roads may require more substantial work outside of road maintenance. These improvements would be done to improve and restore National Forest System roads. Improvements would provide serviceability for project haul vehicles and harvest equipment, as well as proper hydrologic function and stream protection according to applicable best management practices. Actions could include surfacing, clearing, excavation, adding or replacing culverts, constructing drain dips, road widening, or riprap fills.

Roads identified for maintenance or reconstruction would be selected during project planning and all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C would be implemented during the activity. The Restoration Assessment Framework (pp. 349-360) could be used for relocation activities.

Significance: The analysis is not affected. This section reiterates text that is within the FEIS Volume 2, Chapter 3 Transportation analysis (pp. 93-97). The section also identifies the applicable design features of temporary roads that are within Appendix C. The section clarifies that decommissioning of any roads that have not been identified for decommission in the Transportation Analysis Process or Travel Management decisions for the forests would require additional NEPA analysis.

8. **FEIS Volume 2, Appendix D: Implementation Plan, Section E - Management Direction, Desired Conditions, and Treatment Design, Mexican Spotted Owl Habitat. Recovery Nesting/Roosting Habitat Mechanical Thin and Burn Treatment Design (p. 365)** delete the sentence "Retain trees greater than 24 inches d.b.h." from the following section and replace it with the highlighted and bolded text:

Recovery Nesting/Roosting Habitat Mechanical Thin and Burn Treatment Design

Prescribed Burning Objectives and Tactics:

Prescribed burns will be used to treat fuels and mitigate fuel hazards where and when feasible by increasing tree canopy base height and reducing litter/duff cover and other surface fuel loading. Prescribed fires are designed to maintain and enhance desired recovery nesting/roosting habitat forest structure, tree densities, snag densities, and coarse woody debris levels.

Course woody debris would be managed for 3 to 10 tons per acre, and downed logs greater than 12 inch midpoint diameter would be managed for three or greater per acre. Averages are at the landscape-scale;

Use prescribed burning management to meet desired condition and mitigate fuel hazards with prescribed fire that produces low to moderate-severity fire effects;

Other activities tied to prescribe burning include line preparation which includes fuel breaks. Logical fuel breaks include existing roads; minimal line construction would be used depending on road system density;

Prescribed burning includes following concurrence and consultation advice from FWS.

Mechanical Thinning Objectives and Tactics:

Use mechanized equipment to reduce and remove hazardous live and dead fuel loading;

Design tree thinning treatments to meet desired conditions. Retain Gambel oak; remaining species may be felled to meet desired conditions;

Activity and residual slash may be removed, masticated, lopped and scattered or piled to burn in place in coordination with fire/fuels staff;

Where possible, manage for the sustainability of large oaks by removing ladder fuels and overtopping trees;

Snags greater than 18 inches would be managed for two or greater per acre in ponderosa pine and three or greater per acre in mixed conifer. Averages are at the landscape-scale;

Original: Retain trees greater than 24 inches d.b.h.

Errata: **In Recovery Nest/Roost habitat strive to maintain all trees ≥18 inches dbh except in overriding management situations such as for human safety.**

Stands of recovery nesting/roosting habitat that are currently simultaneously meeting conditions in Table C.3 of the Mexican Spotted Owl Recovery Plan should not go below identified levels.

Significance: The typo in the FEIS does not change the analysis. Appendix C Design Feature WL002 contains the correct text that was referenced in the analysis.

Appendix E – Monitoring and Adaptive Management Plan

1. **FEIS Volume 3, Appendix E – Monitoring and Adaptive Management Plan, Adaptive Management Process (pp. 7-8)** the following bolded text is added to the paragraphs:

The 4FRI Rim Country project, like the first 4FRI EIS project, is a long-term forest restoration effort that is unprecedented in scale in the southwestern region of the United States. Implementation of the entire Rim Country project would take place over a period of 20 years or when activities can be funded or completed. This work would occur as the Southwest is experiencing climatic changes, including periods of extended drought and increased temperatures. These changes are lengthening the wildfire season in the Southwest, shifting plant communities, and threatening native biodiversity, among other effects (Gonzalez et al. 2018). Together with the large scale and long duration of the project, this may require modifications of planned treatments before they are implemented **as part of the condition-based management approach described in Section D of Appendix D.** These changes would be in addition to any suggested adaptive management actions identified through monitoring. This MAMP is intended to guide monitoring that can help the Forest Service learn from treatment effects and respond to changing conditions.

