Comment Number	Comment	Comment Source	How Addressed
Letter 1		**Danny Smith, Graham County Board of Supervisors**	
1	Yes please move forward with the 4FRI project. Please start now and please implement the project to the largest degree possible. Unquestionably, like every subsequent year, we will lose more forest within the area this fire season before August 8th as "comments" are collected.		Thank you for your comment. We are streamlining the NEPA process for the Rim Country Project so it will be ready to implement as early as 2019. This will add to the over 600,000 NEPA-ready acres already approved for implementation.
2	The largest measurable environmental impact on the area will be catastrophic fire. This project gives Arizona forests and the nation a tremendous opportunity to demonstrate positive outcomes as a result of the thinning and rehab activities in the project. For recreation, water, and wildlife sake please put Arizonans to work saving our forests for future generations. Let's do it!		The Rim Country Project will comply with law, regulation, and policy when developing alternatives for analysis in EIS. The alternatives will consider a range of treatment types.
Letter 2		**Rob Nelson, AZ DOT Northcentral District**	
1	ADOT's Northcentral District is in support of the proposed project as it provides for a healthier forest, greater vegetation diversity, greater wildlife habitat, and decreased risk of high intensity crown fires.		Project support
2	Additionally, we would like USFS to consider coordination with ADOT to perform these activities within ADOT right-of-way (ROW). ADOT is open to working with USFS to address the removal of trees with the recovery zone and thinning of trees within ADOT ROW. Adding these elements to the proposed action would benefit winter storm management practices, potential hazard trees within ADOT ROW, and sight distances being improved for motorists to react to concealed wildlife that can impair driver safety.		The Forest Service will coordinate with ADOT on tree removal within recovery zones and ADOT ROWs to improve public safety during implementation.
3	Please be aware of ADOT's requirements for an encroachment permit for any potential activities within the ADOT Right of Way (tree cutting, fencing modification and access control). ADOT's contact for encroachment permits is listed below.		The Forest Service will coordinate with ADOT during implementation to meet the requirements for permits as necessary.

4	Please notify our local ADOT representatives when burning activities (smoke) could potentially impact motorist safety. ADOT will need to install proper signage and message boards to inform the traveling public of potential activity impacts.		Design criteria will be developed to insure the Forest Service coordinates with local ADOT representatives when there is the potential for smoke from prescribed burning to impact motorist safety.
5	Sediment (mud), vegetation or debris causing track-out from vehicles onto ADOT roadways, namely SR 260 and SR 87 for these proposed actions, must be mitigated using Best Management Practices (BMP5) (track-out pads, washing, etc.). For your convenience, attached to this comment letter is ADOT's stabilized construction entrance specifications/design sheet.		National Forest System roads entering SRs 260 and 87 will have mitigations measures in place to prevent mud and debris from entering the ADOT roadway.
6	Actively limit the amount of obliteration of existing ground cover vegetation to limit erosion.		Retention of ground cover is key in protecting soil and watershed health. Best Management Practices (BMPs) and soil and water conservation practices will be implemented to mitigate the loss of ground cover.
7	If erosion potential is increased due to the project, install additional control measures to control sediment in storm water runoff (straw wattles, hydro seeding, check dams, etc.)		BMPs and Soil and Water conservation measures will include provisions for erosion and water control to minimize effects of storm water runoff.
8	Minimize the potential spread of noxious weeds onto the ADDT Right of Way. Incorporate proper BMP's (controlling weeds near roadways, cleaning vehicles, etc.) when conducting these activities.		The Rim Country Project will make use of BMPs and mitigation measures to control weeds in ADOT rights of way.
Letter 3		**Bill Davis**	
1	Be prepared to "adaptively manage" this operation. Make allowances for learning to improve actions. We do not know everything and the actions we take may or may not work. Be flexible.		Monitoring and adaptive management will be addressed through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan. In addition, as stated in the Proposed Action, the Rim Country Project will make use of a flexible toolbox approach, determining types of treatments that would work best in certain conditions, then deciding on specific treatments or tools during implementation. This approach will provide flexibility during implementation. Within the broader adaptive management framework, learning from implementation and monitoring of mechanical treatments for restoration, the IDT will analyze a wide variety of possible treatments across the landscape, and defer the final treatment determination until the most accurate and current on-site stand conditions are determined.

2	Additional roads together with the many existing roads and trails, increases the opportunity for access to the project area for off-road vehicles after completion of treatments and the mitigation measures have been employed. Although you have indicated several mitigation measures proposed for roads and trails in the area, these can be quickly negated if sufficient enforcement measures are not used. This could lead to the very problems your mitigation measures are intended to prevent, e.g., erosion of soils and deposition, wildlife habitat disturbances, etc.		Unauthorized vehicle use is an ongoing issue on Forest Service lands. Forest Service law enforcement officers make every effort to control this activity through existing tools including education, enforcement, and engineering that have been used with implementation of the Travel Management Rule.
3	Treatments vary in their impacts to streams. How are stream values incorporated into decisions to go with various treatment methods? How do you propose to prioritize MSO PAC treatment methods with those needed to protect streams?		Stream values will vary by stream type (perennial, intermittent, and ephemeral), as well as by whether or not a stream is occupied by aquatic species. Values like stream habitat and stream shading will be incorporated into treatments using a flexible toolbox approach. This approach will consider stream values that may need improvement and list treatment options. Protection of stream values will also be incorporated into treatments through design features, conservation measures for aquatic species, and best management practices for water quality. Treatments and their effects on streams, along with resource protection measures, will be analyzed in the Rim Country EIS and the Watershed and Aquatics Reports. MSO PAC treatments will be coordinated with the protection of streams in the PACs.
4	What does it mean to "restore" 350 miles of stream "habitat?" Vegetation clearing will result in more warming of waters in Arizona even with maintenance of riparian corridors. How can you clear and thin vegetation while maintaining stream water temperatures?		Proposed stream habitat restoration refers to restoring in stream habitat to provide for habitat complexity and thermal refugia (pools) for stream and aquatic species. Maintaining cool water temperatures is an important component of stream riparian restoration treatments. Silvicultural prescriptions that provide for riparian desired conditions and stream shading would be implemented on a site-specific basis. Mechanical thinning and prescribed fire activities within riparian corridors should benefit the ecological condition of the riparian area. Benefits may include enhancing growth of large wood, reducing ladder fuels, or improving the condition of riparian vegetation such as hardwoods. Stream temperatures are driven by

			subsurface flow (cooling) and surface flows (diurnal fluctuations). This will be addressed further in the Rim Country EIS, the Aquatics Report, and the Implementation Plan.
5	You mentioned the use of antelope as an indicator species and this works for terrestrial habitats; however, you need indicator species for aquatic habitats as well. We suggest use of EPT organisms as indicators of impacts of your actions on stream health but don't see this as an integral part of the project. Monitoring their presence before, during and after the treatments will provide vital data for adaptively managing the treatments.		The Proposed Action spoke to antelope being a Management Indicator Species under the 1982 Planning Rule for some Forest Plans. The proposed action does not discuss monitoring, but a Monitoring and Adaptive Management Plan will be developed, in collaboration with the Multi-party Monitoring Board, for the Rim Country Project.
6	Timing of tree removals and prescribed burns no doubt will overlap critical nesting periods for MSOs. It would seem that winter activities when sufficient snow is available may be the best time to conduct such operations as this would avoid their nesting period and reduce erosion potential. Obviously, monitoring of nest sites before, during and after operations is a critical action.		Design features will include avoiding any PAC treatments during critical nesting periods for MSOs and using timing restrictions for any treatments in MSO habitat. Monitoring of PACs in the Rim Country project area will be determined by the Forest Plan direction and the Monitoring Plan, in consultation with USFWS.
7	The intensity of prescribed burns must be a consideration. Too many ground fires over small areas may result in excessive ash that could be washed into the reservoir. We assume the prescribed ground fires will be spaced out, spatially and temporally, to avoid this potential problem.		Prescribed fires are implemented based on burn plans, which are tiered to a NEPA document. In this case, they would be tiered to the Rim Country EIS, and the desired conditions it describes. Prescribed burn units are laid out in consultation with other resource specialists, including soil scientists, hydrologists, and wildlife managers. That helps ensure resource objectives and concerns for all resources are met or addressed when a prescribed fire is implemented.
8	Although much of the area is relatively flat, there are many small channels and valleys that conduct fair volumes of water during precipitation events. Logging activities that result in yarding on the fall line into these valleys could exacerbate erosion of soils despite your efforts to mitigate this with seeding, mulching, etc. Even slight deviations from the fall line may help prevent many erosion issues.		As project design features, BMPs are prescribed to limit the amount of disturbance in and around perennial, intermittent, and ephemeral stream channels. Careful implementation around these channels reduces the need for post-treatment remediation. If necessary, there are resource protection requirements in contracts and agreements that can initiate remediation efforts.
9	Also, these trails can, and probably will, be used by off-road vehicles after the project is completed, unless maximum effort is made to discourage and prevent it.		See response above for comment 2 from Bill Davis.
10	The inventory of species in the project area needs to be examined closely for potential *TIE* listings or other sensitive		The analysis will identify and analyze effects on threatened and endangered species, FS sensitive species, management

	species. Using mitigation measures that can help a group of species associated with similar habitats may be a prudent approach and one that could prevent more stringent measures being required later on.		indicator species (MIS), and migratory bird species. Design features and mitigation measures will be designed for groups of species and individual species.
11	The speed at which this project can be conducted is critically important to all of us. It is necessary to involve many in conducting this project but this should not result in stagnation due to an increasing bureaucracy. Please keep your eyes on the goal and not let the need to collaborate, mediate and compromise deny all of us the urgently needed protection this project will provide.		The FS will continue to streamline the NEPA process as much as possible, as well as include measures to facilitate implementation.
12	Actions on the 4FRI should be collaborated with local communities. Your actions may be compromised if similar efforts are not employed within local communities with forest thinning issues. Not sure how this gets accomplished but in should be considered a necessary part of the entire effort.		The FS will continue to collaborate with local communities and organizations regarding the 4FRI Rim Country Project.
Letter 4		**Aaron Green, District Manager, Northern District Arizona Dept. of Forestry and Fire Mgmt.**	
1	The State of Arizona Department of Forestry and Fire Management is writing to comment on the 4FRI Rim Country Proposed Action. Overall, we are proud to contribute as a partner, collaborator and stakeholder in the 4FRI process and feel that the Proposed Action is a solid, well developed document.		Project support
2	We have two concerns regarding issues that were not addressed in the Proposed Action: biomass utilization and disposal and the utilization and disposal of the Pinon and Juniper. Bother of these issues are opportunities and obstacles, but should be considered in all phases of the 4FRI projects. We do not feel that either of these issues are insurmountable to successful implementation, but would like to see a wide range of options for utilization and disposal addressed in the alternatives in the Environmental Impact Statement. These issues will have a direct impact on the project's success and economical feasibility.		Although the FS cannot ensure economic viability, we are considering options to increase opportunities. The economics analysis for the Rim Country Project will discuss a range of options for biomass utilization and disposal. And, the flexible toolbox approach will provide flexibility in implementation and optimization of productivity across treatment areas.

	We recognize that economically viable biomass utilization, in the quantity addressed in the Proposed Action, is a challenging issue that affects engaging and attracting industry to Arizona and this project. We strongly support the 4FRI goal of an engaged industry being able to cover all or nearly all of the costs of removal of forest restoration byproducts by the use and sale of the products removed. There are serious concerns that if complete biomass removal is mandatory, the burden on the Forest Products Industry will be too great to overcome. We would like to recommend a wide range of options be considered in the alternatives that relates to the issue of biomass that would allow for biomass removal where economically feasible but would also allow other options to dispose of uneconomically feasible biomass.		
3	We are similarly concerned about the economic viability of the more than 111,000 acres of Juniper and Pinion Juniper woodlands identified within the Rim Country project area. We are in favor of the goals and desired future conditions of the grassland and meadow restoration identified in the Proposed Action. We recognize the need to mechanically treat in these cover types to achieve the restoration goals, but have concerns about the lack of existing markets and the low value of the material generated by treatments being able to overcome the expense of mechanical treatments in these woodland covertypes.		Although the FS cannot ensure economic viability, we are considering options to increase opportunities. The economic analysis in the Rim Country EIS will evaluate the economic viability of proposed treatments. The Rim Country Project will comply with law, regulation, and policy when developing alternatives for analysis in the EIS. The alternatives will consider a range of treatment types.
4	Ultimately, we would like to see as many options available to limit constraints on the Forest Products Industry that might prevent, limit or delay the successful implantation of the 4FRI Rim Country Proposed Action. Thank you for your consideration of our comments and we look forward to continuing to work together to find economically viable solution to forest restoration and resiliency in Arizona.		The Rim Country Project will comply with law, regulation, and policy when developing alternatives for analysis in EIS. The alternatives will consider a range of treatment types. Although the FS cannot ensure economic viability, we are considering options to increase opportunities. The economic analysis in the EIS will evaluate the economic viability of proposed treatments.
Letter 5		**Joni Howard**	
1	We live in Deer Creek so this FRI doesn't really pertain to us but we are surrounded by Tonto National Forest lands so I wanted to get my thoughts into your committee. I think it's great and is really needed especially the thinning. Our forests are too overgrown with grasses, brush, bushes and trees growing so		Project support

	close together. I have seen the old pictures of the forests on the rim from 100 years ago and you can tell that Mother Nature did an excellent job keeping the forest thinned. Good luck to you all fighting environmentalists and those that don't get it.		
Letter 6		**Jim Strogen**	
1	Take advantage of opportunities that present themselves like: Dead oak brush under tall canopy along the road to Tonto Hatchery just after you turn off from 260. It would seem a perfect time to do a burn to clean out that understory that's already dead		Dead and down fuels may be treated in conjunction with silvicultural treatments of standing live trees if prescribed fire is part of the prescription. Many areas will be analyzed for prescribed burns only. Prioritization of prescribed fire and mechanical treatments will be done by the districts during the implementation of the Rim Country Project. The area mentioned in the comment is proposed for prescribed fire. The Fire Ecology and Air Quality Report will include modeled changes in potential fire behavior and effects from the proposed treatments.
2	Be aware of conditions like: the grass under the powerlines on the road up to the Tonto hatchery. High grass under big hill that with a careless cigarette could impact power and get into forest quickly.		The conditions under which the area would be burned with prescribed fire would be determined by the district when they implement prescribed fire. Those conditions will be determined based on desired fire effects and behavior.
3	Be sensitive to impacts on streams. Treat areas with native trout or areas that historically supported native trout with the same degree of concern, respect as the Mexican spotted owl and the norther goshawk.		The proposed action includes streams currently occupied by native trout or that are proposed for reintroduction. Apache and Gila trout are listed species, and their stream habitat or populations are given the same degree of sensitivity as any federally-listed species. These trout will be analyzed in the Rim Country Aquatics Report.
4	Time and money it takes to get the forest back to a safer state.		The Forest Service appreciates that it takes time, money, and partners to accomplish all of the restoration work we are proposing. The FS is working on innovations and efficiencies to accomplish restoration in the 4FRI footprint, and appreciates other ideas on how to successfully accomplish this work
5	Priority to be given to protecting CC Cragin area and Payson's water source.		A prioritization of implementation will be evaluated once the analysis is complete.
Letter 7		**4FRI Stakeholder Group**	
1	In collaboration with the Forest Service, the Stakeholder Group has been an integral part of the 4FRI planning effort since 2009. Together we successfully developed in 2015 a robust Environmental Impact Statement (EIS) and Record of Decision		Project support

	for the 1st 4FRI analysis area that is now being implemented as part of the largest forest restoration effort in the country. We look forward to duplicating this success with the Rim Country EIS in order to extend restoration treatments along the entire Mogollon Rim, over an area totaling in excess of 2 million acres. The comments expressed in this letter represent the views of the Stakeholder Group. The Stakeholder Group represents approximately 30 organizations and businesses, spanning a diversity of interests from conservation, industry, local government, academia, recreation and the public. We all stand to be directly impacted by the Rim Country Proposed Action. This letter has two purposes: 1. To express strong support for the Rim Country Analysis; 2. To provide scoping comments regarding the Rim Country Proposed Action.		
2	I - Support for the Rim Country Project As amply documented by the conservation, academic and agency scientists, and as generally well supported by an overwhelming majority of stakeholders, the highly departed current conditions of the forested ecosystems in the Rim Country require action to re-establish forest structure, pattern and function, in order to increase forest resiliency and reduce the risk of uncharacteristic fire behavior. The Stakeholder Group therefore strongly supports the objective of the Rim Country Analysis “to reestablish and restore forest structure and pattern, forest health, and vegetation composition and diversity in ponderosa pine ecosystems to conditions within the natural range of variation, thus moving the project area toward the desired conditions” (Rim Country Proposed Action). The Stakeholder Group further strongly supports the desired outcome of “improving structure and function (and) increas(ing) ecosystem resiliency (and) the ability of [the Rim Country] ecosystem to survive natural disturbances such as fire, insects and disease, and climate change without changing its inherent function” (Rim Country Proposed Action). Therefore, the Stakeholder Group strongly supports the Purposes and Needs stated for the Rim Country Project to:		Project support

	• "Increase forest resiliency and sustainability; • Reduce risk of 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" (Rim Country Proposed Action).		
3	II - Comments on the Rim Country Proposed Action 1) Good Starting Point Document The Stakeholder Group appreciates the overall quality and comprehensiveness of the Proposed Action, and passes on a resounding "Well Done!" to the people and the team responsible for it.		Project support
4	2) Need to Include All Stakeholders Input The Stakeholder Group appreciates that much of the early stakeholder input has been integrated in the Proposed Action, as illustrated in the cross-walk document *How Feedback on Rim Country draft PA was Addressed.* However, the stakeholders noted a number of areas in which the Proposed Action could more fully incorporate comments provided on the Draft Proposed Action. These include issues and opportunities related to habitat restoration and management for terrestrial and aquatic wildlife. We request that all input from all stakeholders be considered and analyzed in the EIS, and that the Forest Service extend all possible opportunities to stakeholders to not only provide, but further discuss their input with the interdisciplinary team. In the spirit of collaboration, and to SHG scoping comments on Rim Country Proposed Action page 3 of 6 ensure transparency, when stakeholder input is not included, a disclosure and explanation of the decision should be shared with the Stakeholder Group.		All comments received during scoping are given careful consideration as part of the NEPA process. The interdisciplinary team (IDT) will be available to the Stakeholder Group for any questions or concerns about how stakeholder input is considered during the planning process. The FS will be considering all opportunities to include terrestrial and aquatic wildlife habitat restoration and improvements in the Rim Country Project.
5	3) Need for Details The Stakeholder Group understands and appreciates that a Proposed Action, by its very nature, cannot be – and should not		Definitions of terms will be included in a Glossary for the Rim Country EIS. The Proposed Action will be fully developed and detailed in the EIS.

	be - as detailed as an Action Alternative, or as an Impact Analysis. However, we are concerned that the extremely general short paragraphs that describe possible restoration actions, such as the paragraphs on Proposed Treatments (p. 21), Grassland and Meadow Restoration (p. 25), Spring Restoration (p. 26), Riparian Stream and Stream Channel Restoration (p. 26), Stream Habitat Restoration (p. 26), Aspen Restoration (p. 26), do not convey anything more substantial than generalities, and do not provide the public with a meaningful understanding of the number, intensity, distribution, timing or potential effects of the actions that are being proposed. From a different perspective, we observe that some new terms such as "No Fire" (e.g. Tables 3 & 4, p. 7) have appeared but are not specifically defined, and that the language addressing the long standing issue of old growth and future old growth shifts from the notion of "old trees" to "large trees" to "old and large trees." Additional consistency and definition of terms used, is needed. We fully expect that the Rim Country EIS Action Alternatives and associated Effects Analyses will provide all needed details for each Action Alternative and Effects Analysis, and that these details will be made available to the Stakeholder Group in a timely manner, so that Stakeholders can conduct additional analysis and provide input to the Forest Service. We further request that the proposed management actions in old growth and future old growth (large young trees) stands be very explicit, and include the clear statement that no old growth trees (predating Euro-American settlement or currently exhibiting old growth structural characteristics) shall be cut. Regarding the Stands with Preponderance of Large Young Trees (SPLYT), we request that the unfinished work currently underway in the Planning Workgroup between the stakeholders and the Forest Service continue in order to jointly and collaboratively identify the most accurate descriptors and characterizers for the SPLYT, and the most appropriate		The FS continues to work closely with the Stakeholder Group and provide opportunities for close communications and considerations as the EIS is prepared. The FS will develop other action alternatives to the Proposed Action that address the key issues resulting from scoping comments. The FS recognizes the importance of old growth and stands with preponderance of large young trees and will continue to work closely with the Stakeholder Group on how the analysis will consider and include these topics. The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies. The Forest Service will continue to actively engage in the work underway in the Planning Workgroup on the identifying stands with a preponderance of large yount trees (SPLYT) and the most appropriate treatments for these stands.

	treatments for these stands. This issue is very important to the Stakeholder Group.		
6	4) Need to Increase and Broaden the Wildlife Focus The Proposed Action would benefit from inclusion of a broader scope of wildlife habitat restoration needs and actions. Notably, the Proposed Action should address increasing wildlife diversity through increased spatial heterogeneity of habitat components for aquatic and terrestrial wildlife within the footprint, not just those that are federally protected. The Stakeholder Group understands that the Cooperating Agency relationship between the Forest Service and the Arizona Game & Fish Department will be a conduit for addressing some of these concerns. However, input from other stakeholders should be fully incorporated at the scoping stage as well, as there is no certainty that the Forest Service will include such input later in the NEPA process. The Stakeholders request that their issues be included in the Proposed Action to ensure that they are analyzed in the NEPA process. SHG scoping comments on Rim Country Proposed Action page 4 of 6 We therefore request that the wildlife focus be significantly increased and broadened, and that all interested stakeholders be given full opportunity to contribute to the development of restoration actions that relate to fish and wildlife.		The Proposed Action will be fully developed with more detail in the Rim Country draft EIS, and the effects on wildlife from the alternatives analyzed in the EIS, the Wildlife and Aquatics Reports, and the Biological Assessments. For the purposes of analysis, the FS is only required to analyze the effects of management activities on federally-listed species under the Endangered Species Act (1973 as amended), on the Regional Forester Sensitive Species (FSM 2672.42), and Management Indicator Species (36 CFR 219.19 and case law; Tonto and Coconino NFs only). The input of interested stakeholders in the development of restoration activities for fish and wildlife has been requested by the FS. All stakeholder comments, ideas, and input will be incorporated wherever possible in the Rim Country NEPA process. Thank you for your valued input to this process. Additional wildlife habitat restoration activities will be considered to address increasing wildlife diversity for terrestrial and aquatic species.in the fully developed Proposed Action and in other fully analyzed action alternatives.
7	5) Need to Increase and Broaden the Attention to Socio-Economic Issues The Stakeholder Group appreciates the fact that the Forest Service modified its first draft of the Proposed Action to include a Statement of Socio-Economic Purposes & Needs, and an accompanying short narrative in response to the input of the Stakeholder Group. However, we are concerned that this narrative may indicate a worrisome bias when stating: “Engaging industry would offer the opportunity to cover all, or nearly all, of the cost of removal of forest restoration byproducts by the value of the products removed” (Rim Country Proposed Action). While in many cases this statement may be perfectly appropriate, there also exist many cases in which this statement may be leading to unrealistic		Social and economic existing conditions and desired conditions in the Rim Country project area will be addressed during the NEPA process. Although the FS cannot ensure economic viability, we are considering options to increase opportunities. The economic analysis in the EIS will evaluate the economic viability of proposed treatments, using the best available scientific information. The site-specificity of the economic viability analysis will be constrained by available information and uncertainty about future economic conditions, including the location of processing facilities and wood product market prices.

	expectations. Treatment types, biomass removal specifications, current conditions, desired conditions, and maybe above all, treatment locations and hauling distances, are all critical factors that contribute in making the value of the material removed sufficient, or not, and sometimes by far, to fully offset the costs of treatments. The Stakeholder Group therefore requests that socio-economic current existing conditions and socio-economic desired conditions be added during the NEPA process to support the socio-economic statement of purposes and needs, and that detailed analyses of the economic viability of the treatments be conducted during the EIS process, treatment area by treatment area, to guide the Implementation Plan, and, ultimately, inform the selection of the contracting and packaging mechanisms of the treatments.		
8	6) Need for In-Depth Descriptions and Analyses of Proposed Treatments and Restoration Actions As previously noted in Section 3 *Need for Details*, the paragraph on Proposed Treatments (p. 21) is extremely general. Further, the *Mechanical Treatments* table (pp. 22 to 25) outlines a series of ranges of treatment descriptions and objectives (e.g.: Uneven-aged Group Selection in Ponderosa Pine: "thin stands to 20-80 square feet of basal area and establish interspaces over 10-90% of the stand;" Uneven-aged Group Selection in Dry Mixed Conifers: "thin tree groups to 30-100 square feet of basal area;" Intermediate Thin in Ponderosa Pine: "thin tree groups to 70-90 square feet of basal area;" Intermediate Thin in Dry Mixed Conifers: "thin tree groups to 40-100 square feet of basal area;" etc.) but there is no indication of any distribution of treatment intensities across the sites, creating the possibility, that ALL treatments could be implemented at the highest, or lowest, intensity of the ranges, while technically remaining within the specified ranges. Further, the treatment descriptions and objectives do not reference the Best Available Science Information (BASI) sources necessary to assess whether the treatments are likely to meet the objectives of the Proposed Action in the relevant stands, or how the direct or indirect effects of the treatments will impact the neighboring stands.		During the development of alternatives and the analysis of these alternatives for the Rim Country EIS, the FS will provide details on the proposed treatments included in the action alternatives. In the Proposed Action, prescribed fire is proposed for the entire project area where mechanical vegetative treatments are proposed. The decision of whether to implement prescribed fire or mechanical treatments first would be based on priorities, expected fire behavior and effects, burn windows, contracting needs and concerns, and available resources. Design features will be included for the action alternatives to increase the flexibility in implementing both prescribed fire and mechanical treatments. The order (sequence) in which different areas are treated is not a NEPA decision, but is made at the local level, based on time and site-specific conditions. If this kind of sequencing was included in the NEPA analysis, it would decrease both the temporal and spatial flexibility for implementation of mechanical and prescribed fire treatments. For example, if the NEPA specifies that Area A will be cut before Area B, and Area A has a storm event that washes out some roads, Area B would still not be available for treatment until Area A could been treated, or

	Finally, all the proposed mechanical treatments include the statement "and/or Prescribed Fire" (Table 9). We are concerned that many treatments need to include both mechanical thinning "and" prescribed fire. In many cases fire cannot be reintroduced before thinning first, and in most cases thinning should be followed by prescribed fire. The Stakeholder Group therefore requests that the EIS include an in depth description and analysis of the proposed treatment and restoration actions, including the Best Available Science Information (BASI) supporting the design and selection of the treatments, the sequencing of mechanical and prescribed fire treatments, and the detailed analysis of the direct and indirect ecological impacts of the treatments in the Rim Country Analysis. The Stakeholder Group further requests the thorough development of a range of Action Alternatives that addresses the effects of treatment types, treatment intensities, and the cumulative effects of implementation actions across the landscape. In addition, the Stakeholder Group requests that the development of Rim Country Action Alternatives, and their analyses, include additional restoration actions, such as but not limited to restoration of riparian and aquatic habitats, in all those areas and projects (e.g. Cragin Watershed Protection Project (CWPP)), that are located within the Rim Country EIS footprint, and that have been, or are going to be mechanically thinned for wildfire protection or fuels management purposes under separate NEPA analyses.		until the roads could be repaired. Or if the NEPA specifies that a large area must be thinned before it is burned, or burned before it is thinned, and contracting doesn't go smoothly or burn windows don't occur as expected, areas could be tied up for long periods of time with no options for treatments.
9	7) Need to Integrate Monitoring and Adaptive Management Flexible Tools The Stakeholder Group is concerned that Monitoring and Adaptive Management are not explicitly addressed in the Proposed Action. This is an important issue for the Stakeholder Group. Our previous scoping comments for the first 4FRI Proposed Action		Monitoring and adaptive management will be addressed through the inclusion of a collaboratively-developed Monitoring and Adaptive Management Plan. The FS also supports the concepts of collaborative monitoring of soil and water resources during the development of the monitoring plan.

	are still relevant for this Proposed Action: "In addition to the need for a targeted and efficient monitoring program, we also would like to emphasize the tremendous opportunity provided by the 4FRI to increase our understanding of the ecology of these systems. Given the 4FRI's commitment to being a science-based endeavor we would ask that the Forest Service help cultivate an atmosphere that is conducive to research being conducted by a variety of partners. Adaptive management requires explicit statement of goals and objectives, and a well-informed monitoring program that has the requisite power to detect management impacts rapidly enough to inform future management. Furthermore, adaptive management is a structured decision-making process that relies on clearly articulated triggers for management change. Finally, adaptive management requires a commitment to change management when monitoring data indicates that the thresholds identified by those triggers have been crossed" (SHG Comments 1st 4FRI EIS). The Stakeholder Group requests that the Forest Service engage collaboratively with the 4FRI Stakeholder Group to develop a comprehensive Monitoring and Adaptive Management Plan to be included in the Rim Country EIS and Record of Decision.		
10	The Stakeholder Group appreciates the efforts deployed by the Coconino, Tonto and Apache-Sitgreaves national forests and the USFS 4FRI staff and leadership to perform the thoroughly robust Environmental Impact Statement that the Rim Country Project deserves, and we urge the Forest Service Team to complete this task in the timeliest manner. We expect to be actively involved in the development of the Environmental Impact Statement for the Rim Country Project; we hereby reserve the right to provide further comments as the process unfolds; and, in the spirit of collaboration, we respectfully request that the Forest Service commit to receiving and considering further comments and emerging ideas provided under the auspices of continuous scoping as the Action Alternatives are developed and the Effects Analyses are conducted. The Stakeholder Group is committed to working with the Forest Service to design, implement and monitor an ecologically,		The Forest Service appreciates the support of and collaboration with the Stakeholder Group in completing the Rim Country analysis in a timely manner. The FS will continue to work closely with the SHG as the action alternatives are developed and analyzed.

	economically, legally and socially robust Environmental Impact Statement.		
Letter 8		**Peter Steere Tribal Historic Preservation Officer, Tohono O'odham Nation**	
1	On page 3 of the 4FRI Rim Country project – you indicate that one of the purposes of this project is to "preserve cultural resources." And on page 5 you expand on this by stating that "there is a need to reduce threats to cultural resources by overly dense vegetation and soil erosion." The primary threat here to cultural resources high severity fires. By reducing fuel loads accumulation around cultural resources you would reduce threats to these cultural resources.		Reducing and/or restructuring fuel loads in the vicinity of cultural resources would be expected to minimize or eliminate adverse effects that would otherwise potentially harm cultural resources in the event of a high-severity wildfire.
2	Page 3 – could you please define "natural range of variation"		The terms Natural Range of Variation (NRV), Historical Range of Variability (HRV), and Natural Range of Variability are used interchangeably within the literature. The NRV is a tool for assessing ecological integrity and does not necessarily constitute a management target or desired condition. The NRV can help identify key structural, functional, compositional, and connectivity characteristics, for which plan components may be important for either maintenance or restoration of such ecological conditions. In contrast to the generality of historical ecology, the NRV concept focuses on a distilled subset of past ecological knowledge developed for use by resource managers; it represents an explicit effort to incorporate a past perspective into management and conservation decisions (adapted from Weins, J.A. et al., 2012). The pre-European-influenced reference period considered should be sufficiently long, often several centuries, to include the full range of variation produced by dominant natural disturbance regimes such as fire and flooding, and should also include short-term variation and cycles in climate.
3	The Tohono O'odham Nation's Tribal Historic Preservation Office would support this effort to protect cultural sites.		Project support

4	When fuel reduction activities start in the proximity of a cultural site there should be a forest archaeologist on site to mark and monitor any such activity.		FS archaeologists will ensure BMPs and mitigation measures are utilized to ensure sites are not adversely affected by fuel reduction activities during implementation.
5	On page 9 you state "that there are 411 known springs in the Rim Country project area." Many tribes regard springs as sacred sites. Any work in the vicinity of springs needs to be carefully monitored		Proposed activities at springs will be evaluated by cultural resource specialists and consultation with tribes would occur as necessary.
6	Page 10 – we assume that the major mechanical treatment is thinning, is this correct?		The Proposed Action includes proposed mechanical treatments (thinning) that are designed to establish interspace and uneven-aged stand structure, mitigate adverse effects of dwarf mistletoe, and improve stand structure and health. While thinning involves silvicultural mechanical treatments, there are other methods that may be used, and are not limited to: mastication, equipment to rearrange fuels, equipment for site preparation for planting such equipment to remove invasive/encroaching species.
7	Page 11 – one of the treatments is controlled fires – care should be taken when doing controlled burns in the vicinity of cultural sites – forest archaeologist should monitor		FS archaeologists will ensure BMPs and mitigation measures are utilized to ensure sites are not adversely affected by fuel reduction activities during implementation.
8	Page 12 – can you explain how travel management rules (TMR) which may include improvement, removal or relocation – please expand discussion to explain what measures will be implemented to protect cultural sites in the event of road improvements, removal or relocation.		Cultural resource surveys would be conducted prior to road-related ground disturbing activities. If cultural resource sites are located they would be avoided and/or protected from effects from project-related activities. The Travel Management Rule is not related to road improvements, road removal, or road relocation; as the TMR regulations are only focused on designation of routes and areas for public use.
9	Page 13 – please define "other restoration activities."		Many other restoration activities, other than mechanical thinning or prescribed fire are proposed. Other or "comprehensive" restoration activities include grassland restoration (where historical grassland has been encroached by trees or other plants); meadow restoration (where meadows have been encroached by trees, or hydrologic function and native vegetation needs to be restored); spring restoration; stream habitat restoration (where threatened, endangered, and sensitive aquatic species habitat exists); stream channel restoration (where stream function and native riparian vegetation need to be restored); wildlife

			habitat restoration; and decommissioning, relocating, and reconstructing roads (where no longer needed or adversely affecting water quality and natural resources, or are a concern to human safety)
10	Page 14 – construction activities – 200 miles of protective barriers around springs, aspen, Bebb's willows and big-tooth maples will need to be monitored – as stated earlier springs are regarded as sacred sites by many tribes.		Proposed work at springs will be evaluated by cultural resource specialists and consultation with tribes will occur as necessary.
11	Appendix A – Proposed Forest Plan Amendments Page 29 – no discussion of project impacts on cultural sites on the Coconino National Forest Page 30 – in discussion of cultural resources on the Tonto National Forest – please define when Programmatic Agreement (PA) you are referring to , You state that the Tonto National Forest has " a standard that directs management to achieve a no "no effect" determination for cultural resources You then state "the Forest Service will comply with the National Historic Preservation Act of 1966 (as amended) and the Programmatic Agreement You then state that " An amendment specific to the 4FRI Rim County EIS would remove the following "no effect" language: sites listed in, nominated to, eligible for, or potentially eligible for the National Register will be managed during the conduct of undertakings to achieve a "No Effect" finding in consultation with State Historic Preservation Officer." This paragraph is unclear – are you removing "no effect" management as regards cultural sites – this section need to be rewritten in clearer manner.		Effects on cultural resources will be analyzed in the Rim Country EIS. The PA is the 2004 R3 First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibility Among New Mexico, Arizona, Texas, and Oklahoma State Historic Preservation Officers and the Advisory Council on Historic Preservation. The current Tonto Forest Plan includes a statement about management achieving a "no effect" determination. This part of the plan, through a plan amendment, was updated to better reflect current standards and make the management direction of the Tonto NF similar to the direction for the Coconino and Apache-Sitgreaves Forest Plans.
12	In Summary I assume that on any area slated for mechanical treatment – a cultural resource survey would be completed, a report prepared and consultation letters will be sent to tribes with copies of cultural reports for review and comment.		A Section 106 of the National Historic Preservation Act evaluation to address potential affects to cultural resources will be conducted for all task orders issued as a result of implementing this project. The tribes and the Arizona State Historic Preservation Office will be consulted during the Rim Country NEPA process.
Letter 9		**Lynn Krigbaum**	

1	I have no expertise in this area. I am willing to be involved in monitoring as a citizen scientist.		Thank you for your interest in this project. The FS is actively engaged in promoting citizen science through partnerships with non-profit organizations and interested stakeholders. The 4FRI Stakeholder Group can be contacted for details at: http://4fri.org/
2	I wish you could speed up the process!		The FS will continue to streamline the NEPA process as much as possible, as well as include measures to facilitate implementation.
3	I also wonder how the juniper trees can be removed		Junipers are a native species and occur in all of the forest cover types in the Rim Country project area. In cases where an area is highly departed from its natural range of variation, juniper may become problematic (i.e., a particular issue in some firescapes). Where juniper trees are an issue or foreseen as an issue, the preferred method of removal is by fire. In other instances, means may be used such as hand cutting, mechanical harvesters, or feller-bunchers.
Letter 10		**Mark Perkins**	
1	Hello, great to read about the 4 Forest Restoration Initiative. Appears that a great deal of good work is planned to improve our forest, ecosystem, streams, habitat for animals, etc. I've lived in Az most of my life and have spent considerable time in the forest (hiking, backpacking, fishing, etc) and have raised my children with sound outdoor ethics. One of my biggest concerns in the outdoors is the abuse by ATV's/OHV's. I see this everywhere, from deserts to the mountains. Lack of ethical riding, clear disregard for signage/closures, disregard for trails/roads that are meant/designated for hiking only, etc. Of course, it's only a small percentage of users who can't follow the rules. Aside from some of the road closures that I see, what other initiatives are planned to reduce some of the back country abuse by ATV/OHV users?		Outside of the scope of the project. Unauthorized ATV/OHV use is an ongoing issue that is best addressed through implementation of Travel Management Regulations by each national forest. Each forest in the Rim Country project area is currently involved in efforts to address management of motor vehicle use, both in regard to planning efforts and on-the-ground activities, including additional signage, blocking roads, and education to address unauthorized motor vehicle use.
Letter 11		**Marsha Honn**	
1	Please consider this official public comment and input of Rim Country 4 FRI proposed plan. I want this to be part of your official public record. Thanks you		These comments are part of the official Rim Country project record.
2	The USFS Rim Country 4FRI project has shown no plans on how they can perform massive slash pile, prescribed burns, and “managed wildfires” and protect human health. There was no		Effects on air quality from smoke will be addressed in the Rim Country analysis.

	plan to protect human health or discussion of it in the USFS burn policies in the Coconino 4FRI plan. It appears that there is no concern for the health of Arizona residents, including its own forest service workers.		Massive slash piles are not proposed in this project. However, prescribed fire will be a key tool in the restoration of the Rim Country project area. The Fire Ecology and Air Quality Report will outline measures taken to minimize effects on air quality. It is unclear which document is being referenced as the 'Coconino 4FRI plan'. However, air quality issues were addressed in the 1st 4FRI EIS. The FS will comply with air quality standards set by the EPA, as enforced by the Arizona Department of Environmental Quality –Air Quality Division. All prescribed burns must conform to the Federal Clean Air Act (individual state programs can be more stringent but not less). The FS has to balance the effects of increased smoke and the effects of declining forest health and the associated increased risk to communities. The Rim Country EIS and Fire Ecology and Air Quality Report will list design features, BMPs, and mitigations that would be applied in all prescribed burns.
3	It has been documented that plant toxins (alkaloids) from smoldering fires may produce more toxins than wildfires. This should be a great reason to keep Arizona citizens exposure to these toxins at a minimum. Fine particulate matter from fuel combustion poses a danger to everyone, but is particularly hazardous to children and the elderly. Approximately 80 to 90 percent of wood smoke particles are 2.5 microns or smaller. EPA studies show that these tiny dagger-shaped particles are particularly harmful as they are able to go deep into the lungs. Other particles pass through the lungs into the blood stream and can attack vital organs. This may cause increased risk of dying to people who suffer diabetes, COPD, and heart disease.		Effects on air quality are a public concern that needs to be addressed. Plant toxins will not be analyzed for the Rim Country Project. Particulates are one of the six substances that are covered in the Clean Air Act. The comment about plant toxins is too general to be addressed specifically, since there are a myriad of alkaloids in a variety of plants around the world, and there is no literature cited to indicate which substances are of concern to the commenter. Additionally, while the emissions produced by smoldering fires do differ from those produced by flaming combustion, wildfires and prescribed fires include both smoldering and flaming combustion. Particulate matter will be specifically addressed in the Fire Ecology and Air Quality Report but, in regards to the comment, there is no specific data source or literature cited to address.

4	Smoke from wildfires and prescribed burns also contains volatile organic compounds, carbon monoxide, ozone, numerous toxins and literally thousands of chemicals. One in particular is mercury. Studies show that mercury causes its greatest damage to unborn fetuses and newborns. This may include developmental defects, reduced IQ, mental retardation, learning disabilities, behavioral problems and chronic neurological diseases. Already, Arizona lakes such as Roosevelt, Tonto Creek, Soldier Lake, Scott Reservoir and Upper and Lower Lake Mary post mercury warnings that fish are not safe for consumption.		Effects on air quality are an issue that will be addressed in the Rim Country analysis. Carbon monoxide and ozone are two of the six principal pollutants for which the Clean Air Act has established National Ambient Air Quality Standards. These will be modeled and discussed in the Fire Ecology and Air Quality Report.
5	Given the hazards from particulate matter and other substances released during prescribed burns, slash pile burning, or "managed" wildfires, alternatives to prescribed burns need to be sought and implemented by the Forest Service. These safer alternatives include logging for fire breaks, chipping, thinning, and goat or cattle grazing. The USFS will simply say that these methods are too costly, but they are simply shifting the cost to the general public in terms of health problems, pain and suffering. Implementation of these techniques will protect not only the health of the public, but provide cleaner air and reduced carbon emissions. Please consider not only the "health" of the forest, but HUMAN HEALTH.		Effects on air quality are an issue that will be addressed in the analysis. Depending primarily on mechanical means, whether it was grazing or machines) would not meet the purpose and need of the Rim Country Project. The Guidance for Implementation of Federal Wildland Fire Management Policy states: > Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and *public safety and welfare*, natural and cultural resources, and values to be protected, dictate the appropriate management response to fire. Because fire is a critical natural process, not including prescribed fire in the Rim Country Project would not meet the purpose and need of the project. Concerns related to air quality effects will be addressed in detail in the Fire Ecology and Air Quality Report. The effectiveness of using prescribed fire as a tool, alone or combined with mechanical treatments, to restore ponderosa pine to healthier, more sustainable and resilient conditions is well documented (Fulé et al. 2012).

6	We have disabled family members who have almost died from the constant smoke you create. You probably don't give a hoot, but at great financial and personal sacrifice we have had to move away from family and friends and to another part of the state to escape your hideous and constant burning. You must have no conscious at all.		Effects on air quality are an issue that will be addressed in the analysis.
Letter 12		**Kathy Smith**	
1	Please include Greer in the Forest Restoration Project! So much of the area was destroyed by the Wallow Fire. Please don't allow the rest of Greer to be destroyed as well!		The Rim Country project area is part of the greater 4FRI initiative footprint. The community of Greer is outside of the 4FRI initiative boundary and the Rim Country project area.
Letter 13		**Leigh J. Kuwanwisiwma Hopi Tribe**	
1	This letter is in response to your correspondence dated July l, 2016, regarding the Four Forest Restoration Initiative and the enclosed 4FRI Rim Country Project Proposed Action. The Hopi Tribe claims cultural affiliation to prehistoric cultural groups on the Coconino, Tonto, Apache-Sitgreaves and Kaibab National Forests. The Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites and we consider the prehistoric archaeological sites of our ancestors to be "footprints" and Traditional Cultural Properties. Therefore, we appreciate the Forests' continuing solicitation of our input and your efforts to address our concerns. The Hopi Cultural Preservation Office previously reviewed the *Four Forest Restoration Initiative-Heritage Resources Strategy and NEPA Compliance*, and the summary of up-coming and on-going Coconino National Forest cultural resource surveys and sample survey efforts in the 4FRI project area. Enclosed are our letters regarding the Four Forest Initiative dated March 21 and June 6, 2011, April 9, 2013, December 21, 2015 and February 16, 2016. We understand the Rim Country Project proposal involves 1.24 million areas on the Apache Sitgreaves, Coconino and Tonto National Forests. Please note that our enclosed letters request continuing consultation with the Forests on the implementation		*Note; the letter from the Hopi Tribe referenced past letters from the first EIS completed for the 4FRI project.* The FS will continue to work closely and consult with area tribes during the analysis for the Rim Country EIS.

	and review of the cultural resources surveys, as well as Traditional Cultural Properties and ethnographic studies.		
Letter 14		**William Baker**	
1	I suggest some modifications to the purpose and need: First, the document describes the purpose as to "restore forest structure and pattern...to conditions within the natural range of variation, thus moving the project area toward the desired conditions," but then explains that the desired conditions are "in the land and resource management plans." The document also says that research, science, and landscape restoration criteria in the Omnibus Public Land Management Act also went into developing the purpose and need. All of these seem fine except using the land and resource management plans to define desired conditions, since the plans do not have the same focus as this project. Instead, I suggest you use all these sources except the land and resource management plans, then amend the plans as needed after the EIS for this project is finalized. I think this could be the intention, since Appendix A lists proposed amendments. However, the "Desired Conditions" section does repeat the idea that the proposed treatments come from the land and resource management plans. I hope this is not true, and I suggest rephrasing the purpose and need to make it clear that the purpose and need does not come from desired conditions in the land and resource management plans.		Forest plans have a broad focus to cover many management areas across many vegetation types that provide for multiple uses. The Rim Country analysis will use the desired conditions from the forest plans that apply to the Rim Country project area.. As required by the National Forest Management Act (NFMA) and the National Forest System Land Management Planning Rule, all projects and activities authorized by the FS must be consistent with a forest plan by being consistent with applicable plan components. In addition to consistency with plan direction, projects and activities are developed to be consistent with applicable laws, regulations, and policies. "Projects and activities" cover all actions under 16 U.S.C. 1604(i). Where possible, moving the landscape towards a natural fire regime would be desired, as specified in the three forest plans that the Rim Country EIS is tiered to. One desired condition in the Coconino Forest Plan states: "Wildland fires burn within the range of intensity and frequency of the historic fire regime of the vegetation communities affected. High-severity fires rarely occur, except where this is part of the historical fire regime, and do not burn at the landscape scale." The Apache-Sitgreaves Forest Plan similarly includes fire regimes in its desired conditions at the landscape scale (10,000 acres or more), and specifies restoring fire regimes at the 6th code hydrologic unit (HUC). The Tonto Forest Plan doesn't mention the term fire regimes, and states: "...Fire will be recognized as a resource management tool and will be included within a management prescription where it can effectively accomplish resource management objectives. The long term goal of fire management is to re-introduce fire back

			into fire dependent ecosystems, and allow it to resume its natural role"
2	I support the bullet "increase forest resiliency and sustainability" but "sustainability" should be defined and limited to the forest ecosystem itself, to make it clear that we are not talking about sustaining products from the forest ecosystem, which are already in the last bullet. This can be accomplished by clarifying this bullet as "forest resiliency and forest ecosystem sustainability."		Forest Service Manual 2020 speaks to "reestablishing and retaining ecological resilience". Ensuring ecological resilience combined with achieving sustainable multiple use management will ensure ecosystem sustainability and may not be necessary in this bullet point. However, sustainability of forest products is part of this overall concept.
3	I do not support the bullet "reduce risk of undesirable fire effects." That implies that people will define what is desirable to them, but that is not necessarily congruent with restoring "to conditions within the natural range of variation" and also is not congruent with the Omnibus Act, which uses the phrase "reestablishing natural fire regimes." This can be resolved by changing the bullet to "Restore the natural fire regime." I think this is needed, because much of the funding comes from the Omnibus Act, and because restoring to conditions within the natural range of variability also means restoring the natural fire regime.		This will be addressed in detail in the Rim Country Fire Ecology and Air Quality Report, including a brief discussion of fire regimes and desirable/undesirable fire effects. The intent of the proposed treatments is to increase forest resiliency and sustainability. When climate change is added to the mix, what was an historic, or natural fire regime may shift. Therefore, keeping in mind the effects of the historic fire regimes, by describing desired conditions in terms of the fire effects, there is more room to use a flexible toolbox approach. Treatments would then be based on the response of the landscape. A NEPA project like Rim Country must have measureable indicators with which to determine if the management activities proposed can meet project objectives. Fire effects are measurable within every fire regime and can be used to determine if management actions do, or are likely to, move the Rim Country landscape toward the desired conditions described in the forest plans. We agree that 'Fire Regime' is a fundamental concept for restoration. However, 'Fire Regime' is a term that is less specific than fire effects – fire effects are characteristic within a specific fire regime. Fire regimes are important indicators of the restoration process, and will be discussed throughout the Rim Country EIS and Fire Ecology andAir Quality Report. The Fire Regime section will describe fire regimes and fire regime groups, as well as descriptions of

			the historic fire regimes for each of the vegetation types or ERUs which may receive treatments.
4	I support the bullets about terrestrial and aquatic habitat, streams and springs, riparian vegetation, and cultural resources.		Project support
5	I might support the bullet: "Support sustainable forest products industries" but the project generates products only for 10 years, so it is impossible for these industries to demonstrate sustainability beyond the 10-year period, and at the end of this period the resources that are available under this project also end. I suggest changing this bullet to read "Support forest products industries that use sustainable practices and have the potential to remain sustainable using other resources after the project period ends."		The Rim Country Purpose and Need includes that "there is a need to support appropriately-scaled, sustainable, forest products industries" (Scoping Document, p. 5). Sustainable and appropriately-scaled forest product industries are those that do not rely exclusively on woody material removed from the Rim Country project area.
6	The Proposed Action needs to revise the historical fire regime and forest structure The document indicates "There is a need to restore the frequent low-severity fire regimes in which the forest in the Rim Country project area evolved" and later (p. 11): "Desired conditions are for no more than 15% of the ponderosa pine (under conditions modeled) in the treatment area to be prone to crown fire or high-severity fire, with areas of potential high severity spatially distributed." The scientific basis for these numbers and this proposal of course are not provided in the document, but it is difficult to see how they can be supported by the available science. The draft EIS should comprehensively review and take a hard look at the available scientific evidence about historical fire regimes in the project area and in comparable areas nearby, including our publication. It documents that very substantial amounts of high-severity fire historically shaped both ponderosa pine and dry mixed-conifer forests inside the project area: Williams, M. A. and W. L. Baker. 2012. Spatially extensive reconstructions show variable - severity fire and heterogeneous structure in historical western United States dry forests. Global Ecology and Biogeography 21:1042-1052. Of course, it is appropriate to review the critique of this publication by Fulé et al. (2014), but if you do this, you should of course also review and report the specific rebuttals we made		Extensive research clearly points to a ponderosa pine ecosystem that is a frequent, low-severity fire ecosystem. The NRV for the ponderosa pine ecosystem is for a majority of the landscape to be open canopy (<30% canopy cover). This type of forest structure does not support large-landscape high-severity fire. Plummer, 1904, clearly describes an open low-severity fire landscape with little evidence of extensive high-severity fires. As to the percentages of fire severity across the Rim Country project area, this will be addressed in the Rim Country EIS and Fire Ecology and Air Quality Report. The FS will review all relevant scientific literature on historical forest structure, including the suggested citations. The preponderance of the science on historical forest structures and establishment within the Rim Country project area will be reviewed for relevancy. Williams and Baker (2012) findings will be reviewed with all other published science and other historical references for relevancy. Forest Plans and regional templates use the term "frequent low-severity fire regimes," so the Rim Country analysis will as well. Silvicultural data have not disputed that there must have been some moderate- and high-severity fire on the

	to their critiques in Williams and Baker (2014). Here are the two citations: Fulé, P. F., T. W. Swetnam, P. M. Brown, D. A. Falk, D. L. Peterson, C. D. Allen, G. H. Aplet, M. A. Battaglia, D. Binkley, C. Farris, R. E. Keane, E. Q. Margolis, H. Grissino-Mayer, C. Miller, C. H. Sieg, C. Skinner, S. L. Stephens, and A. Taylor. 2014. Unsupported inferences of 79 high severity fire in historical western United States dry forests: Response to Williams and Baker. Global Ecology and Biogeography 23:825-830. Williams, M. A. and W. L. Baker. 2014. High-severity fire corroborated in historical dry forests of the western United States: response to Fulé *et al.* Global Ecology and Biogeography 23:831-835. The description of the fire regime as "frequent low-severity" is not supported by the findings of Williams and Baker (2012), which is the only reconstruction of fire severity across a very large land area that includes much of the project area. Be careful with other available literature as there is very little tree-ring research on the historical fire regime in the project area that includes actual reconstruction of fire severity using forest age structure. Most tree-ring research assumed that fire severity was low in these forests and did not collect information to determine fire severity. That is not scientific evidence that the historical fire regime was "frequent low severity" as described in the Proposed Action. I hope that when you present the draft EIS you will have revised the historical fire regime description so it is "mixed severity" or "variable severity" and you will have accepted that this historical fire regime at times included substantial high-severity fire, so that the proposed goals of no more than 15% high severity in ponderosa and no more than 20% high severity fire in dry mixed conifer will not be used. Those numbers are too low relative to the evidence we presented (Williams and Baker 2012), and there is limited evidence about historical fire severity in other sources for the project area.		landscape, but do not agree that it was "substantial" across the majority of the landscape. Fire regimes will be addressed in detail in the Rim Country EIS and the Fire Ecology and Air Quality Report.

7	Do not overpromise what can be accomplished regarding large, severe fires. It would be a significant matter to not reveal to the public the evidence in Williams and Baker (2012) and treat this evidence seriously, as it shows the historical fire regime to have been mixed-severity, not low severity. If you indicate in the draft EIS that you are going to restore a fire regime that included no more than 15% high-severity fire, and subsequent fires have much more high-severity fire than this, then you will have lost public faith in these large restoration programs. If, instead, you indicate that you expect restoration to reduce fire severity somewhat, because fuels will have been reduced, but also make it clear that severe fires were part of the natural range of variability and could still occur, you will not be over-promising. I think it is also important to make it clear that fuels are only part of the fire equation and you cannot control the weather and climate parts of this equation. This, too, is an important part of not over-promising. Also, I do not know which model you used to estimate the reduction in fire severity expected from treatments. However, all the common models (e.g., FlamMap), have known errors that mean they significantly underpredict the probability of crown-fire initiation. Those errors have not been fixed. Here is the peer-reviewed scientific publication that shows this, and proposes using an alternative validated model that can be downloaded and used instead. These two authors are the world authorities on fire-behavior and fire modeling and are collaborating with USFS researchers on fire modeling: Cruz, M.G., Alexander, M.E., 2010. Assessing crown fire potential in coniferous forests of western North America: a critique of current approaches and recent simulation studies International Journal of Wildland Fire 19, 377-398. Use their model, CFIS, not the standard models used by USFS, and you will again avoid overpromising, in this case because of a documented modeling flaw, what can be accomplished via this restoration program. Here is a recent publication, that includes a USFS researcher, that mentions this flaw, then avoids it by using CFIS, and shows how to do it. I suspect Tinkham or		The variability of the fire environment (weather, fuel conditions, topography, etc.), and its effects on fire severity will be disclosed in the Rim Country EIS and Fire Ecology and Air Quality Report, and will be reviewed and refined. FlamMap will be used to model the potential for crown fire and the probability of burning. The paper cited in reference to the fire modeling (Cruz & Alexander 2010) evaluated versions of modeling programs that were used in and before 2010. Those versions are old, and will not be used for the Rim Country Project. The version of FlamMap that will be used is FlamMap 5.0.2 64 bit, which was copyrighted in 2016. The fire modeling that was done was calibrated to known fire behavior and effects, and iterations were adjusted per fire managers who have worked on the landscapes in the project area for decades. Fire severity will be addressed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report.

	Battaglia at the Rocky Mt. Res. Station and Martin Alexander in Canada would help with CFIS: Tinkham, W. T., C. M. Hoffman, S. A. Ex, M. A. Battaglia, and J. D. Saralecos. 2016. Ponderosa pine forest restoration treatment longevity: implications of regeneration on fire hazard. Forests 7, 137. This journal is online: http://www.mdpi.com/journal/forests		
8	Propose to take action to reduce human-set fires in the project area. Please also review and present the evidence in Baker (2015), which shows that high-severity fires are not generally increasing across dry forests in most of the western USA, but are in the larger analysis area that includes the project area: Baker, W. L. 2015. Are high-severity fires burning at much higher rates recently than historically in dry-forest landscapes of the western United States? PLOS One 10(9), e0136147. This journal is also online: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0136147. Please explain that, although there is an upward trend in ponderosa, high-severity fire is still operating within its historical range and has a recent fire rotation of 686 years in ponderosa and 592 years in dry mixed conifer. Those fire rotations are quite long and provide ample time for dry forests to fully regenerate and grow back to old-growth forests. Also, there is no upward trend in the fraction of fires that are burning at high severity. Please also explain that many of the large, severe fires that have contributed to the trend in ponderosa are human-set fires. There are quite a few things that the project could propose to help reduce the possibility of human-set fires. Certainly, reducing tree density and fuels will have some effect, but also you can take action to close access to certain areas during severe droughts, you can redirect camping and other activities into less vulnerable locations and treat/redesign those locations to reduce fire spread, you can make it difficult for people to stop along roads in vulnerable locations and instead channel stops into moister areas or locations where fire spread is less likely. Of		Management activitiess with the objective of reducing human-caused fires in the project area are outside the scope of the Rim Country Project. Many of the largest fires near or adjacent to the 4FRI area that have produced unnaturally large areas of high severity have been human caused (e.g., Rodeo/Chediski, Wallow, Schultz). This topic will be addressed in the Fire Ecology and Air Quality Report for the Rim Country EIS. Although he objectives of the Rim Country Project do not include addressing the causes of fires started by humans, the proposed management activitiess would be expected to reduce the potential severity and/or size of such fires. Even though reducing unintended human-caused wildfires would be a good thing, it is outside of the scope of this analysis. Occurrences of high-severity fires outside of the project area are also outside the scope of this analysis. High-severity fires will be addressed in detail in the Fire Ecology and Air Quality Report. The definitions generally used to describe fire regime groups are frequency and severity. The fire regimes in the project area can be clearly explained by a discussion of fire severity and fire return interval.

	course it would be good to increase fines for leaving campfires burning etc. There are other suggestions in Fire ecology in Rocky Mountain landscapes. There is a copy at NAU.		
9	The Proposed Action needs to review and base a landscape plan on historical landscape data. The Proposed Action does mention, under Forest Resiliency and Sustainability, the idea that the natural range of variation included "a mix of open, moderately closed, and closed canopy conditions at the fine (group) to landscape...scales." This is good, and is in agreement with the tree-density reconstructions of Williams and Baker (2012 Figure 2) and other published sources. Please cite and use this document as one of your cited sources as supporting that historical landscapes had a large range in tree densities. This mix cannot have been produced by a frequent-fire regime, as this regime is consistently linked only to low-density forests with large trees. You have described the historical landscape as a mix of densities. Please abandon that unsupported notion, and embrace the mixed-severity fire regime evidence, which is the primary source of this mix of open to closed conditions. Of course, you are correct to review evidence of effects on historical forests from droughts, disease, and insect outbreaks as well. The Plummer report, discussed below, has unique, comprehensive data on drought effects across the project area that I hope you will report and use. The Proposed Action, as it is in Tables 2 and 7 is too vague at this point, as I'm sure you know, with large ranges of basal area and tree density (e.g., 11-124 trees/acre). You will need, and perhaps already have, some scientific basis for determining the details of the mix of densities, basal areas, and other aspects of historical forest structure across the landscape, so that there is a well-supported scientific basis for the landscape restoration plan. As far as I know, there are only two widely available sources that provide spatially comprehensive information about the historical landscapes of the project area. Here they are: Plummer, F. G. 1904. Forest conditions in the Black Mesa Forest Reserve, Arizona. U.S. Geological Survey Professional		The Proposed Action is consistent with the forest plans. Current state and transition modelling (STM) indicates that the closed canopy conditions in the historical forest structure (PNVT/ERU) is low when compared to the open canopy structure. The pre-settlement forests were comprised of a mix of densities. And the preponderance of science indicates that the open condition predominated and that closed canopy conditions were a smaller percentage. Plummer (1904) clearly states on page 12 that fire on the landscape was approximately 0.2%, or 5.5 square miles out of 2,786 square miles (less than 4.000 acres out of 1,783,040 acres). On page 20, Plummer observes "There has been very little damage to the timber of this reserve by fires, for the reason that there is so little underbrush and litter. A few old burns were noticed in the neighborhood of Alpine, at the head of Blue River, but their scope is very limited and the amount of timber destroyed is very small." And on page 19: "Throughout the area in which yellow pine predominates the amount of litter and underbrush is very small, the forest floor being very clean, with a scanty covering of humus." This general lack of underbrush and litter is a clear indication of frequent low-severity fire. The descriptions provided by Plummer (1904) for the townships and ranges gives us some insight into forest structure. Average stand height and age can give us indications of site quality (site index), the percent of dead trees says something about the densities (in the inferred form of density related mortality and the past existence of damaging fire), and the description of the "litter" says something about the fire frequency. Where Plummer noted the litter was exclusively light, we also see a distinct forest composition in terms of species composition. Plate VII, page 61, clearly indicates the locations of the white fir and red fir (our Douglas-fir). Mostly these species

	Paper No. 23, U.S. Government Printing Office, Washington,D.C. Williams, M. A. and W. L. Baker. 2012. Spatially extensive reconstructions show variable-194 severity fire and heterogeneous structure in historical western United States dry forests. Globa Ecology and Biogeography 21:1042-1052. What you need, in my scientific opinion, is some way to estimate proportions of the project area that historically had various levels of tree density, basal area, perhaps timber volume, and forest composition, or at least indicators of variability in forest structure. Not all of this is available, but enough is to craft a reasonable plan. Calculating some actual distributions of various parameters 201 of historical forest structure is possible from Plummer, and I recommend it be used directly: Plummer (1904) provides township-by-township descriptions for about A.D. 1900 for most of the townships in the project area, including the following for each township: a. verbal description of the quality and location of the ponderosa pine timber, including what percentage was “good quality” and whether it was “heavy” meaning dense b. estimate of timber volume for ponderosa in feet B.M. These estimates are difficult to translate into modern estimates of volume since they cruised it differently, but this is very good indicator to use in a relative way to estimate how variable forests were historically across the project area. c. composition - some estimates of volume for associated tree species, that could also be used in a relative way, and some verbal explanations of associated trees. d. average height - tells something about how variable the forest was, although height is not as important as other variables		are distributed on the Apache side of the forest in and around Mt. Baldy (where we see the majority of our mixed conifer forest types) with very lower occurrences along the rim (where we see today large amounts of white fir, Douglas-fir, SW white pine). The general lack of these shade tolerant species along the rim is a clear indicator of frequent low-severity fire that historically kept these low fire-tolerant species out of the stands. The distributions of species as depicted in this plate clearly supports the notion of landscape-level frequent low-severity fire. If these landscapes were subject to large “substantial” moderate to high-severity fires, Plummer would have certainly seen this in the dead standing snags and the dead and down woody material. However, Plummer makes no mention of excessive mortality, snags, or accumulated fuels. To the contrary, Plummer notes just the opposite: lack of fuels, low mortality, and no mention of dead standing snags from fire. He even points out that there has been little activity from fire. Unfortunately, Plummer does not comment on fire scars or the presence of char on standing live trees. The silvicultural analysis in the Rim Country EIS and Silviculture Report will provide detail on the ranges of post-treatment densities expected as one of the outputs of each alternative developed. Thank you for the inclusion of this reference of the first person account by a professional forester covering a large portion of the Rim Country project area. It will be included in a discussion of forest structure. There have been extensive studies on pre-settlement forest structure in terms of densities, spatial arrangements, and percentages of distributions (e.g., ERI, Plummer, STM, PNVT, ERU, Lieberman). These references will be included in scientific discussions. The revised Apache-Sitgreaves and Coconino Forest Plans, Potential Natural Vegetation Types (PNVTs), Ecological

	e. average diameter - of obvious value directly and also can compare across the townships to estimate the variability of mean tree diameter f. average age - this is important and also can be used to show variability across the landscape. This appears to show that a lot of the landscape was not very old, often between about 125-175 years on average. g. dead and diseased - these are useful to understand the state of the historical forest, which had just experienced a significant drought period (p. 18). But, these estimates should also be useful in understanding that significant amounts of dead and diseased trees were historically normal. h. Map in Plate VI. This shows some of the variability in the historical forest and how it was arrayed across the landscape. Look at the patches of timber in the three volume classes to see that there were large blocks and patches of forest with differing levels of timber volume. And, those volume levels were generally pretty low, likely because of fires and other disturbances. The restored forest should not be uniform or entirely old-growth forests. I would like to respectfully remind USFS that after quite a bit of discussion over objections to Phase 1 of 4FRI, it was determined by USFS that Phase 1 would be restoring tree densities and leaving dense-forest areas that are congruent with the reconstructions of Williams and Baker (2012). That was good news, and I hope that similar congruence will be possible with Phase 2. Patterns in Williams and Baker's maps of tree density and fire severity (2012) correspond reasonably well with patterns in the Plummer map of timber volumes, which was done about 10-20 years after the surveys. The western part of the Rim Country Project area corresponds with the southeastern part of the Mogollon Plateau panel in Figures 2 and 3 in Williams and Baker (2012), which shows moderate to high tree density (Fig. 2) and high-severity and mixed-severity fire (Fig. 3). These fires likely occurred early in the reconstruction period (which was		Response Units (ERUs), the Terrestrial Ecological Unit Inventory, LANDFIRE, NatureServe, and The Nature Conservancy all provide scientific information on historical NRV. In general, the descriptions of the quantities of Board Foot Measure (FBM) are fairly low (600-4,000/acre, inferred). This is consistent with what is expected in a relatively open canopy forest. This is an interesting comment in the context that we see this age class structure across very extensive contemporary forests, and we know that they were not established by extensive high-severity fire, otherwise Plummer (1904) would have seen and described this fire. To the contrary, Plummer talked about very little fire on the landscape, the open nature of the forest, and how it was established by frequent low-severity fire. Of note, the 125-175 trees in 1904 are now 237 to 287, what we now call large old trees. All forested ecosystem contain diversity. The Rim Country Project does not propose uniform (single) treatments across the landscape, nor does it propose a forest of entirely old-growth. This will be explained in detail in the Rim Country EIS alternative descriptions. NRV, CFLRP, FSM 2020, NFRM, etc. all talk in terms of resiliency, diversity, and sustainability. The Rim Country Project is an entirely different landscape than the first EIS. As it was discussed in the objection resolution meetings, the forest density outcomes in the 1st 4FRI EIS were similar to how they are described by Williams and Baker (2012). However, the analysis outcomes were derived from current stand data, relevant research on frequent low-severity fire, long established vegetation models (FVS), Forest Plan direction, and current forest management legislation, and not as a direct result of Williams and Baker (2012). The effects analysis for the 1st 4FRI EIS was completed prior to the publication of Williams and Baker (2012).

	about 1760-1880) and post-fire forests would have been about 100-120 years old at the time of the surveys in the late-1800s. This area was reconstructed to have evidence of high-severity fire because it had high tree density, few trees larger than 16" diameter, spatial contiguity, and some sharp borders with mature forest. This same area is highlighted in Plummer on p. 18, where he says "In Tps. 12 and 13 N., R 12 E, exceptionally heavy stands of young timber were noticed. These trees average about 10 or 12 inches in diameter..." Trees 10-12 inches diameter would likely have been 100-120 years old, agreeing with the Williams and Baker reconstruction for this area. This agreement is strong corroboration that both sources provide valid information about historical landscapes and corroborating evidence that this area likely burned at high severity. The Black Mesa panel in Figure 2 and 3 of Williams and Baker (2012) corresponds with the eastern half of the Rim Country Project area but extends beyond it. Similarly, the area of reconstructed high-severity fire west of Show Low in William and Baker's Fig. 3 shows up on the Plummer map (Plate VI) in the lowest timber-volume class, reflecting a young forest, and the description of the township says: "The timber is generally small and rough, the best yellow pine being along the creek" (p. 39) consistent with a forest recovering from a high-severity fire in the late-1700s to early 1800s, that left surviving trees in moister areas along the creek. What you see in the Williams and Baker (2012) reconstructions and in the Plummer (1904) report and maps is similar coarse spatial heterogeneity in tree density (W&B) and timber volume (Plummer), produced by the same mixed-severity fires, that included some large patches of high-severity fire. Patches are similar, although mapping detail differs, and they are in similar places. I hope you will use these two sources as a guide to formulate a landscape plan that will lead to a landscape, after restoration, that was guided by this historical landscape heterogeneity.		In the next sentence on page 18 of the Plummer reference, it states: "In this same area was a still later generation of smaller pines of thrifty growth. In this hot climate it is absolutely necessary that the young forest growth shall have the protection of the parent trees, and it is evident that in areas which have been logged off completely the young growth has been unable to stand the extreme heat." And later in the same paragraph Mr. Plummer states: "There is no doubt that reproduction is a practical impossibility without this sheltering of the larger trees, but under proper forestry regulations logging can be accomplished." This strongly argues against the assertions of the commenter that this area was established by high-severity fire that, by definition, would remove the overstory and remove any shelter to regeneration. Therefore, the stand as described was probably not established by high-severity fire. Ponderosa pine seeds are not disseminated naturally over extensive distances. In central Oregon, seedfall at 37 m (120 ft) was only 22 percent of the seedfall at the west edge of a cleared area, and at 120 m (396 ft.) it was only 8 percent", and "Throughout ponderosa pine's range, except in the Black Hills and the west side of the Sierra Nevada, natural regeneration is sporadic." The inability of ponderosa pine seed to distribute widely further argues against the wide-spread establishment of even-aged stands from areas of extensive high severity fire. We do not see in the Rodeo-Chediski fire (14 post fire) any wide-spread establishment of pine seedlings. To the contrary, it is evident that resulting forests from episodic seedling establishment lead to uneven-aged forest structures, and small blocks of even-aged bands (personal observation). The paper cited by the commenter will be included in the literature review to be conducted for the Rim Country EIS

			and Silviculture Report, along with all other relevant resources. The efforts of Williams and Baker 2012 to describe the pre-settlement landscape in terms of its heterogeneity are appreciated and, since there was heterogeneity across the Rim Country landscape, silviculture must acknowledge the preponderance of science that is counter to the determination of the fire effects that led to the majority of the landscape we see today. Plummer's descriptions in 1904 support the description of a frequent low-severity fire ponderosa pine ecosystem. The Apache-Sitgreaves Forest Plan (2015) gives silviculture guidance that is based on the extensive scientific work on this ecosystem and is characterized by the distribution of forest "states" (from regional state and transition modelling) (Appendix B, pp. 215-245), and the desired conditions for ponderosa pine forests (pp. 40-42) and dry mixed conifer forests (pp. 42-45), as well as these ecosystems being classified as Fire Regime I forests (pp. 105-106). The mix described could, in fact, have been a product of a frequent fire regime. A group that is closed canopy could easily support surface fire, particularly if it burns frequently enough that fire intensity is low (low flame lengths), and has short residence times. These concerns and suggestions will be addressed in the Rim Country EIS and Fire Ecology and Air Quality Report.
10	The Proposed Action needs to show how the restored landscape will look and how fire will be managed to restore the fire regime, as required by the Omnibus Public Land Management Act The proposed action should lay out what the restored landscape will look like and how fire will ultimately be managed in the restored landscape, as without this vision, the Proposed Action appears to lead to nothing, when in fact it is clear that there is a very big vision to this project. Please explain these two missing		The landscape restoration criteria found in the Omnibus Public Land Management Act of 2009 (P.L. 111-11, Title IV Forest Landscape Restoration) were used to develop the purpose and need. The Rim Country Project analysis will be tiered to the forest plans. The management activities proposed for this project would increase the decision space for line officers and fire managers when managing unplanned ignitions, though the EIS will not provide direction for how to manage wildfires.

	and essential matters in detail, with accompanying maps, graphs, and tables giving the details. To meet the mandate of the Omnibus Act to restore the historical fire regime, I suggest an obvious goal for fire would be to maximize the area within which fire managers are able, after the project is done, to manage wildfire for resource benefit. I hope you agree, and agree that this should be clearly laid out in the Proposed Action, along with an explanation of the steps that will be taken to meet this goal. Also needed are explicit maps of where these areas will be or will not be. Where managed wildfire is not feasible, it is important to provide clarity about how fires will be managed to effectively restore the natural fire regime even in these areas. The EIS does need to propose explicit policy actions and locations to restore the historical fire regime. The Proposed Action should clearly demonstrate that the project is worthwhile and will achieve the goals required by the Omnibus Act, which is to restore the forest and restore the fire regime The plan itself and the extent of expected success in achieving these goals, along with the environmental impacts, should be on display in the draft EIS for every alternative.		Wildfires will be discussed in the Rim Country EIS and Fire Ecology and Air Quality Report.
11	Use more fire to accomplish restoration itself The Kaibab National Forest is a national leader in wildland fire use and managing fire for resource benefits, yet this Proposed Action does not even mention using wildland fire to accomplish restoration, instead just mechanical/prescribed fire or prescribed fire alone. Please include use of wildland fire for resource benefit whenever and wherever it is possible to use it during the 10-year project period. Over the course of ten years, a great deal of restoration could likely be accomplished with this technique. Based on the Kaibab's achievement of 98% of wildfires managed for resource benefit, over about 25,000 acres in one year, it would not be surprising if 10-20% of the project area could be restored this way, reducing costs and achieving better ecological results.		The use of more fire to accomplish restoration will be addressed in detail in the effects analysis in the Rim Country EIS and the Fire Ecology and Air Quality Report. Direction on how to manage wildfires is outside the scope of this analysis.
12	Use the final agreement about how to treat and monitor MSO habitat Phase 1 of 4FRI, regarding the MSO, met with objections from Wild Earth Guardians and John Muir Project and an agreement		As agreed to for the 1st 4FRI EIS, and to honor the FS commitment to carry forward the objection resolution agreements that are applicable to the Rim Country Project, the FS anticipates carrying the monitoring plan forward

	was forged that phased in actions in MSO habitat, combined with monitoring and re-evaluation. Nothing about that agreement is in this new Proposed Action. Please go back to that agreement, explain it in detail in the draft EIS, along with whatever data have been collected, and put it back in as the preferred alternative. That could help avoid another round of objections, which would be a waste of everyone's time and energy.		with only those modifications necessary to comply with the USFWS Biological Opinion for Rim Country. The monitoring proposed will be determined by the actual proposed treatments, in collaboration with our stakeholders, and in consultation with USFWS.
13	Too much area for "Facilitative operations" (p. 14) is proposed It should not take 157,270 acres of area to facilitate adjoining actions–that is a huge area to prescribe burn just to allow mechanical/prescribed burned next door. This need should just require a small area and most of this can be right within the actual treatment area by blackening the margins first.		Facilitative operations will be described and analyzed in more detail in the Rim Country EIS and Fire Ecology and Air Quality Report, including why and where they are needed.
14	Don't plant the 69,360 acres of burned forests that you are calling "understocked". Both the Williams and Baker (2012) reconstruction and the Plummer (1904) report show treeless areas and grasslands. These were likely created or maintained historically in part by high-severity fires, as they were historically closely intermixed with high-severity fire areas (W&B Fig. 3) Early successional habitat is very rare in western dry forests because it is typically planted to meet forestry goals, as indicated here by the use of the term "understocked" in this case. However, this is an ecological restoration project where the habitats that are created by fire should be left to slowly return to forest, rather than being planted to expedite forestry goals. It especially makes no sense to remove trees in existing grasslands to restore grasslands but plant trees in other grasslands (those created by fire). It is particularly important to not plant these fire- created grasslands, especially since restoring grasslands is a high priority for the Arizona Partner in Flight bird conservation plan.		It is not clear if the commenter infers from Williams and Baker (2012) or Plummer (1904) that the approximately 167,215 acres of the Rodeo-Chediski Fire or the approximately 28,000 acres of the Dude Fire are within the Natural Range of Variation (NRV) for historical high-severity fires. These fires are now 14 years old (Rodeo-Chediski Fire) and 26 years old (Dude Fire), and neither are displaying extensive conifer regeneration as predicted by Williams and Baker (2012) for large even-aged stand structure. To the contrary, at best, these burned areas are showing episodic seedling establishment. FSM 2020, NFMA, and Forest Plans direct the FS to regenerate lands classified as Timber Suitable. FSM 2020 considers regeneration a restoration activity. Early successional habitat is not very rare in western dry forests (PNVT, ERU, STM, and Plummer). The FS is directed to regenerate areas following disturbance (e.g., fire, harvest, insect, disease) within 5 years of disturbance. (Fule) indicates that large fire landscapes could take over 150 years to recover. Restoration includes removing post-settlement trees where they were not historically growing, such as in historical grasslands, and where we see no historical reference. Restoration of grassland areas established by fire that we historically forested, is not the same thing as removing

			trees in historical grasslands. Contrary to the statement of the commenter it is particularly important to plant trees in disturbance-created areas, whether currently grassland or brushland. This topic will be addressed in the Rim Country EIS and the Fire Ecology and Air Quality Report. The FS recognizes the importance of grassland habitats to a number of wildlife species, including those identified by AZ Partners in Flight. The Proposed Action includes maintenance and restoration of the approximately 21,550 acres of grassland habitats within the Rim Country project area.
15	Lots of other good things in the Proposed Action too. Decommissioning roads, relocating roads having adverse impacts, restoring hydrologic function in meadews and springs, restoring riparian areas are all wonderful to see in the restoration program. I appreciate your attention to the concerns I raise in this letter. I know that the task you have is very large already.		Project support
Letter 15		**Tom Mackin Secretary Treasurer Coconino Sportsmen**	
1	The Coconino Sportsmen welcome this opportunity to comment on the 4FRI Rim Country Project Proposed Action. As a 60+ year local sportsman's organization that has been active over the decades on forest, wildlife and other related issues we support and agree with the letter submitted by John Hamill of the TRCP. In addition we would like to submit the following additional comments to supplement those topics included in the TRCP letter.		
2	When discussing the project Purpose and Need we could not agree more on all of the purposes outlined, restoration of forest health, structure, function and resiliency are absolutely necessary to meet mutually beneficial goals. Current conditions are a far cry from the historic norm and we're fortunate today to have the knowledge, experience and desire to remedy this problem. Unfortunately there does exist roadblocks to the		The FS understands and appreciates that it takes time, money, and partners to overcome the many roadblocks to accomplish all of the restoration work proposed. The economics analysis will discuss prioritizing implementation in an effort to optimize, as much as possible, both ecological and economic considerations. First and foremost, the purpose of the Rim Country Project

	success of this project including adequate funding, balancing of priorities, contractor activities and fulfillment of obligations, frequent turnover of key personnel and stringent social and industrial pressures. We realize that we're not going to please everyone regardless of the scientific knowledge available but we cannot afford to ignore proven facts and scientific evidence in order to appease personal opinions or that of a small but highly vocal portion of the public. A balanced adherence to procedures and treatments that achieve the needs and purposes of the project must be kept in the forefront at all times without undo emphasis on any one of the goals. We know how we've arrived at the current conditions and we know what it takes to attain the desired conditions and that should be first and foremost with any activities in our forests and other public lands.		is to restore ponderosa pine ecosystems, their function and processes, while meeting multiple needs as it is implemented.
3	When discussing the specific proposed actions on page 14 of the document I've received we'd like to make the following comments or suggestions When it comes mechanical thinning and prescribed burning, whenever possible insure that multiple objectives are being considered. For example, thinning or prescribed fire on MSO PAC's or NGH areas should be done in a manner that also reduces the undesirable effects of fire. There will be limited or no MSO or NGH activity in an area that suffers high severity wildfire. Wildlife is resilient and adaptable to various conditions as long as minimum carrying capacity conditions exist.		The FS primary objective within PACs and NGH areas is to restore to forested conditions that would sustain low-severity fire, while preserving suitable nesting and foraging conditions for MSO and NGH, as described on page 22 of the Proposed Action. Each PAC and PFA will be assessed for the most suitable treatments. This will be addressed in detail in the Rim Country EIS, and the Silviculture, Wildlife, and Fire Ecology and Air Quality Reports.
4	Roads should be managed as part of the TMP program and not dependent on 4FRI budgets or priorities. The ongoing discussions and resulting changes to roads and other access opportunities is a program that has shown to be feasible and effective when coupled with appropriate enforcement activities and budget appropriations.		The FS agrees the current TMR implementation process is the appropriate venue for working with interested parties on travel management. Any road decommissioning considered in the Rim Country EIS would be consistent with travel management plans on all three forests.
5	Numerous opportunities exist for volunteer activities to carry out objectives related to meadow, wetland and riparian areas and these opportunities should be explored and implemented whenever possible.		Many opportunities exist for volunteer groups to improve meadows. The flexible toolbox approach would include specific treatments that could be implemented in coordination with volunteer groups.
6	There have been many activities already completed to inventory springs and assess their current conditions. Like many other		The FS is working with our stakeholders and partners to explore all possible opportunities for financial support and

	areas of concern, the knowledge and experience in what should and must be done already exists and all possible opportunities for collaboration and financial support/sharing should be implemented.		sharing information to implement comprehensive restoration activities. The flexible toolbox approach being used for the Rim Country Project will make use of the known conditions of springs, and determine the types of treatments that would work best in certain conditions, allowing the FS and its partners to decide on specific treatments or tools during implementation. The FS will address monitoring through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan. Current and future active participation by stakeholder groups focused on aquatic species and hydrology in the Multi-party Monitoring Board would help ensure that both terrestrial and aquatic monitoring is appropriately integrated in the plan.
7	In regard to protective barriers, a topic we have a great deal of experience with, planning and implementation must include discussions for future maintenance, access, monitoring and possible decommissioning once appropriate. Within the project area there are existing sites where barriers were constructed that have not been maintained or monitored and the costs of the initial development were wasted due to the lack of adequate planning and foresight.		The implementation plan for the Rim Country Project will include the maintenance as well as the construction of fences and other barriers proposed. The FS will address monitoring through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan. Current and future active participation by stakeholder groups focused on aquatic species and hydrology in the Multi-party Monitoring Board would help ensure that both terrestrial and aquatic monitoring is appropriately integrated in the plan.
8	Finally, we understand that not all of the proposed actions will be completed at the same time or in the same order so prioritization and order and location of treatments should be planned to make the most of available resources. In addition, with resources and planning already built into the schedule, resolving other problems, like the removal of unnecessary pasture and allotment fences, removal of old, ineffective or significantly damaged aspen or wetland exclosures and general housekeeping on forest lands should be included under the proposed actions.		An implementation plan based on the analysis will be developed to include prioritization of activities based on timing restrictions, location, funding, operations, and available resources. Prioritization of treatments will be part of the implementation plan. The order (sequence) in which different areas are treated is not a NEPA decision, but is made at the local level, based on time and site-specific conditions. If this kind of sequencing was included in the NEPA analysis, it would decrease both the temporal and spatial flexibility for implementation of mechanical and prescribed fire treatments.

			The removal of unnecessary pasture and allotment fences; removal of old, ineffective, or significantly damaged aspen or wetland exclosures; and general housekeeping on forest lands are outside the scope of the Purpose and Need for the Rim Country Project and do not require NEPA analysis. These types of maintenance activities in the project area could be part of the flexible treatment approach for restoration activities (e.g., meadow and grassland restoration), as well as opportunities for external funding from partners or volunteer work.
9	Again, thank you for this opportunity and we look forward to continued involvement with the 4FRI effort and we hope to see improved education and information sharing on some of the misconceptions regarding the proposed actions, like the need to have prescribed or managed fires and the inevitable smoke that may accompany these activities.		The FS appreciates your support and involvement in the process. Prescribed fire and smoke will be addressed in detail in the effects analysis in the Rim Country EIS and Fire Ecology and Air Quality Report.
Letter 16		**Judy Prosser, Bar T Bar Ranch, INC.**	
1	In response to your request for comments to the 4FRI Rim Country Project Proposed Action, we would like to make the following comments: Generally we are strongly supportive of the Purpose & Need for the project. We are in support of any means to expedite and/or make the process more efficient. Time is of the essence.		Project support
2	Page 4 & Page 24, where "Facilitative Operations" is defined: if fire is utilized in the pinon-juniper, we would suggest that there is aggressive removal of the "PJ". Grassland fires do not have the same positive effect as direct elimination of trees.		The pinyon-juniper cover type is not a frequent-fire type targeted for restoration in the Rim Country Project. Facilitative operations are only proposed in this cover type where they are needed to support the safe and effective use of prescribed fire in adjacent target cover types.
3	Page 8, 4th paragraph, reference to pronghorn as "Management Indicator Species "(MIS). It is our understanding that under the new Forest Plan, that term is obsolete, and no longer management protocol. It has a tendency to attract legal issues and in our opinion, should not be used.		The revised forest plans being completed do contain MIS, including pronghorn. Regional direction is to replace MIS with ‘focal species’ at some point in the future, after each forest plan is revised. In the meantime, the Apache-Sitgreaves, Tonto, and Coconino National Forests will continue to use MIS to reflect major management issues and challenges and to monitor the effects of implementation of the Forest Plans on wildlife habitat and species diversity.

4	Page 12 & 26: Spring Restoration treatment, namely fencing, or "protective barriers". There should be advance research to determine if the water rights are owned by a Grazing Permittee. In the event they are owned by a Permittee, then there would have to be mutual agreement to fence off the spring from grazing ungulates. Mitigation measures might include piping water to an alternative location.		Prior to fencing, water rights for that water source would be researched. If the water right ownership belongs to someone other than the United States, the water source would not be excluded. The removal or exclusion of other livestock water would be mitigated with alternative water sources, providing lanes to the water, or piping water to a livestock drinker.
5	Page 13, Habitat for rare plant species: increase individual recruitment of aspen, etc. there is mention of "protective barriers placed around sites to prevent browsing and other disturbance during regeneration". We suggest that fencing should be at a minimum because it requires maintenance and historically that is a difficult order for the USFS to perform. It ends up not getting done, creates a bigger problem for large ungulates, and is an unsightly, and potentially dangerous mess in the forest.		Aspen occurs across the Rim Country Project landscape in mostly small areas associated with other species. Where there are opportunities to improve wildlife habitat by improving aspen resilience and recruitment, they will be evaluated and only implemented where they are appropriate. The particular method of browsing exclusion will be determined on a case-by-case basis and may include such things as jackstrawing of down logs, lop and scatter, or fencing, as examples.
6	Page 14 Stream Habitat Restoration: "Restore 360 miles of stream habitat..." Given that extraordinary amount , it needs to be low maintenance, or it will not get maintained. Page 26 Riparian Stream & Stream Channel Restoration: "Protecting sites from grazing ungulates,...and/or removing stock tanks". This could be, once again, a water rights issue, which needs to be investigated first. Second, even if the water rights are not owned by the Grazing Permittee, removing stock tanks should not be allowed, unless the Permittee is in full agreement. IF, the Permittee is in agreement, a provision for an alternative water source should be considered. Stock tanks are important to livestock and wildlife and typically were built to improve utilization by livestock(in consultation with the USFS Range Conservation Staff). The location of stock tanks are an integral part of managed grazing. Permittees are expected to adhere to grazing plans and removal of stock tanks could negatively alter their ability to do so.		Stream habitat treatments will be designed to require as little maintenance as necessary for the treatment to function properly until the system is self-maintaining. Activities identified as degrading factors will be eliminated or reduced to allow for successful restoration to occur. Proposed stream habitat restoration refers to restoring instream habitat to provide for habitat complexity and thermal refugia (pools) and to meet desired conditions for streams and aquatic species. The objective is to utilize treatments that would be maintained through the stream's natural functions and not by human intervention, making them low maintenance. Prior to fencing, water rights for water sources would be researched. If the water right ownership belongs to someone other than the United States the water source would not be excluded. The removal or exclusion of livestock water would be mitigated with alternative water sources, providing lanes to the water, or piping water to a livestock drinker.
7	Burning in the name of "Restoration" needs to accomplish that objective. Restoration needs to kill the targeted number of trees. Burning grass and pine needles does not accomplish the same objectives.		Using prescribed fire to kill trees is not the only role of fire, though it can be an important one, particularly for small trees. This will be addressed in detail in the Rim Country EIS and Fire Ecology and Air QualityReport.