Adaptive management (AM) and condition-based management (CBM) both account for environmental analysis with responsiveness and flexibility; however, with AM, adjustments to management activities occur after their initial implementation and are based on monitoring results. If monitoring reveals that the action is not having its intended effect, it is modified to improve outcomes. With CBM, appropriate management activities are confirmed or modified prior to initial implementation based on field reviews that validate the current location-specific resource conditions. A CBM project can incorporate AM, but it is not required. Adaptive management refers to a "rigorous approach for learning through deliberately designing and applying management actions as experiments" (Murray and Marmorek 2003). In an adaptive management process, monitoring of indicators prior to and in response to management actions provides information for understanding if those management actions are leading to progress toward desired conditions and/or towards thresholds that should trigger a change in management response.

Significance: There is no change to the analysis. The change clarifies the difference between adaptive management and condition-based management.

Appendix H – Response to Comments

1. **FEIS Volume 3, Appendix H Response to Comments, Smoke, General Concern, #10 (p. 335)** the entire response is modified as follows:

The Nevada Test Site, 65 miles north of Las Vegas, was a nuclear weapon test site. Nuclear testing, both atmospheric and underground, occurred here between 1951 and 1992. The U.S. government conducted a total of 1,021 nuclear tests at the site (Atomic Heritage Foundation, 2022). Out of these tests, 100 were atmospheric, and 921 were underground (Atomic Heritage Foundation, 2022). The atmospheric nuclear tests caused concern about potential health effects on the public, and environmental dangers, due to nuclear fallout. As a result, the last atmospheric test occurred on July 17, 1962, at the Nevada Test Site (Atomic Heritage Foundation, 2022). In 1990, Congress passed the Radiation Exposure Compensation Act to make payments to people who met a set of conditions who claimed to have been affected by the fallout from the nuclear tests (USDOJ, 2022). The individuals and communities who were exposed to nuclear fallout are now called "Downwinders." The Rim Country Project lies within the Radiation Exposure Compensation Act Downwinder Area (USDOJ, 2022). A claimant must establish a physical presence in the Downwinder area for at least two years during the period beginning on January 21, 1951, and ending on October 31, 1958, or for the entire period beginning on June 30, 1962, and ending on July 31, 1962 (USDOJ, 2022). An eligible claimant must also establish a subsequent diagnosis of a specified compensable disease.

According to recent research conducted by Wei Min Hao: Following a radiological release event, nuclear power plant incident, improvised nuclear device, nuclear testing site, or hazardous waste site a wide area may be contaminated by radiological materials, including significant forest areas. There is a potential for emissions of radionuclides such as cesium-137 from a wildfire over a radionuclide-contaminated forest. The paper reports on a laboratory simulation study of a wildfire with two types of biomass doped with nonradioactive cesium. This simulation suggests that only 1 to 2.5 percent of the cesium in the biomass would be emitted from the wildfire, while the rest would reside in the residual ash. In the study, pine needles were the only contributor to the air emissions of cesium; duff was not a source of cesium emissions. In the study, cesium emitted from the simulated wildfire was concentrated in particle sizes larger than 10 micrometers (Hao et al. 2018). Hao (2018) confirms that cesium and other radionuclides that would be emitted by the Rim Country Project would not reach unsafe levels. This research can be found in: Hao et al. 2018. Cesium emissions from laboratory fires. Journal of The Air and Waste Management Association 2018, Vol. 68, No. 11, 1211–1223 https://doi.org/10.1080/10962247.2018.1493001.

Also see the literature review within the FEIS, Air Quality, Radioactive Emissions section.

The Forest Service is responsible for controlling emissions from prescribed burning on National Forest System lands and the agency is required by law to manage smoke emissions in compliance with Arizona Department of Environmental Quality regulations. See response to smoke general concerns 1, 2, and 5.

Significance: The change in the comment response clarifies that the Rim Country Project area is within the Radiation Exposure Compensation Act "downwinder" area. The FEIS Air Quality Affected Environment has been updated with the Radioactive Emissions analysis and updated literature.