8	Thank you for the opportunity to comment.		The FS appreciates your participation in the NEPA process for the Rim Country Project.
Letter 17		**Duke Grant**	
1	The first general comment regarding the plan is to point out that the restoration project is established to increase the health of the forest ecosystem by removing much of the Ponderosa Pine and subspecies of the forest, down to 25% of the existing forest in the treated areas. It is of great concern to note that scientists predict that due to drought and continued warming and climate change and severe annual wildfires that up to 50% of the forest system will be gone by the year 2050, and much more by the year 2100.(see reference at bottom of page.)		The Rim Country project area is abnormally overstocked in terms of the Natural Range of Variability (NRV) when compared to pre-European settlement conditions. The current conditions are not sustainable in the long term and the forest is experiencing increasing stress from drought, overstocking, insects and disease, and uncharacteristic fire behavior. The proposal for mechanical treatments in the Rim Country Project is to reduce stand densities to within their NRV and return fire to its natural return intervals. These strategies will reduce the likelihood of damage from large uncharacteristic fires. It is true that climate change will continue to exert stressors on Rim Country ecosystems. The best strategies to promote resilience and long-term sustainability is to change the current direction of forest growth toward lower tree density, to increase drought tolerance, to reduce risk from insects and disease, and to reduce uncharacteristic adverse fire behavior. This is the intention of the Rim Country Proposed Action and will be addressed in the effects analyses in the EIS. The relationship between climate change and ecological processes, forest structure, and wildland fire will be addressed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report.
2	Scientists state that there is a real possibilty of secondary succession and growth of new warmer climate tolerant species of trees and environmental desertification may likely take the place of the Ponderosa Pine forest in the future once enough of the existing forest is damaged by drought and/or mechanically removal by thinning operations.		Climate change will exert successional changes within the ecotones of the ponderosa pine ecosystems. Current modelling of climate change scenarios demonstrates the ebb-and-flow expected in species spatial distributions. However, literature does not equate thinning operations with the processes of damage or desertification. To the contrary, literature strongly endorses thinning, prescribed fire, and restoration as ways to promote forest resilience in the face of the uncertainties of climate change and other biotic and abiotic stressors.

			The effects of the restoration activities proposed, cumulatively with the expected effects from climate change, will be analyzed in the Rim Country EIS and Silviculture and Fire Ecology and Air Quality Reports.
3	With these new environmental conditions it is very important to maintain as much of the original ecosystem as possible while completing the 4FRI Action Plan objectives. The real concern being that if too much of the forest system is removed or interrupted by the 4FRI actions it is very possible that combined with the continued drought and climate change issues, the forest ecosystem may be irreversibly damaged. Therefore, it is strongly recommended that the desired condition (DC)" % Max Stand Density Index " from Tables 2 and 7 not be less than 45% for Ponderosea Pine, and 35% for any other species. Under the "Mechanical Treatments" chart for uneven aged group selection Ponderosa Pine should have interspaces over 10 to 60% of the stand, and not 10 to 90% to maintain the forest in the current drought conditions. Furthermore Single Tree selection of Ponderosa Pine, pine Gamble, and pine Evergreen Oak should have openings of less than or equal to 1/5 acre in size, and not ¼ acre. The stand Improvement for Ponderosa Pine et al, should be young even-aged stands dominated by trees less than 8 inches in diameter to improve growth and vigor, and not 8.5 inches. These minor modifications will go a long way in ensuring the health of the forest in severe drought and wildfire conditions that we are currently experiencing.		The purpose of the Rim Country Project is to increase resilience so that it can adapt to, and better tolerate, future climate changes (FSM2020). Existing conditions are highly departed from what we know are the Natural Range of Variation (NRV) for these ecosystems. Given the existing high densities, departure from historical fire intervals, and susceptibility to insects and diseases, literature does not suggest that the current conditions are sustainable. The best course of action to ensure ecosystem resilience and sustainable forests into the future are the activities being proposed in this project. Leaving ponderosa pine stands at, or above, 45% SDI post-treatment does not move any stands toward their desired conditions as outlined in the forest plans. Sound silvicultural science and stand dynamics indicate that 45% SDI for ponderosa pine is too high to be sustainable in the long term as the forests continue to grow. At 45% SDI stands move away from their desired conditions, perpetuate a closed canopy condition, leave the stands at better than full stand capacity post-treatment, and ensures that they will move towards extremely high densities (>54% max SDI) and density related mortality before the next planned treatment, and are less resilient to withstand adverse challenges. The proposal is to leave a matrix of stand densities across the landscape. To address stand health (i.e., insects, diseases, and climate change) the silvicultural thinning plan will have a wide range of densities in terms of basal area and stand density index. The amount of interspaces across the landscape will vary depending on many factors, with higher productivity sites generally having smaller interspaces than less productive sites. However, in grasslands where pine encroachment is occurring, 90% or more interspace is appropriate to return these areas to their NRV. In wildland urban interfaces, interspaces may be as high as 70%. The interspaces

			proposed are designed to ensure the ponderosa pine ecosystems move towards their NRV, have high diversity, and high heterogeneity. Limiting openings to 1/5 acre does not ensure enough interspace to elicit the understory response desired and does not move the stands towards their desired ecological conditions. The proposed openings would average ¼- acre openings, with stand openings from 0.1 acres to 1.0 acres (averaging .25 acres), but may be as large as four acres. Even-aged stand conditions are not the desired condition for ponderosa pine in the forest plans. The desired condition is for uneven-aged stand conditions across the landscape that are diverse in terms of age and diameter. There may be small areas of even-aged stands (< 50 acres, and not more than 10% of the project area). Timber stand improvement thinning is a treatment to select the best future trees. High stand density index, small interspaces, and limiting the opportunities for stand improvement treatments would move the forest away from desired conditions outlined in the forest plans, as well as increase the risks of uncharacteristic fire, density-related mortality, and drought stress, lower stand resiliencies, and make the stand more susceptible to adverse effects from climate change.
4	Furthermore, local water companies like Arizona Water in Lakeside have already detected a herbicide in their public water supply due to the actions of thinning / logging companies working in the area. Therefore it is of the utmost importance to eliminate any further potential water shed contamination by the action from the USFS 4 Fri contractors who use glyphosate, or other herbicides during their facilitative actions in this scope of work. The Deputy Director of the Arizona Forest Department has already stated concerns in an article from The Daily Star that the 4 Fri scope of work over the next 10 to 20 years may not be sustainable in regards to the forest ecosystem. It is important to maintain a healthy Forest system as well as a healthy local		The FS does not use pesticides when conducting mechanical thinning. The Rim Country Project is not proposing any use or analysis that includes any use of glyphosate or any other herbicides. The silviculture analysis is required to ensure ecosystem health and sustainability, as well as to contribute to social and economic sustainability. The Rim Country EIS and Silviculture Report will describe the sustainability of the ecosystem and wood supplies through the year 2059. The Rim Country Project will result in an ecosystem that is resilient to drought, insect and disease, climate change, uncharacteristic fire behavior, and provide sustainable ecosystem services into the future.

	economy, but sustainable forest management should not be compromised for any reason. Balancing these two can be a challenge especially given the extreme environmental conditions that we are now facing. It might be better to err on the side of caution then to have hindsight after causing potentially permanent ecological damage to the Worlds largest Ponderosa Pine Forest ecosystem.		
5	Thank you for your consideration of these comments.		The FS appreciates your participation in the NEPA process for the Rim Country Project.
Letter 18		**Stephen Clark Executive Director, Arizona Elk Society**	
1	We are encouraged with this phase of 4 FRI in that you have identified riparian areas, streams and springs that need to be worked on in conjunction with the tree thinning. In your analysis you identified the springs and riparian areas and the human caused issues related to the damage and reduced functioning. But you left out the fact that overgrown forests have limited the amount of water and runoff available due to the needs of the trees and overgrowth. The AES has been very successful in showing that reducing the conifers and junipers in areas of springs, streams and riparian creek has resulted in the increase in water. Also if you reduce water stealing trees you increase watershed and need to improve riparian areas and creeks, that are currently damaged, to protect them from further damage.		We are developing a flexible toolbox approach to spring restoration. Included in that toolbox will be a treatment to reduce density of trees to increase water availability to springs and seeps, along with spring protection. A comprehensive description of these and other treatments will be provided in the Rim Country EIS analysis. Proposed stream habitat restoration refers to restoring instream habitat to provide for habitat complexity and thermal refugia (pools) to meet desired conditions for streams and aquatic species. Maintaining cool water temperatures is an important component of stream riparian restoration treatments. Silvicultural prescriptions that provide for riparian desired conditions and stream shading would be implemented on a site-specific basis. Mechanical thinning and prescribed fire activities within riparian corridors should benefit the ecological condition of the riparian area. Benefits may include enhancing growth of large wood, reducing ladder fuels, or improving the condition of riparian vegetation such as hardwoods. Stream temperatures are driven by subsurface flow (cooling) and surface flows (diurnal fluctuations). This will be addressed further in the Rim Country EIS, the Aquatics Report, and the Implementation Plan.

2	Please consider the following comments on the June 2016 Four Forest Restoration Initiative (4FRI) Rim Country EIS Proposed Action. **Project Objective, Purpose and Need:** AES supports the objective of the Rim Country Proposed Action "to reestablish and restore forest structure and pattern, forest health, and vegetation composition and diversity in ponderosa pine ecosystems to conditions within the natural range of variation, thus moving the project area toward the desired conditions." We further support the Purposes and Needs stated for the Proposed Action to: • Increase forest resiliency and sustainability; • Reduce risk of 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		Project support
3	**Increase and broaden the wildlife focus** The AES would like to see the Proposed Action include a broader scope of wildlife habitat restoration needs and actions not just those benefitting federally protected species. Many Arizona sportsmen utilize and depend on the project area for a quality hunting and fishing experience. Hunting and Fishing is an important part of the multiple use of the Forest. A recent state-wide survey conducted by the Arizona Game and Fish Department indicates that the project area includes some of the State's mostly highly valued hunting and fishing areas for elk, deer, turkey, trout, and pronghorn antelope (see: www.azgfd.com/Recreation/ValueMapping). Hunting and fishing for these species are economically and socially important to local and neighboring communities. As such, we recommend that the Purpose and Need should be expanded to include "Support quality hunting and fishing opportunities". The proposed action and treatments should emphasize actions that will improve terrestrial and aquatic habitat conditions, maintain/restore functioning wildlife migration corridors, and provide reasonable access. In addition, the Proposed Action should address increasing wildlife diversity by increasing spatial heterogeneity of habitat components for both aquatic and terrestrial wildlife.		In the development of alternatives and the analysis of wildlife habitat in the Rim Country project area, the FS will look at the spatial heterogeneity of aquatic and terrestrial wildlife habitat, and consider different scopes of wildlife habitat restoration activities, including for those highly valued hunting and fishing species. The Purpose and Need states the need to "Improve terrestrial and aquatic species habitat." In meeting this need, project activities will create additional habitat for highly valued hunting and fishing species. Additional wildlife habitat restoration activities may be considered in the fully developed Proposed Action and/or in other action alternatives that are fully analyzed in the NEPA process.

4	**Emphasize wildlife waters** Many wildlife waters (including tanks, water collection aprons, drinkers, etc.) in the project area have been degraded or are no longer functioning due to damage from catastrophic wildfire or lack of maintenance. These waters need to be repaired (i.e., sediment removal) or replaced. For waters that are exclusively wildlife waters, exclusion fencing may need repair or replacement to keep livestock out. There are other areas of wildlife habitat that have been identified for the installation of new waters. These repairs, replacements, and installations will improve habitat for wildlife and improve wildlife distribution across the landscape.		Repair, replacement, and installation of wildlife waters does not fall under the Purpose and Need for the Rim Country Project, which is focused on restoring forest structure and pattern, forest health, and vegetation diversity to increase ecosystem resiliency. Wildlife waters projects may be considered in the fully developed Proposed Action and/or in other action alternatives as additional activities that may be completed as funding allows.
5	**Emphasize wildlife connectivity and migration corridors** An objective of the Proposed Action should be to **c**reate and restore wildlife corridors through thinning to connect wildlife habitat blocks on the landscape. For example, emphasis should be placed on mechanical treatments that will maintain and/or restore montane meadow connectivity through the removal of trees, including juniper and large young trees where wildlife travel corridors have been identified. Within the Rim Country project area, fence improvements and modifications would benefit wildlife through increasing wildlife connectivity on the landscape. For example, unnecessary fences need to be removed to allow wildlife to move through important movement corridors between habitat blocks. There are also other fences that require repair to keep livestock within allotments and protect sensitive wildlife resources. Wildlife would also benefit from wildlife friendly modifications to other fences that would retain livestock while allowing wildlife to cross.		The Purpose and Need states the need to "Improve terrestrial and aquatic species habitat." In meeting this need, project activities would be restoring wildlife corridors through thinning and connecting wildlife habitat blocks across the landscape. Meadow restoration activities that remove encroaching trees would help restore montane meadow connectivity. Additional meadow restoration activities may be considered in the fully developed Proposed Action and/or in other action alternatives that are fully analyzed in the NEPA process. Fencing repairs needed for grazing allotments would be accomplished as part of the permit for that allotment, and are outside the scope of the Rim Country analysis.
6	**Clarify the decommissioning roads will be done pursuant to approved Travel Management Rules (TMR)** Decommissioning of roads should be done in accordance with approved TMR's process not the Rim Country EIS. Page 5 (Roads) indicates that "there is a need to decommission unneeded routes identified during the forest Travel Management Rule review processes as part of the restoration of the landscape in the project area." However, page 14 indicates that the Proposed Action will:		The Travel Management Regulations direct each forest to designate roads available for public motorized use; the regulations do not go so far as to direct the agency to decommission or physically close roads. The Rim Country EIS would implement portions of Travel Management Plans, and should be consistent with the Travel Management Plans for all forests with signed decisions. The Rim Country EIS will not propose to decommission any roads designated as open in a signed TMR decision. The Rim Country EIS could propose to decommission

	Decommission approximately 230 miles of existing system and unauthorized roads on the Coconino and Apache-Sitgreaves National Forests. Decommission approximately 20 miles of unauthorized roads on the Tonto National Forest. Improve approximately 150 miles of existing non-system roads and construct approximately 350 miles of temporary roads for haul access; decommission when treatments are completed. Relocate and reconstruct existing open roads adversely affecting water quality and natural resources, or of concern to human safety. It's unclear whether these proposed actions are authorized in approved TMR's.		existing system roads that are designated as closed to the public or unauthorized roads.
7	**Emphasize and expand the scope of stream restoration actions** The project area includes numerous streams that support some of the most productive trout fisheries in the state and contribute to Arizona's vital water supplies. The project area is home to native Gila and Apache trout that are important from both a conservation and recreational perspective. The proposed forestry restoration combined with thoughtful hydrologic rehabilitation can produce resilient, sustainable and highly functioning watersheds that supports both native and recreational fisheries. All perennial, ephemeral, or intermittent streams (not just those identified in Figure 6, page 19) should be eligible under the EIS to receive restoration and or improvements, if needed. Not all these streams may need restoration or special treatment, but the EIS should provide the necessary compliance if restoration or special treatment is deemed appropriate. Prior to mechanical or fire restoration treatments, the hydrologic impacts of the treatment to streams, aquatic ecosystems, and riparian areas should be formally evaluated. Treatments should be adjusted to avoid or mitigate adverse impacts.		Restoration needs are not fully known across the Rim County project area. Particular streams with known habitat restoration needs will be proposed for treatments, while a flexible toolbox approach will be applied for restoration of streams and riparian areas across the project area. This approach will allow the FS to implement stream restoration as needed with other management activities and as funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. The Proposed Action includes all streams currently occupied by aquatic species or proposed for reintroduction. The flexible toolbox approach will describe current conditions and treatment options to consider moving streams and riparian areas toward desired conditions. Resource protection measures will also be incorporated into treatments through design features, conservation measures for aquatic species, and best management practices (BMPs) for water quality. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports. Restoration of all streams within the project area could be included in an action alternative.

8	Thank you for considering these comments and for all the hard work of the 4FRI EIS team to work collaboratively with stakeholders to prepare the Rim Country EIS. The Arizona Elk Society is very encouraged to be part of this phase due to the inclusion of the rest of the ecosystem improvements. Please contact me if you have questions or need additional information.		Project support
Letter 19		**Arthur Firstenberg**	
1	The Four Forests Ruination Initiative (4FRI) is a planning effort designed to remove 95% of the trees from over two million acres of Arizona's forests and destroy forest resiliency for the benefit of timber, oil and gas, mining, geothermal and cattle grazing interests, as well as the prescribed burning industry and others wishing to exploit public lands for private profit.		The Rim Country Project will follow forest plan desired conditions and management direction to determine the amount of thinning proposed. Silvicultural prescriptions will be written that follow guidelines for removal of a certain basal area of trees from forest stands. These prescriptions do not include removal of 95 percent of trees from the entire project area. The purpose of the Rim Country Project is to restore the structure, pattern, composition, and health of fire-adapted ponderosa pine ecosystems; reduce fuels and the risk of unnaturally severe wildfires; and provide for wildlife and plant diversity. Doing so will involve a variety of restoration treatments and will rely on FS personnel, stakeholders, partners and volunteers, and contractors to ensure this purpose is being met.
2	The Deforestation Service is no longer hiding its real agenda or pretending any more that this has anything whatever to do with ecological restoration or fire prevention. It is about removing as many trees as possible and setting as many fires as possible. This is stated right out front in Senate Bill 1691, introduced in the U.S. Senate on June 25, 2016. S. 1691 *defines* "restoration" as "timber harvesting, thinning, prescribed fire, or other vegetation manipulation in the National Forest System." The bill also mandates a minimum of one million acres of burning per year and 400,000 acres of timber sales per year.		Senate Bill 1691indicates restoration can include activities like timber harvesting, thinning, prescribed fire, or other vegetation manipulation in the National Forest System, relating that this helps to recover, establish, or maintain the resilience or adaptive capacity of an ecosystem.
3	The Deforestation Service also no longer pretends that public comments will have any effect on its plans, or that Environmental Impact Statements are anything more than a charade. S. 1691 and House Bill 2647, which was passed by the House of Representatives on July 9, 2015, will make it impossible for private citizens to ever again challenge an EIS in court. Both bills contain language requiring any person who		The Rim Country Project will follow forest plan desired conditions and management direction to determine the amount of thinning proposed. Silvicultural prescriptions will be written that follow guidelines for removal of a certain basal area of trees from forest stands. The purpose of this 4FRI project is to restore the structure, pattern, composition, and health of fire-adapted ponderosa pine

	wishes to challenge a deforestation plan in court to post a bond equal to the Deforestation Service's estimated costs, expenses and attorneys' fees in defending the lawsuit. If H.R. 2647 is passed by the Senate and signed into law, Environmental Assessments and Environmental Impact Statements won't even be required any more. H.R. 2647 will categorically exclude prescribed burning projects from environmental review. Another Senate bill, S. 2012, has already passed the Senate and the House and is in conference committee. This bill awards categorical exclusions to "vegetation management" plans in the rights-of-way of electric power lines "and adjacent Federal lands."		ecosystems; reduce fuels and the risk of unnaturally severe wildfires; and provide for wildlife and plant diversity.
4	The Deforestation Service awarded the contract for the first million acres of 4FRI to an international land and timber broker called Good Earth Power, a company based in the Sultanate of Oman, with partners in England and China. Little or none of that lumber is staying in the United States. International Forest Products, LLC, a subsidiary of The Kraft Group, is marketing the lumber harvested by Good Earth Power from Arizona's forests (340 million board feet per year) on the international market.		The economics analysis will include discussion of what can be expected with different types of contracting, but contracting will not be a part of the alternatives or the decision.
5	After most of the trees are gone, the National Forests will have lost their reason for being. Real estate developers are already salivating over what may soon be the former Coconino, Kaibab, Apache-Sitgreves, and Tonto National Forests. There isn't a word of truth in the 32-page scoping document describing the 4FRI Rim Country Project.		The Rim Country Project will follow forest plan desired conditions and management direction to determine the amount of thinning proposed. Silvicultural prescriptions will be written that follow guidelines for removal of a certain basal area of trees from forest stands. The purpose of 4FRI is to restore the structure, pattern, composition, and health of fire-adapted ponderosa pine ecosystems; reduce fuels and the risk of unnaturally severe wildfires; and provide for wildlife and plant diversity.
Letter 20		**Fred Gaudet, Arizona Trail Association Board of Directors**	
1	The proposed project will have a temporary negative impact but a long-term positive impact on the Arizona National Scenic Trail (AZT) west of SR87 and the experience of trail users, including hikers, runners, backpackers, mountain bikers and equestrians. The AZT is an 800-mile National Scenic Trail and State Scenic Trail that is among the greatest natural resources in		The Arizona National Scenic Trail (AZT) is a vital recreation trail for the state of Arizona, the southwest region, and the nation as a whole. The local and regional economics that are both generated by and sustained as a result of the continued growing popularity of the AZT in the state of Arizona are undeniable. Short-term effects on

	the nation. It attracts locals and international visitors alike, and has become increasingly popular since its completion in 2011. It is an economic engine for the state of Arizona as well as the 33 Arizona Trail Gateway Communities, including the towns of Strawberry, Pine, Mormon Lake Village and Flagstaff. As the administering agency of the AZT, the USDA Forest Service has an important responsibility in the protection of the trail. As the nonprofit organization whose mission is to build, maintain, promote, protect and sustain the Arizona Trail, the Arizona Trail Association (ATA) submits these scoping comments.		users of the AZT will occur in the forms of temporary visual and aesthetic alterations, as well as restricted access to some areas due to implementation of restoration activities. However, and as the Arizona Trail Association (ATA) observes, the long-term benefits to those ecosystems the AZT passes through will far outweigh the short-term, temporary effects on visual scenic qualities and localized public access to specific segments of the AZT. The FS anticipates that implementation of restoration activities across landscapes shared with the AZT will not only have positive, long-term benefits to the overall protection of the AZT, but will also serve to preserve the AZT as a major recreational destination and economic engine for the state of Arizona, the southwest region, and the nation as a whole.
2	The ATA supports the proposed ecosystem thinning and burning treatments that will protect all recreational trails in the 4FRI Rim Country Project, including the AZT, over the long term. The Arizona National Scenic Trail and other trails are important values at risk, and as such, will be protected by the proposed actions of the 4FRI Rim Country Project. The Design Features, Best Management Practices, and Mitigation for Recreation, Trails, Scenery, and Special Areas of Appendix C of the 2013 EIS are most appropriate and positive mitigations and would protect the recreational values and scenic views for all trails, including the AZT.		Project support
3	As part of RS7, Recreation and Other Trail Mitigation, particularly important for users of the AZT, is notification to the public when forest restoration activities are scheduled. Specifically, District Recreational Specialists should “ensure well marked and publicized detour routes for the Arizona Trail” (p. 18). Sending announcements or media releases directly to the Arizona Trail Association will inform over 10,000 ATA members and supporters, and more importantly, users of the AZT about thinning/burning activities or detours along the AZT.		The FS agrees that mitigation requirements contained in RS7 for recreation resources, pertaining to public notification of impending landscape restoration projects in an area, must be met in order to reduce potential negative effects on users of the AZT and to system travel routes in general. In addition to establishing temporary alternate travel routes around restoration project areas and marking those temporary routes in a manner so that users know where they are, the FS will conduct periodic outreach to the ATA (e.g., public notices and project updates tailored to AZT users) regarding anticipated restoration projects in close proximity to or surrounding the AZT so that users are

			made aware of future restoration activities as they are planning their travel routes and related recreation activities. Since landscape restoration activities don't stop with simple cutting and removal of trees and brush, the FS also anticipates the need to continually update the ATA and the recreating public regarding other planned resource improvement activities, such as prescribed burning, so that trail users are informed on the wide array of ongoing landscape restoration work that could cause temporary effects on trail users.
4	Additional design features, best practices, and mitigation specific to the Arizona National Scenic Trail that need to be addressed for the Draft Environmental Impact Statement include the following from Appendix C: 1. Avoid using the AZT as a boundary and have minimal marking of trees within the Arizona Trail corridor (RS2 p. 14). 2. The highest emphasis for slash treatment, temporary road closures, and road decommissioning will be placed on foreground of a number of entities including national scenic, historical or recreational trails (RS3(d) p. 14-15). 3. "National, Historic, and Recreational Trails as well as forest system trails . . . will not be used as temporary roads or skid trails"(RS3(h) p. 15). Any perpendicular trail crossing will be restored to pre-project conditions. "Crossing of the Arizona Trail will be done sparingly and only if no other alternative exits" "(RS3(i) p. 15). 4. Slash piles should be at least 300' from the AZT and fire control lines on the AZT need to be coordinated with district recreational staff (RS3 and RS4 p. 16). 5. Jack straw treatment shall not be implemented within 1,000' of the AZT (RS6 p.16). 6. Along the AZT, character trees of unique form or shape should be retained when feasible. Avoid abrupt changes in the landscape along the AZT trail corridor (RS7(d) p. 17).		The travel corridor facility mitigation and protection criteria that will be incorporated into the 4FRI Rim Country EIS for the AZT and other established travel corridors will be strictly adhered to and may be enhanced if the needs present themselves as restoration activities are implemented. The design criteria, best management practices, and mitigation measures specific to the AZT and other system travel routes will help to protect and preserve travel corridors as restoration activities are implemented, and any necessary rehabilitation and restoration work on those travel corridors will be documented and completed per specific contractual requirements.
5	The ATA also recommends adding an additional mitigation: where possible, while implementing proposed treatments, make improvements within recreation sites and along trails. Examples include cleaning up logs and debris from past projects and removing hazard trees and downed timber across trails.		Although the focus of the 4FRI Rim Country Project and other landscape restoration projects is to help return forested areas across southwestern region landscapes back to their natural range of variation, opportunities may present themselves through implementation of specific restoration activities around recreation sites and developed

			system trails to protect those sites and facilities. For example, implementation of restoration activities across large forested areas will not only help to restore natural ecosystem conditions such as more open forest canopy and conditions less prone to catastrophic wildfire, but will also help reduce the potential for large-scale catastrophic wildfire effects on developed recreation sites and trails. As restoration activities are completed, developed recreation sites and trails will be monitored for any additional site clean-up or travel corridor clearing work that may be necessary (e.g., post-restoration project activities that can be considered regular ongoing developed recreation site and trail maintenance activities).
6	Design Features, Best Management Practices, and Mitigation for Recreation, Trails, Scenery, and Special Areas should be explicitly communicated to all individuals working on the project, not only stated in prescriptions for treatment within contracts, but also communicated to each person involved in thinning and/or burning. Individual workers need to understand the importance of the Arizona National Scenic Trail and how their work can positively or negatively impact this important resource. Forest Service personnel and ATA Trail Stewards should monitor and evaluate activities as they progress, not just upon completion.		The multi-faceted importance of the AZT and the significant recreation and economic roles the AZT plays need to be explicitly communicated to those entities and individuals that will have direct, on-the-ground involvement with implementation of proposed restoration activities in those areas near and adjacent to the AZT. Forested areas slated for restoration work in this project will be analyzed for their proximity to and/or collocation with the AZT, and any contracts created that include forested areas near or adjacent to the AZT corridor will be specifically identified as having unique and/or critical features that warrant special protection measures prior to beginning any restoration work. Pre-bid meetings with potential contractors would reaffirm the presence of the AZT in cutting units, physical identification of AZT corridor cutting limits on-the-ground with either flagging, tree-marking paint, or a combination of materials, and cutting unit walkthroughs. The FS welcomes any representatives of the ATA, as well as its AZT Trail Stewards, to assist FS staff with ongoing monitoring and evaluation of the AZT before, during, and after implementation of restoration activities.
7	Thank you for your time and effort to review these scoping comments. The ATA looks forward to this proposed action moving ahead to the Environmental Impact Statement and ultimately to activities in the forest that will protect the AZT and		Project support

	more importantly the forest, watersheds, wildlife and other items. If you have any questions, or would like additional comments, including an in-person meeting, please contact Matthew Nelson, Executive Director or me.		
Letters 21, 22, and 23		**Pascal Berlioux, Eastern AZ Counties Org. Tommie Martin, Gila County Board of Supervisors, and Jason Whiting, Navajo County Board of Supervisors**	The Eastern Counties, Gila and Navajo Counties submitted the same comments. Each comment letter is entered in the project record as a separate letter but will be addressed together in this comment table.
1	In collaboration with the Forest Service, ECO has been an integral part of the 4FRI planning effort since 2009. Together we successfully developed in 2015 a robust Environmental Impact Statement (EIS) and Record of Decision for the 1st 4FRI analysis area that is now being implemented as part of the largest forest restoration effort in the country. We look forward to duplicating this success with the Rim Country EIS in order to extend restoration treatments along the entire Mogollon Rim, over an area totaling in excess of 2 million acres. The comments expressed in this letter represent the views of the Eastern Arizona Counties Organization. The Eastern Arizona Counties Organization regroups the six counties of Apache, Navajo, Gila, Greenlee, Graham and Cochise, most of which stand to be directly impact by the Rim Country Proposed Action. This letter has two purposes: 1. To express strong support for the Rim Country Analysis; 2. To provide scoping comments regarding the Rim Country Proposed Action.		Project support
2	**I - Support for the Rim Country Project** As amply documented by the conservation, academic and agency scientists, and as generally well supported by an overwhelming majority of stakeholders, the highly departed		Project support

	current conditions of the forested ecosystems in the Rim Country require action to re-establish forest structure, pattern and function, in order to increase forest resiliency and reduce the risk of uncharacteristic fire behavior. ECO therefore strongly supports the objective of the Rim Country Analysis "to reestablish and restore forest structure and pattern, forest health, and vegetation composition and diversity in ponderosa pine ecosystems to conditions within the natural range of variation, thus moving the project area toward the desired conditions" (Rim Country Proposed Action). ECO further strongly supports the desired outcome of "improving structure and function (and) increas(ing) ecosystem resiliency (and) the ability of [the Rim Country] ecosystem to survive natural disturbances such as fire, insects and disease, and climate change without changing its inherent function" (Rim Country Proposed Action). Therefore, ECO strongly supports the Purposes and Needs stated for the Rim Country Project to: • "Increase forest resiliency and sustainability; • Reduce risk of 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" (Rim Country Proposed Action).		
3	**II - Comments on the Rim Country Proposed Action** **1) Good Starting Point Document** ECO appreciates the overall quality and comprehensiveness of the Proposed Action, and passes on a resounding "Well Done!" to the people and the team responsible for it.		Project support
4	**2) Need to Include All Stakeholders Input** ECO appreciates that much of the early stakeholder input has been integrated in the Proposed Action, as illustrated in the cross-walk document *How Feedback on Rim Country draft PA was Addressed.* However, the stakeholders noted a number of areas in which the Proposed Action could more fully incorporate		The FS appreciates the support of and collaboration with the SHG. The FS will continue to work closely with the SHG as the action alternatives are developed and analyzed, and provide opportunities for close communications and considerations as the EIS is prepared.

	comments provided on the Draft Proposed Action. These include issues and opportunities related to habitat restoration and management for terrestrial and aquatic wildlife. We request that all input from all stakeholders be considered and analyzed in the EIS, and that the Forest Service extend all possible opportunities to stakeholders to not only provide, but further discuss their input with the interdisciplinary team. In the spirit of collaboration, and to ensure transparency, when stakeholders' input is not included, a disclosure and explanation of the decision should be shared with the stakeholders.		
5	**3) Need for Details** ECO understands and appreciates that a Proposed Action, by its very nature, cannot be – and should not be - as detailed as an Action Alternative, or as an Impact Analysis. However, we are concerned that the extremely general short paragraphs that describe possible restoration actions, such as the paragraphs on Proposed Treatments (p. 21), Grassland and Meadow Restoration (p. 25), Spring Restoration (p. 26), Riparian Stream and Stream Channel Restoration (p. 26), Stream Habitat Restoration (p. 26), Aspen Restoration (p. 26), do not convey anything more substantial than generalities, and do not provide the public with a meaningful understanding of the number, intensity, distribution, timing or potential effects of the actions that are being proposed. From a different perspective, we observe that some new terms such as "No Fire" (e.g. Tables 3 & 4, p. 7) have appeared but are not specifically defined, and that the language addressing the long standing issue of old growth and future old growth shifts from the notion of "old trees" to "large trees" to "old and large trees." Additional consistency and definition of terms used, is needed. We fully expect that the Rim Country EIS Action Alternatives and associated Effects Analyses will provide all needed details for each Action Alternative and Effects Analysis, and that these details will be made available to the Stakeholder Group in a timely manner, so that Stakeholders can conduct additional analysis and provide input to the Forest Service.		During the development of alternatives and the analysis of these alternatives for the EIS the FS will provide details on the proposed treatments included in the proposed action. The Forest Service will continue to actively engage in the work underway in the Planning Workgroup on the identifying stands with a preponderance of large yount trees (SPLYT) and the most appropriate treatments for these stands.

	We further request that the proposed management actions in old growth and future old growth (large young trees) stands be very explicit, and include the clear statement that no old growth trees (predating Euro-American settlement or currently exhibiting old growth structural characteristics) shall be cut. Regarding the Stands with Preponderance of Large Young Trees (SPLYT), we request that the unfinished work currently underway in the Planning Workgroup between the stakeholders and the Forest Service continue in order to jointly and collaboratively identify the most accurate descriptors and characterizers for the SPLYT, and the most appropriate treatments for these stands. This issue is very important to the Stakeholder Group.		
6	**4) Need to Increase and Broaden the Wildlife Focus** The Proposed Action would benefit from inclusion of a broader scope of wildlife habitat restoration needs and actions. Notably, the Proposed Action should address increasing wildlife diversity through increased spatial heterogeneity of habitat components for aquatic and terrestrial wildlife within the footprint, not just those that are federally protected. ECO understands that the Cooperating Agency relationship between the Forest Service and the Arizona Game & Fish Department will be a conduit for addressing some of these concerns. However, input from other stakeholders should be fully incorporated at the scoping stage as well, as there is no certainty that the Forest Service will include such input later in the NEPA process. The Stakeholders request that their issues be included in the Proposed Action to ensure that they are analyzed in the NEPA process. We therefore request that the wildlife focus be significantly increased and broadened, and that all interested stakeholders be given full opportunity to contribute to the development of restoration actions that relate to fish and wildlife.		The Proposed Action will be further developed and detailed, as well as other action alternatives, and the effects analyzed in the Rim Country EIS, Wildlife and Aquatics Reports, and the Biological Assessments. The Proposed Action will likely be broadened to include additional wildlife and aquatic habitat restoration. For the purposes of analysis, the FS is only required to analyze the effects of management activities on federally-listed species under the Endangered Species Act (1973 as amended), on the Regional Forester Sensitive Species (FSM 2672.42) and on Management Indicator Species (36 CFR 219.19 and case law; Tonto and Coconino NFs only). The input of interested stakeholders in the development of restoration activities that relate to fish and wildlife has been requested by the FS. All stakeholder comments, ideas, and input will be incorporated wherever possible in the Rim Country NEPA process. Thank you for your valued input to this process.
7	**5) Need to Increase and Broaden the Attention to Socio-Economic Issues** ECO appreciates the fact that the Forest Service modified its first draft of the Proposed Action to include a Statement of Socio-Economic Purposes & Needs, and an accompanying short narrative in response to the input of the Stakeholder Group.		Social and economic existing conditions and desired conditions in the Rim Country project area will be addressed in the NEPA process. Although the FS cannot ensure economic viability, we are considering options to increase opportunities. The economic analysis in the EIS will evaluate the economic

	However, we are concerned that this narrative may indicate a worrisome bias when stating: "Engaging industry would offer the opportunity to cover all, or nearly all, of the cost of removal of forest restoration byproducts by the value of the products removed" (Rim Country Proposed Action). While in many cases this statement may be perfectly appropriate, there also exist many cases in which this statement may be leading to unrealistic expectations. Treatment types, biomass removal specifications, current conditions, desired conditions, and maybe above all, treatment locations and hauling distances, are all critical factors that contribute in making the value of the material removed sufficient, or not, and sometimes by far, to fully offset the costs of treatments. ECO therefore requests that socio-economic current existing conditions and socio-economic desired conditions be added during the NEPA process to support the socio-economic statement of purposes and needs, and that detailed analyses of the economic viability of the treatments be conducted during the EIS process, treatment area by treatment area, to guide the Implementation Plan, and, ultimately, inform the selection of the contracting and packaging mechanisms of the treatments.		viability of proposed treatments, using the best available scientific information. The site-specificity of the economic viability analysis will be constrained by available information and uncertainty about future economic conditions, including the location of processing facilities and wood product market prices.
8	**6) Need for In-Depth Descriptions and Analyses of Proposed Treatments and Restoration Actions** As previously noted in Section 3 *Need for Details*, the paragraph on Proposed Treatments (p. 21) is extremely general. Further, the *Mechanical Treatments* table (pp. 22 to 25) outlines a series of ranges of treatment descriptions and objectives (e.g.: Uneven-aged Group Selection in Ponderosa Pine: "thin stands to 20-80 square feet of basal area and establish interspaces over 10-90% of the stand;" Uneven-aged Group Selection in Dry Mixed Conifers: "thin tree groups to 30-100 square feet of basal area;" Intermediate Thin in Ponderosa Pine: "thin tree groups to 70-90 square feet of basal area;" Intermediate Thin in Dry Mixed Conifers: "thin tree groups to 40-100 square feet of basal area;" etc.) but there is no indication of any distribution of treatment intensities across the sites, creating the possibility, that ALL treatments could be implemented at the highest, or lowest, intensity of the ranges, while technically remaining within the specified ranges.		During the development of alternatives and the analysis of these alternatives for the Rim Country EIS, the FS will provide details on the proposed treatments that are included in the action alternatives. The anticipated distribution of treatment intensities across the project area will be discussed and potential effects analyzed in the Rim Country EIS, but all treatments will not be site-specifically set. A flexible toolbox approach will be used to allow resource specialists implementing the project to adapt treatments to the current site-specific environmental conditions. BASI for different types of treatments will be referenced in the effects analyses of the alternatives in the Rim Country EIS. In the Proposed Action, prescribed fire is proposed for the entire project area where mechanical vegetative treatments are proposed. The decision of whether to implement

	Further, the treatment descriptions and objectives do not reference the Best Available Science Information (BASI) sources necessary to assess whether the treatments are likely to meet the objectives of the Proposed Action in the relevant stands, or how the direct or indirect effects of the treatments will impact the neighboring stands. Finally, all the proposed mechanical treatments include the statement "and/or Prescribed Fire" (Table 9). We are concerned that many treatments need to include both mechanical thinning "and" prescribed fire. In many cases fire cannot be reintroduced before thinning first, and in most cases thinning should be followed by prescribed fire. ECO therefore requests that the EIS include an in depth description and analysis of the proposed treatment and restoration actions, including the Best Available Science Information (BASI) supporting the design and selection of the treatments, the sequencing of mechanical and prescribed fire treatments, and the detailed analysis of the direct and indirect ecological impacts of the treatments in the Rim Country Analysis. ECO further requests the thorough development of a range of Action Alternatives that addresses the effects of treatment types, treatment intensities, and the cumulative effects of implementation actions across the landscape. In addition, ECO requests that the development of Rim Country Action Alternatives, and their analyses, include additional restoration actions, such as but not limited to restoration of riparian and aquatic habitats, in all those areas and projects (e.g. Cragin Watershed Protection Project (CWPP)), that are located within the Rim Country EIS footprint, and that have been, or are going to be mechanically thinned for wildfire protection or fuels management purposes under separate NEPA analyses.		prescribed fire or mechanical treatments first would be up to the districts implementing the Rim Country Project, based on priorities, expected fire behavior and effects, burn windows, contracting needs and concerns, and available resources. Design features will be included for the action alternatives to increase the flexibility in implementing both prescribed fire and mechanical treatments. The order (sequence) in which different areas are treated is not a NEPA decision, but is made at the local level, based on time and site-specific conditions. If this kind of sequencing was included in the NEPA analysis, it would decrease both the temporal and spatial flexibility for implementation of mechanical and prescribed fire treatments. For example, if the NEPA specifies that Area A will be cut before Area B, and Area A has a storm event that washes out some roads, Area B would still not be available for treatment until Area A could been treated, or until the roads could be repaired. Or if the NEPA specifies that a large area must be thinned before it is burned, or burned before it is thinned, and contracting doesn't go smoothly or burn windows don't occur as expected, areas could be tied up for long periods of time with no options for treatments. A range of action alternatives will be developed in the Rim Country EIS, and the effects of the treatments proposed in each alternative will be analyzed. Additional restoration activities will be included in the Proposed Action as well as the other action alternatives. The cumulative effects of proposed Rim Country treatments and treatments from other projects being implemented across the 4FRI landscape will also be analyzed.
9	**7) Need to Integrate Monitoring and Adaptive Management Flexible Tools** ECO is concerned that Monitoring and Adaptive Management are not explicitly addressed in the Proposed Action.		Integrating monitoring and adaptive management tools will be addressed through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan.

	This is an important issue for ECO. Previous scoping comments for the first 4FRI Proposed Action are still relevant for this Proposed Action: "In addition to the need for a targeted and efficient monitoring program, we also would like to emphasize the tremendous opportunity provided by the 4FRI to increase our understanding of the ecology of these systems. Given the 4FRI's commitment to being a science-based endeavor we would ask that the Forest Service help cultivate an atmosphere that is conducive to research being conducted by a variety of partners. Adaptive management requires explicit statement of goals and objectives, and a well-informed monitoring program that has the requisite power to detect management impacts rapidly enough to inform future management. Furthermore, adaptive management is a structured decision-making process that relies on clearly articulated triggers for management change. Finally, adaptive management requires a commitment to change management when monitoring data indicates that the thresholds identified by those triggers have been crossed" (SHG Comments 1st 4FRI EIS). ECO requests that the Forest Service engage collaboratively with the 4FRI Stakeholder Group to develop a comprehensive Monitoring and		Collaborative monitoring and the development of clearly articulated adaptive management triggers is supported in this project.
10	ECO appreciates the efforts deployed by the Coconino, Tonto and Apache-Sitgreaves national forests and the USFS 4FRI staff and leadership to perform the thoroughly robust Environmental Impact Statement that the Rim Country Project deserves, and we urge the Forest Service Team to complete this task in the timeliest manner. We expect to be actively involved in the development of the Environmental Impact Statement for the Rim Country Project; we hereby reserve the right to provide further comments as the process unfolds; and, in the spirit of collaboration, we respectfully request that the Forest Service commit to receiving and considering further comments and emerging ideas provided under the auspices of continuous scoping as the Action Alternatives are developed and the Effects Analyses are conducted. ECO scoping comments on Rim Country Proposed Action.		Project support

	ECO is committed to working with the Forest Service to design, implement and monitor an ecologically, economically, legally and socially robust Environmental Impact Statement		
Letter 24		**Joyce Francis Habitat, Evaluation, and Lands Branch Chief AZGFD**	
1	The Arizona Game and Fish Department (Department) appreciates the opportunity to work collaboratively with the United States Forest Service (USFS) as a cooperating agency on the Rim Country Environmental Impact Statement (EIS) for the Four Forest Restoration Initiative (4FRI) Rim Country Project (Project). The 4FRI Project has the potential to benefit Arizona's terrestrial and aquatic wildlife resources, as well as the people who use and value those resources. The Department looks forward to continued cooperation to make this landscape-scale project successful from planning to implementation, and provides the following comments on the Rim Country Proposed Action (PA).		Project support
2	The EIS is being developed through a diverse, multi-partner, multi-agency stakeholder group (SHG). The Department requests the USFS outline the collaboration and partnership of the SHG within the EIS as well as the Department's role as cooperating agency, member of the SHG, and Project Core Team.		Collaboration is central to 4FRI and to the Rim Country Project. Chapter 1 of the EIS will include a detailed description of public involvement for the project including details on AZGFD roles as a cooperating agency and a member of the SHG.
3	The Department requests monitoring and adaptive management be included as essential components within the PA. Monitoring of terrestrial and aquatic wildlife and their habitat is necessary for determining if restoration activities are effective, and that treatments are managed adaptively to avoid and/or minimize the potential for negative impacts to species and/or the habitats. Aquatic habitat monitoring is particularly critical to ensure thinning and burning are not resulting in long-term negative impacts to watershed health. The Department has developed and implemented stream habitat monitoring techniques within the project area and would like to partner with USFS to continue to implement the appropriate monitoring techniques, as was done in the first 4FRI EIS with the multi-party monitoring board. The Department considers monitoring and adaptive management		This will be addressed through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan (strongly influenced by the collaboratively developed plan from the 1st EIS). Current and future active participation by the Department and other stakeholder groups focused on aquatic species and hydrology in the Multi-party Monitoring Board would help ensure that both terrestrial and aquatic monitoring is appropriately integrated in the plan

	critical aspects of success for landscape scale restoration, and requests that the USFS continue engagement with the Department and the SHG to ensure these elements are appropriately incorporated and implemented.		
4	The large tree and old tree implementation plans (LTIP/OTIP) were a product of discussions during the development of the first 4FRI EIS. The Department believes the Rim Country PA does not sufficiently emphasize the importance of these plans. The Department understands that the vegetative communities are more complex within the Project than those within the first 4FRI EIS, and that the criteria for preponderance of large young trees (PL YT) and high canopy closure patches within the Project would be defined in close collaboration with the SHG. However, the Department requests that the EIS provide greater clarity with respect to application of the LTIP/OTIP, and place more emphasis on the wildlife value of presettlement and old growth trees.		The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies. The Forest Service will continue to actively engage in the work underway in the Planning Workgroup on the identifying stands with a preponderance of large yount trees (SPLYT) and the most appropriate treatments for these stands.
5	Issues of **clarity and** consistency (throughout) Will and would are used interchangeably for proposed actions. The use of "will" is perceived as predecisional; suggest use of "would" instead. (throughout) Lack of definition of scale is an issue throughout the PA. For example, Table 7 (p 11) provides desired conditions, but does not indicate the scale for average basal area for cover types. (throughout) Define cover types for clarity. The Department is specifically interested in definitions of grassland, savanna, meadow, wet meadow, and wetlands. We also requests that dry meadow be included and defined. (p 3, paragraph 2) The purpose statement focuses on ponderosa pine, and does not mention other forest cover/habitat types present in the project area, even though they cover a broad area. Broaden appropriately. (p 3, paragraph 3, under Forest Resiliency and Sustainability) The analysis area includes wet mixed-conifer with longer fire-return intervals; we request that this be addressed here as well. (p. 3, paragraph 5) Savannah cover types have likewise been affected by woody encroachment. (p. 3 paragraph 4, last sentence) It is unclear what species is referred to by " ... variety of shapes and sizes of trees ... " (p. 4, paragraph 3) "structure" is listed twice in item (2). (p. 4, paragraph 3, and p. 24).		The FS will ensure the proper use of words in the various documents for this planning process, such as the correct use of “will” and “would.” Definitions of terms will be included in a Glossary for the Rim Country EIS. The Rim Country EIS and Silviculture Report will describe all forested cover types in the project area. Facilitative operations that are proposed in the project area will be defined more clearly and analyzed thoroughly in the alternatives in the Rim Country EIS. The goal of 4FRI is to plan and implement restoration treatments across its 2.4 million acres of ponderosa pine forest, so we are constrained to treatments within frequent-fire cover types that include ponderosa pine. Other cover types that are not frequent-fire types are not targeted for restoration in the Rim Country Project. Facilitative operations are only proposed in non-target cover types where they are needed to support the safe and effective use of prescribed fire in adjacent target cover types. Facilitative operations will do some restoration work in these other cover types in their attempt to facilitate restoration of target types, but the focus

	Under facilitative operations on non-target cover types, the Department believes that to restore ecosystem function within the project area, treatments of non-target cover types should be implemented to maintain desired conditions or move these cover types toward desired conditions. These non-target cover types are contributing to undesirable fire effects, degraded terrestrial and aquatic species habitat, and degraded condition and function of streams and springs within the project area. To exclude these cover types would prevent a comprehensive effort at restoration of ecosystem functions. Furthermore, these facilitative operations may require mechanical treatment, not solely fire. (p. 5) Wet meadows are mentioned only under the Purpose and Need for Streams and Springs. Wet meadows are an integral component of a functioning headwater system. The Department requests that wet meadows are specifically considered under Desired Conditions and Proposed Treatments for aquatic habitats. (p. 5, paragraph 2) The Department requests clarification as to the need to include road decommissioning in the Project, and how the Project would be used to implement Travel Management Rule (TMR) decisions. The PA states there is a need to decommission unneeded routes identified during TMR, however, the PA later (p. 14) gives mileages of roads to be decommissioned for Apache-Sitgreaves National Forests, which have not yet finished TMR. Please provide more information and clarification as to the need and ability for the USFS to make changes to the transportation network outside of TMR. (p. 6, Table 1) The Project analysis area includes >100,000 acres of juniper and pinyon-juniper woodland. Are these within the natural range of variability and meeting desired conditions? If not, why are they excluded from treatment? (p. 8) Savannah types are mentioned in the text, but not included in summary tables. (p. 8, paragraph 4) It is not clear what the percentages of historic incidence of dwarf mistletoe refer to (i.e., infected acreage, stands, or other geographic units?). (pp. 8, 11, 14) Provide criteria for areas classified as being "understocked," and how this fits with overall restoration goals. (p. 9) Define Regional Forester Sensitive species. (p. 11 paragraph 3) Clarify circumstances for which planting would be necessary to meet desired conditions and restoration objections. (pp. 11 - 12)		of the restoration work done for 4FRI must remain on ponderosa pine ecosystems. Wet meadows will be evaluated and treatments recommended as part of the Aquatic, Riparian, and Soils Flexible Toolbox Approach for the Rim Country Project. This flexible toolbox approach will be included in each of the action alternatives for the Rim Country EIS, and will be used for much of the restoration of streams, riparian areas, springs, meadows, as well as for the associated road work, across the Rim Country project area. These types of treatments will fit most common restoration needs and will be described in detail in the Rim Country EIS. Sideboards for these treatments will be identified so that the effects of these treatments can be analyzed. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. Design features for implementing these treatments will be included in the Rim Country EIS and Watershed and Aquatics Reports. The Travel Management Regulations direct each forest to designate roads available for public motorized use; the regulations do not go so far as to direct the agency to decommission or physically close roads. The Rim Country EIS would implement portions of Travel Management Plans, and should be consistent with the Travel Management Plans for all forests with signed decisions. The Rim Country EIS will not propose to decommission any roads designated as open in a signed TMR decision. The Rim Country EIS could propose to decommission existing system roads that are designated as closed to the public or unauthorized roads. Dwarf mistletoe is a natural component of ponderosa pine ecosystems. The intent is not to try and eradicate dwarf mistletoe, but to mitigate its effects in those stands where certified silviculturist deem it possible. Addressing dwarf mistletoe infections is directed by all three Forest Plans and is an integral strategy to improve

	Historically, some areas infected by dwarf mistletoe received intense silvicultural treatments (e.g., "sanitation") that were controversial and compromised aesthetics and wildlife habitat values. Restoration treatments should be done in consideration of the natural incidence of mistletoe and its value to wildlife and habitat. The Department requests that the scale and intensity of mistletoe treatments be more clearly defined. The statement that mitigations will be considered "where more than 20% of ponderosa pine trees or an aggregate of mixed conifer host species are infected" has little meaning without a reference to scale. The same comment applies to the Mechanical Treatment table (p. 24) where the 20% threshold is mentioned again; this may be a very low threshold in areas of low host species diversity. Please clarify or revise to address the discrepancy under differing circumstances. (pp. 16 - 19, Figures 3 - 6) The figures provided by the P A are lacking in context and detail. Given the scale of the Project, we request that USFS publish figures online and include topographic features, so there will be sufficient detail for the public to comment in a meaningful and effective manner. (p. 24) Under Weed and Release, reference is made to thinning where brush, juniper, and evergreen oak species are greater than 40% of the cover. The Department requests clarification on the scale and science/management basis for this number, and that the EIS address the following questions and concerns. Does this proposed thinning only apply to evergreen oaks, 3 and not other oak species? Would this apply only below the Mogollon Rim where evergreen oaks are abundant? The Department requests USFS provide a map of the areas that would be targeted for oak thinning. We anticipate discussions with the ID team to ensure we work towards mutual goals of fuel reduction and wildlife habitat management, given the importance of oaks (including patches of young oak, in some cases) for wildlife. (p. 24) Even-aged shelterwood is a silvicultural system for sustained-yield and of uncertain relevance in a restoration context. The Department requests clarification as to its use and relevance in the Project. There is also a reference to the LTIP/OTIP here,		forest vigor, overall health, and resiliency. The FS is directed to increase forest health and resiliency, and reduce susceptibility to climate change. It is well understood that dwarf mistletoe is a parasitic plant that reduces tree vigor, is a significant stressor on plant health, and makes infected trees susceptible to insect infestations. To ignore the detrimental effects of dwarf mistletoe is to ignore one of the most widespread (up to 40% of all stands) diseases in the Rim Country Project. (Conklin, Fairweather, Hawksworth, Giles). Page 8 refers to 69,360 acres of understocked lands. This is a technical term defined in the published version of the Proposed Action. Understocked does not imply that all of these acres will be targeted for reforestation, but may be evaluated for planting, natural regeneration, natural recovery, or future trajectories that are not initially conifer (ponderosa pine). The term understocked will be better defined in the Rim Country EIS. Even-aged stand conditions are not the desired condition for ponderosa pine in the forest plans. The desired condition is for uneven-aged stand conditions across the landscape that are diverse in terms of age and diameter. There may be small areas of even-aged stands (< 50 acres, and not more than 10% of the project area). The use of shelterwood silvicultural systems in the alternatives will be explained in detail in the Rim Country EIS and Silviculture Report.

	which seems out of context especially given that this is the only reference to these plans within the PA.		
6	**Stronger emphasis on aquatic habitat restoration** In contrast to the first 4FRI EIS project area, the Rim Country project area contains an extensive aquatic environment. Riparian, wetland, and spring habitats are common in the project area and of tremendous importance to terrestrial and aquatic wildlife. The Department supports active improvement and restoration of these areas, but we are concerned that the P A does not sufficiently emphasize the aquatic restoration opportunities available. The aquatic treatments are confusing and lacking detail on proposed actions and locations. The Department has the following general and specific comments regarding aquatic habitat restoration. (pp. 14 and 26) Define the difference between "riparian stream and stream channel restoration" and "stream habitat restoration." Does this distinction imply perennial versus ephemeral streams? The Department has concerns with the method and accuracy of how riparian habitat was categorized. The "Stream Habitat and Stream Channel" restoration map provided to the Department upon request contains inaccuracies in classifications of streams. The PA does not explain how the 360 miles of stream habitat and 470 miles of non-riparian stream channels were identified. Please provide explanation of stream categorization. The Department would like to provide our expertise on the intermittent, ephemeral, and perennial nature of streams identified within the project area, but is unable to provide comment on the listed mileages without further explanation on methodology and a list of streams and their categories. We fully support the inclusion of restoring function to ephemeral and intermittent stream channels as outlined in the proposed action, and have attached a list of perennial streams (Attachment 1) that we are specifically requesting be included under stream restoration; this list was generated from an Arizona Department of Environmental Quality perennial stream layer. The USFS should consider the streams as the Department's priorities for stream habitat restoration within the Project. The Department requests that all of these streams and reaches be		There are inconsistencies with stream categorization; the information in the Proposed Action is based on the latest GIS spatial data available. The forests are scheduled for updating the NHD (National Hydrographic Database) beginning in FY 2018. The riparian information is based on the most current information available. Proper functioning condition (PFC) has been inventoried in many riparian areas on the three Rim Country forests; however, not all riparian areas in the project area have been formally inventoried. The condition of these other riparian areas are estimated. The FS welcomes input from AZGFD if there is data for formally documented riparian conditions in the project area. That being said, we are not limiting improvement work to just those areas identified. Particular areas with known restoration needs will be proposed for treatments, while a flexible toolbox approach will be applied for restoration of streams and riparian areas across the project area. This approach will allow the FS to restore riparian areas as needed with other management activities and as funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. The 360 miles of streams proposed for stream habitat restoration was calculated by mapping all streams and reaches currently occupied by aquatic species or proposed for stocking. Individual species' habitat greatly overlapped, therefore total occupied stream miles within the project area were used to describe the extent of potential stream habitat restoration rather than by each species. Maps of occupancy were reviewed by personnel from different agencies and the best available information at the time was used.

	included, and used to calculate the stream restoration mileage. To clarify and simplify stream restoration treatments and locations, the Department requests that the two riparian restoration types identified by the P A be combined into one single restoration type, termed "stream habitat restoration." Per that request, we suggest the following two paragraphs be included under the PA's Purpose and Need to further clarify what constitutes stream habitat restoration within the project area: *"Inclusion of stream habitat restoration projects in the project area is an integral part of restoring forest resiliency and ecosystem function. To return streams to functioning condition,* 4 *incorporation of artificial structures is often the most effective method. High severity wildfire has been shown to negatively impact aquatic habitats and surrounding riparian vegetation and has resulted in decreased habitat complexity, increased water temperatures, and sedimentation, all of which contribute to overall declines in water quality and quantity. Enhancing and restoring aquatic habitat and riparian vegetation would promote the biodiversity of wildlife that inhabit the stream or utilize associated habitats. Incorporation of physical instream structures into broader watershed restoration will improve the overall efficacy of these ecosystem level treatments." "Stream habitat restoration projects in the project area should include instream habitat restoration to improve aquatic species habitat through inclusion of physical structures that would improve habitat heterogeneity."* (see Attachment 2, a list of stream habitat restoration activities). (throughout, but specifically pp. 4-5; p. 9, paragraph 4; p. 12, last paragraph) Aquatic habitat restoration under the Project would restore function and provide benefit to all aquatic species. The Department therefore requests that the P A remove adjectives that specify that restoration would benefit "sensitive" or "protected" aquatic species; and broaden the benefits of aquatic habitat restoration to include all "aquatic species." (p.5, under Streams and Springs) In some circumstances, barriers are more effective than stream crossings for management activities. The Department requests the USFS work with the Department collaboratively to determine the need for fish passages for specific roads. We request that the sentence be changed to		Miles of streams by type (ephemeral, intermittent, perennial) were determined using NHD stream type layers from each forest. These shapefiles reflect the best available science at this time, but are not 100% accurate. The Department's list of priority streams was included in the overall total mileage of potential stream habitat miles proposed for restoration in the Proposed Action. The FS will review and consider these perennial streams for inclusion in the fully developed Proposed Action andother action alternatives. The FS will consider combining stream habitat, stream channel, and riparian restoration into a single category. The Proposed Action includes physical structures to enhance aquatic habitat. A flexible toolbox approach will be developed to describe possible current conditions and treatment options to move streams and riparian areas towards desired conditions. Resource protection measures such as design features, conservation measures for aquatic species, and BMPs for water quality will be developed. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports. Restoration would benefit all aquatic species; however, the FS is obligated by law, regulation, and policy to specifically address federally-listed, federal candidate (Endangered Species Act, 1973 as amended), Regional Forester Sensitive (FSM 2672.42), and management indicator species (36 CFR 219.19 and Case law; Tonto and Coconino NFs only). These species groups will be analyzed in the Rim Country EIS and Aquatics Report. Specific road crossings will be assessed on a case-by-case basis during implementation by FS personnel and other interested parties to develop particular treatments to move toward desired conditions. This flexible toolbox approach will be analyzed and included in the Rim Country

	"Reducing road density and improving road and stream crossings (where desirable, and in conjunction with Department management objectives) would maintain natural flow regimes ... " (p. 5, under Streams and Springs) The Department requests inclusion of the sentence: "lnstream habitat improvement also stabilizes streamside areas and restores functioning condition in the watershed by decreasing sediment mobilization, maintaining riparian vegetation, and increasing habitat complexity." (p. 7, paragraph 1) Define the methods for the fire model used within the project area. (p.l4, last bullet) Change to "Construct up to 200 miles of protective barriers (including jack straw barriers and fencing) around springs, aspen, Bebb's willows, and big-toothed maples, as needed for restoration." (p. 26, under Spring Restoration, Riparian Stream and Stream Channel Restoration, and Stream Habitat Restoration) Please provide more detail on proposed restoration activities for aquatic systems and potential "tools in the toolbox." See Attachment 2 for suggested activities for stream habitat restoration. (p. 26, under Stream Habitat Restoration) Potential structures for stream channel restoration are listed in Attachment 2. Structures would be designed for each stream restoration project to improve the condition of the stream and stabilize the watershed, improving water quality and potentially improving water quantity through reconnection of the stream with the floodplain. 5 (p. 26, under Design Features) For aquatic species, the Department would like the EIS to emphasize the following general recommendations to improve aquatic habitat: retain large conifers and/or hardwood trees in riparian corridors; remove encroaching conifers from headwater meadows; and maintain existing/construct new exclosures where ungulate impacts are excessive to restore flow and protect aquatic habitat. (p. 26, under Design Features) To protect watershed health in riparian areas as well as the Rim lakes, which are recreationally and economically important, we request that mutually agreed upon Best Management Practices (BMPs) be developed and implemented before and during treatments, including but not limited to projects that control erosion,		Implementation Plan. Improvements at crossings do not preclude management activities by the Department. Changes and additions to wording will be considered as the FS fully develops the Proposed Action and action alternatives in the EIS. The national BMPs for Water Quality Management on National Forest System lands have guidelines for aquatic ecosystems, prescribed fire, and vegetation management to minimize effects on aquatic systems. There is also manual and handbook direction on BMPs for watersheds. Aquatic species which have recovery plans with guidance for species protections will be incorporated into the Proposed Action and other action alternatives. Forest plans also provide standards, guidelines, and management approaches for aquatic habitats and their protection. Design features, BMPs, and conservation measures will be developed by the FS and incorporated into the Rim Country EIS and Aquatics Report. Fire modeling will be addressed in more detail in the Rim Country EIS and in the Assumptions and Methodology section of the Fire Ecology and Air Quality Report.

	minimize soil and ash outputs, and protect riparian areas from siltation during and after mechanical and burn treatments. Refer to the Department's *Preliminary Existing Conditions and Habitat Recommendations for the 4FRI Rim Country EIS* (Attachment 3), provided to the 4FRI core team in June 2016 for suggested BMPs to protect watershed health.		
7	**Broadening of the wildlife focus** The PA adequately addresses appropriate treatments for Mexican spotted owl (MSO) and northern goshawk (NOGO). However, we request that the EIS include treatments that create desired conditions for a broader range of wildlife species, not just sensitive or federally protected species. There is no single forest state that maximizes habitat value for all wildlife species, so habitat restoration needs to incorporate spatial heterogeneity, while also considering the requirements of federally protected species. The varying habitat requirements of different species underscores the need for forest restoration practices that are implemented at a sitespecific scale, but applied to the landscape, to improve wildlife populations across the project area. Please refer to Attachment 3 for the Department's specific desired conditions for wildlife habitat based on species distributed within the project area. The Department requests that the uneven-aged group selection (p. 23) to include additional techniques to protect and improve wildlife habitat components, including: • Protect and promote development of large Gamble oak and other hardwood species • Ensure retention of snags and downed logs • Retain poorly formed, dead-topped, and lightning struck trees The Department requests that mutually agreed upon BMPs (i.e., tnmng restrictions) are developed and implemented before and during treatments to minimize negative impacts to terrestrial wildlife from treatments.		Thank you for your valued input to this process. In the development of alternatives and the analysis of wildlife habitat in the Rim Country Project area, the FS will look at the spatial heterogeneity of aquatic and terrestrial wildlife habitat, and consider different scopes of wildlife habitat restoration activities. Additional wildlife habitat restoration activities may be considered in the fully developed Proposed Action and in other action alternatives that are fully analyzed in the Rim Country EIS. The treatment types and treatment descriptions in the Proposed Action describe the intent to retain old growth attributes, protect large oaks, and ensure snags and coarse woody debris. These treatment descriptions and objectives will be further developed to include more detail on improving wildlife habitat components. The Purpose and Need includes the described need to move toward desired conditions for snags and coarse woody debris. Each alternative will be analyzed to determine how well it meets this need. Design features and mitigation measures for all proposed treatments will be developed to minimize negative effects on terrestrial wildlife.
8	**Improving wildlife movement across the landscape** The Department has identified several activities not included in the PA that would improve or restore wildlife connectivity, movement, and distribution across the landscape. These include creating movement corridors for open canopy species, wildlife		The Purpose and Need for the Rim Country Project includes the need to improve terrestrial and aquatic species habitat. In meeting this need, project activities would be restoring wildlife corridors by thinning and connecting wildlife habitat blocks. Meadow restoration activities that

	water developments or redevelopments, and fence construction or modifications. The Department is pleased with the inclusion of grassland and meadow restoration in the P A, which would benefit pronghorn and other grassland-associated wildlife species. To restore functionality to grasslands and meadows, we anticipate that there may be a need to ensure connectivity between existing grasslands and meadows. The Department supports the need to retain old and large trees and high-canopy patches, and acknowledges that there will be further 6 discussion within the SHG to collaboratively identify the most accurate parameters for identifying the PL YT areas and the management techniques that will be appropriate therein. However, the Department requests flexibility within PLYT areas to restore intermontane meadow connectivity. As we did during the first 4FRI EIS, the Department will work with the 4FRI core team to identify meadows and grasslands that may require conifer removal, as well as potential corridors that may require thinning to facilitate movement among intermontane meadows and grasslands. Although this flexibility would allow a more intensive treatment in certain PL YT areas, the Department is not requesting an exception to remove old growth trees. There is a need for up to 36 wildlife water developments or redevelopments within the project area to provide reliable and permanent sources of water in an even distribution across the landscape (Attachment 4). Existing waters in need of redevelopment (n=33) include USFS and Department waters. Examples of potential improvements include the need for creation of an apron, cleaning following sedimentation, damage repair following wildfire, restoring function to old, dilapidated waters, adjustments that improve access for wildlife, and improvements that bring the existing water up to the Department's Wildlife Water Construction Standards. Some waters that provide important amphibian habitat may require fencing to exclude livestock, or require restoration following livestock exclusion. New waters can create a more even distribution of wildlife across the landscape and reduce grazing pressure in high use areas. These new waters may be located in areas of importance for particular species or strategically placed to protect habitats of interest from native and nonnative ungulates. Additionally, in areas of aspen recruitment, waters		remove encroaching trees would help restore montane meadow connectivity. Additional meadow restoration activities may be considered in the fully developed Proposed Action and in other action alternatives that are fully analyzed in the Rim Country EIS. Repairs, replacements, and installations of wildlife waters do not fall as readily into the Purpose and Need for the Rim Country Project, which is focused on restoring forest structure and pattern, forest health, and vegetation diversity to increase ecosystem resiliency. Wildlife waters projects may be considered in the fully developed Proposed Action and/or in other action alternatives as additional activities that may be completed as funding allows. The FS is very interested in partnering with AZGD to develop and complete new and existing wildlife water and fence modification projects.

	can be placed to strategically pull elk away and facilitate further aspen recruitment. For new and existing wildlife water projects, the Department may have funding or may be interested in partnering with the FS for funding opportunities. There is a need for up to 10 fence constructions or modifications that have been identified within the project area (Attachment 5). New fence projects are needed to exclude livestock and native ungulates from sensitive areas. Fence modifications (i.e., making improvements using the Department's Wildlife Compatible Fencing guidelines) have been identified in the project area to facilitate wildlife movement. These fence modifications will improve landscape permeability for elk, deer, and pronghorn, and in some cases are specific to known spring and fall pronghorn migration, an important ecological component of the ponderosa pine ecosystem. The Department may have funding for such projects, or may be interested in partnering with the FS to seek funding opportunities.		
9	In conclusion, the Department expresses its strong support for the collaborative process being implemented by the 4FRI Project, a one-of-a-kind effort to restore function and resiliency of Arizona's forests, with considerable benefits to terrestrial and aquatic wildlife. We look forward to our continued partnership with USFS on the Rim Country Project.		Project support
Letter 25		**Garrett Hanks Trout Unlimited**	
1	Trout Unlimited (TU) is the nation's largest coldwater conservation organization with over 160,000 members, some 1,800 belonging to Arizona's council of four chapters. Our mission is to protect, conserve, and restore the nation's coldwater fisheries and their watersheds for the next generation. Because these watersheds provide the habitat for outstanding coldwater fisheries and are homes for high quality wildlife populations that are enjoyed by sportsmen/women and recreationists across the West, above all TU is dedicated to protecting and enhancing watersheds. The Four Forest Restoration Initiative (4FRI) Rim Country Project (RCP) is an outstanding opportunity to have a long-lasting and widespread positive impact on the landscape, and we are thankful for the opportunity to participate in the planning process. Trout		The FS will review the waterways in the project area to determine their eligibility for restoration or improvement work. Streams, riparian areas, and aquatic ecosystems will be taken into consideration and mitigation measures developed prior to implementation of thinning or prescribed burning. A flexible toolbox approach will be developed to describe possible current conditions and treatment options to move streams and riparian areas towards desired conditions. Restoration of all streams within the project area could be included in an alternative.

	Unlimited supports all the Rim Country Project needs, and hopes to provide input specifically to; improving terrestrial and aquatic species habitat, improving the condition and function of streams and springs; and the restoration of woody riparian vegetation. Some of the most storied and productive coldwater fisheries in Arizona and vital watersources for thousands of people are found within the Rim Country Project Environmental Impact Statement (EIS) footprint. The project area is home to native Gila trout in conservation populations and recreation settings. We would like to see these resources protected, and we believe that the proposed forest restoration combined with thoughtful hydrologic rehabilitation can produce resilient, sustainable and highly functioning watersheds. Upon review of the 4FRI Rim Country Proposed Action, Trout Unlimited has supplied recommendations to strengthen the subsequent Draft Environmental Impact Statement (EIS) and work on the landscape. Two major concerns we would like to see addressed as the Rim Country Project moves forward; 1) The recommendation that *all* waterways – perennial, ephemeral, or intermittent – as well as upland dry Trout Unlimited Comments to: 4FRI Rim Country Project Proposed Action 2 drainages, be eligible under the EIS to receive restoration and or improvements and 2) Prioritizing and formalizing evaluation of the hydrologic impacts to streams, aquatic ecosystems, and riparian areas *prior* to mechanical or fire restoration prescriptions in their watersheds. We feel that using soft infrastructure where needed throughout watersheds, combined with a robust monitoring program to assess impacts from forest restoration prescriptions would lead to the best possible outcome for the 4FRI Rim Country Project watersheds.		Prioritization would occur as part of implementation on the individual forests and districts,providing flexibility. Assessment will be part of the flexible toolbox approach, to assess needs and appropriate restoration treatments. This will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports, and included in the Implementation Plan. Restoration of all streams within the project area could be included in an alternative. The FS will address monitoring through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan (strongly influenced by the collaboratively developed plan from the 1st EIS). Current and future active participation by TU and other stakeholder groups focused on aquatic species and hydrology in the Multi-party Monitoring Board would help ensure that terrestrial and aquatic monitoring is appropriately integrated in the plan.
2	**Major Concerns / Topics** *Eligibility of all waterways to receive restoration and or improvements* In the Proposed Action on page 14, mileages are identified for stream channels (ephemeral), and stream habitat (perennial).		We agree that all of the restoration needs have not been fully identified in the Rim County project area. The process being proposed is to develop a flexible toolbox approach for restoration of streams and riparian areas across the project area, to be implemented as needed. Particular

	These numbers are presented as the maximum to be evaluated for restoration or other physical work in riparian areas. We believe that it is unnecessary to: identify the maximum total number of miles for restoration, restrict potential locations for restoration, and separate the types of stream classifications and the corresponding restoration techniques. Instead, we recommend that the restoration and improvements on all drainages within the 4FRI Rim Country Project footprint be considered regardless of classification or form of implementation. All drainages have an impact downstream and cumulative effects are greater moving down a watershed. Forest restoration treatments will be watershed wide and landscape scale, and as such, impactful to every collection of water regardless of size. We suggest a blanket approval of hydrologic management across the 4FRI Rim Country Project area, provided that it follows an evaluation for suitability and fits the best management practices and desired project conditions. If strict definitions of stream miles are necessary for the proposed action and subsequent EIS, at a minimum a re-evaluation of the mapping needs to happen. Local knowledge and other mapping efforts do not match the numbers in the Proposed Action, or in Figure 6. Similarly restrictive is the separation between perennial and ephemeral or intermittent streams and the corresponding language of stream habitat and riparian improvements. Because watershed restoration does not fit neatly into these categories, the recommendations for restoration techniques and desired conditions should reflect the diverse ways of meeting the goal for a functioning watershed and waterway. What is good for a stream's hydrology is good for the fish and other aquatic biota of the riparian corridor. Likewise, restorative changes to dry upland drainages are intended to have the same desired effects of attenuating peak flows in abnormally large events, capturing sediment, promoting vegetative cover, and increasing groundwater infiltration. To separate these categories seems at odds with the rest of 4FRI's intention to be holistic and multifaceted.		streams with known habitat restoration needs will be proposed for treatments, while a flexible toolbox approach will be applied for restoration of streams and riparian areas across the project area. This approach will allow the FS to implement stream restoration as needed with other management activities and as funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. The effects from implementing proposed mechanical and fire treatments will be analyzed.

	If the divide between perennially wet, seasonally flowing, and intermittent steams needs to be in place, the definition needs to be strengthened, as does the reasoning for the split.		
3	*Evaluating watershed hydrology and aquatic ecology prior to forest treatments* Evaluation of hydrologic and ecologic impacts before mechanical or fire treatments is essential to the long-term success of the 4FRI Rim Country Project. As identified on page 26 of the Proposed Action, we strongly agree that hydrologic evaluations and aquatic ecosystem characterization must be done prior to any physical alteration of the landscape. This proactive decision will ensure the long-term health of the entire ecosystem at a watershed level. Trout Unlimited is a strong proponent of the proposed landscape level forest restoration; we believe it is the right course for the landscape and its users. By thoroughly evaluating the hydrology and aquatic ecosystems, especially macroinvertebrate assemblages in the drainages to be treated with forest restoration prescriptions, mitigation of potential negative effects and opportunities for positive improvements through adaptive management would be identified. The RCP is full of unique spring fed, bedrock dominated waterways. Their hydrology is largely a product of feast or famine – flood events or spring fed baseflow. And though intrinsically dynamic, these creeks will be greatly impacted by what is done on the land they drain. On one hand, populations of fish like the Gila Trout of Dude Creek could be devastated by a single post burn flood as has happened before. On the other Canyon Creek's legendary brown trout could benefit from an influx of small gravel sediment in strategic locations, delivered, for example, after a disturbance to the surrounding forest. Knowing the specific hydrology and aquatic biota of each drainage, and what can help or hurt, will ultimately mean the success of Proposed Action's goals for aquatic systems, but also for the forest restoration prescriptions as a whole. TU believes that upland forest treatments and inchannel restoration can go hand in hand, and that this Proposed Action and 4FRI Rim Country Project is an opportunity to match the proposed forest treatments with similar restoration to the hydrology for a mutually beneficial end. Actions like soft		Evaluation of the hydrologic effects from mechanical and fire restoration treatments will be completed in the effects analysisin the Rim Country EIS. A considerable reduction in effects is expected from implementing design features, BMPs, and soil and water conservation practices. Prior to implementing these treatments, the forests will review the specific activity area and define further mitigation as needed. Implementation monitoring of soil and water resources and identification of problem areas is the responsibility of the contracting officer representative (COR) and his inspectors. Remediation of damage to resources is required under the terms and conditions of contracts and stewardship agreements. The 360 miles of streams proposed for stream habitat restoration was calculated by mapping all streams and reaches currently occupied by aquatic species or proposed for stocking. Maps of occupancy were reviewed by personnel from different agencies and used the best available information at the time.

	infrastructure channel design, habitat improvement projects, and tributary restoration would possibly offset any negative impacts, but also provide a basis for utilizing the changes to the watershed (from forest operations) for a positive hydrologic effect. Though already identified in the Proposed Action, we would like to see a higher value put on the aquatic and hydrologic evaluations prior to forest management work and acknowledgement of the parallel importance of riparian and inchannel work to compliment the robust effort to restore the Rim Country's forest ecology.		
4	**General Comments** *Monitoring* Monitoring and adaptive management are major components within the first 4FRI Project, however, the Rim Country Project Proposed Action does not define or outline how it would be used in the Rim Country Project. Monitoring of fish and wildlife resources is necessary for determining if restoration activities are effective, and that treatments are managed adaptively to avoid and/or minimize the potential for impacts to species and their habitat. The Arizona Game and Fish Department (AZGFD) has developed Trout Unlimited Comments to: 4FRI Rim Country Project Proposed Action 4 and implemented stream habitat monitoring techniques within the project area. We believe the two agencies should partner with TU to continue to implement the appropriate monitoring techniques. Trout Unlimited promotes and supports citizen science based application of monitoring techniques. Our local membership stands ready to aid the Forest Service in these protocols. We strongly urge the Forest Service to take advantage of these partnerships specifically for stream temperature monitoring and macroinvertebrate sampling. In the past the Arizona council and TU chapters have procured funding to do stream temperature monitoring, and would like to continue as partners in this area. Collaboration and data sharing is crucial to the bottom line of aquatic ecosystem health in the RCP. Projects like the Rocky Mountain Research Station's NorWeST1 are putting together large datasets of stream temperatures which could serve as a		Monitoring will be addressed through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan (strongly influenced by the collaboratively developed plan from the 1st EIS). Current and future active participation by TU and other stakeholder groups focused on aquatic species and hydrology in the Multi-party Monitoring Board would help ensure that terrestrial and aquatic monitoring is appropriately integrated in the plan. The FS will continue to partner with organizations that support our goal of restoration and organizations that can bring additional resources in support of our restoration activities. The FS supports the concept of collaborative monitoring and the development of clearly articulated adaptive management triggers, and the use of the flexible toolbox approach when the trigger points are exceeded.

	host or model for this scenario. Trout Unlimited suggests the creation of a local initiative to work toward a useful stream temperature monitoring program that can engage local partners, provide meaningful scientific contributions to managing agencies, and accumulate the best possible information for the management of the resource. Macroinvertebrates in aquatic ecosystems are well documented indicator species. As a proxy for overall watershed health and a reliable indicator of major disturbance, especially without continuous water quality monitoring, benthic macroinvertebrates should be included in monitoring protocols and partnerships.		
5	*Socio-economic contributions of sporting tradition* Arizona has a rich history of sporting tradition. The Rim Country is widely considered the heart and soul of the coldwater fisheries in the state. In 2015, according to a report by Southwick and Associates2, Arizona's first congressional district saw a total of 90,000 anglers, an economic multiplier effect of $155 million, and supported 1,200 jobs from fishing alone. Like fishing, all forms of traditional sporting recreation are greatly impacted by land management decisions. We hope that the outdoor recreation economy in the RCP area is considered when making decisions for forest treatments.		The economic analysis in the Rim Country EIS will consider the economic contribution of recreation in the project area and the potential for proposed treatment activities to affect recreation opportunities and associated visitor spending.
6	*Native species* Trout Unlimited has interest in all coldwater fisheries, but would like to highlight the existing populations for native trout recovery efforts in the 4FRI RCP. Conservation of southwest native fish was identified in 2015 as a priority initiative by Trout Unlimited's strategic plan. Trout Unlimited's southwest native trout initiative will provide additional focus and funding opportunities for recovery of native trout within the project area. For decades, volunteers and staff have been working in partnership with the Forest Service and Arizona Game and Fish Department among other partners to support the recovery of Apache and Gila trout in their original ranges across the state. Where appropriate, TU supports the pursuit of conservation and recreation populations of native fish in their native ranges. In the case of the RCP, Gila trout exist in small numbers currently, and Apache trout may be of future consideration for reintroduction. TU suggests that any indications of Apache trout found within		The 360 miles of streams proposed for stream habitat restoration were calculated by mapping all streams and reaches currently occupied by aquatic species or proposed for stocking. Maps of occupancy were reviewed by personnel from different agencies and used the best available information at the time.

	the EIS analysis area be reported to the recovery team and AZGFD.		
7	**Comments to Purpose and Needs** *Undesirable Fire Effects (p. 4)* Trout Unlimited agrees with the need for reduction of potential post fire effects. The Proposed Action identifies that a change in fire regime can help to offset risks, but fails to note that so can properly functioning and healthy streams and riparian areas. We suggest that multiple ways to reduce risk be noted, in this case the complimentary proposed hydrologic restoration.		There are many activities that can be implemented to maintain and or restore properly functioning and healthy streams and riparian areas. The FS will develop activities and mitigation measures specific to these areas as the Rim Country analysis move forward. Post-fire effects will be analyzed in detail in the Rim CountryEIS and Fire Ecology and Air Quality Report.
8	**Comments to Desired Conditions** Trout Unlimited generally agrees with the statements in the Desired Conditions section. Specifically, the section about upland treatments providing increased flows downstream and cooler water temperatures we feel should be elaborated on in the Proposed Action and Treatments sections. These types of treatments have been documented by L. M. Norman Et Al. 3 to show positive hydrologic response in similar conditions. Though explained through individual pieces of hydrology, there is not sufficient discussion about overall watershed health in the Desired Conditions. By simply stating that riparian streams need be capable of filtering sediment and transporting bedload, it does not address the need for moving watershed condition and function from non-functioning or at risk designations to properly or highly functioning conditions. As outlined in the Riparian Streams section of 4FRI RCP Proposed Action's page 9, "*Many riparian streams in the Rim Country project area, are currently non-functioning or functioning-at-risk, with accelerated erosion and increased peak flows."* If the goal of the Proposed Action as detailed on page 13 is to, "*make the forest more resilient to natural disturbances such as fire, insect and disease, and climate change*," then watershed and riparian health should follow the same logic and would necessitate goals of systems which can handle the immediate impacts of forest restoration treatments but also the larger flood events predicted post burn or in more severe climate change scenarios. This is important not only to wildlife, but also the human communities of the Rim Country.		The effects of implementing proposed mechanical and fire treatments will be analyzed. The potential effects of stream, spring, road, and meadow treatments will also be analyzed as part of the flexible toolbox approach. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired.

	Trout Unlimited would like to highlight the importance of wet meadows in the Rim County landscape. As noted in the Existing Conditions section, page 8, there are places on the forest which have shown meadow function change from wet conditions to dry due to erosive gullies and encroaching trees, causing poor soil condition and loss of vegetative diversity. But most impactful in these scenarios is the loss of water storage high in watersheds4. These wet meadow systems are the source of annual baseflow for many waterways of the RCP footprint. These types of impacts are felt hardest in coldwater fisheries, and have serious implications to TU's organizational concerns. In accordance with those concerns and AZGFD recommendations, we ask for specific direction of wet meadow restoration in the Desired Conditions and Proposed Treatments.		
9	**Comments to Proposed Action** As referenced in the Main Arguments section of this document, the language around the Proposed Action's definition of riparian vs non-riparian is confusing and sometimes incorrect. Footnoted number 3 on page 14 states that ephemeral and intermittent streams do not have perennial groundwater or riparian vegetation. Trout Unlimited cautions against this distinction. Though we understand the desire to separate dry, upland drainages and lower lying wetter sites, information produced by this attempted distinction is incorrect in Figure 6. In many of the streams defined as non-riparian on and below the rim there is typically year round groundwater, sufficient to support riparian vegetation. These riparian zones, although not used by fish year round, do provide corridors of migration during high flow events, are suitable habitat for many other species, and regardless of definition an important part of watershed and overall health of a stream. Furthermore, these dry sections of otherwise ephemeral waterways will possibly see a positive influx of water post forest restoration. If so, the definitions of certain stream segments as laid out in the Proposed Action could possibly change during the lifespan of the EIS or the Forest Plans. It could be argued that to restore function to those non-riparian reaches would be to rewet them in some cases. Would the accomplishment of that goal remove them from the eligibility to do continued work on		Although the concept presented here is a possible outcome of upland restoration efforts, the degree of rewetting a stream system is dependent on factors including timing and extent of upland treatments and stream channel characteristics. The Rim Country Project will consider an adaptive management approach based on collaborative monitoring results. This will be explored in the development of the Monitoring and Adaptive Management Plan. Intermittent and ephemeral channels can provide movement corridors and habitat for aquatic species during high flow events such as spring runoff and monsoon rains.

	systems whose condition could still be improved? Because they should receive the same level of evaluation, and similar potential physical work, we would prefer all stream channels be treated similarly and more simply defined. Trout Unlimited recognizes the differences between the upland dry drainages and the typical riparian corridors of the RCP footprint. However, we feel that putting a maximum length definition on the mitigation across the footprint, could lead to undesirable outcomes for overall stream health and aquatic wildlife communities.		
10	**Proposed Treatments** *Grassland and meadow restoration (p. 25)* Not mentioned in the Proposed Treatment section is language specific to wet meadows. As mentioned above, these hydrologic features can have extremely important impacts to overall watershed and aquatic ecosystem health. In the subsequent EIS, Trout Unlimited suggests the Forest Service identifies candidates and recommends management for the restoration and rewetting of historically wet meadows in the RCP landscape. Trout Unlimited has been a partner on previous wet meadow restoration projects in the southwest. Similar techniques as listed by the Forest Service for upland erosion control can be used to restore the function of historically wet meadows, and in conjunction the watersheds they support. Please refer to the *Characterization and Restoration of Slope Wetlands in New Mexico* 6 for more information about these techniques.		The process being proposed is a flexible toolbox approach to restore wet meadow areas across the Rim Country project area, to be implemented as needed and funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. The references provided will be used to help develop the flexible toolbox approach.
11	*Riparian Stream and Stream Channel Restoration and Stream Habitat Restoration (p. 26)* Trout Unlimited agrees that restoration is needed to restore watershed and stream function, but would like to add that both improvements to current conditions and increasing overall resiliency are of equal merit when evaluating potential future impacts to the watersheds of the RCP. Again, we stress the need for identification of overall watershed condition prior to specific treatment decisions for mechanical and fire forest treatments. Likewise, we see the Proposed Treatments for stream habitat and riparian and stream channel restoration to be very similar,		Soil, hydrologic, and watershed condition evaluations will be made for all treatments proposed, including those identified in the flexible toolbox approach for streams, riparian areas, springs, meadows and roads. Stream values will vary by stream type (perennial, intermittent, and ephemeral), and whether or not they are occupied by aquatic species. These values (stream habitat, stream shading) will be incorporated into treatments using a flexible toolbox approach. The toolbox will consider stream values that may need improvement and list potential treatment options. Stream values will be protected by using design features, conservation measures for aquatic species,

	and would likely use the same techniques to address both concerns. We applaud the Forest's direction to emphasize soft infrastructure rather than structural. To best accomplish restoration of streams and drainages, we suggest examples of non-structural treatments be added with the other possible treatments listed, to a "toolbox" of approved Design Features, while still allowing for adaptive and creative solutions for situational prescriptions.		and BMPs for water quality. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports.
12	**Conclusion** In a testimony to the Senate Committee on Agriculture, Nutrition, and Forestry, Trout Unlimited CEO Chris Wood reflected that, "The guiding principle of the federal government's action regarding wildfire—and all other management activities— should be to ensure the long-term ecological health of the lands and waters upon which we all depend."7 The Four Forest Restoration Initiative and the Rim Country Project have an opportunity to accomplish a broad set of goals and directives. Trout Unlimited applauds the vision of these projects, and hopes our contributions to that vision are helpful. We are thankful to participate in the public input process for these important projects and decisions. Though we believe that the forest restoration of the Rim Country is necessary and we trust in the process to guide that management, our goal is to see more importance put on the hydrology and aquatic ecosystems in the footprint, as you cannot have a healthy watershed without the cumulative health of the uplands and the waterways. Chris Wood also reminded the Senate Committee that Forest Service road and fish habitat projects have dropped from 250 to 40 in recent years, and that in 2015 alone watershed restoration projects were reduced by 35%. Trout Unlimited hopes this project will buck that trend.		The FS appreciates the support of and collaborative efforts by Trout Unlimited. The FS will continue to work closely with Trout Unlimited and the Stakeholder Group to develop the analysis for the Rim Country Project. Health of the ecosystem as a whole is an essential component of the Rim Country Project, including uplands and waterways. The purpose of 4FRI and the Rim Country Project is to restore forest resiliency and ecosystem function across the landscape. The purpose and need includes improving both terrestrial and aquatic species habitat, as well as improving the condition and function of streams and springs. Restoration of the ecosystem will be addressed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report.
Letter 26		**Stephen M. Dewhurst, School of Forestry, Northern Arizona University**	

1	In general the Proposed Action (PA), has more general statements than substance. The document could be improved by adding detail to the description of the project and its scope. It is nice to state that the project will accomplish objectives like increased forest resiliency, but it is more important to capture what that means and how that will be accomplished, with enough detail to allow the public to make meaningful comments. I would like to know what a 'resilient' forest will look like compared to how it looks now. What are the metrics, the ranges of conditions, and the percentages of the landscape that will receive those specific modifications? Also it would be good to connect the content of the different sections; the topics discussed in each section (Purpose & Need, Existing Conditions, and Desired Conditions) should be the same, but there are different topics discussed in some but not others (i.e. cultural resources).		The Proposed Action along with other action alternatives will be further developed in the Rim Country EIS to include more details on the proposed restoration activities. FS specialists will discuss existing and desired conditions, the topics/issues they will evaluate, and the indicators and measures they will use to compare the alternatives. The effects of the alternatives will then be analyzed.
2	Under **Purpose and Need**; a. The second paragraph on page 2 states "The purpose of the project is to reestablish and restore forest structure and pattern…. To conditions within the natural range of variation," but there is not a section in the document that adequately describes the natural range of variation (NRV) for the project area.		The NRV information related to restoring forest structure and pattern will be included in the Rim Country EIS and Silviculture Report.
3	Forest Service Manual (FSM) 2020 is referenced but this document does not adequately capture the direction and/or intent of FSM 2020 as it relates and guides this project. Adding this direction and information on the NRV would help the reader understand the purpose and need for this project. (From FSM 2020 - "In order to construct a desired future condition for an area, one should assess past and current conditions as well as how these conditions may change into the future." And "The desired future condition of an ecosystem should be informed by an assessment of spatial and temporal variation in ecosystem characteristics under historic disturbance regimes during a specified reference period.")		The specific information quoted in this comment could not be found in FSM 2020. The FS will assess past and current conditions and compare those to desired conditions as we work through the analysis. Thiscomment is really a reiteration of the process completed to determine desired conditions in forest plans (programmatic plans). The FS understands the desire of the commenter for more detail on the NRV, current conditions, desired conditions, and consistency with forest plan. This detail will be included in the Rim Country EIS and specialist reports.
4	In the fourth paragraph on page 2 there is a statement about how the Forest Plans will "define" how the forest will be moved toward NRV but there is no information on how NRV and the Forest Plans are connected (if they are). It would be good to add some information to help the reader understand the difference between the purpose of the project being reestablishing conditions within NRV and the need to follow the Forest Plans.		Natural range of variation (NRV) is discussed in the Purpose and Need section of the document in terms of reestablishing and restoring ponderosa pine ecosystems within the NRV, as well as in the Desired Conditions, Proposed Action, and Forest Plan Amendments sections of the scoping document. Additional discussion and analysis of how the activities will move the resources in the project

	It would also be good to explain the difference in the Forest Plans and the revisions of those plans and how those differences will manifest themselves across the project area (one plan is new, one has been released as a draft and the Tonto plan is just starting revision, with the existing plan having minimal direction).		area toward their NRV will be included in the effects analyses in the Rim CountryEIS and specialist reports.
5	The descriptions of the different headings is more about general statements (i.e. “reduce the risk of undesirable fire behavior” “improve the condition of..”) than specific description of what the project need really is. As an example (fire); since you mentioned the purpose was to return to NRV, what was the fire behavior under NRV? The document would be stronger if the purpose statements were connected to NRV information. It would also help the reader understand the difference between what the current conditions are now and what the desired conditions are, especially if specific metrics and descriptors are being used consistently. For example fire risk can be defined by fire behavior (low intensity surface fire – a component of NRV for frequent fire ecological systems), which can be defined by forest conditions (tons of coarse woody debris, tree density, ladder fuels, crown density and connectivity, etc.), all of which can be assigned historical (NRV), current, and desired, condition quantifiers. Then you can describe the need (NEPA direction) as the difference between existing and desired. For example there is a need to reduce coarse woody debris across the project area (or within a specific habitat type) from 15-25 tons per acre (existing) to 3-10 tons per acre (from Forest Plan which corresponds with NRV). This detail provides a better understanding of what the need really is (you need to remove 12-15 tons per acre).		More details on how desired conditions were developed, NRV and its applicability, and expected post-treatment conditions for all action alternatives will be laid out in the Rim Country EIS, Fire Ecology and Air Quality Report, and other specialist reports.. Risk in regards to fire, is commonly used to describe the probability of fire, while hazard is generally references potential fire behavior and effects.
6	Under the section titled **Terrestrial and Aquatic Species Habitat**, there is a statement “There is a need to retain as many old large trees as possible”. This needs to be clarified; ‘as possible’ is based on what? What is an ‘old large tree’? Without definition and clarification how will you know if you have meet this? Without more information how will the public know how this will shape the forest?		The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies.

7	3. Under **Existing Conditions** a. This section provides some existing condition information, but only a few (Table 2 only covers three metrics) of the many that are connected to the different treatment needs (grasslands, riparian areas, different forest types, etc.). As stated above it would be beneficial to look at the existing condition information along with both the NRV (historical), and desired condition, by resource or management need. For example under **Terrestrial and Aquatic Species Habitat** there is a snag element which can be described for historical, current and desired conditions. This format would be more comprehensive and easier to assimilate as a reader. Also it would allow for the display of more desired conditions. Table 2 has a difference in metric display; the existing condition information for basal area and trees per acre is one number but the metric for desired condition information for these two descriptors is displayed as a range, they should be the same either as a range or an average (the chart heading says average). Tables 3&4 do not provide descriptions for passive and active crown fire. There is no definition of what 'no fire' means. The components that support fire behavior like fuel loading (coarse woody debris), crown bulk density, ladder fuel, interspaces (canopy breaks), and canopy base heights are not included. What are those elements you need to change and how do compare with existing conditions and desired conditions. Tables 3&4 do not provide descriptions for passive and active crown fire. There is no definition of what 'no fire' means. The components that support fire behavior like fuel loading (coarse woody debris), crown bulk density, ladder fuel, interspaces (canopy breaks), and canopy base heights are not included. What are those elements you need to change and how do compare with existing conditions and desired conditions. There are discussions of existing conditions that were not previously discussed under the purpose and need section, like acres of understocked forest lands. Again, by jointly describing the existing conditions and desired conditions and then establishing the project need the complete purpose of the project		As the FS analyzes the Rim Country Project they will fully develop the Proposed Action and include more detailed existing condition data. The term 'no fire' is an artifact of modeling across landscapes where there are areas of rock, water, pavement, etc. – areas where fire cannot burn. This will be discussed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report. Definitions of fire types will be included in the Rim Country glossary in the EIS. We agree that all of the restoration needs have not been fully identified in the Rim County project area. The process being proposed is to develop a flexible toolbox approach for restoration of streams and riparian areas across the project area, to be implemented as needed. Particular streams with known habitat restoration needs will be proposed for treatments, while a flexible toolbox approach will be applied for restoration of streams and riparian areas across the project area. This approach will allow the FS to implement stream restoration as needed with other management activities and as funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. The Rim Country Project is analyzing over 1,000,000 acres of NFS lands for restoration treatments. The FS does not have complete information or the same level of detailed data on some resources that they have for others. For example, while the 360 miles of fish-bearing streams is considered accurate, information on the existing condition of each mile of stream habitat has either not been provided or does not exist. We do know that the condition of most stream habitat and aquatic species in the Southwest has declined; that is well documented in the literature.

	can be displayed. This comment applies to the discussion of grasslands, savannas, and meadows, as well. Some of the discussion is just general information and does not include information on existing condition (the discussion of the 360 miles of fish-bearing streams). Some of the existing condition discussion is not linked to desired conditions so there is no indication of what the need for change is and what elements need to be changed (the discussion of springs and riparian streams). As a result it is difficult to comprehend what management needs will be incorporated into the proposed action (are all of the riparian areas on all the forests going to be addressed or just some parts?). The discussion of existing conditions should be tied to the discussion of purpose and need and should be written so they define the scope of the proposed action.		Additional information on stream condition and aquatic species will be included in the Rim Country EIS and the Watershed and Aquatics Reports. The existing conditions are based on project averages and the desired conditions are ranges described in the forest plans. Ranges for existing conditions across the Rim Country project area would be so great as to be meaningless. Details on the ranges of existing conditions will be included in the Rim Country EIS and Silviculture Report. Table 2 in the Proposed Action was designed to give a quick snapshot of the existing conditions as compared to desired conditions.
8	Under **Desired Condition** a. This section does not mesh with the other two sections; that is the discussion points put forth in the purpose and need do not logically flow through the sections on existing and desired conditions. As a result there is no clear comparison of the metrics that define the need for change discussion points. b. The table 7 information was already displayed and should be removed. c. In the second to last paragraph there is mention that many of the understocked areas are not suitable for planting; this is not desired condition information. This information should be included under the existing condition write-up and the amount of acres that are suitable should be included if this project proposal includes the planting of these acres. At the end of this paragraph it states planting, burning, and other management actions will 'be considered', since this is a site specific analysis the plan to project analysis should have determined what management actions will be incorporated into the proposed action and those actions should be described here specifically not as a speculative, possible, action. Also this is not desired condition information – more purposed and need discussion.		a. The scoping document is a summary of the Rim Country Project background, existing conditions, and desired conditions, to support the Purpose and Need and Proposed Action. The intent was to lay out concise rather than comprehensive statements for each of these sections to show the needs for the proposed treatments. A much more comprehensive description of desired conditions and existing conditions will be included in the EIS, as well as a more detailed Proposed Action alternative, and the metrics or measures used to compare alternatives. b. Table 7 is slightly different from Table 2 in that Table 2 compares the existing conditions to the desired conditions. c. This particular statement is given to give context to the sentence to encourage reforestation to meet desired conditions. Standing alone it is existing conditions. The management activities or treatments will be identified more specifically in the detailed Proposed Action alternative in the EIS. d. and e. The desired conditions are summarized here in the interest of a short, concise scoping document. The desired conditions will be spelled out specifically in the EIS, and linked to the forest plans.

	d. The desired condition statements should be linked (referenced) to the Forest Plans, since that should be the origin. I realize that there are different plans with different levels of revision but still, if the Forest Plans are driving the project (which they are), the DC statements should be from the plans not from general conclusions. By linking the plans the associated environmental analysis can be incorporated by reference. e. A lot of the paragraphs in this section are composed of general statements, which aren't really desired condition statements. Also only bits and pieces of the desired conditions for the resource areas (like wetlands) are described it would be easier to just cut and paste in the Dc statements from the plans, i.e.; ***Desired Conditions for Wetlands/Cienegas*** • Wetland conditions are consistent with their flood regime and flood potential. • Native plant and animal species that require wetland habitats have healthy populations within the natural constraints of the particular wetland community. • Wetlands infiltrate water, recycle nutrients, resist erosion, and function properly. (From the Kaibab plan) The last paragraph in this section describes some effects; "any negative effects on these species from management actions will be mitigated and plant numbers will remain the same". Where the heading for this section is Desired Conditions any discussion of effects should be removed. This section should be specific to the desired conditions as captured in the Forest Plans, and closely linked to those different vegetative or ecological components that are associated with the restoration plans of the project.		
9	5. Under **Proposed Action/Proposed treatments** a. This section lacks information that would help the reader/interested public fully understand the scope of the project – again this is a site specific analysis, not a programmatic document. Whereas it is difficult to talk to thousands of acres, the scoping process as I interoperate it under the NEPA		a. The Proposed Action includes the specificity we have at this time for the Rim Country Project. The FS understands the public would like as much detail as possible, and the available information was provided in a concise format for readability. The Proposed Action will be further developed as the FS gathers more information and as we prepare for the analysis of the Proposed Action and other alternatives.

	legislation and the FSM and FSH direction directs the scoping process to be specific. Some examples; i. Mechanically thin trees – to what end will you 'thin trees'? What will be the residual density, density ranges, and where would those ranges be applied and why? What other treatment components would be include in the 'tree thinning'? Like spatial arrangement, canopy gaps (interspaces), diameter/age distribution, and where and why that treatment would be applied. Without this information how can you expect to get meaningful comments? When you say were going to make the forest great again and nothing more you can't expect to get a consistent understanding from stake holders as what the forest will look like and what the expected effects will be. The treatment description has some information (thin to a BA of 30-80 in ponderosa pine) but it does not describe where and why you would thin to a BA of 30 vs a BA of 80, nor does it describe how much heterogeneity would be applied (post treatment how much of the area would be treated to a BA of 30)? The same comments would be applied to the 10%-90% interspaces – Where and why would you create 30% of the area as interspace vs 70% let say? ii. Conduct facilitative operations – what is this? Need to have a definition for this term – the reader does not know if this applies to roads, trees, recreation facilities or what! What are you facilitating? This statement is followed by parenthesis capturing thinning and burning, is there more? If it is thinning and burning, then the above comments should be considered in describing the activities. Planting, burning, and other activities to encourage reforestation - Need more detail; how many acres are going to be planted and where? What are the "other activities"? Remember this is a site specific analysis, not a programmatic document. iv. There are similar general statements for the other bullets (Improve, relocate and reconstruct roads, restore function of riparian areas, restore hydrologic function). It is great that you are going to do all this good restoration work but how are you going to do it? Are you going to use mechanical equipment, do		b. The intent of scoping is to give as much information as possible in a concise document for readability, in order to gather comments on the activities proposed, any concerns about the effects of those activities, and other restoration opportunities we did not capture. From these comments, we will identify the issues for the Rim Country Project and develop alternatives to the Proposed Action. These details will be presented in the EIS. i.-iv. The Proposed Treatments section of the Proposed Action gives details on the types of treatments, describing each type of mechanical treatment anticipated and its objective, as well as the types of treatments being considered for grassland and meadow, spring, stream channel, stream habitat, and aspen restoration, as well as road decommissioning, and road and trail relocation/reconstruction. These treatments will be further defined in the EIS, with defined conditions or criteria to determine exactly where they will be used, using the flexible toolbox approach described on pp. 21-22 of the scoping document. ii. Facilitative operations will be fully developed and defined in the Rim Country EIS. iv (second paragraph). NRV is not a desired condition but is a reference condition that may or may not be desired or obtained. NRV is a central theme within restoration and will be fully explained in the EIS. NRV will be described in more detail in the Rim Country EIS and specialist reports, Including a discussion of the relationship of historic NRV/fire regimes to climate change and if/how historic fire regimes may or may not be appropriate in the face of climate change (Flatley & Fulé 2016).

	seeding, planting, or just what and where are you doing this (the maps show stream locations, meadows and such but does that mean that the entire length or entire meadow is going to be treated)? Since this is a 'scoping document' there needs to be enough information to convey the scope of the project so that meaningful comments can be made. There is no mention or link, to how, or even if, NRV will be incorporated into the proposed action (other than the initial sentence at the beginning of the proposed action). There is also no general information about NRV as it might relate to this project, in contradiction to the new FSM 2020 direction. For example, tree planting: if NRV was specific to certain spatial patterns, would you still plant trees on a fixed DXD spacing or would you incorporate some other requirements to re-stock unforested areas in a more "natural" configuration?		
10	Under **Possible Alternatives** a. Since the desired conditions in Tables 2 and 7 are specified in terms of a range of values, it must be ensured that the range of alternatives is sufficient to demonstrate the difference in effects between managing at the low versus the high side of the range. b. At least 1 alternative which analyzes the impact of returning the forest to a state closely approximating historic reference conditions, and which incorporates an aggressive strategy to achieve the stated goal of comprehensive landscape restoration (as stated in the Introduction) while complying with requirements such as the Endangered Species Act is essential. What would comprehensive landscape restoration look like? How soon could we get there? How does that compare to the proposed action? Why is it inconsistent with the forest plans? c. Decades and millions of dollars have been spent on scientific research into historic forest conditions and the ecological consequences of management actions. This document appears to be almost devoid of science, and a science-based alternative is required to understand how the compromises and simplifications built into this document either are, or are not, consistent with the best available science.		a. As NEPA requires, a range of reasonable alternatives will be analyzed for the Rim Country Project. b. Each alternative considered will be studied to determine if it meets the purpose and need for the Rim Country Project. Those that do will be analyzed in detail and compared to the no action alternative, the Proposed Action, and any other action alternatives in terms of moving toward the desired conditions in the forest plans. c. The intent of the scoping document is to give as much information as possible in a concise document for readability, so it does not reference/cite the scientific literature used to support the desired conditions or proposed activities. This will be done thoroughly in the analyses in the EIS.
Letter 27		**Travis Bruner**	

		Arizona Forests Program Manager Grand Canyon Trust	
1	The Grand Canyon Trust ("GCT" or the "Trust") strongly supports the desire of the Forest Service ("USFS") to reestablish the resilience and function of northern Arizona's ponderosa pine and mixed conifer ecosystems and commends it on taking monumental steps towards achieving this goal. We believe it is vital that forest structure be restored to these ecosystems, thereby allowing for the reintroduction of fire into wildland forests in a way that is safe, acceptable to local communities, and protective of wildlife and native biological diversity. To be successful, GCT believes that restoration efforts must be ecologically, economically, and socially viable. On June 21, 2016, through correspondence, the Apache-Sitgreaves, Coconino, and Tonto National Forests released a proposal to conduct restoration activities within a 1.24 million acres of ponderosa pine ecosystem over approximately 10 years (the "Rim Country Project" or the "Project"). This correspondence included a brief description of the Purpose and Need and Proposed Action for the Rim Country Project. On June 27, 2016, the U.S. Forest Service ("USFS") published a Notice of Intent ("NOI") to prepare an environmental impact statement for the Project in the Federal Register, at 81 Fed. Reg. 41517, which included a description of the Purpose and Need and Proposed Action. The Proposed Action for the Project would implement treatments – mechanized operations to cut trees and prescribed burns to maintain desired openings and interspaces, between trees – across the Mogollon Rim and Red Rock Ranger Districts of the Coconino National Forest, the Black Mesa and Lakeside Districts of the Apache-Sitgreaves National Forest, and the Payson and Pleasant Valley Districts of the Tonto National Forest. The Trust respectfully submits these comments on the Proposed Action and the scope of analysis to be conducted in the environmental impact statement. The Trust is a nonprofit organization that focuses on the protection and restoration of the Colorado Plateau – its spectacular landscapes, flowing rivers,		Project support

	clean air, diversity of plants and animals, and areas of beauty and solitude. Since 2009, the Trust has been an active member of the Four Forest Restoration Initiative ("4FRI") Stakeholder Group (the "Stakeholder Group"), a collaborative group of more than 30 organizations, municipalities, institutions, and agencies focused on carrying out landscape-scale forest restoration efforts across 2.4 million acres of the Mogollon Rim in northern Arizona, including the Project area. GCT staff and members regularly use and enjoy areas of the National Forests within the Project area.		
2	The Trust believes that the Proposed Action provides a general framework for accomplishing successful forest restoration efforts. However, the Trust encourages USFS to elaborate and refine its plan for forest restoration activities by completing a revised Proposed Action prior to beginning its analysis of the Proposed Action. Specifically, GCT respectfully requests that the USFS develop a revised Proposed Action that includes further discussion regarding: (1) forest structure modification, (2) large and old growth trees, (3) livestock grazing, (4) springs, streams, and riparian areas, and (5) monitoring and adaptive management.		The Proposed Action includes the specificity we have at this time for the Rim Country Project. The FS understands the public would like as much detail as possible, and the available information was provided in as concise a format for readability. The Proposed Action will be further developed as the FS gathers more information and as we prepare for the analysis of the Proposed Action and other alternatives. The analysis will discuss in more detail forest structure modification, large and old growth trees, livestock grazing, spring and stream, and riparian area restoration, along with monitoring and a flexible toolbox approach. The process being proposed is a flexible toolbox approach to restore wet meadow areas across the Rim Country project area, to be implemented as needed and funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. The FS will address monitoring through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan. The FS supports a collaborative effort to prioritize treatments either by watershed or other means, and a collaborative approach to monitoring the adaptive management process.

3	**A. Forest Structure Modification** The Proposed Action proposes nine different mechanical treatment approaches. While the descriptions of these various mechanical treatment types provide a useful overview of treatment approaches, the Trust suggests that the USFS revise its Proposed Action by providing a more detailed explanation of how treatments would modify the structural and spatial characteristics of remaining forest cover. For example, the uneven-aged group selection treatment proposes thinning to 20-80 square feet of basal area with interspaces over 10-90% of the stand in Ponderosa Pine, Ponderosa Pine-Gambel Oak, Ponderosa Pine-Evergreen Oak and thinning to 30-100 square feet of basal area with interspaces adjacent to groups in Dry Mixed Conifer. Here, the ranges for uneven-aged group selection should be somewhat narrowed. The approach presented in the Final Refined Proposed Action for the 1st 4FRI EIS in 2011 provides helpful guidance, aiming for thinning to 50-70 square feet of basal area while interspaces should be more specific and correlate to site quality. The Trust believes that further knowledge about the structural and spatial characteristics of the remaining forest cover would provide the public with a better understanding of the result of mechanical treatments and allow for a more comprehensive analysis of the effects of mechanical treatments on wildlife populations, ecosystem processes, and community uses of the landscape. The Trust is concerned about the Proposed Action's conception of the role of dwarf mistletoe in the Project area. The occurrence of dwarf mistletoe in ponderosa pine is a natural phenomenon. In a healthy ponderosa pine forest, dwarf mistletoe will occur at a natural level. Indeed, fossil records show that dwarf mistletoes have been around for 40 million years or more, likely providing multiple ecological services.1 Where dwarf mistletoe occurs at unnaturally high levels, it is likely the symptom of other forest health issues. Thus, the Trust suggests that dwarf mistletoe mitigation be removed from the list of potential treatments, that where it occurs at natural levels it be allowed to remain unaddressed by treatments, and that where it occurs at unnaturally high levels that USFS consider addressing other forest health issues rather than mitigating dwarf mistletoe directly through thinning.		The basal area ranges are correct for ponderosa pine and dry mixed conifer. On the ASNF, the range is 20-80 BA, and on the CNF the range is 22-89 BA in the ponderosa pine type. In the mixed conifer type, the range is 30-100 BA on ASNF. The proposed treatments in terms of basal area follow the Forest Plans' guidance. There will be detailed descriptions of treatment structures and spatial arrangements, modifications of treatments in wildlife areas, stream sides, grasslands, etc. in the Rim Country EIS and Silviculture Report. The 1st 4FRI EIS was restricted to ponderosa pine and did not include any dry mixed conifer forest or pine/evergreen forest, and was in fundamentally different forest structures. To limit thinning to between 50-70 BA is not appropriate and does not move the forests toward their desired conditions. Dwarf mistletoe is a natural component of ponderosa pine ecosystems. The intent is not to try and eradicate dwarf mistletoe, but to mitigate its effects in those stands where certified silviculturist deem it possible. Addressing dwarf mistletoe infections is directed by all three forest plans and is an integral strategy to improve forest vigor, overall health, and resiliency. The FS is directed to increase forest health and resiliency, and reduce susceptibility to climate change. It is well understood that dwarf mistletoe is a parasitic plant that reduces tree vigor, is a significant stressor on plant health, and makes infected trees susceptible to insect infestations. To ignore the detrimental effects of dwarf mistletoe is to ignore one of the most widespread (up to 40% of all stands) diseases in the Rim Country Project. (Conklin, Fairweather, Hawksworth, Giles). Silviculture disagrees with the suggestion to remove dwarf mistletoe mitigation from proposed treatments. There are guidelines within the forest plans for the treatment of dwarf mistletoe. In general, if there is less than 20% dwarf mistletoe, to consider stand health; between 20% to 80%,

			to "consider" even-aged silviculture systems; and over 80%, to not consider uneven-aged silviculture systems or defer treatments. This gives the certified silviculturist some latitude in determination of mitigation strategies. While dwarf mistletoe is an historical component of pine ecosystems, it is also one of the most damaging in terms of mortality, reduced resistance to drought, and increased susceptibility to insect infestations. To ignore dwarf mistletoe in its entirety is not sound silviculture.
4	Aspen are dying and declining within the Project area and the Proposed Action contemplates the use of barriers to reduce ungulate browsing. GCT supports the use of protective fencing and barriers in these instances to protect aspen clones from ungulate browsing, we also support addressing the root causes of over-browsing in these areas**.**		Silviculture can propose treatments, the use of prescribed fire, and various barriers to browsing where appropriate. It is not within silviculture expertise to recommend how to control ungulate populations.
5	**B. Large & Old Growth Trees** The Trust appreciates that USFS states that there is a need to "retain as many old and large trees as possible and "maintain and promote the development of old growth characteristics and components." However, GCT is concerned that these aspirational statements do not provide sufficient clarity or assurances regarding protection and retention of old growth and large trees. During the first 4FRI EIS planning process, the Stakeholder Group collaboratively developed an Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS). This document reflects agreement between a diverse group of environmental conservation organizations, scientists, agencies, and industry representatives on how to protect old growth trees and retain large trees during implementation of restoration treatments. The document identifies the actions that should be taken to protect and retain large trees in many situations that would be encountered during the implementation of the Rim Country Project. The Trust believes that OGP/LTRS should be referenced in the Proposed Action and incorporated into the EIS and EIS. The old tree implementation plan (OTIP) and modified large tree implementation plan (MLTIP), presented in the 1st 4FRI		The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies. The Forest Service will continue to actively engage in the work underway in the Planning Workgroup on the identifying stands with a preponderance of large yount trees (SPLYT) and the most appropriate treatments for these stands.

	EIS at Appendix D, Sections C and D, also provide clear direction on the protection and retention of old-growth and large trees. While the Rim Country Project area contains a more complex vegetative community than the first 4FRI project area, with a higher incidence of mixed conifer stands, the approaches described in OTIP and MLTIP remain relevant and we urge the USFS to revise the Proposed Action to clearly state that those plans will be be strongly considered for this Project. The Trust suggest that OTIP and MLTIP be referenced in the Proposed Action and incorporated into the EIS and EIS. Additionally, we request that USFS strongly consider forthcoming stakeholder group recommendations regarding criteria for identifying areas with a preponderance of large young trees and management strategies within those areas. This will greatly enhance the social acceptability, ecological appropriateness, and overall success of the Project.		
6	**C. Livestock Grazing** The Trust appreciates that one of the resource management topics that USFS plans to address within the Rim Country Project area is the management of livestock grazing. All members of the public have an interest in retaining the ecological benefits of forest restoration while minimizing the potential for unintended losses due to livestock overgrazing. Proactive planning regarding livestock grazing locations, rotations, and utilization levels will help protect the healthy understory of grasses and forbs that return after restoration. On grazing allotments where thinning and/or burning will occur, GCT suggests that USFS and permittees coordinate together to adjust rotation schedules and ensure that livestock move away from those pastures where thinning and burning operations occur for at least two years post-treatment. Developing such a plan is essential to the success of restoration treatments and the safety of livestock. It will also provide clarity to livestock permittees, enabling them to adjust their operations in a manner that suits their needs during the treatment period. The Proposed Action discusses management strategies to restore streams, riparian areas, and springs. These resources are essential to the maintenance of biodiversity, provide essential		Management of livestock grazing is outside the scope of this analysis, and will be discussed in the cumulative effects analyses. Rest or deferment of a pasture by livestock may occur after ground-disturbing activities, such as burning, mechanical thinning, and seeding. Line officers will evaluate conditions to determine when adjustment to livestock management, such as rest of deferment of a pasture is needed. Several factors may be used to assist in these determinations, such as plant recovery, plant vigor, and size of the disturbed area in relation to the pasture size and/or current climatic conditions. Livestock use adjustments can be made in the Annual Operating Instructions or during the season of use if needed, based on ground conditions after treatments. Climatic conditions, soils, vegetation, the severity of fire effects, burn amount, intensity of vegetation treatments and pasture management may vary greatly from year to year or from pasture to pasture. Livestock grazing is analyzed in separate analysis and is generally done on an allotment basis (e.g., allotment management plans)..

	water and forage for wildlife, and fill countless other niches of ecological importance. These areas are also historically important for livestock grazing within the Project area. GCT suggests that USFS consider developing a plan for livestock management that protects streams, riparian areas, and springs in a manner that will increase the resilience of those areas for all uses over the long-term. Such a plan would be particularly useful for those sites that are prioritized for restoration through a systematic approach as suggested in the next comment section. In the wake of restorative thinning and burning projects, understory conditions will improve. Maintaining resultant increases in biodiversity, grass and forb production, and general resilience of the ecosystem will be high priorities for USFS and the public. The Trust suggests the identification of long-term strategies to retain improved understory conditions resultant from restoration treatments, and those strategies should include consideration of how to best to manage livestock grazing over the long-term within the Project area.		
7	**D. Springs, Streams, and Riparian Areas** The Proposed Action recognizes the importance of protecting riparian areas, stream channels, and springs within the Rim Country Project area. Conserving these water sources is even more essential in the age of climate change. Considering that 867 of the 1243 miles of stream in the planning area are non-functioning or functioning-at-risk and approximately 184 springs show downward trends or static-degraded conditions, the Trust suggests developing a systematic approach to the identification of and prioritization of restoration needs in these areas. Prioritization of these restoration sites would be best developed through a collaborative process where the Stakeholder Group engages in a discussion to balance site condition, importance to aquatic and terrestrial wildlife, recreation value, and other factors. GCT supports the use of protective fencing and barriers to exclude grazing ungulates and removal of trees as appropriate when complimented by addressing root causes of overall degradation.		The process being proposed is a flexible toolbox approach to restore wet meadow areas across the Rim Country project area, to be implemented as needed and funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. We agree that prioritization is needed for accomplishing the restoration effort. The FS supports a collaborative effort to prioritize treatments either by watershed or other means, and a collaborative approach to monitoring the adaptive management process. Prioritization would occur as part of implementation on the individual forests and districts to provide flexibility. Assessment will be part of the flexible toolbox approach, to assess needs and possible restoration treatments. This will be analyzed in the Rim Country Watershed and Aquatics

			Specialist Reports, EIS, and included in the Implementation Plan.
8	**E. Monitoring and Adaptive Management** A monitoring and adaptive management plan is integral to any restoration project, especially for a project of this scale. Potential impacts to fish, wildlife, and recreation must be measured in order to understand the effectiveness of restoration treatments and communicate useful information about those treatments to the public. While some specifics regarding Mexican spotted owl and northern goshawk habitat requirements are addressed, very little detail is provided regarding other fish and wildlife species. The Trust suggests that USFS provide more detail about the impacts of restoration treatments on the habitats of aquatic and terrestrial species, how those impacts will be monitored, and what adaptive management actions will be taken to reduce potential negative impacts on the habitats of those species.		The Rim Country EIS will include a collaboratively developed Monitoring and Adaptive Management Plan (strongly influenced by the collaboratively developed plan from the 1st EIS). Current and future active participation by stakeholder groups in the Multi-party Monitoring Board would help ensure that both terrestrial and aquatic monitoring is appropriately integrated in the plan. Potential negative effects will be managed through design criteria and mitigations and analyzed in the Rim Country EIS and specialist reports. The Monitoring and Adaptive Management Plan will include monitoring activities that may identify unexpected negative outcomes.
9	The Trust appreciates the opportunity to comment on the Proposed Action. We believe that the completion of a revised Proposed Action that includes the elaborations and refinements discussed above will help USFS conduct an environmental impact statement for forest restoration activities that garners support among the 4FRI stakeholder group as well as local and regional communities. Thank you for your consideration.		The Proposed Action includes the specificity we have at this time for the Rim Country Project. The FS understands the public would like as much detail as possible, and the available information was provided in as concise a format for readability. The Proposed Action will be further developed as the FS gathers more information and as we prepare for the analysis of the Proposed Action and other alternatives.
Letter 28		**Gentry Smith, President Desert Fly Casters**	
1	The Desert Fly Casters club is a long time non-profit representing fly fishers in the Phoenix metropolitan area and throughout Arizona. Our mission is to advance the sport of fly fishing in Arizona through education, conservation and community outreach including by: Committing to conserve, restore and enhance local and regional fisheries. We welcome the opportunity to comment on the 4FRI Rim Country Project EIS Proposed Action. We have worked for many years on many conservation projects in the state with the		Project support

	Arizona Game and Fish Department, the White Mountain Lakes Foundation, Trout Unlimited and other fly fishing organizations in the state. We are an International Federation of Fly Fishers affiliate. We have reviewed the June 2016 Proposed Action and support the objective of the Rim Country Proposed Action "to reestablish and restore forest structure, … forest health, … and diversity …, thus moving the project area toward the desired conditions." We further support the Purposes and Needs stated for the Proposed Action, especially to: - Increase forest resiliency and sustainability; - Reduce risk of undesirable fire effects; - Improve terrestrial and aquatic species habitat; - Improve the condition and function of streams and springs; and - Restore woody riparian vegetation.		
2	We are also familiar with and in support of comments being submitted by the Arizona Trout Unlimited organization, and we routinely receive briefing reports from the Arizona Game and Fish Department such as on their Coldwater Fisheries Management Program now being deployed throughout the state. Therefore we support the fisheries management related comments now being made by AZGFD on the Rim Country EIS. The Desert Fly Casters have special interest in the fisheries and fishing opportunities in the Rim Country Project area; We routinely visit both the streams and lakes included in that footprint, and indeed have long been part, both as an organization and through individual members' activities, of conservation efforts and stream restoration initiatives there. A particular example is Canyon Creek in the Tonto NF, where our on-stream efforts go back many years and continue today. In accord with those interests we would like to emphasize the importance of the following in the analysis and planning for the EIS:		The proposed action includes all streams currently occupied by aquatic species or proposed for reintroduction. A flexible toolbox approach will be developed to describe current conditions and treatment options to consider to move streams and riparian areas toward desired conditions. Resource protection measures such as design features, conservation measures for aquatic species, and BMPs for water quality will be developed. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports.
3	**Stream Restoration** The numerous streams in the project that both support some of the most productive trout fisheries in the state and contribute to Arizona's vital water supplies. The proposed forest restoration		The process being proposed is a flexible toolbox approach for restoration of streams, riparian areas, springs, meadows, and roads across the Rim Country project area, to be implemented as needed and funding allows. These Tools or

	combined with thoughtful hydrologic rehabilitation on those streams can produce resilient, sustainable and highly functioning watersheds that support both native and recreational fisheries. All perennial, ephemeral, or intermittent streams (not just those identified in Figure 6, page 19 of the PA) should be eligible under the EIS to receive restoration and/or improvements, if needed. All drainages can have an impact downstream and cumulative effects can be much greater moving down a watershed. Forest restoration treatments will be watershed wide and landscape scale, and as such, impact every collection of water regardless of size. Not all streams may need restoration or special treatment, but the EIS should provide the necessary compliance, through a flexible "Toolbox" approach, if restoration or special treatment is deemed appropriate. Prior to mechanical or fire restoration treatments, the potential hydrologic impacts of those treatment to streams, aquatic ecosystems, and riparian areas should be formally evaluated. Treatments should be adjusted to avoid or mitigate potential adverse impacts.		treatments will be developed and described in detail to fit most common restoration need situations, however, sideboards will be identified so the effects of the treatments can be evaluated. Any project exceeding the sideboards would be subject to additional NEPA analysis. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site specific design would occur, whether or not the area needing improvement is identified in the EIS specifically or not, and as project funding acquired. The 360 miles of streams proposed for stream habitat restoration was calculated by mapping all streams and reaches currently occupied by aquatic species or proposed for stocking. Species greatly overlapped; therefore total occupied stream miles within the project area were used to describe the extent of potential stream habitat restoration rather than by each species. Maps of occupancy were reviewed by personnel from different agencies and used the best available information at the time Prioritization would occur as part of implementation on the individual forests and districts to provide flexibility. Assessment will be part of the flexible toolbox approach, to assess needs and possible restoration treatments. Resource protection measures such as design features, conservation measures for aquatic species, and BMPs for water quality will be developed. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports.
4	**Characterization of Stream Hydrologic Conditions and Aquatic Populations / Conditions** Monitoring of fisheries and wildlife resources both pre- and post-restoration is necessary for determining if restoration activities are effective, and that treatments are managed adaptively to avoid and/or minimize the potential for negative impacts to wildlife and/or the habitats. Aquatic habitat monitoring is particularly critical to ensure treatments are not resulting in long-term negative impacts to watershed health. The Rim Country Proposed Action should be amended to recognize the needs for pre- and post-treatment monitoring and to describe		The process being proposed is a flexible toolbox approach for restoration of streams, riparian areas, springs, meadows, and roads across the Rim Country project area, to be implemented as needed and funding allows. Treatments will be developed and described in detail to fit most common restoration needs and sideboards will be identified so the potential effects of the treatments can be evaluated. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired.

	how it will be used in the project. We especially ask for the identification and characterization of the aquatic invertebrates (the "food-base") in all candidate streams, and also the stream temperature profiles. These measures will best allow for good planning and for the application of adaptive management practices.		Effectiveness monitoring is a key part of adaptive management as well as determining effects on resources. Aquatic macroinvertebrates are a good indicator of stream health, but are also influenced by drought, floods, climate change, and a multitude of factors besides management activities. Stream temperatures are influenced by multiple factors including, but not limited to: amount of moisture, recharge, presence/absence of springs, and diversions or impoundments. Stream temperature profiles for all of the streams within the project area are not available for use in the analysis. The Rim Country EIS will include a collaboratively developed Monitoring and Adaptive Management Plan (strongly influenced by the collaboratively developed plan from the 1st EIS). Any Regional Forester Sensitive, MIS, or T&E species present in the project area will be analyzed. Water quality standards that would be important for macro invertebrates would be addressed through design features and BMPs.
Letter 29		**Alicyn Gitlin Sierra Club Grand Canyon Chapter**	
1	This letter provides scoping comments from Sierra Club – Grand Canyon Chapter on the "Rim Country Proposed Action" (PA) for the Four Forests Restoration Initiative (4FRI). This comment is timely because the Notice of Intent was published in the Federal Register on June 27, 2016, with a 45 day comment period ending August 11, 2016. The Sierra Club's mission is "to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environments." Inspired by nature, the Sierra Club's more than 1.3 million members and supporters work together to protect our communities and the planet. Sierra Club has		Thank you for your participation in 4FRI and with the 4FRI Stakeholder Group. In our analysis of the effects of restoration activities in the Rim Country EIS, we will consider the concerns you have brought forward.

	regularly participated in stakeholder meetings since 2010 and protection of the region's forests and wildlife is a high priority for our membership in Arizona. Our members have a significant interest in this proposed action as we have been very involved in protection of Arizona's public lands and the wildlife that depend on them. We support the need for forest restoration to protect wildlife habitat, watersheds, forest resiliency, and ecosystem function. Our members believe that ecological values should always take priority over economic gain when treating our forests. Bad logging practices during the last century removed most of the large trees and old growth from Arizona's landscape, while overgrazing eliminated much of the dense grasses and forbs from the understory. These factors along with fire suppression resulted in a crop of small, overly dense trees with an increased fire hazard across the landscape. While it is important to thin these dense stands, it is of paramount importance that we protect the limited remaining large and old growth trees to protect the wildlife that depend on them, including species such as the northern goshawk. Because most trees remaining in the project area are small, we want to make sure that large and old trees are protected, and that enough acres of closed canopy habitat remain to ensure survival of species that rely on mature forest structure. The goal of 4FRI must be ecological restoration above all else, including retaining old growth and large trees, and the return of natural fire processes to the landscape. Only through careful implementation and proper monitoring will we be able to achieve that goal. In preparation of the 4FRI Rim Country Environmental Impact Statement (EIS), the Forest Service should take into consideration the following:		
2	**ALL EXISTING OLD GROWTH AND "PRE-SETTLEMENT" TREES SHOULD BE PROTECTED** The proposed action should prohibit old growth logging consistent with the stakeholders' Old Growth Protection and		The Rim Country EIS and Silviculture Report will continue to describe old growth as a structural stage in the development of the pine ecosystem as it relates to uneven-aged management.

	Large Tree Retention Strategy, developed for the first 4FRI EIS. The proposed action should not allow for logging old growth and "presettlement" trees—trees that established prior to the disruption of natural fire regimes. Old growth patches and presettlement trees should be retained in all cases, regardless of tree size. The only way to restore and develop old growth as a natural process at the landscape scale is to preserve the old growth components that currently exist. This can best be accomplished by retaining old growth components such as yellow pines and large trees at the individual and group levels while identifying stands that as a whole generally exhibit old growth characteristics. The goal is to provide as much old growth as can be sustained in patterns that provide for a flow of functions and interactions at multiple scales across the landscape through time. While old growth is a term generally used to describe ecosystem function, it is also increasingly used by the public, academics and even some land managers to describe individual trees with the characteristics described below in "A." (A) Retain old growth trees regardless of size, as old growth is a function of age, not size. Old growth is not a definitive age. Ponderosa pines begin to develop the thick yellow bark characteristic of an old growth tree between 120 and 150 years of age. As they age, the yellow-red bark also develops wide, large plates. In addition to bark characteristics, an old growth ponderosa pine tree typically exhibits complex structural attributes such as full crowns, flattened tops and large limbs. These trees are sometimes referred to as yellow pines, presettlement trees or mature trees. (Note that "The Path Forward" dated March 19, 2010, a document guiding the Four Forests Restoration Initiative uses the following language: "**8.No old growth trees (predating Euro-American settlement) shall be cut.")** (B)When creating openings, protect old growth trees by removing excess competition from small, young trees. Initially, removal should focus on, but not be restricted to, trees 12 inches in diameter and smaller. Such a focus is warranted given the high density and high percentage of the forest landscape these		The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original OGP/LTRS as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies. Retention of current old and large trees is not the only way to "restore and develop" old growth. While it is desirable to retain old growth structure, it is also desirable to develop stand structure that is conducive to the future development of large old trees. This is best accomplished with uneven-aged silviculture systems that promote all stages of forest structure from early seral up to complex late seral (old growth). This is the desired condition outlined in the forest plans. (A) Old growth cannot be defined as 120-150 years old. This would mean that post-European settlement trees established after the beginning of fire suppression in and around 1900 are being considered old growth. This is a new definition of old growth that is not appropriate for the Rim Country Project. (The majority of pole stands are in the 120-150 range and nobody will describe them as old growth stands.) (B)-(C) There is not a lack of trees larger than 16" in diameter in the Rim Country project area. Thinning should focus on developing an uneven-aged forest structure with representation of all diameter and age classes. A 16" diameter cap as proposed would not move stand structure toward forest plan desired conditions. The comment that 96% of the trees in Region 3 (references used FIA from all of Arizona and New Mexico) are less than 15" is not relevant to the Rim Country project area, where actually 25% of the trees are larger than 24" dbh. (D)-(E) Uneven-aged management is proposed within "old growth stands," agreeing with the forest plans. The exact design of the treatments will be completed by a certified

	trees occupy. According to the USDA, more than 82 percent of ponderosa pine trees in Region Three are smaller than 11 inches in diameter12. Thinning should occur within groups, as well as in identified openings between groups. (C) Reduce the fire risk to old growth trees by removing small, younger trees, as well as some mid-aged trees, (VSS 4: 12 to 18 dbh) from within the drip lines of individual trees. Given the lack of trees larger than 16 inches in diameter, thinning should focus on trees smaller than 16 inches in diameter. Approximately 96 percent of the trees in Region Three are smaller than 15 inches in diameter34. This would reduce ladder fuels, lowering the potential for crown fires. It would also encourage the growth of an understory community. (D)When developing future old growth stands and managing for mature age classes, larger diameter trees, in VSS 4, 5 and 6 should be retained to replace the structure and function of old growth trees that were removed by logging. (E) To provide for an uneven age structure, within old growth stands, retain groups of young and mid-aged trees to provide for multiple age classes and enhance structural diversity. Thin variably within retained groups, removing ladder fuels and avoiding even spacing. (F) Identify and retain areas that would be best left unthinned as wildlife cover and for travel corridors. (G) Preserve all snags. Downed logs with a diameter greater than **10**" will be preserved. (H) Use prescribed fire and the management of natural ignitions to reduce ground fuels and to reintroduce fire to the ecosystem. (I) Defer Livestock grazing, after the initial fire treatment to allow for understory recovery and change grazing management to allow for function of natural processes. (J) Decrease road densities to enhance stand integrity by reclaiming old skid trails and log landings.		silviculturist writing stand-level prescriptions during layout. (F) Non-treated areas will be identified with resource specialists and with the Arizona Game & Fish Department (AZGD), a cooperating agency for the Rim Country analysis. (G) It is not possible to retain all snags and downed logs in a frequent fire ecosystem. There are instances where snags pose imminent hazards to life and property, to fire crews, and to field workers. Small snags, as suggested, remain standing for a very short period of time and, upon falling, contribute to fuel loads. The forest plans have guidelines for snag retention for snags larger than 18" (A-S 2015, pp. 36, 41, 43, 46; Coconino Draft, pp. 58, 66; Tonto Forest Plan, amended, p. 133). (H) The Rim Country Project proposes prescribed fire, as well as managed natural ignitions as appropriate, to reduce surface fuels and to reintroduce fire to pine ecosystems. (I) Livestock grazing and fire treatments will be coordinated on an annual basis across the Rim Country project area. There would be flexibility in annual operating instructions to defer pastures until after they are treated with fire. (J) The Proposed Action includes decommissioning temporary roads after they are used to access stands for treatments. If old skid trails or landings are found in the project area that adversely affect resources, mitigation work to reduce ongoing impact canbe undertaken.

3	**THE STAKEHOLDER LARGE-TREE RETENTION STRATEGY SHOULD FORM THE BASIS OF THE PREFERRED ALTERNATIVE** The Forest Service should include the Large Tree Retention Strategy, developed for the first 4FRI EIS, as a basis for the proposed action; the Forest Service has the authority to include the Large Tree Retention Strategy as a basis of a preferred alternative in the EIS. The Large Tree Retention Strategy should be implemented and honored in the Rim Country EIS.		The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies. The Forest Service will continue to actively engage in the work underway in the Planning Workgroup on the identifying stands with a preponderance of large young trees (SPLYT) and the most appropriate treatments for these stands.
4	**THE EIS SHOULD DESCRIBE THE AFFIRMATIVE GOAL OF SAFELY RESTORING NATURAL FIRE REGIMES AND HOW STRATEGICALLY PLACED TREATMENTS DEPLOYED WITHIN FIRESCAPES WILL FACILITATE THE MANAGEMENT OF PLANNED AND UNPLANNED IGNITIONS** The proposed action should describe the project in the context of Federal Wildland Fire Policy and its goals of facilitating public and firefighter safety and maximizing fire's natural role in wildland ecosystems. "Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the appropriate management response to fire." 1995/2001 Federal Wildland Fire Management Policy. The EIS should discuss the affirmative goal of restoring fire as a critical natural process rather than focusing on the negative goal of avoiding undesirable fires. The EIS should discuss and		The Rim Country EIS and Fire Ecology and Air Quality Report will discuss restoring fire as a natural process and how the alternatives will move the project area toward that goal. The order (sequence) in which different areas are treated is not a NEPA decision, but is made at the local level, based on time and site-specific conditions. If this kind of sequencing was included in the NEPA analysis, it would decrease both the temporal and spatial flexibility for implementation of mechanical and prescribed fire treatments. For example, if the NEPA specifies that Area A will be cut before Area B, and Area A has a storm event that washes out some roads, Area B would still not be available for treatment until Area A could been treated, or until the roads could be repaired. Or if the NEPA specifies that a large area must be thinned before it is burned, or burned before it is thinned, and contracting doesn't go smoothly or burn windows don't occur as expected, areas could be tied up for long periods of time with no options for treatments. Any direction on the management of wildfires or unplanned ignitions is outside the scope of the Rim Country Project.

	present the idea of firescapes and strategically placed treatments in the context of safely managing planned and unplanned ignitions, including restoring fire as a critical natural process. In the former case, the EIS should describe Firescapes as a geographic context within which to plan and deploy strategically placed treatments that can facilitate safely managing planned and unplanned ignitions. We refer the Forest Service to the definition and description of Firescapes in the 4FRI Stakeholders' Landscape Strategy document; we suggest the Forest Service use this definition and description to provide additional clarity and specificity to the purpose of Firescapes as an geographic context for planning and deploying strategically placed treatments in a way that serves fire management goals. In the latter case, the EIS should provide additional detail on the relationship between strategically placed treatments and fire management. Specifically, the EIS should describe how restoration treatments can be strategically designed, located and sequenced to efficiently and safely facilitate operational fire management, community protection, and landscape-scale restoration of ecologically beneficial fire regimes at landscape scales. Toward that end, some key questions that the Forest Service should be seeking to answer in the EIS and subsequent analyses are: • Where and under what conditions can natural ignitions be managed for resource benefit under current Fire Management Plans? • Where can treatments be located to facilitate containment and management of planned or unplanned ignitions within firescapes or subsets thereof? • How can treatments be positioned and sequenced to most efficiently reduce the potential for landscape-scale crown fire?		Fire Management Units (FMUs) are similar to Firescapes, have long been used by the FS for management of fire on the landscape, and will likely be used in the Rim Country EIS analysis.
5	Treatment units should be distributed in the project area with spatial patterns of crown fire spread in mind. Overlapping patterns of fuel treatment that reduce horizontal fuel continuity can fragment severe fire behavior and effects into smaller patches if they disrupt heading fire behavior and increase the area burned by fires exhibiting flanking behavior as they move upslope5. Slope aspects facing away from frontal or diurnal		The spatial distribution of treatment areas will be considered and analyzed in the Rim Country EIS and specialist reports. The Rim Country Project is a CFLR project and as such it is about restoring ecosystem function. Mechanical treatments are planned across ponderosa pine frequent-fire ecosystems.

	winds are a lesser priority for treatments because backing fires likely to occur on those sites are the most likely to exhibit mild intensity and cause low-severity effects to vegetation and soil with attendant benefits to ecosystem resources and fire worker safety. The direction of fire spread (backing, flanking, heading) is an important aspect of fire behavior because fire interacts with weather, topography and vegetation to "back" and "flank" around certain fuel and topographic conditions or "head" through others as it moves across the landscape6. Steep slopes can facilitate wind-driven convection currents that drive radiant heat upward and bring flames nearer to adjacent unburned vegetation, pre-heating fuels and amplifying fire intensity as it moves upslope7. As a result, severe fire effects typically concentrate at upper slope positions and on ridges, whereas such effects are relatively rare on the lee side of slopes that do not directly receive frontal wind8. For starters, we suggest the Forest Service consider targeting treatments in fire suppressed VSS 3 stands that are (1) within ¼ mile of roads, (2) that exhibit active or passive crown fire behavior under 95th percentile conditions, and that (3) occur in patches of 50 acres or larger. We also urge the Forest Service to carefully review rationale and analyses employed in the 4FRI Landscape Strategy; the analyses unpinning that document reflect careful thinking about linking restoration and fire management goals in a landscape context. The Forest Service should explicitly include thinning with fire, either in single or multiple, repeated events, within the range of treatment options. Acres precluded from mechanical treatment should not automatically be excluded from fire use; rather, the planning document should consider thinned and non-thinned areas together within a landscape matrix that can safely accommodate natural fires with beneficial ecological effects. Another approach to strategic location of fuel treatments is to identify landscape features that are currently resilient to fire disturbance and use those sites as anchor points for compartmentalization of the project area for long-term fire management oriented to use of unplanned ignitions for resource		Backing fire in heavy surface fuels can do a great deal of damage, and will be a consideration when prescribed fire is imnplemented. The potential effects of restoration activities on public health and safety, post-treatment fuel density and structure, and fire hazard, as well as discussions of analysis assumptions, and the strategic locations of fuel treatments will be addressed in the Rim Country EIS and Fire Ecology and Air Quality Report.

	benefits. Such sites may include natural openings, meadows, relatively open ridges, riparian areas, patches of mature forest with relatively shaded and cool microclimates, and sites where fuel reduction work already has been completed. Such locations can facilitate appropriate fire management responses including confinement and containment strategies as alternatives to full control, as well as provide safe areas for workers to ignite prescribed fires for hazardous fuel reduction and ecological process restoration. Identification of such sites does not necessarily equate to actively treating them. Landscape features that are currently fire resilient, as well as proposed fuel treatment areas, should be spatially mapped and distinguished in analysis of the proposed action. The Forest Service also can prioritize active fuel management in areas where relatively little resource investment may create relatively fire resilient stand conditions. This may include low-productivity sites with little encroachment of small trees (e.g., dry southerly aspects) and relatively open stands that are currently dominated by large conifers. Targeting work in these areas will maximize the area treated and the effectiveness of treatments with available funds and personnel, and thereby provide the greatest opportunity to quickly reduce fuels and restore ecosystem function at larger spatial scales.		
6	**TREE-MORTALITY AND OTHER STRUCTURAL CHANGES RESULTING FROM FIRE USE** The EIS must describe tree mortality and other structural changes resulting from restoration treatments and from fire management following treatments on an ongoing basis. That is, the forest structure resulting from thinning, or the forest structure today in areas that will go unthinned, will change over time by virtue of fire effects. The EIS needs to characterize those ongoing changes and incorporate them into forest modeling. Losses of canopy, large trees, small trees and resulting recruitment of logs and snags will affect long-term forest dynamics, stand development and wildlife habitat suitability. We urge the Forest Service to exhibit caution in so doing: Post-treatment large tree mortality have exceeded planning targets at several restoration sites in northern Arizona.		The potential effects from treatments in terms of large tree mortality and structural changes will be detailed in the Rim Country EIS and specialist reports.

7	**THE FOREST SERVICE MUST PROTECT MEXICAN SPOTTED OWL (MSO) HABITAT AND VIABILITY WITHIN THE PROJECT AREA** Due to the scale of 4FRI, the Forest Service's actions will cause great changes to the forest during a short timeframe. Decisions made under this plan can have rapid and long-term consequences. Unfortunately, the Forest Service will not have a chance to incorporate lessons learned during implementation of the first 4FRI EIS and Record of Decision (ROD) into this Rim Country EIS. Because of this, the Forest Service risks incidental "take" of MSO as this project proceeds. We are very concerned about the implementation of new management approaches for MSO, and that is one of the points on record as part of an unresolved appeal against the 2015 revised Apache-Sitgreaves National Forests Land and Resource Management Plan, which we filed in partnership with the Center for Biological Diversity, Grand Canyon Wildlands Council, Western Watersheds Project, and White Mountain Conservation League (Letter from Center for Biological Diversity et al. to USDA Forest Service dated December 24, 2015, p.21). The Forest Service must disclose all sources of uncertainty about the impact to MSO from its actions related to this project, and detail how it will reduce uncertainty and learn from its actions. The Forest Service should act conservatively to protect MSO habitat and consider all cautions identified in the revised Recovery Plan for Mexican spotted owl (USDI 2012). The Forest Service is proposing to cut trees up to 17.9 inches d.b.h. within MSO Protected Activity Centers (PACs). Since 1996, the Forest Service has only removed trees up to 9 inches in PACs, and there is not enough monitoring data to know how MSO are responding to this new treatment, which allows trees of double the size previously allowed to be removed. The Forest Service must report on how they will detect and respond to negative impacts on this threatened species' population. According to a report prepared for the 4FRI team, median canopy cover for Mexican spotted owls foraging and roosting in		Sources of uncertainty regarding effects on MSO will be identified and disclosed in the wildlife effects analysis. The Proposed Action and alternatives developed will follow the 2012 revised Recovery Plan for MSO. Final project design and monitoring will defer to the U.S. Fish and Wildlife Service's biological opinion for the Rim Country Project, Appendix E of the 2012 Revised Recovery Plan and will also reference monitoring data from the 1st 4FRI project where possible. The flexible toolbox approach applied in the Rim Country Project will allow some modifications to future treatments as monitoring results are known. There are numerous desired conditions, standards, and guidelines that address the composition, structure, and condition of forested PNVTs used by the Mexican spotted owl, e.g., guidelines in the Aquatic Habitat and Species and Wildlife and Rare Plants sections of the plan (ASNFs EIS, Vol. II, Appendix A, p. 675).

	mixed conifer forests is greater than 60 percent. Note, "75% of stands used for roosting had canopy cover >60%."9. The Upper Gila Mountains Recovery Unit is an important unit for MSO populations, where management decisions can affect MSOs outside the Recovery Unit10. Further: "Current data indicate that owls within the UGM RU are most common in mixed-conifer and ponderosa pine–Gambel oak stands with high basal area and canopy cover. These stands frequently have a prominent hardwood component and numerous large trees and snags. Most are uneven-aged, with variable age-and size-classes of trees and snags and considerable volumes of down logs. These are not the kinds of stand structures that forest managers typically try to create in restoration activities in ponderosa pine and mixed-conifer forests that evolved with relatively frequent fire (for example, Cooper 1960, Dieterich 1983, Covington and Moore 1994, Fulé and others 1997, 2002, 2003, 2004, 2009, Cocke and others 2005, Kaufmann and others 2007; see also Beier and Maschinski 2003). The conditions typical of owl nesting and roosting habitat therefore are frequently viewed as "unsustainable" and unnatural in these systems (Johnson 1994). How then did Mexican spotted owls, which apparently occurred historically in these forest types (for example, Ligon 1926, Steele 1927, Bailey 1928, Huey 1930), come to specialize on these types of forest stands (for example, Hutto and others 2008)? Were such stands (or perhaps patches smaller than stands) present historically in these landscapes, for example in fire refugia (Camp and others 1997) such as north-facing slopes or rocky canyon slopes? If so, is there a minimum size to suitable patches for nesting and/or roosting owls? Or were spotted owls able to exist and persist in stands with lower basal area, canopy cover, and fuel loads?… **The problem is that we do not know where potential thresholds may lie, or how far we can reduce stand conditions before those stands no longer provide habitat for spotted owls.**"11 (bold emphasis added) In light of the fact that thresholds for Mexican spotted owl-occupied stand density have not been determined, the Forest Service should not risk destroying the habitat for this threatened species. The Forest Service should have a strong monitoring		

	plan in place with clearly defined thresholds, trigger points for action, and a contingency plan in case those trigger points are met. The Forest Service must create a monitoring plan for MSO that includes a sufficient number of control and treatment sites to generate statistical power and usable data. The Forest Service should not construct roads within PACs.		
8	**THE FOREST SERVICE MUST PROTECT NORTHERN GOSHAWK AND CANOPY-DEPENDENT SPECIES** We are also concerned about the implementation of new management approaches for the sensitive northern goshawk, which is another of the points on record as part of an unresolved appeal against the 2015 revised Apache-Sitgreaves National Forests Land and Resource Management Plan, which we filed in partnership with the Center for Biological Diversity, Grand Canyon Wildlands Council, Western Watersheds Project, and White Mountain Conservation League (Letter from Center for Biological Diversity et al. to USDA Forest Service dated December 24, 2015, pp. 21-25). We incorporate our concerns about northern goshawk by reference to the letter from Center for Biological Diversity et al. to USDA Forest Service dated December 24, 2015, pp. 21-25, and it is attached with our email. According to the 1996 Record of Decision for the northern goshawk plan amendments, which set forth the mandatory standards and guidelines for ecosystem management within Northern goshawk habitats, "it is important to maintain a diversity of cover types and vegetation structural stages across landscapes to sustain healthy wildlife populations and communities,"12 and the Forest Service should, "Sustain a mosaic of vegetation densities (overstory and understory), age classes and species composition across the landscape. Provide foods and cover for goshawk prey."13 The Forest Service should not implement a 'once size fits all' approach to treating forests, but instead should leave a mix of densities and cover types, including patches with high density. Later seral stages should be protected intact where possible. Dense understory habitats and coarse woody debris, which are important to goshawk prey species, should also be kept intact or enhanced where possible. Old growth patches with interlocking tree crowns should remain.		Dense understory habitats for goshawk prey will be maintained wherever possible, while recognizing that these conditions are not always compatible with restoration objectives for fuels and silviculture. Coarse woody debris will be maintained according to forest plan standards and guidelines. Each alternative will include strategies for maintaining uneven-aged conditions across the Rim Country project area, with a mosaic of densities, age classes, and species composition. While there are no forest plan standards specific to northern goshawk, there are two guidelines in the Wildlife and Rare Plants section of the Apache-Sitgreaves Revised Forest Plan that address goshawk needs (ASNFs EIS, Vol. II, Appendix A, Response to Comments. p. 679) In addition, there are desired conditions for northern goshawk in all forested potential natural vegetation types (PNVTs) (ponderosa pine, dry mixed conifer, wet mixed conifer, and spruce-fir). Structural attributes are addressed in desired conditions in the Forests: Ponderosa Pine section (ASNFs EIS, Vol. II, Appendix A, Response to Comments, p. 679). The Rim Country Project will follow forest plan standards and guidelines as well as applicable laws, regulations, and policy for resources in the Rim Country Project area. If old skid trails or landings are found to be adversely affecting resources, mitigation work could be undertaken to reduce ongoing effects.

	Appendix C to the 1996 Record of Decision for the northern goshawk plan amendments set forth mandatory standards and guidelines for ecosystem management within Northern goshawk habitats, including, but not limited to the following. We suggest adhering to these policies rather than experimentally applying new management protocols across a large part of the landscape, with unforeseen outcomes: (1) The Forest Service must survey the management analysis area prior to any habitat modifying activities, including a ½ mile beyond the proposed project boundary. The Forest Service must use the R3 survey protocol in order to get complete coverage of the management analysis area, and must complete at least one year of surveys. (2) The Forest Service must establish and delineate on a map, a post-fledgling family area that includes 6 nesting areas per pair of nesting goshawks for known nest sites, old nest sites, areas where there is historic data of past nest sites, and where there have been repeated sightings. A post-fledgling family area (PFA) must be approximately 600 acres in size, and must include the nest sites and habitat most likely to be used by the fledglings during their early development. The 6 identified nest sites should each be approximately 30 acres in size, requiring a minimum total of 180 acres of nest areas within each PFA. (3) The Forest Service must manage for uneven-age stand conditions for live trees and retain live reserve trees, snags, downed logs, and woody debris levels; (4) The Forest Service must manage for old age trees such that as much old forest structure as possible is sustained over time across the landscape; (5) The Forest Service must sustain a mosaic of vegetation densities, age classes and species composition across the landscape; (6) The Forest Service must provide foods and cover for goshawk prey; (7) The Forest Service must limit human activity in nesting areas and near PFAs during the breeding season, which extends from March 1 to September 30;		

	(8) The Forest Service must manage the ground surface layer to maintain satisfactory soil conditions i.e., minimize soil compaction and maintain hydrologic and nutrient cycles; (9) The required habitat structures, such as tree size, snags, dead and down material, etc., are to be evaluated at (a) the ecosystem management area level, (b) the mid-scale such as drainage, *and* (c) the small scale of site. (10) For areas outside of PFAs, the required distribution of vegetation structural stages is 10% VSS1, 10% VSS2, 20% VSS3, 20% VSS4, 20% VSS5, and 20% VSS6. (Actual percentages may vary + or – up to 3%). (11) Snags are to be 18 inches or larger dbh and 30 feet or larger in height, downed logs are to be 12 inches in diameter and at least 8 feet long, and woody debris must be 3 inches or larger on the forest floor. (12) For areas outside PFAs, canopy cover for Ponderosa pine forest is to average 40+% for VSS4, 5, and 6. (13) Within PFAs, the canopy cover for Ponderosa pine forest is to average 50+% for VSS4, 5, and 6. (14) Within nesting areas, the area must contain only mature to old forest (VSS5 and 6) having a canopy cover between 50-70% and with mid-aged VSS6 trees 200-300 years old. (15) Road densities are to be managed at the lowest level possible, and where timber harvesting is prescribed to achieve desired forest conditions, the Forest Service is to use small, skid trails in lieu of roads.		
9	**RESTORATION OF SPRINGS AND STREAMS** We support the effort to improve the condition and function of streams and springs throughout the project area by reducing road density, improving road crossings, maintaining natural flow regimes, and providing habitat connectivity. (PA p. 5) Because of the high density of streams and wet meadows in the project area, efforts to protect soils, reduce erosion and sedimentation, and prevent noxious weed introductions are extremely important. A thorough scientific inventory of the springs within the project area has never been completed, and as part of this project, the Forest Service should document the location, condition, and type of all springs encountered during treatment. The Forest Service should work with university or US		The forests are currently working with the Northern Arizona Museum and Springs Institute to inventory known springs. This will be a continuing effort for 4FRI. We have identified about 400 springs, but most do not have detailed condition information. As a part of the flexible toolbox approach, springs identified during implementation will be evaluated and spring restoration applied as needed and as funds are available.

	Geological Survey scientists to create a spring database (or augment an existing database) that will be useful into the future.		
10	**THE FOREST SERVICE MUST PROTECT ECOTONES AND DIVERSE HABITAT TYPES** According to the PA, "The Rim Country Project includes extensive areas where the ponderosa pine and mixed conifer cover types interface with the pinyon-juniper and oak woodland types. Because of this close association, some facilitative operations may be needed in these other, non-target cover types (such as pinyon-juniper) to support, increase the safety and effectiveness of, and minimize surface disturbance of treatments to restore the frequent-fire forest structure in the target cover types (ponderosa pine types)." Pinyon pines in particular provide important wildlife habitat and cultural values, grow slowly, and are susceptible to drought. These slow growing trees need to be protected, but there is no standard for prioritizing their retention on the landscape, and measurements applied to other trees such as diameter at breast height are not as useful for determining whether pinyon and juniper are old growth or newly established. Pinyon-juniper woodlands support high avian abundance and diversity, with many obligate and semi-obligate species, and with a low level of avian community similarity to other forest habitats. Sieg (1991) found higher bird abundance in pinyon-juniper woodlands in Utah during every season than were found in adjacent grasslands. An estimated 1,000 species are associated with pinyon pines in the southwest, and pinyon pines hold cultural significance (i.e., pine nut gathering). Slow-growing pinyons are extremely drought sensitive, unlike their juniper counterparts. Within the last 15 years, pinyon mortality has occurred throughout the southwest, exceeding 90% in some places. Therefore, even though the two trees often coexist, pinyon and juniper may require separate management strategies to maintain biodiversity. After the massive die-offs of pinyon pine that have occurred over the last 15 years, we should not gratuitously remove them from the landscape. Pinyon pine should not be intentionally removed from the landscape when habitat restoration is a project goal.		Ecotones, also called transitional areas, are important habitats that are in highly departed condition. Analysis will recognize the special nature of these areas in designing treatments. The pinyon-juniper cover types are not frequent-fire types targeted for restoration in the Rim Country Project, so are not being analyzed for mechanical treatments. There are pinyon-juniper cover types across the Rim Country project area ranging from frequent to infrequent fire frequency. Any facilitative operations proposed in pinyon-juniper cover types would maintain the current condition or move the area towards desired conditions as described by the forest plans. The effects of facilitative operations will be analyzed in the Rim Country EIS and Fire Ecology and Air Quality Report.

	No tree species should be unilaterally removed to create homogenous ponderosa pine stands. Ecotones can be areas of higher biodiversity, novel genotypes and adaptive variations and therefore may provide refugia for species in a changing climate. They can also be places of rapid landscape response to climate, and a diverse forest will be more resilient than a monoculture. Also, the Forest Service should acknowledge the role of grazing in juniper expansion. On page 8 of the PA, the Forest Service reports: In the meadows and grasslands of the Rim Country project area, conifers and junipers have encroached into these once open grassland habitats, decreasing the size and function of landscapes that were historically grasslands. As tree canopy increases, understory productivity decreases. The grasslands have impaired soil conditions due to inadequate protective ground cover, compacted soil surfaces, and encroaching pines and junipers. In many meadows, vegetative ground cover is low, hydrologic soil function is reduced from compaction, groundwater levels have dropped below root zones due to gully formation, and encroaching upland tree species are competing with desired species. (PA, p. 8)		
11	The Forest Service must disclose the ways that livestock grazing led to these changes in soil compaction, ground cover, and hydrologic function.		The cumulative effects of livestock grazing will be analyzed in the Rim Country EIS and Range Report . The link between historic grazing, tree density, and associated understory; the interaction of grazing with fire suppression; and a discussion of how future livestock management would differ from past practices will be discussed in the Existing Condition section of the Range Report. The existing condition and effects analysis will discuss these changes with the focus directed on improving existing conditions where needed. Design features regarding livestock rest/deferment after treatments will be included.
12	**“REGENERATION” CUTS SHOULD NOT BE USED TO ENHANCE PONDEROSA SEEDLING RECRUITMENT IN NON-PONDEROSA DOMINATED FOREST TYPES**		Treatments proposed do not have the intent to “dry out” the forest floor for regeneration. High productivity sites are naturally more mesic than pure ponderosa pine stands. The intent of regeneration openings, where prescribed, is to encourage the establishment of pine (the NRV predominant

	We support the restoration of a more natural forest structure that includes fine-scale openings (generally 0.05 to 1.0 acres) interspersing groups of trees. We do not support the use of "regeneration" gaps cut into mixed conifer types to create openings with the intention of drying out the forest floor and recruiting ponderosa pine seedlings. The Forest Service should focus on creating the next generation of old growth and the goal of these cuts runs counter to the goal of reducing the excess of small trees from the forest. Large trees should not be cut to create regeneration openings. We agree that prescribed fire should be the preferred method for reducing tree density within ecotones and mixed forest types. (PA p. 4)		tree species) and to encourage a more diverse forest structure with a plurality of pine appropriate for dry mixed conifer in a frequent fire-low severity ecosystem. Desired conditions for the dry mixed conifer type recommend even-aged management, and recruitment is best accomplished by regeneration openings and not interspaces. In general, in dry mixed conifer types, the groups will be larger than in pure pine and the interspaces smaller, which necessitates designated regeneration openings. It is not the intent to turn mixed conifer stands into pure pine stands, but to develop early-, mid-, and late-seral stages within the dry mixed conifer ecosystem. It is agreed that fire may the preferred treatment in some ecotones and some dry mixed conifer stands. But it is certainly not the only method being analyzed. Mechanical treatments will be applied where it is deemed necessary to move stands toward their desired conditions.
13	**ROAD DENSITIES SHOULD BE KEPT TO A MINIMUM AND LOGGING ROADS SHOULD BE OBLITERATED AFTER USE** Road densities should be kept to the lowest density possible and all roads created for this project should be immediately closed, obliterated, and obscured when they are no longer needed. Small skid trails should be used in lieu of roads wherever possible. Roads should not be built in MSO PACs.		CFRLA projects like 4FRI Rim Country prohibit the construction of new permanent roads. Only temporary roads and relocated system roads may be built. Temporary roads used for implementation of restoration treatments in Rim Country would be closed and decommissioned when they are no longer needed for this purpose. The need for temporary roads in PACs will be determined as treatments in PACs are defined for the Rim Country action alternatives. Seasonal restrictions (September 1st through February 28th) would apply where breeding is confirmed. Both skid trails and roads are needed for restoration treatments. There is a balance between building fewer roads and having longer skid distances. Roads cost money to build and can have other effects. Conversely, longer skidding distances can result in higher treatment costs, and many trips over the same trail can result in effects on that trail very similar to a constructed road. Skidding distances and miles of temporary road will be considered in alternative development.
14	**MONITORING**		Monitoring will be addressed through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan.

	In order to ensure that wildlife is protected and the Forest Service is accountable for its actions, we want to see a carefully crafted and fully-funded monitoring plan. Without monitoring, there is no accountability. Without funding, there will be no monitoring. We are eager to see the final monitoring plan and its funding sources. All monitoring plans should be designed with appropriate statistical power to detect changes across the project area.		Funding for monitoring is established each year once the FS receives its budget from Congress. Once the annual budget is available, the FS will work with the Multi-party Monitoring Board to prioritize monitoring activities. The FS commits to using a portion of its annual funding for monitoring and both the FS and 4FRI stakeholder groups have committed to seeking additional funds.
15	**FOREST SERVICE MUST ACKNOWLEDGE CUMULATIVE EFFECTS OF 4FRI AND GRAZING** Livestock grazing and fire suppression continue to encourage unnaturally dense stands of small trees, resulting in elevated competition for available sunlight, water and soil nutrients, decreased abundance and diversity of understory grasses and forbs, and increased density of hazardous fuels. Significant cumulative effects to the environment may result from the proposed action in combination with past, ongoing and foreseeable management activities within and around the project area. The Forest Service is required to take a hard look at such impacts rather than merely list potential causes or mention that some risk may result from a catalogue of activities. The Forest Service is about to engage in the largest forest "restoration" project ever undertaken, and it must address a root cause of the problem. Livestock grazing may cause significant cumulative effects for several reasons. First, grazing directly contributes to fire hazard by impairing soil productivity and altering plant composition, which indirectly contributes to delayed fire rotations, increased forest density, and reduced forage for herbivorous species. In addition, livestock grazing combined with proposed mechanical thinning and prescribed fire treatments may spread exotic plants and reduce the competitive and reproductive capacities of native species. Once established, exotic species may displace natives, in part, because natives are not adapted to ungulate grazing in combination with fire. Grazing must be considered within the Cumulative Effects of this project.		The cumulative effects of livestock grazing will be analyzed in the Rim Country EIS and Range Report . The link between historic grazing, tree density, and associated understory; the interaction of grazing with fire suppression; and a discussion of how future livestock management would differ from past practices will be discussed in the Existing Condition section of the Range Report. Design features regarding livestock rest/deferment after treatments will be included. The potential for spread of exotic plants such as cheat grass will be analyzed in the Rare Plants and Noxious Weeds Report, and the browsing contributing to aspen decline and detrimental to aspen recruitment and survival will be addressed in the Silviculture Report. A literature review of the noted references will be conducted and be addressed in the Range Report. Livestock grazing can have a significant effect on fire behavior and effects. Grazing management is outside of the scope of the Rim Country Project, but the effects of grazing will be addressed in the Rim Country effects analysis, and design features and monitoring will be included.

	Historically, grazing reduced understory vegetation and inhibited the spread of low intensity, low severity fire, creating conditions prime for natural regeneration of ponderosa pine. Livestock grazing decreases understory biomass and density, reducing competition with conifer seedlings and also reducing the ability of the understory to carry low-intensity, low-severity fire, thereby contributing to dense forests with altered species composition28. The increase in small tree density has led to the amount of forest acres burned in recent history. Simultaneously, grazing increases the presence of exotic plant species29. Livestock also compact soils, decreasing the soils' ability to absorb water and increasing erosion30. Restrictions in grazing of livestock after fires, cutting treatments, seeding, plantings, mulching, and aspen treatments may be required as mitigation to reduce impact to forage species. Release from grazing before fire may be required to enable sufficient fuels to accumulate. Post-treatment release from grazing could be required for several years. USDA research has found that excluding cattle from a landscape for five growing seasons "significantly increased: (1) total vegetative cover, (2) native perennial forb cover, (3) grass stature, (4) grass flowering stem density, and (5) the cover of some shrub species and functional groups."31. Livestock and wildlife tend to concentrate in seeding treatments, which leads to soil compaction, soil surface disturbance and erosion, and overuse of vegetation. Frequent grazing has in part facilitated invasion by grazing-tolerant, less palatable weedy species by reducing native perennial grass cover. These exotic weedy species have displaced native perennial grasses in parts of the intermountain west because the native plants are not adapted to frequent and close grazing32. Also, many native species are not adapted to frequent ungulate grazing in combination with fire. Grazing is not an effective means of reducing exotic plant cover, and instead can drive non-native plants to compensate and increase growth and reproductive potential in ways that native species cannot.		

	In the cumulative effects section, the Forest Service should specifically: a) Link tree density to historic grazing and associated removal of understory. b) Mention interaction of grazing with fire suppression to degrade forests, including old growth forests. c) Mention reduced competitive and reproductive capacities of native species in grazed areas, and that actions associated with grazing can spread exotic plant seed such as cheatgrass. d) Acknowledge that grazing and browsing contributes to aspen decline and is detrimental to aspen recruitment and survival. e) Discuss how grazing impacts springs and riparian areas, and has a negative interaction with off highway vehicle use f) Explain how future livestock management would differ from the past practices that helped lead to unhealthy forests in the first place g) Explain how monitoring will detect problems and what changes might be made to grazing practices in the future, including changes to timing, duration, stocking rates, or availability of pastures h) Acknowledge that removal of livestock after treatment (fire, cutting, or seeding/planting/mulching) may be necessary for a period of years. Only fire is mentioned as potentially impacting the availability of pastures to livestock, but if forests are returning to an unhealthy state (i.e., reduced understory, dense regeneration, altered fire regimes, noxious weeds) then livestock utilization may have to be altered. i) Take a strong position suggesting *what* changes to grazing might be necessary to achieve a fully restored forest. j) Cite the following sources. The science establishing an interaction between grazing, fire, understory health, and pine recruitment is well established and goes back over half a century. The following peer-reviewed literature contributes to the knowledge that cattle grazing can create effects counter to forest restoration efforts: Kerns et al. 201134 (which describes USDA research: “understory release from a long history of cattle grazing caused a greater degree of change than the initial reintroduction of fire.”), Bakker et al. 201035, Kimball and Schiffman 200336, Allen et al. 200237, Belsky and Blumenthal		

	199738, Cooper 196039, Madany and West 198340, Savage and Swetnam 199041, Arnold 195042. Use the 4FRI project as an opportunity to study the interactions between forest treatments and livestock grazing. The effects of grazing should be monitored as a learning opportunity. As part of the monitoring plan, the following measurements should be taken and analyzed in relation to presence of grazing and/or time since pasture was grazed: soil moisture, woody species regeneration in meadows, woody species regeneration in within-stand openings; understory density and composition, understory ability to carry fire, noxious weeds. In the affected Environment section for Range in the EIS, the Forest Service should include the actual grazing numbers (annual operating instructions) going back over a period of time. This will help everyone understand what the current state of grazing on the landscape is, and provide a record for future comparisons.		
16	**THE FOREST SERVICE SHOULD ACKNOWLEDGE ALL CAUSES OF ASPEN DECLINE** The Forest Service intends to build and maintain "up to 200 miles of protective barriers springs, aspen, Bebb's willows, and big-tooth maples, as needed for restoration." (PA, p. 14). It is true that "Aspen are dying or rapidly declining in the Rim Country project area," (PA p. 8) and the causes of decline include browsing and grazing. Aspen has gradually declined in part due to browsing by livestock and introduced and native wild ungulates. Wolf reintroductions have improved aspen recruitment and survival where elk were the limiting factor4344. When large predators, particularly wolves, were reintroduced to Yellowstone National Park, USA, and Banff National Park, Canada, the wolves brought elk populations to levels that resulted in decreased grazing pressure, allowing aspen populations to rebound45. Elk populations consist of larger numbers than historically existed in the project area.		Aspen is an historical and desirable species in the ecosystems in the Rim Country project area. Aspen retention and recruitment will be encouraged in treatment areas wherever feasible. Aspen decline can be caused by many factors. Browsing is a significant factor in reducing aspen recruitment. However, literature questions the linear relationship of the wolf-elk-aspen trophic cascade as earlier thought in the Yellowstone valley. Aspen decline will be addressed in the Rim Country EIS and Silviculture, Wildlife, and Fire Ecology and Air Quality Reports.
17	**FENCING SHOULD ONLY BE USED WHERE ABSOLUTELY NECESSARY**		The Rim Country EIS will consider other options for exclusion structures besides installed fences, such as natural barriers.

	Fencing is expensive, difficult to maintain, unsightly, and blocks movement of many wildlife species that aren't responsible for overgrazing and overbrowsing on aspen and wetland habitat types. The Forest Service must acknowledge that the lack of – or severely reduced populations of – top predators including wolves exacerbates the problem of overgrazing and overbrowsing on aspen, as does elk overpopulation. Suggested language, approved by stakeholders while developing the Large Tree Retention Strategy for the first 4FRI EIS: "Other factors contributing to gradual aspen decline over the past 140 years include reduced regeneration due to browsing by livestock and introduced and native wild ungulates in the absence of natural predators like wolves." Fencing should only be used as a last resort to protect values at risk from grazing and browsing. The Forest Service instead should use jackstrawing or move stock tanks to deter grazing and browsing of aspen and riparian habitats. No water sources should be provided within a mile of aspen stands. Instead of providing new constructed waters, the focus should be on restoring and protecting natural water sources such as springs and seeps.		The Rim Country Wildlife Report will include discussions on apex predator relationships to ungulate effects on aspen.
18	**INVASIVE PLANTS** Domestic livestock, as well as logging, prescribed fire, and other practices that disturb soils, can spread alien weedy species in ponderosa forests. Livestock act as vectors for seed travel, disturb the soil, and reduce the competitive and reproductive capacities of native species. Exotic weeds can displace native species, in part, because native grasses are not adapted to frequent and close grazing4647. In some portions of the planning area, although the locations relative to active grazing allotments is not disclosed, aggressive alien weeds such as cheatgrass (*Bromus tectorum*) and spotted knapweed (*Centaurea maculosa*) have displaced native species. The potential for significant cumulative impacts of noxious weed spread in the project area is high because McGlone and others (2009)48 showed that cheatgrass abundance and distribution increased 90-fold above a pre-treatment baseline as a result of forest treatments similar to the proposed action.		Thank you for your comment. Forest management activities that disturb soil, including timber harvest, grazing, and fire, can contribute to invasive plant invasion. The management activities proposed in the Rim Country Proposed Action will be sources of disturbance and may result in increased risk of invasive plant invasion. Each of the three forests in the Rim Country project area have prepared weed management documents. The treatments and mitigations provided by these documents will be incorporated into the Rim Country analysis. The current composition of grassland species in the Rim Country project area represents the baseline condition which the FS will need to manage. The frequency and amount of grazing are managed for each allotment throughannual operating instructions. Range managers monitor utilization throughout the grazing period to assure that overgrazing does not occur.

	The presence of cheatgrass has important long-term implications for native plant communities. Melgoza and co-workers (1990)49 studied cheatgrass soil resource acquisition after fire and note its competitive success owing to its ability suppress the water uptake and productivity of native species for extended periods of time. They further note that cheatgrass dominance is enhanced by its high tolerance to grazing (also see Mack 1981). Cheatgrass is well adapted to fire and often dominates plant communities after disturbance51. Its annual life-form coupled with the abilities to germinate readily over a wide range of moisture and temperature conditions, to quickly establish an extensive root system, and to grow early in the spring contribute to its successful colonization52. Some native species also exhibit this trait, but greenhouse and field studies show that cheatgrass effectively competes with seedlings of perennial species535455. In addition, cheatgrass successfully competes with the native species that survive fire, despite these plants being well-established adult individuals able to reach deeper levels in the soil56. This competitive ability of cheatgrass contributes to its post-fire dominance.		Grazing is one of several factors that can contribute to cheatgrass infestations. Cattle can be the source of invasive weeds including cheatgrass. However, the risk of severe wildfire in certain areas is a risk as well. High-severity, uncontrolled fires often result in invasive weed infestations.
19	**SOILS** The EIS should identify soil types on which mechanical treatments, piling and pile burning should be prohibited owing to vulnerability to soil disturbance. It should also include mandatory procedures for preventing soil erosion during mechanical treatments. We are not at all convinced that best management practices will prevent unacceptably detrimental soil conditions where ground-based log skidding occurs. The EIS should relate slope steepness to soil erosion hazard or soil structure throughout the project area; it should disclose exactly where ground-based skidding and mechanical treatments may and should not occur. The Forest Service should evaluate soil erosion hazard at multiple scales, using watersheds and sub-watersheds to delineate between those scales. We have seen extensive soil damage occur within the Flagstaff Watershed Protection Project area, resulting from operations occurring during wet and muddy conditions. Every effort should		Each soil mapping unit will be evaluated to determine where soil loss will occur. Site-specific guidance on areas sensitive to heavy equipment use and slope limits for operations based on the type of equipment used will be provided in design features. The FS will also provide specific guidance to sale administrators and operators for determining when soils are too wet to operate. BMPs are monitored by the sale administrator during implementation, and administrators have closeout checklists to document substandard work and repairs needed. Soil disturbance monitoring is assigned randomly, but can be requested in any treatment area that is sensitive to equipment use.

	be taken to stop operations during wet conditions to prevent rutting and gullying.		
20	**MISTLETOE TREATMENTS** Because this project is intended to improve and restore forest and ecosystem health, structure, functioning, and resilience, and not for timber production, mistletoe treatments are unwarranted and counterproductive, especially if they focus on removing the largest trees as a treatment method. Research repeatedly shows that mistletoe is an important component of healthy forest habitats, and large trees with mistletoe brooms provide essential food and occupancy needs to wildlife. Worldwide, species in 97 vertebrate families consume mistletoe and species in 50 vertebrate families use mistletoe for nesting; therefore mistletoe can be considered a keystone species in forest ecosystems57. Mistletoe brooms provide essential wildlife nesting, foraging, caching, resting, and roosting habitat for sites for Abert squirrel, porcupine, and passerine birds; managers should retain some broomed trees as wildlife habitat5859. Bird species richness in southwestern ponderosa pine forest positively correlates with level of dwarf mistletoe, and no bird species appear to have a negative correlation with dwarf mistletoe60. Mistletoe provides a consistent food-based moisture source for squirrels61. Deer use was significantly higher in tree clusters with dwarf mistletoe in the Wet Beaver Creek watershed62. Mistletoes provide a climatically stable food resource for avian frugivores, even when other tree-based foods are unavailable due to drought. Plants that rely on birds to disperse seeds benefit from mistletoe, which correlates with bird presence through a range of climatic conditions63. Red squirrels rely on specific types of mistletoe brooms for nesting in mixed-conifer forests in northern Arizona and New Mexico64). Mistletoe provides inclement weather protection to porcupines in Douglas-fir65 and pine-juniper forests66. Number of branches within a mistletoe broom and tree height correlate with probability of Abert squirrel caching, foraging, and nesting. Taller trees with mistletoe are most important. Forest managers should keep trees > 18 m and with brooms having > 7 branches67.		Dwarf mistletoe mitigation treatments as proposed are not designed to increase timber production and are not intended to remove the largest trees, but are part of a strategy to mitigate the negative effects of the southwest's most damaging and prevalent disease. Dwarf mistletoe reduces tree vigor, decreases tree resilience, decreases tree drought resistance, decreases tree resistance to insect infections, and decreases a tree's ability to adapt to climate change. Different levels of dwarf mistletoe mitigation will be evaluated for the Rim Country Project, with consideration for wildlife needs in the project area.Where dwarf mistletoe mitigation and large/old tree strategies are in conflict, forest plan guidance is to follow large/old tree strategies. FSM 2020 provides policy for reestablishing and retaining ecological resilience of National Forest System lands and resources to achieve sustainable multiple use management and provide a broad range of ecosystem services. A discussion of fires's effects on dwarf mistletoe will be included in the Smoke Ecology section of the Fire Ecology and Air Quality Report.

	Besides, since fire causes more scorch and there is higher fire mortality in medium scorch classes with mistletoe, if these areas are expected to burn in the future, mistletoe populations exposed to managed fire will be kept in check without intervention.		
Letter 30		**Chad Hanson, John Muir Project**	
1	On behalf of the John Muir Project of Earth Island Institute, we offer the following scoping comments on the proposed 4FRI Rim Country Project. The proposal makes numerous assumptions that are inconsistent with current science with regard to fire history, fire trends, and post-fire effects in these forest ecosystems. <u>These Forests Do Not Have an Unnatural Excess of Fire, or High-Intensity Fire, and Future Trends May Be Downward</u> Current science from the Forest Service and others concludes: 1) there is currently a deficit of fire in the forests proposed for logging in this region, relative to natural levels (Parks et al. 2015--attached); 2) there is also less high-severity fire, in particular, now than there was historically, and fire severity is not increasing (Baker 2015--attached); and 3) the most comprehensive and current climate change projections from Forest Service and university scientists, incorporating not only future climate changes but also vegetation shifts that will result due to climate change this century, concludes that fire severity will, overall, decrease slightly to moderately over the 21st century in the forests of this region (Parks et al. 2016--attached).		The other science offered in this comment will be reviewed and addressed in the Fire Ecology and Air Quality Report. In regards to the commenters interpretations of 'Forest Service and others' conclusions: 1) There is currently a deficit of fire in the region. However, there are four study areas for this paper, three of which are in the northern Rockies, one in the Gila NF in New Mexico, in the Gila and Aldo Leopold Wilderness (Parks et al. 2015). There is a copious amount of literature and research that specifically addresses the question of fire regimes within, adjacent to, or nearly adjacent to the Rim Country project area. While Parks et al. (2015) contains information that is pertinent to the project, it is not the best source to support the contention that there is a deficit of fire in "the forests proposed for logging in this region." 2) There is not less high-severity fire now than there was historically. While we welcome additional studies and novel data to assess historical patterns of forest structure, historical fire regimes, and changes through time, the preponderance of research has not shown that fire severity in the southwest is maintaining a current level, or decreasing (Dillon et al. 2011). The single source cited, Baker (2015), is insufficient to support the theory that there is less high-severity fire now than there was historically, or that fire severity is not increasing. 3) Fire severity is not increasing. The commenter's interpretation of Parks et al. (2016) neglects the caution stated in the abstract of the paper: "...our predictions are best interpreted as a *potential* reduction in fire severity, a potential that may not be

			realized due human-induced disequilibrium between plant communities and climate. Consequently, to realize the transition of plant communities towar a state of equilibrium with the emerging climate though means such as active restoration treatments (e.g., mechanical thinning and prescribed fire) and passive restoration strategies like managed natural fire (under suitable weather conditions). Resisting changes in vegetation composition and fuel load via activities such as aggressive fire suppression will amplify disequilibrium conditions and will likely result in increased fire severity in future decades because fuel loads will increase as the climate warms and fire danger becomes more extreme." (Parks et al. 2016)
2	<u>Large High-Intensity Fire Patches Did Sometimes Occur Historically in Ponderosa Pine and Dry Mixed-Conifer Forests of This Area</u> Williams and Baker (2012) (Figure 3) reconstructed historical high-intensity fire patches in these forests and mapped numerous areas of large high-intensity fire patches hundreds, and in some cases, thousands of acres in size, and historical forest density was highly variable (Figure 2 of Williams and Baker 2012), with numerous areas of moderately to very dense forests. Historical fires were not almost homogeneously low-intensity, or low/moderate-intensity but, rather, had substantial portions of low, moderate, and high-intensity fire. As discussed in Williams and Baker (2012) and Williams and Baker (2014), their methodology was extensively accuracy-checked, and cross-checked against historical records. Moreover, Williams and Baker (2012) investigated whether there was an inconsistency between their findings and findings of previous tree-ring studies that reported open, low-intensity fire conditions on numerous local areas historically, and in every single case the Williams and Baker (2012) methods also found open, low-intensity fire conditions on these same sites, historically. The point is that open forests dominated by low-intensity fire did indeed exist historically in ponderosa pine and dry mixed-conifer forests of the proposed project area, but they were not the only condition that existed, and did not even represent the		High intensity fire patches will be addressed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report. Extensive research clearly points to a ponderosa pine ecosystem that is a frequent, low-severity fire ecosystem. The NRV for the ponderosa pine ecosystem is for a majority of the landscape to be open canopy (<30% canopy cover). This type of forest structure does not support large-landscape high-severity fire. Plummer, 1904, clearly describes an open low-severity fire landscape with little evidence of extensive high-severity fires. As to the percentages of fire severity across the Rim Country project area, this will be addressed in the Rim Country EIS and Fire Ecology and Air Quality Report. The FS will review all relevant scientific literature on historical forest structure, including the suggested citations. The preponderance of the science on historical forest structures and establishment within the Rim Country project area will be reviewed for relevancy. Findings by Jenkins et al. (2011) refer to 'transitional ponderosa and dry mixed-conifer'. While researchers generally agree that there was mixed and/or high severity fire in ponderosa pine (Roccaforte et al. 2008; Williams & Baker 2012), there are some unresolved questions about the amount, pattern, and distribution of these fires. Some studies on the rates of these fires suggest they were relatively infrequent

	majority in many areas. In the same forest types in the same landscapes, simultaneously there were much denser forests with mixed- and high-intensity fire effects. These findings are further supported by paleoecological data (see, e.g., Jenkins et al. 2011). Even though some reconstructions of overall fire frequency indicate relatively frequent fire, on average, at localized sites, this same research reports that frequencies were highly variable, especially at larger spatial scales, and there were often fire-free periods of several decades in ponderosa pine forests of Arizona historically (Swetnam and Baisan 1996, Tables 3 and 4). Further, in the history of fire occurrence in southwest ponderosa pine forests, "large crown fires" have naturally occurred in particular during warm, dry periods that follow a couple of wet years (Roos and Swetnam 2011).		(Williams and Baker 2012). This is corroborated by Jenkins et al. (2011), whose paleo-ecological reconstruction found high-severity fires in transitional ponderosa and dry mixed-conifer forests at 200-600 year intervals over the last 1,000 years. Certainly, there was variability in fire regimes but: "Pre-1900 fire regimes of the Southwestern U.S. varied greatly in time and space. Some patterns of fire regime variation were evident across gradients of elevation and forest type, such as a decrease in frequency from low to high elevations and from drier ponderosa pine to wetter mixed-conifer forests...". Roos and Swetnam (2011) suggested that: "Multidecadal and centennial variation in the frequencies of regional fire years, however, does indicate reduced surface fire frequencies from approximately 700–800 ce and 1360–1455ce. We hypothesize that these were periods when some forests were vulnerable to altered canopy structure, accumulated fuels, and increased fire severity."(Roos & Swetnam 2011)
3	<u>Mexican Spotted Owls are Thriving in Large Mixed-Intensity Fires, in the Absence of Post-Fire Logging</u> The current data indicate that large mixed-intensity fires, without post-fire logging, benefit Mexican Spotted Owl occupancy and reproduction (see attached reports by Moors and Ward, 2011-2013, from fires in Arizona). Moreover, Ganey et al. (2014) found that Mexican Spotted Owls left unburned old forest nest sites in the winter and traveled up to 14 kilometers to spend the winter months foraging in mixed-intensity fire areas (in comparable forests in terms of elevation and forest type), where the small mammal prey base (in terms of small mammal biomass) was 2-6 times greater than in their unburned nest sites.		Large mixed-severity fires will be addressed in the Rim Country EIS and Fire Ecology and Air Quality Report. Moors and Ward (2011 – Pinaleno Mtns) cite literature, anecdotal information, and their own experience to describe responses of MSO to various burn severities, including, in some cases, adjacency and size of burned areas. To state that '...large, mixed-intensity fires without post-fire logging, benefit Mexican Spotted Owl occupancy and reproduction' based on the reports by Moors and Ward takes some liberty with their reports.
4	<u>Optimal Conditions for Forest Birds are Created by Mixed-Intensity Fires in Southwest Ponderosa Pine Forests, Not By Nearly Homogeneous Low-Intensity Fires</u>		Mixed-intensity fires in SW ponderosa pine will be addressed in the Rim Country EIS and Fire Ecology and Air Quality Specialists' Report.

	Latif et al. (2016) found, in ponderosa pine forests of Arizona, that overall forest bird diversity was maximized by mixed-intensity fire, including significant occurrence of high-intensity fire, since numerous species were strongly positively associated with high-intensity fire patches, while others selected low/moderate-intensity areas. These findings stand in contrast to common assumptions that biodiversity in southwest ponderosa pine forests will benefit to the greatest extent from a fire regime that is heavily dominated by low-intensity fire, and which has very little moderate- and high-intensity fire.		Latif et al. (2016) looked at fire severity, not fire intensity. They looked at locations in Arizona and Idaho, and concluded that more intensive fuels management may be more ecologically appropriate for promoting biodiversity in Arizona and areas where low-severity fires are more common. Additionally, the response of the birds to fire depended on their lifestyle.
5	Large Forest Fires in Arizona Over the Past Decade Are Heavily Dominated by Low/Moderate-Intensity Effects A common misconception is that the largest fires that have occurred over the past decade in Arizona's forests, including ponderosa pine and dry mixed-conifer forests, have been predominantly high-intensity, whereas the data indicate that these fires are heavily dominated by low/moderate-intensity fire effects, and often have only about 8% to 12% high-intensity fire effects, based on the final categorical fire severity assessments by USGS and USFS, after experts from these agencies have corrected fire severity mapping from satellites for clear errors based on one-year post-fire imagery (www.mtbs.gov). Examples include the Wallow fire of 2011 and the Horsehoe2 fire of 2011 (www.mtbs.gov). One of the sources of misconceptions is that much of the reporting regarding these fires occurs shortly after the fires occur, based on initial, preliminary fire severity mapping from the "RAVG" system, which does not account for "flushing" of ponderosa pines at one year post-fire (i.e., production of new green needles from surviving terminal buds in pines where the needles were killed by radiant heat). This can result in a severe overestimation of fire severity, such as occurred with the Wallow fire, for example (compare RAVG and MTBS maps).		Large forest fires will be addressed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report. The commenter is correct in that: Many people assume that fires that are considered to be 'bad' or 'destructive' are dominated by high-severity effects. In fact, on average, roughly 2/3 of these fires have low to moderate-severity effects. Assessments of *fire severity* (not to be confused with *burn severity*) made immediately post-fire (within a month or two) from remote imagery do not account for the flush of new green needles and may overestimate *fire severity*.
Letter 31		**Greg Dyson, Wild Earth Guardians**	
1	Thank you for the opportunity to provide scoping comments on the 4FRI Rim Country Project. WildEarth Guardians is a nonprofit conservation organization with offices in Tucson, Arizona, Santa Fe, New Mexico, and		

	five other states. WildEarth Guardians has more than 160,000 members and activists across the United States and the world. We protect and restore wildlife, wild places, wild rivers, and the health of the American West.		
2	**Minimum Road System** The Forest Service faces many challenges with its vastly oversized, under-maintained, and unaffordable road system. The impacts from roads to water, fish, wildlife, and ecosystems are tremendous and well documented in scientific literature. Given that the 4FRI Rim Country Project is considering changes to a large number of miles of roads, and given its large geographic scale, this is precisely the type of project where the Forest Service must consider its Travel Analysis Reports (TARs) for the three national forests, and more importantly, it must identify the Minimum Road System (MRS).1 We urge the Forest Service to carefully evaluate the proposed 4FRI Rim Country Project and its alternatives through this lens. This type of large-scale project is the perfect opportunity to begin making on-the-ground progress towards an economically and environmentally sustainable road network. We are very encouraged to see this project considering ecosystem restoration on a large scale to address many of the factors that continue to degrade ecosystems. We fully support ecosystem restoration, especially the project components that address water quality and aquatic habitats andimprove watersheds and forest resiliency by returning expensive and deteriorating forest roads to the wild.		The determination of minimum road system is completed with individual forest travel analysis reports (TARs). Each forest in the Rim Country project area has completed its TAR, and there is no requirement to re-visit the TAR for this project analysis. Many TARs were the result of coarse-scale GIS analysis and are 5-10 years old at this point. The Rim Country Project is an opportunity to decommission unneeded roads within the project area and is using forest TARs, reviewing routes recommended for decommissioning and using this information in context with more fine-scale and updated information.
3	To address its sustainable and deteriorating road system, the Forest Service promulgated the Roads Rule (referred to as "subpart A") in 2001. 66 Fed. Reg. 3206 (Jan. 12, 2001); 36 C.F.R. part 212, subpart A. The Roads Rule created two important obligations for the agency. One obligation is to identify unneeded roads to prioritize for decommissioning or to be considered for other uses. 36 C.F.R. § 212.5(b)(2). Another obligation is to identify the MRS needed for safe and efficient travel and for the protection, management, and use of National Forest system lands. *Id.* § 212.5(b)(1).2 The MRS is the road system, determined by the Forest Service, as needed to:		Determining the MRS has been completed with individual forest TARs. Each forest in the Rim Country project area has completed its TAR, and there is no requirement to re-visit the TAR for this project analysis. There is also no requirement to determine whether a proposed project is consistent with each forest's TAR. Many TARs were the result of coarse-scale GIS analysis, and are 5-10 years old at this point. The information from TARs was used to implement Subpart B of the Travel Management Regulations for each Forest, which resulted in the integration of additional data, public input, and more up-to-date information for the designation of routes and areas for motor vehicle use. The Rim Country EIS is using forest

	□□Meet resource and other management objectives adopted in the relevant land and resource management plan, □□Meet applicable statutory and regulatory requirements, □□Reflect long-term funding expectations, and □□Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance. *Id.* (hereafter, MRS factors). *See also* Memorandum from Leslie Weldon to Regional Foresters *et al.* on Travel Management, Implementation of 36 CFR, Part 212, Subpart A (Mar. 29, 2012) (hereafter, 2012 Weldon Memo). The goal of subpart A is "to maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns."3 The Forest Service's Washington Office has issued a series of directive memoranda that outline how the agency expects forests to comply with subpart A.4 Pursuant to its own regulations and directive memoranda, the Forest Service must consider the valid portions of its TARs and begin to determine the MRS in its analysis of site-specific projects of the appropriate geographic size under NEPA. *See* 2012 Weldon Memo at 2 (directing forests to "analyze the proposed action and alternatives in terms of whether, per 36 CFR 212.5(b)(1), the resulting [road] system is needed"). By analyzing whether a proposed project is consistent with the relevant portions of the TAR, and considering the MRS factors under 36 CFR 212.5(b)(1), the Forest Service expects each forest to identify the MRS for particular forest segments. *Id.* ("The resulting decision [in a site-specific project] identifies the MRS and unneeded roads for each subwatershed or larger scale").		TARs, reviewing the routes recommended for decommissioning, then considering this information in the context of more fine-scale data and updated information, to determine which road decommissioning efforts would be most valuable to meet forest restoration goals.
4	It is now time for the Forest Service to take the next step under subpart A: identify the MRS through site-specific projects subject to NEPA. This project provides the appropriate geographic scale for the Forest Service to identify the MRS. The Forest Service's Washington Office has directed forests to use the TAR to identify the MRS for proposed actions at the scale of a 6th code subwatershed or larger. 2012 Weldon Memo at 2. *See also* 2012 FAQs (noting that "travel analysis and identification of the MRS could be done at the same scale, if that scale is at the ranger district or unit level."). Plus, consideration of the MRS factors at 36 C.F.R. § 212.5(b)(1) only makes sense on a larger		Determining the MRS has been completed with individual forest TARs. Each forest in the Rim Country project area has completed its TAR, and there is no requirement to re-visit the TAR for this project analysis.There is also no requirement to determine whether a proposed project is consistent with each forest's TAR. Many TARs were the result of coarse-scale GIS analysis, and are 5-10 years old at this point. The forests plan to use the information in their TARs as one source of information to plan which roads should be

	geographic scale. Pursuant to the plain language of the agency's own regulations and directive memoranda interpreting those regulations, the Forest Service must identify the MRS when analyzing the 4FRI Rim Country Project under NEPA. *See, e.g.*, 2012 Weldon Memo at 2 ("Travel analysis should be used to inform the environmental analysis.") Subpart A directs the agency to "identify the roads on lands under Forest Service jurisdiction that are no longer needed."6 It refers to all roads, not just National Forest System roads. The rules define a road as "[a] motor vehicle travelway over 50 inches wide, unless designated and managed as a trail." The Forest Service must ensure that the actions proposed under the 4FRI Rim Country Project are consistent with subpart A. Here, this project proposes to decommission approximately 230 miles of system and unauthorized roads on the Coconino and Apache-Sitgreaves and 20 miles of unauthorized roads on the Tonto, and improve 150 miles of road, and build 350 miles of temporary roads. The forest must assess these proposed actions in relation to the TARs as well as the factors for an MRS, with the goal of minimizing adverse environmental impacts. Specifically, the decisions to close, decommission, or maintain certain roads should reflect the results from the risks and benefits analysis in the TARs. Routes identified for decommissioning through the TARs or other processes within the project area must be closed, decommissioned, and reclaimed to a stable and more natural condition during the life of the project. To the extent that the final decision in this project differs from what is recommended in the TARs, the Forest Service must provide an explanation for that inconsistency.		decommissioned, but there is no requirement to match the Rim Country Project to the TARs. Using the TARs as suggested in the comments would mean using outdated and coarse-scale information when more recent, fine-scale information is available.
5	The Forest Service should prioritize road decommissioning in this project to enhance landscape connectivity and ecological integrity based on: □□Effectiveness in reducing fragmentation, connecting un-roaded and lightly-roaded areas, and improving stream segments, with a focus on inventoried roadless areas, important watersheds, and other sensitive ecological and conservation areas and corridors;		These factors could be used to determine which roads should be proposed for decommissioning in the action alternatives. Decommissioning would likely be associated with thinning and other restoration activities in a specific treatment area, since it is more efficient to do all the work at once when there is heavy machinery on site. This would minimize the disturbance to the area. A flexible toolbox approach will be used for much of the restoration of streams, riparian areas, springs, meadows, as well as for the associated road work, across the Rim

	□□Benefit to species and habitats, including restoring aquatic and terrestrial habitats and habitat connections; □□Addressing impaired or at-risk watersheds; □□Achieving motorized route density standards; and □□Enhancement of quite recreation experiences.		Country project area. These types of treatments will fit most common restoration needs and will be described in detail in the Rim Country EIS. Sideboards for these treatments will be identified so that the effects of these treatments can be analyzed. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. Design features for implementing these treatments will be included in the Rim Country EIS and Watershed and Aquatics Reports.
6	The Forest Service should use the National Best Management Practices for Water Quality Management on National Forest System Lands (Volume 1, April 2012) (*available at http://www.fs.fed.us/biology/resources/pubs/watershed/FS_National_Core_BMPs_April2012.pdf*) to guide road management in determining the MRS. The BMP program "was developed to improve agency performance and accountability in managing water quality consistent with the Federal Clean Water Act (CWA) and State water quality programs" and "[c]urrent Forest Service policy directs compliance with required CWA permits and State regulations and requires the use of BMPs to control nonpoint source pollution to meet applicable water quality standards and other CWA requirements." National Best Management Practices. It directs forests to: □□Design the transportation system to meet long-term land management plan desired conditions, goals, and objectives for access rather than to access individual sites. □□Limit roads to the minimum practicable number, width, and total length consistent with the purpose of specific operations, local topography, geology, and climate to achieve land management plan desired conditions, goals, and objectives for access and water quality management. *Id.* at 104. We urge the Coconino, Apache-Sitgreaves and Tonto National Forests to limit their road networks to those roads that are necessary for access and management, and which can be adequately maintained within agency budgets and capabilities. While it appears the Coconino and Apache- Sitgreaves are taking this responsibility serious, it also appears the Tonto is not. We encourage road decommissioning and reductions in road		National Best Management Practices (BMPs) for water quality management on National Forest System lands will be defined and used as appropriate for all restoration treatments proposed in this EIS. The MRS has been determined by each forest in its TAR. Minimizing the effects of motorized vehicle use on water quality and watershed values were two of several criteria used to identify the MRS through the TAR process. The 1st 4FRI EIS and the current Rim Country Project both include proposals to decommission and/or rehabilitate a number of existing routes to improve watershed conditions and aquatic health in streams, as well as to protect and enhance wildlife habitat and connectivity.

	density to improve watershed conditions and aquatic health in streams, as well as to protect and enhance wildlife habitat and connectivity. The Forest Service should continue working to reduce sediment delivery from roads, improve or remove road crossings, and close or decommission roads that cannot be adequately maintained.		
7	National Forests provide a range of significant environmental and societal benefits, including clean air and water, habitat for myriad wildlife species, and outdoor recreation opportunities for millions of visitors and local residents each year. *See* 66 Fed. Reg. 3244, 3245-47 (Jan. 12, 2001) (Preamble to Roadless Area Conservation Rule describing key ecosystem and other services of roadless National Forest lands). The Forest Service's extensive and decaying road system, however, poses a growing liability to the future ability of the National Forests to provide critical environmental, ecosystem, and recreation services. Collectively, the National Forest System contains over 370,000 miles of roads (not even counting the tens of thousands of additional miles of unclassified, non-system, temporary, and user-created roads). That is nearly eight times the length of the entire U.S. Interstate Highway System. The National Forest road system is primarily a byproduct of the big timber era. The system is often convoluted, unmanageable, and ineffective at meeting 21st century transportation needs. Much of the system is in serious disrepair: as of the end of Fiscal Year 2015, the National Forest *WildEarth Guardians – Weminuche Landscape Grazing EIS Comments – April 4, 2016* 5road system had a 3 billion dollar maintenance backlog. USDA, Forest Service, National Forest System Statistics 2015. Well-sited and maintained roads provide important services to society. But the adverse ecological and environmental impacts associated with the Forest Service's massive and deteriorating road system are well documented. Those adverse impacts are long-term, occur at multiple scales, and often extend far beyond the actual "footprint" of the road. Included in these comments is a 2014 literature review from The Wilderness Society that surveys the extensive and best available scientific literature—including the Forest Service's General Technical Report synthesizing the scientific information on forest roads (Gucinski		Thank you for providing these references. The Rim Country EIS will include road decommissioning in each of the action alternatives to address resource concerns and contribute to restoration.

	2001)—on a wide range of road-related impacts to ecosystem processes and integrity on National Forest lands. *See* The Wilderness Society, *Transportation Infrastructure and Access on National Forests and Grasslands: A Literature Review* (May 2014) (attached as Exhibit A).		
8	Erosion, compaction, and other alterations in forest geomorphology and hydrology associated with roads seriously impair water quality and aquatic species viability. *See* Exhibit B at 2-4. Roads disturb and fragment wildlife habitat, altering species distribution, interfering with critical life functions such as feeding, breeding, and nesting, and resulting in loss of biodiversity. *Id.* at 4-6. Roads facilitate increased human intrusion into sensitive areas, resulting in poaching of rare plants and animals, human-ignited wildfires, introduction of exotic species, and damage to archaeological resources. *Id.* at 6, 9. Roads are also major vectors for spreading weeds.		Thank you for providing this information. The Rim Country EIS will include road decommissioning in each of the action alternatives to address resource concerns and contribute to restoration. The effects identified in this comment were considered, in addition to other criteria, used to identify the roads proposed for decommissioning.
9	A robust analysis under NEPA of the forest road system and its environmental and social impacts is especially critical in the context of climate change. As the CEQ's recent draft guidance on addressing climate change in NEPA analyses recognizes, "[c]limate change can increase the vulnerability of a resource, ecosystem, human community, or structure, which would then be more susceptible to climate change and other effects and result in a proposed action's effects being more environmentally damaging." CEQ, *Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts* (Dec. 18, 2014), at 22. The draft CEQ guidance makes clear that "[s]uch considerations are squarely within the realm of NEPA, informing decisions on whether to proceed with and how to design the proposed action so as to minimize impacts on the environment, as well as informing possible adaptation measures to address these impacts, ultimately enabling the selection of smarter, more resilient actions." *Id.* Climate change intensifies the adverse impacts associated with roads. The Forest Service should consider the risk of increased disturbance when analyzing this proposed project. For example, as the warming climate alters species distribution and forces wildlife migration, landscape connectivity becomes even more critical to species survival and ecosystem resilience. *Id.* at 9-14. *See also* USDA, Forest Service, *National Roadmap*		Climate change will be considered and analyzed in the Rim Country EIS according to recent CEQ guidance, the Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Reviews (August 2016). However, an analysis of the entire road system in the context of climate change is outside of the scope of this project, as this project is specifically focused on restoration and improving the resilience of ponderosa pine ecosystems in the Rim Country project area. Implementation of the Travel Management Rule on each Forest has included a robust analysis of each forest's road system, and has considered the effects of climate change according to agency policy and issues identified through the NEPA process.

	for Responding to Climate Change at 26 (2011), *available at* http://www.fs.fed.us/climatechange/pdf/Roadmapfinal.pdf (recognizing importance of reducing fragmentation and increasing connectivity to facilitate climate change adaptation). Climate change is also expected to lead to more extreme weather events, resulting in increased flood severity, more frequent landslides, altered hydrographs, and changes in erosion and sedimentation rates and delivery processes. Many National Forest roads are poorly located and designed to be temporarily on the landscape, making them particularly vulnerable to these climate alterations. Even those designed for storms and water flows typical of past decades may fail under future weather scenarios, further exacerbating adverse ecological impacts, public safety concerns, and maintenance *WildEarth Guardians – Weminuche Landscape Grazing EIS Comments – April 4, 2016* 6 needs. The Forest Service should analyze in detail the impact of climate change on forest roads and forest resources.		
10	The President's Executive Order 13,653 (Nov. 2013) provides direction on "Preparing the United States for the Impacts of Climate Change." The Order recognizes that "[t]he impacts of climate change – including an increase in prolonged periods of excessively high temperatures, more heavy downpours, an increase in wildfires, [and] more severe droughts . . . – are already affecting communities, natural resources, ecosystems, economies, and public health across the Nation," and that "managing th[o]se risks requires deliberate preparation, close cooperation, and coordinated planning . . . to improve climate preparedness and resilience; help safeguard our economy, infrastructure, environment, and natural resources; and provide for the continuity of . . . agency operations, services, and programs." Exec. Order 13,653, § 1. To that end, the Order requires agencies to take various actions aimed at making "watersheds, natural resources, and ecosystems, and the communities and economies that depend on them, more resilient in the face of a changing climate." *Id.* § 3. For example, "recognizing the many benefits the Nation's natural infrastructure provides, agencies shall, where possible, focus on program and policy adjustments that promote the dual goals of greater climate resilience and carbon sequestration." *Id.* Agencies also must develop and implement adaptation plans that "evaluate the most significant climate change related risks to,		The FS agrees that this is what Executive Order 13,653 (Nov. 2013) states as its goals. As this order relates to improving the resilience of ecosystems to climate change, this will be addressed in detail in the Rim Country EIS; Silviculture, Fire Ecology and Air Quality, and Wildlife Reports; and other specialist reports. The Rim Country Purpose and Need states that "The outcome of improving structure and function [in ponderosa pine ecosystems] is increased ecosystem resiliency." The first need outlined is to "Increase forest resiliency and sustainability." The Rim Country Proposed Action is designed to "make the forest more resilient to natural disturbances such as fire, insect and disease, and climate change."

	and vulnerabilities in, agency operations and missions in both the short and long term, and outline actions . . . to manage these risks and vulnerabilities." *Id.* § 5(a). The Forest Service's 2014 adaptation plan recognizes that the wide range of environmental and societal benefits provided by our national forests "are connected and sustained through the integrity of the ecosystems on these lands." *See* USDA Forest Service, *Climate Change Adaptation Plan*, page 58 (2014). The plan highlights USDA's 2010-2015 Strategic Plan Goal 2 of "[e]nsur[ing] our national forests . . . are conserved, restored, and made more resilient to climate change, while enhancing our water resources." *Id.* at 58. And consistent with section 5(a) of Executive Order 13,653, the plan identifies numerous climate change risks – including increased wildfire, invasive species, increasing water temperatures, extreme weather events, and fluctuating precipitation and temperature – that "pose challenges to sustaining forests and grasslands and the supply of goods and services upon which society depends, such as clean drinking water, forest products, outdoor recreation opportunities, and habitat." *Id.* at 60-64. With respect to transportation infrastructure specifically, the adaptation plan recognizes that, "[w]ith increasing heavy rain events, the extensive road system on NFS lands will require increased maintenance and/or modification of infrastructure (e.g. larger culverts or replacement of culverts with bridges)." *Id.* at 62. The Forest Service's Climate Change Adaptation Plan points to a number of actions to address the risks of climate change to our forests, and in particular to forest roads. For example, the plan highlights the 2012 Planning Rule as a mechanism to ensure that "National Forest System . . . land management planning policy and procedures include consideration of climate change." *Id.* at 73. The final directives to the planning rule echo the importance of designing plan components "to sustain functional ecosystems based on a future viewpoint" and "to adapt to the effects of climate change." FSH 1909.12, ch. 20, § 23.11. The adaptation plan also points to Forest Service Manual 2020, which provides "Ecological Restoration and Resilience" directives designed "to restore and maintain resilient ecosystems that will have greater capacity to withstand stressors and recover from disturbances,		

	especially those under changing and uncertain environmental conditions, including climate change and extreme weather events." Exhibit D at 73.		
11	For all these reasons, the Forest Service must include the MRS as one of the alternatives in its analysis. Subpart A defines the MRS as that "needed for safe and efficient travel[;] for administration, utilization, and protection of [forest] lands[; and] to meet resource and other management objectives adopted in the relevant . . . plan." 36 C.F.R. § 212.5(b)(1).		The MRS may be considered in an action alternative. However, the MRS identified by each forest may not fit the purpose and need for the Rim Country Project, which is focused on restoration and improving the resilience of ponderosa pine ecosystems. While the MRS identified by each forest may contribute to restoration goals, the MRS for each forest was identified several years ago and does not reflect the public input and updated roads data that has been used to manage motor vehicle use through the implementation of Subpart B of the Travel Management Rule.
12	**Temporary Roads** Under NEPA, the Forest Service has a duty to consider the effects of its proposed action when added to the existing road and trail network. *Wilderness Society v. U.S. Forest Service*, 850 F. Supp. 2d 1144, 1157-58 (D. Idaho 2012) (holding the Forest Service was arbitrary and capricious to conclude that designating 94 miles of user-created routes as non-system routes would have no significant impact). Here, the agency is proposing to construct an alarming amount – 350 miles – of temporary roads. Temporary roads must be closed within 10 years of completion of a project, per 16 U.S.C. 1608(a), unless the Forest Service re-evaluates the road and determines it to be necessary for the minimum road system. The Forest Service must ensure that the temporary roads will in fact be temporary by including monitoring and enforcement of the projects and 10 years following completion of the projects. The most obvious way to do this would be through a thorough tracking system for the temporary roads. Therefore, we specifically request that this project incorporates a tracking system for the huge volume of temporary roads in this project so that at any time the agency and the public can see which roads were built (including date and mileage), if the roads have been reclaimed, and when they were reclaimed. During the project and for an additional 10 years after completion of the project, the temporary roads will continue to		The mileage of temporary roads needed will be addressed in alternative development. The effects of the temporary roads proposed in each action alternative on each resource area will be analyzed and disclosed in the effects analysis in the Rim Country EIS and Transportation Report. Temporary roads will be decommissioned when they are no longer needed for restoration activities. Tracking of temporary roads occurs through contract oversight and monitoring. There is no requirement to contrast the construction of temporary roads to the minimum road system (MRS) identified by each forest. The regulations specifically state that the purpose in Subpart A is to "identify the minimum road system…" Subpart B then uses the MRS to consider the designation of routes and areas throughout the forest. Both the Coconino and Tonto National Forests have completed or are in the final stages of completing Subpart B, and thus have both identified an MRS and used this MRS as the starting point for route designation. The Apache-Sitgreaves National Forests are currently in the process of implementing Subpart B of the Travel Management Regulations.

	have very real impacts on the landscape. For example, temporary roads will continue to allow for harassment of wildlife, littering, fires, invasive plant distribution, and negative impacts to aquatic and riparian habitat, as well as the fish that depend on that habitat. The agency must consider the effects of its proposal to construct temporary roads when combined with the effects of its minimum road system. It must also consider how construction of the proposed temporary roads will detract from the purpose of subpart A of the agency's own rules, to "identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of the National Forest System lands." 36 C.F.R. § 212.5(b). This is especially true if the Forest Service fails to provide assurances that the proposed temporary roads will in fact be closed within 10 years of completion of the relevant project. We request that the EIS addresses these effects from so-called temporary roads. To address these concerns regarding temporary roads, we request an alternative that dramatically reduces the temporary road mileage and requires the temporary roads to be limited to the absolute minimum existence, with a default time-frame of 3 months barring exceptional circumstances that call for a longer timeframe. Seasonal restrictions might also be appropriate, especially in important wildlife habitat (*see* MSO section, below). The Forest Service must seriously analyze temporary roads, as seen in the United States District Court of Montana case, *Native Ecosystems Council v. Krueger*, 946 F.Supp.2d 1060 (2013). In that case, environmental groups challenged a timber sale project posed in the Beaverhead-Deerlodge National *WildEarth Guardians – Weminuche Landscape Grazing EIS Comments – April 4, 2016* 8 Forest. The thinning and restoration project was set to involve construction of a large number of temporary roads. The Forest Service, after an Environmental Assessment and Wildlife Report were completed, stated that there would be no significant impact on grizzly bears. The Forest Service based this determination on road density statistics that failed to include temporary roads. Because the Forest Service entirely "[failed] to consider an important aspect of the problem", the case was remanded to the Forest Service to perform a new biological		

	assessment to resolve the question of whether the Project "may affect" grizzly bears in the area.		
13	**Mexican Spotted Owl** The 4FRI Rim Country Project proposes mechanical thinning and/or prescribed fire on about 68,630 acres of Mexican spotted owl (MSO) protected activity centers (PACs) and over 128,800 acres of recovery habitat. In reference to these proposed actions, we make the following comments and considerations, all based on the 2012 MSO Recovery Plan: • We would like to see a better distinction between management actions and habitat needs in riparian habitat versus upland habitat. *See id.* at 271. • "Ongoing climate change will result in unpredictable changes in habitat distribution and quality, and this creates considerable uncertainty in developing strategies to recover the owl. Again, this argues for preserving options where possible, as well as for attempting to account for potential changes in habitat distribution and quality." *Id.* at 250. • "Given our lack of experience and demonstrated expertise in purposely creating the forest structure used by owls, the recommendations for PACs focus on minimizing management." *Id.* at 257. • "In many cases, strategic treatments on surrounding and/or adjoining lands will reduce fire risk sufficiently so that, in the short term, treatments are not needed within PACs (Ager et al. 2007, Finney et al. 2007, Ager et al. 2010)." *Id.* at 258. • "No mechanical or prescribed fire treatments should occur within PACs during the breeding season unless non-breeding is inferred or confirmed that year per the accepted protocol." *Id.* at 261. • There is reference in the scoping letter to a vague diameter limit within PACs. We request that limit be set at no more than 18 inches dbh, as per the 2102 MSO Recovery Plan at 268. • Mechanical treatment should be limited to 20% of non-core PAC area within an EMU. *Id*. at 262. • Seasonal restrictions should be implemented. *Id.* • A robust monitoring program should be established. *Id.* • Prescribed fire should be allowed to enter core areas only if it is expected to burn with low fire severity and intensity. *Id.* at 263.		The FS will follow the MSO recovery plan guidelines for Riparian Recovery Habitat, including Manage for Proper Functioning Condition, Manage for Species Diversity, Manage Grazing Effects, Minimize Construction Activities, and Selective Tree Removal. Anticipated effects from climate change will be analyzed and incorporated into the recommendations for treatments in MSO habitat in each of the action alternatives. Proposed treatments for each of the action alternatives will conform to recommendations in the 2012 Revised MSO Recovery Plan, as referenced in your comment. Proposed treatments, even if not immediately effective, will be effective in the long term, setting landscapes, including specific habitat types, on a trajectory that will allow them to sustain natural disturbances (fire, drought, and insects) without significant adverse effects. The timing of treatments will be addressed in Best Management Practices (BMPs), mitigation measures, and design features, which will be written in consultation with USFWS to ensure minimum disturbance to species of concern from proposed treatments. Prescribed fires will be implemented under conditions and in such a manner to move the area burned towards the desired conditions specified in the forest plans.

	• Within recovery foraging/non-breeding habitats, strive to retain trees greater than 24 inches dbh. *Id.* at 269.		
14	Thank you for your consideration of these scoping comments. Please keep me apprised of any developments on the 4FRI Rim Country Project.		Thank you for participating in the planning process for the Rim Country Project.
Letter 32		**Bradley Powell President Arizona Wildlife Federation**	
1	Please consider the following comments on the June 2016 Four Forest Restoration Initiative (4FRI) Rim Country EIS Proposed Action. **Project Objective, Purpose and Need -** The AWF strongly supports the objective of the Rim Country Proposed Action "to reestablish and restore forest structure and pattern, forest health, and vegetation composition and diversity in ponderosa pine ecosystems to conditions within the natural range of variation, thus moving the project area toward the desired conditions. We believe that a healthier more resilient forest will provide more sustainable benefits to wildlife and to the citizens of Arizona.		Project support
2	**Place more emphasis on Wildlife -** Arizona is blessed to be a sportsmen's paradise. More than 2 million Arizona residents and nonresidents enjoy hunting, fishing and wildlife viewing here every year, contributing $2.4 billion to the state economy. To ensure these traditions can be passed along to the next generation, sportsmen are actively restoring habitat across the state for elk, pronghorn, mule deer, quail, turkey, bighorn sheep, and native trout. The Proposed Action should include wildlife habitat restoration needs and actions for all species not just federally protected species. We also recommend that the Purpose and Need should be expanded to include "Support quality hunting and fishing opportunities". The proposed action and treatments should emphasize actions that will improve terrestrial and aquatic habitat conditions, maintain/restore functioning wildlife migration corridors, and provide reasonable access. In addition, the Proposed Action should address increasing wildlife diversity by increasing spatial heterogeneity of habitat components for both aquatic and terrestrial wildlife.		In the development of alternatives and the analysis of wildlife habitat in the Rim Country Project area, the FS will look at the spatial heterogeneity of aquatic and terrestrial wildlife habitat, and consider different types of wildlife habitat restoration activities, including for those highly valued hunting and fishing species. The Purpose and Need states the need to "Improve terrestrial and aquatic species habitat." In meeting this need, project activities will be supplying additional habitat for highly valued hunting and fishing species. Additional wildlife habitat restoration activities may be considered in the fully developed Proposed Action and/or in other action alternatives that are fully analyzed in the NEPA process.

3	**Emphasize wildlife waters** - Many wildlife waters (including tanks, water collection aprons, drinkers, etc.) in the project area have been degraded or are no longer functioning due to damage from catastrophic wildfire or lack of maintenance. These waters need to be repaired (i.e., sediment removal) or replaced. For waters that are exclusively wildlife waters, exclusion fencing may need repair or replacement to keep livestock out. There are other areas of wildlife habitat that have been identified for the installation of new waters. These repairs, replacements, and installations will improve habitat for wildlife and improve wildlife distribution across the landscape.		Repairs, replacements, and installations of wildlife waters do not fall as readily into the Purpose and Need for the Rim Country Project, which is focused on restoring forest structure and pattern, forest health, and vegetation diversity to increase ecosystem resiliency. Wildlife waters projects may be considered in the fully developed Proposed Action and/or in other action alternatives as additional activities that may be completed as funding allows.
4	**Emphasize wildlife connectivity and migration corridors** - The State of Arizona participated a few years ago in a wildlife corridors project of the Western Governors Association. Maps of important corridors were developed and should be utilized in this analysis. An objective of the Proposed Action should be to **c**reate and restore wildlife corridors through thinning to connect wildlife habitat blocks on the landscape. For example, emphasis should be placed on mechanical treatments that will maintain and/or restore montane meadow connectivity through the removal of trees, including juniper and large young trees where wildlife travel corridors have been identified. Within the Rim Country project area, fence improvements and modifications would benefit wildlife through increasing wildlife connectivity on the landscape. For example, unnecessary fences need to be removed to allow wildlife to move through important movement corridors between habitat blocks. There are also other fences that require repair to keep livestock within allotments and protect sensitive wildlife resources. Wildlife would also benefit from wildlife friendly modifications to other fences that would retain livestock while allowing wildlife to cross.		The Purpose and Need states the need to "Improve terrestrial and aquatic species habitat." In meeting this need, project activities will be restoring wildlife corridors through thinning and connecting wildlife habitat blocks on the landscape. Meadow restoration activities that remove encroaching trees would help restore montane meadow connectivity. Additional meadow restoration activities may be considered in the fully developed Proposed Action and/or in other action alternatives that are fully analyzed in the NEPA process.
5	**Clarify the linkages between the Travel Management Plans and the Rim Country EIS** - It is not clear to us how the Travel Management plan for the area will be coordinated with the Rim Country EIS. The proposed action details specific road decommissioning targets. If the Rim Country EIS intends to		Clarification of the PA for the Rim Country Project does not supersede the Travel Management planning process for any forest. The purpose of the Travel Management Regulations is to identify a system of designated routes and areas for public motorized use. The Rim Country Project may include physical decommissioning of routes that are not designated through the Travel Management process,

	supersede the Travel Management planning process it should be clearly specified.		including unauthorized road and also Forest Service system roads that are classified as decommissioned. It may also decommission other FS system roads that are not currently open to public use under travel management and are not needed for administrative or permitted use. This project would not decommission or close any road that is designated as open under any forest travel management plan.
6	**Ensure that riparian areas and watersheds are adequately analyzed and protected -** Some of the most storied and productive Coldwater fisheries in Arizona lie within the project area. These streams also provide vital water sources for thousands of people in the State. The project area is home to native Gila trout that are important from both a conservation and recreational perspective. We would like to see these water resources protected. The proposed forest restoration combined with thoughtful hydrologic rehabilitation can produce resilient, sustainable, and highly functioning watersheds that support both native and recreational fisheries. All perennial, ephemeral, or intermittent streams (not just those identified in Figure 6, page 19) should be considered for restoration and or improvements. Not all of these streams may need restoration or special treatment, but the EIS should provide the necessary guidance if restoration or special treatment is deemed appropriate. Prior to mechanical or fire restoration treatments, the hydrologic impacts of the treatment to streams, aquatic ecosystems, and riparian areas should be formally evaluated. Treatments should be adjusted to avoid or mitigate adverse impacts when matched with complimentary hydrologic rehabilitation.		A flexible toolbox approach will be used for much of the restoration of streams, riparian areas, springs, meadows, as well as for the associated road work, across the Rim Country project area. These types of treatments will fit most common restoration needs and will be described in detail in the Rim Country EIS. Sideboards for these treatments will be identified so that the effects of these treatments can be analyzed. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. Design features for implementing these treatments will be included in the Rim Country EIS and Watershed and Aquatics Reports. The 360 miles of streams proposed for stream habitat restoration was calculated by mapping all streams and reaches currently occupied by aquatic species or proposed for stocking. Individual species' habitat greatly overlapped, therefore total occupied stream miles within the project area were used to describe the extent of potential stream habitat restoration rather than by each species. Maps of occupancy were reviewed by personnel from different agencies and used the best available information at the time. A flexible toolbox approach will be developed to describe current conditions and treatment options to consider to move streams and riparian areas toward desired conditions. Resource protection measures such as design features, conservation measures for aquatic species, and BMPs for water quality will be developed. Treatments and their effects on streams, as well as resource protection measures,

			will be analyzed in the Rim Country Watershed and Aquatic Specialist Reports and EIS.
7	Thank you for your work on restoring our National Forests and accepting our comments. Please contact me if you have questions or need additional information.		The FS appreciates your help and participation in the planning process.
Letter 33		**Leslie Johnson Flying H Ranch**	
1	The project needs to drastically increase juniper treatment, as well as thin the Ponderosa pine, throughout the Tonto and other forests. For juniper treatment, herbicides, wood cutting (both commercial and for personal use), dozer pushes and prescribed fires all need to be used.		The goal of 4FRI is to plan and implement restoration treatments across its 2.4 million acres of ponderosa pine forest, so we are constrained to treatments within frequent-fire cover types that include ponderosa pine. The pinyon-juniper and juniper cover types are not frequent-fire types targeted for restoration in the Rim Country Project. Facilitative operations are only proposed in this cover type where they are needed to support the safe and effective use of prescribed fire in adjacent target cover types.
2	There should be NO road closures. ALL roads are covered under the Travel Management plan and if you cannot maintain these roads, then the County or Game and Fish should as these roads are part of the infrastructure of the county and are essential for ranching operations, hunts, fishing, and recreation. The proposed action needs to be very specific, and not be proposed using generalities, so there is no question about what is being proposed on the ground.		The purpose of the Travel Management Regulations is to identify a system of designated routes and areas for public motorized use. The Rim Country Project may include physical decommissioning of routes that are not designated through the travel management process, including unauthorized roads and also National Forest System roads that are classified as decommissioned. Rim Country would not decommission or close roads that are designated as open under any forest travel management plan. The Rim Country Project will include the physical, on-the-ground decommissioning of unauthorized roads, as well as National Forest System roads that are classified as decommissioned. It may also decommission other National Forest System roads that are not currently open to public use under travel management and are not needed for administrative or permitted use National Forest System roads proposed for decommissioning would be identified in the EIS for decommissioning.
3	When any road is proposed to be closed or areas are to be affected by a new proposal, then the proposed action needs to use the USFS improvement number identify of the road or area (creek, tank, fence, meadow, etc.) under consideration.		The Rim Country Project would not decommission or close any road that is designated as open under any forest travel management plan.

			The Rim Country Project may include physical decommissioning of National Forest System roads that are classified as decommissioned. It may also decommission other National Forest System roads that are not currently open to public use under travel management and are not needed for administrative or permitted use. National Forest System roads proposed for decommissioning would be identified in the EIS.
4	There should be no fencing done around waters for most waters in the forest are someone's private property right and fencing creates a bias act between domestic animals and wildlife.		Prior to fencing, water rights for that water source would be researched. If the water right ownership belongs to someone other than the United States, the water source would not be excluded. The removal or exclusion of other livestock water would be mitigated with alternative water sources, providing lanes to the water, or piping water to a livestock drinker.
5	Affected permittees need to have a say in project area's before, not after, any action is proposed and their voice needs to be heard, as they are the main stakeholder in any proposed action.		Thank you for commenting on the project. It is important to receive input from our permittees and the FS will continue to provide information on this project to area permittees.
6	All work contracts need to be issued to U S contractors.		The economics analysis will include discussion of what can be expected with different types of contracting, but contracting will not be a part of the alternatives or the decision.
Letter 34		**John Johnson Flying H Ranch**	
1	The project needs to drastically increase juniper treatment throughout the Tonto and other forests. Herbicides, wood cutting (both commercial and for personal use), dozer pushes and prescribed fires all need to be used to control the juniper take over of many parts of the forests.		The goal of 4FRI is to plan and implement restoration treatments across its 2.4 million acres of ponderosa pine forest, so we are constrained to treatments within frequent-fire cover types that include ponderosa pine. The pinyon-juniper and juniper cover types are not frequent-fire types targeted for restoration in the Rim Country Project. Facilitative operations are only proposed in this cover type where they are needed to support the safe and effective use of prescribed fire in adjacent target cover types. The Rim Country Project is not analyzing any herbicide applications. There are, however, other projects the FS is planning or implementing to address woodland treatments.
2	There should be NO road closures. ALL roads are covered under the Travel Management plan and if you cannot maintain these		Rim Country would not decommission or close any road that is designated as open under any forest travel

	roads, then the County or Game and Fish should as these roads are part of the infrastructure of the county and are essential for ranching operations, hunts, fishing, and recreation.		management plan. However, Rim Country restoration activities may include the physical decommissioning of many miles of unauthorized road and National Forest System roads that are classified as decommissioned. Other National Forest System roads that are not currently open to public use under travel management and are not needed for administrative or permitted use may be decommissioned.
3	There should be no fencing done around waters for most waters in the forest are someone's private property right and is a bias act between domestic and wildlife.		Prior to fencing, water rights for that water source would be researched. If the water rights belong to someone other than the United States, the water source would not be excluded. The removal or exclusion of other livestock water would be mitigated with alternative water sources, providing lanes to the water, or piping water to a livestock drinker.
4	All permittees need to have a say in project area's before, not after, any action is proposed and all work contracts need to be issued to U S contractors.		Thank you for commenting on the project. It is important to receive input from our permittees and the FS will continue to provide information to and work with permittees on the Rim Country Project. FS contracting procedures will be followed in implementing 4FRI Rim Country.
Letter 35		**Jan Boyer**	
1	These are my comments about your plan to burn and sell 2 million acres of Arizona forest: Please do not do this project. The potassium permanganate is too toxic and the toxins that the trees have been storing will be released. Also, every acre burned produces 4.81 tons of carbon = 14 tons of CO2. This is not sustainable and I want future generations to have forests. We can hardly breathe in Santa Fe from the burns in this area. The scale of what you are doing is criminal. Getting rid of 95% of the Ponderosa Pines is insane.		There are no plans to burn and sell two million acres of National Forest System lands, or to get rid of 95% of the ponderosa pine. The potential effects of chemicals released from prescribed fires will be addressed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report.
2	There is a persistent belief, due to oft-repeated misinformation, that the U.S. Forest Service is thinning and burning "underbrush" on our public lands. Many express shock at the actual scale of prescribed burns.		These comments are verbatim, three of the first four paragraphs that were posted on Saturday, May 7th, 2016 at: http://www.santafenewmexican.com/opinion/my_view/reader-view-community-needs-to-be-involved-in-forest-

	Tom Ribe's recent op-ed ("Santa Fe must tackle overgrown forests," My View, April 3) makes clear the scale of the Forest Service's prescribed burning and logging agenda. Ribe bemoans the loss of 12,000 acres to fire, which is indeed tragic, and then goes on to call for the burning and clear-cut logging of more than 107,000 acres. We oppose the increasing aerial firebombing of our forests and wildlife. We are pro-forest, and we advocate for community decision-making on public land issues. New Mexico's 99 percent who are not politically connected and wealthy have had no voice in decisions to sell off our forests to the burn and logging industries.		decisions/article_83269798-2e4f-5540-9789-6db5b327ff1b.html The situations mentioned in the comment are located in New Mexico and do not apply to the Rim Country project area in Arizona. The scale and effects of the prescribed fire proposed in Rim Country alternatives will be analyzed in the Rim Country EIS and Fire Ecology and Air Quality Report. The FS will continue to seek and consider all feedback, input, and comments on the Rim Country Project as we move forward in the planning process.
3	The Forest Service's "comment" process is a bad joke. Anyone who objects to landscape-scale chemical burning and clear-cut logging is harassed out of public meetings, disrespected and disregarded. There is no oversight nor community input in the shady underworld of prescribed burn contracting. I attend public meetings on prescribed burns, and I am appalled at what I see as the Forest Service's unbridled hatred for forests and the democratic process. Workers never use the word "trees." Only "excess fuel" and "timber."		The FS will continue to seek and consider all feedback, input, and comments, and respond as clearly as we can. We do appreciate your input and hope you will stay engaged in the the 4FRI Rim Country Project.
4	Ribe and the Forest Service appeal to fear, not logic nor science. They warn against the "big fire" that has never happened in our watershed, while avoiding mention of the Cerro Grande Fire, a prescribed burn set by the National Park Service in May 2000. Ribe wrote a book calling it "America's worst prescribed fire disaster." More than 250 homes were destroyed, the entire city of Los Alamos was evacuated, and Los Alamos National Laboratory property burned. We'll never know the numbers of wildlife lost, because no one cares to investigate.		These comments are verbatim, three of the first four paragraphs that were posted on Saturday, May 7th, 2016 at: http://www.santafenewmexican.com/opinion/my_view/reader-view-community-needs-to-be-involved-in-forest-decisions/article_83269798-2e4f-5540-9789-6db5b327ff1b.html The situations mentioned in the comment are located in New Mexico and do not apply to the Rim Country project area in Arizona. The scale and effects of the prescribed fire proposed in Rim Country alternatives will be analyzed in the Rim Country EIS and Fire Ecology and Air Quality Report. The FS will continue to seek and consider all feedback, input, and

			comments on the Rim Country Project as we move forward in the planning process.
5	William Baker's *Fire Ecology in Rocky Mountain Landscapes*, the definitive, 628-page, peer-reviewed scientific text on the subject, concludes that the best approach is not to try to change or control fire, but to learn to live with it. He argues that the most effective action is to limit and redesign human-forest interfaces to withstand fire, which can be done in ways that are beneficial to forests and human communities.		The William Baker reference cited and its findings will be reviewed with all other published science and other historical references for relevancy.
6	The Forest Service has been intentionally ignoring current peer-reviewed science for decades. Why? Because current science tells us that prescribed burns make forests more — not less — likely to burn. But there is no money in leaving the forests alone. Instilling fear into the public serves the interests of the multibillion-dollar burn contracting industry.		The commenter doesn't cite any specific science, so it's hard to know what is being referenced. The preponderance of science related to the vegetation types and ecosystems being analyzed in the Rim Country project area shows that prescribed fire is a very effective and efficient tool for restoring ponderosa pine forests. This science will be cited and discussed in the Rim Country EIS and Fire Ecology andAir Quality Report.
Letter 36		**Rob Marshall Nature Conservancy**	
1	Thank you for the opportunity to comment on the Rim Country Project's Proposed Action of the Four Forest Restoration Initiative (4FRI). The Nature Conservancy ("Conservancy") has actively supported forest restoration in Arizona for over 20 years, and is proud to be a strong partner with the U.S. Forest Service as they continue to address forest management needs at a scale that matches the scope of this critical issue. As a participating member of the 4FRI Stakeholder Group, we support the comments provided by this group as approved at the July 27, 2016 4FRI Stakeholder Group meeting. We focus our organization-specific comments here towards providing meaningful input that will help craft the Draft Environmental Impact Statement ("Draft EIS"). We have divided our comments into three categories: 1) support for the Proposed Action ("PA") document itself; 2) input designed to improve documentation and development of the Draft EIS; and 3) preparation for project implementation.		Project support
2	**Support for the Proposed Action**		Project support

	The Conservancy is in strong agreement with the overarching Purpose and Need embedded with the Proposed Action. We agree with the expressed desired conditions of a restored forest structure and pattern, improved forest health, and vegetation composition and diversity that reflect conditions within their natural ranges of variation. We do note that while your statement specifies ponderosa pine (PA p. 3), we understand that multiple vegetation types are being evaluated for restoration purposes (i.e. dry mixed conifer, grasslands, aspen, etc.). In addition, we are pleased to see focus on maintaining structural diversity such as snags and coarse woody debris for wildlife habitat complexity, as well as maintaining or improving aquatic habitats to meet needs for the variety of aquatic and riparian-dependent species. We also appreciate the increased attention on the economic conditions necessary to build a successful forest restoration effort in a timeframe that matters.		
3	**Input for Draft EIS** In taking this PA forward to the next step, that of developing and analyzing alternatives for the Draft EIS, we encourage the U.S. Forest Service to address consistency in use of terms, both within the PA and between this analysis process and the First EIS under 4FRI, and clarify concepts and treatment outcomes. As examples:		Thank you for your comment. We appreciate you letting us know which terms are confusing and that need clear definitions. The FS will endeavor to be more consistent in our use of terms and a glossary will be provided in the Rim Country EIS and specialist reports.
4	a) Dry mixed conifer vs. mixed conifer vs. frequent-fire mixed conifer are often used to describe the same vegetation type. b) Old and large vs. larger/older vs. large and/or old trees are all used as descriptors and could cause confusion.		Mixed conifer has become a generic descriptor to describe forests with multiple conifer species growing and successfully regenerating. Current terminology has been refined to describe mixed conifer forests as those comprised of: a) Mixed Conifer with Frequent Fire: mixed conifer with a fire return interval more aligned with the ponderosa pine cover types. These are also referred to as Dry Mixed Conifer stands because they are less mesic and have a high percentage of ponderosa pine. b) Mixed Conifer with Aspen: mixed conifer with a longer fire return interval than ponderosa pine cover types. They tend to have more aspen and less ponderosa pine and are the more mesic of the two mixed conifer systems. These are also referred to as Wet Mixed Conifer stands.

			The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies.
5	c) The terms "high severity fire" and "active crown fire" seem to be used at different places to refer to essentially a similar condition—consistency (and definition) of terms such as these may be helpful in future documents.		The FS will endeavor to be more consistent in our use of terms and these terms will be defined in the glossary of the Rim Country EIS and Fire Ecology and Air Quality Report.
6	d) The concept of Natural Range of Variability ("NRV") is mentioned in the Purpose section (PA, p. 3), but not referred to in the Desired Conditions. It may be helpful to both describe what NRV is for readers of the Draft EIS and also describe where and how we may not achieve NRV given socio-political and economic aspects of the restoration effort.		The FS will better describe and define the use of NRV (FM 2020, April 2016), ecological restoration, and functional restoration, and where the guidance might be used, in the Rim Country EIS and Silviculture, Fire Ecology and Air Quality, and other specialist reports. The NRV is not a desired condition but rathera reference condition that may or may not be desired or obtained. It is a central theme within restoration.
7	e) Tables 3 and 4, if translated into the Draft EIS, should have a clearer definition of "No Fire," as well as have a column for "Surface Fire," as the only options described are "No Fire" and two categories of "crown fire," with the percentages not totaling 100%. f) "Brush" seems to be a non-technical term and is also not defined. g) Perhaps use different terms than "understocked" and "stocking levels" as they refer more to timber production than ecological conditions, particularly if the Draft EIS will use the Natural Range of Variability concept. As an example, paragraph 3 on page 8 of the PA could state "There are approximately 69,360 acres of national forest lands in the project area in need of *reforestation*, a term applying ecological needs for forest cover rather than wood production.		e) The different types of fire will be clarified in the Rim Country EIS and Fire Ecology and Air Quality Report. No Fire includes water, rock, roads, cinders, areas of sparse vegetation, and other acres on which there are insufficient fuels to carry fire under the conditions modeled. f) Brush is a technical term used in fire management and silviculture, defined as: A collective term that refers to stands of vegetation dominated by shrubby, woody plants, or low growing trees, usually of a type undesirable for livestock or timber management. In general terms, silviculture considers woody plants smaller than 4.5 feet in height to be part of the brush component (other than desirable tree species that normally attain over 4.5 feet in height). g) Thank you for your comment and suggestions for changes. Page 8 of the scoping document refers to 69,360 acres of understocked lands. This is a technical term

			defined in the published version of the Proposed Action. Understocked does not imply that all of these acres will be targeted for reforestation, but may be evaluated for planting, natural regeneration, or natural recovery, or future trajectories that are not initially conifer (ponderosa pine). This term and others will be better described and defined in the Rim Country EIS and specialist reports.
8	h) Aspen restoration (PA, p. 26) includes, but does not provide adequate rationale for, removing aspen. This may cause confusion without explanation; does this mean "remove dead aspen" or is there another reason for aspen removal in areas targeted for aspen regeneration?		Thank you for your comment. The statement should read, "Remove post-settlement conifers within 66 feet (one chain) of the aspen clone. Within the clone, remove encroaching conifers, disturb the ground, and/or apply fire as needed to stimulate suckering. Evaluate the need for barriers to reduce ungulate browsing." Aspen regeneration does not require removal of live aspen. It is better described as removing competing vegetation in the form of encroaching conifers (part of the normal successional patterns within the aspen type). By removing competing conifers within and around aspen sites, with and without fire, the treatments can encourage regeneration and healthy sites. This will be corrected in the Proposed Action in the Rim Country EIS and specialist reports.
9	i) Despite being in similar vegetation types, it may improve understanding of management differences for Mexican Spotted Owl (MSO) and Northern Goshawk (NOGO) treatments by separating their descriptive treatments.		As the Proposed Action and other alternatives, as well as the treatment types and objectives, are fully developed for the effects analysis, the treatments for MSO and NOGO will be described separately in the Rim Country EIS and Wildlife Report.
10	j) Reflecting upon the 4FRI First EIS, the objection process, and the resultant agreed-upon negotiation relative to MSO treatments, we suggest providing explicit support, rationale, and justification for MSO treatments that may have only been embedded within the Biological Opinion and not easily attainable by stakeholders during the EIS review process. Documenting the support and agreement between the U.S. Forest Service and the U.S. Fish & Wildlife Service for proposed treatments needs to be a part of the Rim Country Project EIS.		The Biological Opinion for the Rim Country Project will be available for public review upon completion.

11	k) Planned protective barriers and fencing may need to be prioritized from both an economic feasibility and capacity standpoint.		Proposed protective barriers and fencing will be part of and prioritized with other restoration activities as they are implemented. As funding or volunteers are available, separate barrier and/or fencing activities will likely take place.
12	**Preparation for Project Implementation** We appreciate the increased emphasis in the Rim Country Project EIS on incorporating industry and socio-economic perspectives and needs. We applaud the U.S. Forest Service's responsiveness in modifying planned contract implementation processes and schedules to better fit the current economic realities the small-diameter wood industries face. To continue that momentum into this next large analysis, we suggest that the Draft EIS analysis of mechanical treatment effects takes into account a variety of potential harvesting and biomass removal scenarios and results on the environment. With the current economic analyses provided by Campbell Global of the C.C. Cragin treatment area, several innovative recommendations have emerged that could facilitate industry while modifying somewhat how harvested wood and residual biomass is removed. These ideas may have environmental effects (for example, allowing logs to dry out on site; leaving a certain percentage of biomass on site in various ways) that, without proper analysis, may not be allowed or supported during implementation of these proposed treatments. While understanding that any EIS is not a prescriptive guide to implementation, we would like to ensure that such flexibility is allowed under this analysis to the extent possible. Certain geographic areas distant from current—and even potential—economic working circles may have to incorporate such flexibility in order to achieve at least some threshold of restoration and catastrophic fire risk reduction. Disclosing effects of the suggestions made by Campbell Global, or by other stakeholders, may help maintain a flexible implementation process. This underscores the most fundamental need of forest restoration today. We are faced with an increasing urgency to address forest health or face the potential loss of a significant portion of our		The effects analysis for Rim Country will consider the effects from a range of mechanical thinning options (including thinning larger trees where needed and biomass removal), and describe the effects from different levels of these treatments (alternatives). The flexible toolbox approach will foster opportunities during implementation. The FS will work with stakeholders and partners to develop and analyze measures to facilitate implementation. These will be discussed in the economics analysis in the Rim Country EIS and Socioeconomics Report.

	northern Arizona forests to uncharacteristically high-intensity wildfire. To achieve success in reducing that risk on a landscape scale, all parties—stakeholders, industry, and agency land managers—must be nimble, innovative, and flexible in trying out new ideas for both ecological treatments and economic scenarios. The Rim Country Project offers a chance to make a meaningful difference in a landscape that provides healthy watersheds and clean water for both humans and wildlife; economic engines for rural communities; and a quality of life for all Arizona residents and visitors alike. Thank you for the opportunity to comment on the Rim Country Proposed Action, and we look forward to the success of the Rim Country Project analysis and the continued restoration of our northern Arizona forests.		
Letter 37		**Mary Fish**	
1	Looking at the project area, and reading the proposed plan I have concerns about some basic premises you have put forth, because I think they are based on misunderstandings, serious misunderstandings, and even as is admitted, inadequate knowledge to put forth such sweeping changes to such a large area of forest in a state easily characterized as a desert, where the forest is your most precious natural resource. First off, looking at the project area on google maps >> link << the cover is not excessively dense. In fact it looks like treecover is densest in valleys and stream beds, and sparser on upland areas, like mesas or ridges. On page 7 of the proposal you state, "The exclusion of fire has resulted in high canopy cover and high tree density which limits the amount of sunlight and precipitation reaching the ground. Consequently, understory vegetation is less diverse, sparse, and it provides poorer quality food and cover for wildlife than under more open canopies." I must beg to differ, as there is abundant evidence in satellite images that more open canopies do not result in more understory growth. Places where stands are at the desired density of or approaching 25% lack shade - shade is seldom a growth inhibiting, even deep shade in denser stands - and the ground is baked, caked and bare desert type shrubs are		The forests in the Rim Country Project area are very diverse, active, and dynamic forest ecosystems and are not ecologically classified as desert ecosystems. Many publicly available aerial resources, such as Google Earth, do not have the resolution necessary to see fine detail (.e.g., regeneration, grasses, small trees) necessary for an evaluation of the resources in the Rim Country Project. On-the-ground studies in the form of forest inventory plots are very accurate datasets. The science of forestry and silviculture has a long research-based, peer-reviewed basis for the recommendations. The forests in the Rim Country Project are indeed dense (in terms of basal area, trees per acre, canopy cover, and stand density index) when compared to their Natural Range of Variability (NRV) and ideal stand structures. These stands are in fact 3 to 10 times their historical densities. These high density conditions lead to reduced vigor, higher risks of uncharacteristic fire, increased insect and disease damages, loss of resiliency, and inability to withstand adverse conditions from climate change.

	typical, if any. Where stands are denser (presumably 40-65%) there is snowcover on the ground, showing precipitation dows reach the understory. Needle leaved trees usually permit this, not limiting the percipitation reaching the ground by very much at all.		Thank you for taking the time to examine the Rim Country Project from Google Earth. The resolution of such public aerial photography is limited (can't see much on the ground smaller than several feet across). That is why the Rim Country silviculture analysis does not rely solely on remotely sensed data, but instead compiles enormous amounts of data collected in the field by highly qualified field crews (Common Stand Exams) (http://www.fs.fed.us/nrm/documents/fsveg/cse_user_guides/R3FG.pdf). Closed-canopy, dense stand conditions do severely inhibit grass, forb, brush, individual tree, and tree regeneration growth. The FS will be conducting many field trips with the public for the Rim Country Project and there should be ample time to visit with professional resource specialists in the field to discuss conditions and their management implications. As forest canopy density increases, the amount of snowfall reaching the forest floor decreases. However, as canopy density decreases, the ablation rates increase.
2	view from upper tonto creek campground view of same from google earth, note trees stands are thin away from waterways, which require shading from same trees if they're not to dry up.		There are currently varying degrees of canopy cover throughout the Rim Country project area, some dense, some open. Dense overstory canopy cover restricts understory growth and forage production. The Rim Country effects analysis will compare the relationship of overstory and understory in the different vegetation types and conditions. Treatments around springs will be conducted to provide the necessary stream bed shading needed by aquatic species.
3	view from paleo site monument google earth view of same, tree cover is moderate to marginal		If one looks at the "street view" of this area they will see areas of high density, prior thinning treatments, and indications of past fire damage. The Rim Country Project will analyze the project area and treat areas that are outside of the Natural Range of Variation (as seen in this view provided).

4	Knoll Lake Campground note on the map, tree density within the campground is similar to the surrounding forest >> link		Recreation areas are special use areas and the forest densities and structures are seldom, if ever, the same as in the surrounding forest. 4FRI Rim Country is not proposing or analyzing any treatments in this campground.
5	Clint's Well Campground, again stand density (Google Earth image) is similar to what is found in the Knoll Lake area, and across this part of the rim. It's reassuring that this stand density allows snowcover on the forest floor, so tanks, streams and other aquifers can be recharged.		There are currently varying degrees of canopy cover throughout the Rim Country project area, some dense, some open. Dense overstory canopy cover restricts understory growth and forage production. The Rim Country effects analysis will compare the relationship of overstory and understory in the different vegetation types and conditions.
6	Chevelon Canyon Lake Campground Earth view shows sparser and stunted trees outside the canyons in this northern part of the project area.		Precipitation decreases from 30 to 35 inches per year along the southwestern portion of the Sitgreaves National Forest near Woods Canyon Lake to 15 to 20 inches per year in the area north of Chevelon Canyon Campground. This has a dramatic effect on soil and forest productivity. Chevelon Canyon Lake Campground is not typical of the entire Rim Country project area. This Google Earth view is displaying signs of past fire damage and woodland (right side of view). The Rim Country Project will analyze the project area and treat areas that are outside of the Natural Range of Variation.
7	Not in the project are but serves well to illustrate, please observe how just east of Show Low how areas with denser tree cover correlate to more tanks, streams and water features. (Zoom in and pan for detail.) The supposition that 25% tree cover is desirable is a highly questionable and unproven premise, especially in a state that is largely desert already. Such a low density canopy will likely diminish the penetration of precipitation into the earth, harming the recharging of springs and aquifers. Victor Schauberger, who was a forester in Austria more than a hundred years ago, understood the desirable effect of designing a positive temperature differential between the ground and surface precip to activate the subterranian part of the hydrological cycle that restores underground aquifers and creates or sustains springs.		Stock tank density is based on the need for water by domestic cattle and sometimes wildlife. The hydrologic function of the soil has more influence on water infiltration into the soil than temperature alone. Optimum surface structure, surface effective ground cover, soil organic matter, and bulk density provide for infiltration.

8	With no tree cover, all the water cycles between surface and atmosphere. temperature differential affects water's penetration into the soil >> Schauberger showed that because water was most dense at 4 degrees C, when the precip was at that temperature or higher, it could only penetrate into soil which was cooler; if precip was less than 4 deg. C, only warmer ground allowed its penetration into the soil. Ofcourse if ground is frozen, there is no penetration.		Neither the Rim Country Project nor any other project in the 4FRI footprint proposes removing all overstory. The concepts provided in this comment are not supported by the best available science regarding the desired conditions of ponderosa pine forests and satisfactory soil condition. This information will be described in detail in the Rim Country EIS and Soils Report.
9	Adequate shading by trees is not only essential for groundwater preservation/restoration, it is also critical for preventing salting/alkalizing of soils, and avertering the proliferation of pathogens and other lower level organisms in the environment.		The best available science for ponderosa pine ecosystems indicates lower tree density, or more open forests, represent historic conditions.
10	A little about Victor Schauberger, and water temperature's effect on pathogens - skip to about 7 minutes if you like it shorter.		Stream values will vary by stream type (perennial, intermittent, and ephemeral) as well as whether or not they are occupied by aquatic species. These values (stream habitat, stream shading) will be incorporated into treatments using a flexible toolbox approach. The toolbox will consider stream values that may need improvement and list potential treatment options. Protection of stream values will also occur with the use of design features, conservation measures for aquatic species, and BMPs for water quality. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports.
11	Although I can't know how severely the bark beetles or their fungi, or mistletoe are haming the trees, and I understand the concern here, I feel some test plots are in order to verify that what you're proposing isn't going to inflict extraordinary damage by side effects from radically heating the environment beyond the forest systems' tolerance levels or ability to recover.		There are extensive numbers of plots for similar treatments, along with an extensive body of research in the project area, that demonstrate the effectiveness of the proposed treatments, and that they will move the forest ecosystems toward their desired conditions as described in the forest plans. The FS will be conducting many field visits with the public and there should be ample time to visit with professional resource specialists in the field to discuss conditions and their management implications.
12	Lastly, I would like you to limit prescribed fire burn tonnage or acreage, perhaps to half or less of what you propose, and not use any chemicals in starting or sustaining the controlled burns, because whenever there is a forest fire out west, all the pollution picks up into the jet stream and dumps on the midwest, and its more toxic and miserable in terms of health effects, for all ages		Air quality effects from different amounts of prescribed fire will be addressed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report.

	of folk, than you might realize. What measures are in place to ensure your prescribed burns don't get out of control? thank you,		
Letter 38		**Bruce Fox**	
1	In response to the invitation I received on June 21, 2016, please find below my comments on the 4FRI Rim Country Project Proposed Action. For context, I earned a Bachelor of Science in Forestry, a Master of Forestry, and a Ph.D. in Natural Resources and have a total of over 30 years of experience in forestry in the public and private sectors, including private industry management and planning, forestry consulting, teaching and research in higher education, and with the USDA Forest Service. In addition, I am a California Registered Professional Forester. Based on my review of the Proposed Action document, I have the following nine comments:		Thank you for participating in the NEPA process for the Rim Country Project.
2	1. Although the Scoping document does identify very broad target desired conditions (Table 7) the specific desired forest conditions that meet the stated proposed action goal "…to restore forest resiliency and ecosystem function in ponderosa pine forests…." (Proposed Action, page 1) are not specified. Instead Table 7 displays very broad ranges of target conditions based on basal area per acre (that has, unfortunately, no units of measure specified), trees per acre, and stand density index. Applying such ranges to a stand could result in extremely different stand structures and thus very different desired conditions;		The Proposed Action was developed to move the Rim Country project area toward the desired conditions outlined in the forest plans. The treatments proposed are based on an analysis of individual stand conditions and what is needed to move them towards the desired conditions. No single treatment is being applied across the project area, but a whole range of prescriptions that are unique to individual stands. A detailed analysis of the proposed treatments will be conducted in the Rim Country EIS and Silviculture Report. Basal area per acre is a specific term and will be defined in a glossary in the Rim Country EIS and Silviculture Report. Basal area is the cross-section area (in square feet) of trees measured at breast height (4 ½ feet above ground). It is one way for foresters to describe stand density, and is the measure of density used in the forest plans. The ranges as stated have been scientifically determined to represent the best range of growing conditions for each forest cover type.
3	2. No criteria are provided as to how to select stands for particular treatments;		The goal of 4FRI is to plan and implement restoration treatments across its 2.4 million acres of ponderosa pine

			forest, so we are constrained to treatments within frequent-fire cover types that include ponderosa pine. The Rim Country EIS and Silviculture Report will detail the criteria used for selecting individual stands for certain types of treatments.
4	3. No references exist to the literature that constitutes "…best available science" used—or is planned to be used--to develop prescriptions, "sustainability", or desired future conditions;		The Rim Country EIS and specialist reports will include reviews of scientific literature used in the analysis.
5	4. Except in the broadest sense, no specification of targets (*e.g.* acres in a particular condition class) for "sustainability" is included in the document;		Expected outcomes from propsed treatments, including stand conditions and sustainability, will be analyzed in the Rim Country EIS and Silviculture, Wildlife, and Fire Ecology and Air Quality Report.
6	5. The document contains little or no reference to how the Proposed Action will "Preserve cultural resources" or "Support sustainable forest products industries" (Scoping Document, page 3);		A separate section is being developed for the Rim Country EIS which will address how cultural resources will be treated for each proposed activity.
7	6. The document contains no mention of monitoring to help ensure that activities attain the goals of the project;		The Rim Country EIS will include a collaboratively developed Monitoring and Adaptive Management Plan (strongly influenced by the collaboratively developed plan from the 1st EIS).
8	7. The treatment types described on pages 22-25 do not contain any quantifiable target for initial treatments nor quantifiable desired future conditions that these treatments are desired to accomplish;		The Rim Country EIS analysis will include detail on the current conditions and stands and the desired outcomes in terms of stand structure and acres.
9	8. The "socio-political importance" of large trees mentioned on pages 4 and 5, is not explained, making the reason for retaining "…as many large trees as possible…." unclear; and		The complete statement is "…recognizing the ecological and socio-political importance of these trees," and is used in describing the need to "retain as many old and large trees as possible…" The protection of old growth and the retention of large trees is important ecologically, especially for wildlife habitat, and is a common desire of the stakeholders and public engaged in 4FRI.
10	9. A relatively minor point is that the "All Ponderosa Pine No Fire" value (2%) in Table 7 appears incorrect. If 49.96% of the acres have a 0% value for "No Fire" and the other 50.04% only has 1% "No Fire", arithmetically the Total Value cannot equal 2%.		It appears that the commenter is referring to Table e on page 7.. Thank you for your comment; the FS will review and clarify this table for the Rim Country EIS.
Letter 39		**Woody Cline**	

1	The project needs to increase the acres of treatment in the juniper vegetation. Treatment options have to include fuel wood harvest and pushing with dozers.		The goal of 4FRI is to plan and implement restoration treatments across its 2.4 million acres of ponderosa pine forest, so we are constrained to treatments within frequent-fire cover types that include ponderosa pine. The pinyon-juniper and juniper cover types are not frequent-fire types targeted for restoration in the Rim Country Project. Facilitative operations are only proposed in this cover type where they are needed to support the safe and effective use of prescribed fire in adjacent target cover types.There will be opportunities to burn within the juniper type adjacent to pine cover types.
2	There should not be any decommissioning of forest roads in this project, all the roads are covered under travel mngt. The proposed action has to be more specific on roads to be closed, exclosures around streams and meadow, etc.		Rim Country would not decommission or close any road that is designated as open under any forest travel management plan. However, Rim Country restoration activities may include the physical decommissioning of many miles of unauthorized road and National Forest System roads that are classified as decommissioned. Other National Forest System roads that are not currently open to public use under travel management and are not needed for administrative or permitted use may be decommissioned.
3	Project needs to disclose road numbers, stream and spring locations and meadow locations.		The Rim Country Project will disclose all known locations of roads, streams, springs, and meadows on maps in the EIS. With the flexible toolbox approach, some road, stream, spring, and meadow treatments will not be located on a map until they are specifically planned during implementation. A flexible toolbox approach will be used for much of the restoration of streams, riparian areas, springs, meadows, as well as for the associated road work, across the Rim Country project area. These types of treatments will fit most common restoration needs and will be described in detail in the Rim Country EIS. Sideboards for these treatments will be identified so that the effects of these treatments can be analyzed. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. Design features for implementing these treatments will be included in the Rim Country EIS and Watershed and Aquatics Reports.

4	There should not be any fencing done around springs, etc. This effects cattle grazing and our wildlife.		Prior to fencing, water rights for that water source would be researched. If the water rights belong to someone other than the United States the water source would not be excluded. The removal or exclusion of other livestock water would be mitigated with alternative water sources, providing lanes to the water, or piping water to a livestock drinker.
5	The 4FRI project needs to be awarded to a US company, note one from outside the US.		The economics analysis will include discussion of what can be expected with different types of contracting, but contracting will not be a part of the alternatives or the decision.
6	Effected permittees have to be involved in this process.		Thank you for commenting on the project. It is important to receive input from our permittees and the FS will continue to provide information on this project to area permittees.
Letter 40		**Todd Schulke Center For Biological Diversity**	
1	This letter responds to the June 27, 2016 notice of intent ("NOI") to prepare an environmental impact statement ("EIS") for the Rim Country Project ("project") of the Four Forest Restoration Initiative ("4FRI") in the Apache-Sitgreaves, Coconino and Tonto national forests. 81 Fed. Reg. 41,547-48. The Center for Biological Diversity ("Center") is a non-profit, public interest organization with more than 48,000 members dedicated to conservation and recovery of fauna and flora at-risk of extinction. As a founding stakeholder in the 4FRI, the Center is part of a broad social consensus that supports active restoration of ponderosa pine forest to improve resilience of ecological systems suffering chronic stress that results from effects of past management and climate change.		Project support
2	**Purpose and need** There need for ecological restoration of dry conifer forests in northern Arizona is clear. Management that followed European settlement in the mid-19th century made forests less resilient to natural disturbance. Logging destroyed large trees that naturally resist fire injury. Livestock grazing and fire exclusion promoted forest structure packed with small trees that compete with other native plants for limited water and soil nutrients. Herbivorous animals and their predators suffer as a result. Chronic drought		The intent of treatments is to restore the forests in the Rim Country project area to a state where they have increased resiliency and can benefit from, rather than sustain damage from, naturally-occurring fires. The location and intensity of restoration activities will be discussed and analyzed in the Rim Country EIS and specialist reports. However, with the flexible toolbox approach, some of this analysis will not be site-specific but based on criteria developed to determine intensity and

	and warming temperatures make it increasingly likely that extensive stand-replacing fires will compound these changes to ecosystem composition with vegetation type conversions. Without action to restore the fire regime and recover mature forest structure, the Forest Service manages for high-intensity fires that outrun suppression resources in extreme weather, creating unnecessary expense and unacceptable risk to human life and resource values. Logging, livestock grazing and fire exclusion created the conditions that now require ecological restoration (Covington and Moore 1994). Climate change underlines the urgency of restoration (Seager and Vecchi 2010, Williams et al. 2010). To accomplish restoration in dry conifer forests, dormant fire regimes must be revived (Allen et al. 2002, DellaSala et al. 2004, Falk et al. 2006, Noss et al. 2006). Benefits of fire should be central to the purpose and need of the project. A coherent restoration strategy will identify opportunities to use fire at landscape and watershed scales, and then prescribe site-specific vegetation treatments that support the strategy (Peterson and Johnson 2007). The Center has repeatedly commented to the Forest Service in context of similar projects that it is necessary to inform proposed actions with landscape-scale assessment of opportunities to manage unplanned natural ignitions for resource benefits. Vegetation treatments must be efficiently located and prioritized to support fire use in the long-term. We expect the Forest Service to supply in the EIS reasons why the location, timing and intensity of proposed actions will support a coherent restoration strategy. Vegetation treatments may improve options for ecological restoration, but they do not guarantee a positive result (*e.g.*, Brown et al. 2004, Elliot et al. 2010, McGlone et al. 2009, Mitchell et al. 2009, Naficy et al. 2010). The EIS should candidly assess how the proposed action may fail to meet the purpose and need. For example, if treatments increase the effectiveness of fire suppression then the EIS should disclose potentially significant impacts to the environment that may result (Backer et al. 2004).		spatial distribution of treatments. The timing of treatments will be determined during implementation. In the Proposed Action, prescribed fire is proposed for the entire project area where mechanical vegetative treatments are proposed. The decision of whether to implement prescribed fire or mechanical treatments first would be based on priorities, expected fire behavior and effects, burn windows, contracting needs and concerns, and available resources. Design features will be included for the action alternatives to increase the flexibility in implementing both prescribed fire and mechanical treatments. The order (sequence) in which different areas are treated is not a NEPA decision, but is made at the local level, based on time and site-specific conditions. If this kind of sequencing was included in the NEPA analysis, it would decrease both the temporal and spatial flexibility for implementation of mechanical and prescribed fire treatments. For example, if the NEPA specifies that Area A will be cut before Area B, and Area A has a storm event that washes out some roads, Area B would still not be available for treatment until Area A could been treated, or until the roads could be repaired. Or if the NEPA specifies that a large area must be thinned before it is burned, or burned before it is thinned, and contracting doesn't go smoothly or burn windows don't occur as expected, areas could be tied up for long periods of time with no options for treatments.
3	**Fuel treatments**		The Rim Country EIS, in a similar fashion as the 1st 4FRI EIS, will address surface fuel loading, canopy base height,

	The intensity of wildland fire behavior and the severity of its physical and biological effects depend, in part, on fuel properties and their spatial arrangement. Fuel bed structure is central to an effective management strategy because it influences fire spread potential (Graham et al. 2004). All things equal, the bulk density of ground fuels (*e.g.*, grasses, shrubs, litter and duff, and downed woody material) influences surface fire behavior more than fuel load (*i.e.*, weight per unit area) (Agee 1996, Sandberg et al. 2001). In turn, the intensity of surface fire behavior dictates the likelihood of tree crown ignition and torching behavior (Scott and Reinhardt 2001). In our observation, the Forest Service has never distinguished ground fuel density and fuel load in environmental analysis of potential fire behavior, and it should clearly distinguish the two in this EIS to ensure professional integrity. The density, composition and structure of live fuels above the ground, namely tall shrubs and small trees, also affect potential fire behavior as "ladders" that facilitate vertical fire spread from the ground surface into tree canopies. The size of the spatial gap that separates ground fuel and ladder fuel from crown fuel strongly influences crown ignition potential (Graham et al. 2004). Van Wagner (1977) established that torching crowns (*i.e.*, passive crown fire) can develop into running canopy fires (*i.e.*, active crown fire) only if the rate of horizontal fire spread exceeds a crown fuel density threshold that varies with slope angle and wind speed. Predictions about fuel treatment effects to crown fire hazard (*i.e.*, potential for active crown fire) depend on measurement of crown bulk density (Perry et al. 2004). In our observation, the Forest Service has never validated its assumptions about potential fire behavior with site-specific analysis of crown bulk density, canopy base height, slope position and angle, and prevailing wind patterns. It should ensure professional integrity with accurate sampling and reporting of field data to corroborate assumptions, and clearly explain the methodology applied to modeling of potential fire behavior. We encourage the Forest Service to model fire behavior in at least two different weather scenarios (*e.g.*, 80th and 95th percentile conditions) to compare the effects of action alternatives and support an informed decision.		and canopy bulk density for every alternative, including an explanation of why percentile weather is not a recommended method of modeling fire behavior. An analysis of crown bulk density, canopy base height, slope position and angle, and prevailing wind patterns will be included in the Rim Country EIS and Fire Ecology and Air Quality Report, some in great detail and some as part of a discussion. There will be iterative review of the modeled fire behavior to validate assumptions with these measurements. Fuel models, one tool used to assess potential fire behavior and effects, include packing ration, SAV, extinction moisture, and fine fuel load (Scott & Burgan 2005). The references cited and their findings will be reviewed with all other published science and other historical references for relevancy.

	Accurate assessment of vegetation treatment effects on the likelihood of crown fire ignition and spread requires the Forest Service to consider: (1) surface fuel density and arrangement, (2) canopy base height, (3) crown bulk density, (4) local topography, and (5) prevailing weather patterns (Graham et al. 2004, Hunter et al. 2007). The first three factors can be managed to affect the likelihood of crown fire ignition and spread without resort to large tree removal (Fielder and Keegan 2002, Keyes and O'Hara 2002, Perry et al. 2004, Pollett and Omi 2002). Omi and Martinson (2002) measured effects of vegetation treatments on fire severity and correlated canopy base height with "stand damage" by wildfire. Importantly, that study did <u>not</u> detect any correlation of crown bulk density with observed fire effects: [H]eight to live crown, the variable that determines crown fire initiation rather than propagation, had the strongest correlation to fire severity in the areas we sampled ... [W]e also found the more common stand descriptors of stand density and basal area to be important factors. But especially crucial are variables that determine tree resistance to fire damage, such as diameter and height. Thus, "fuel treatments" that reduce basal area or density from above (i.e., removal of the largest stems) will be ineffective within the context of wildfire management. Omi and Martinson (2002: 22). The Center has repeatedly commented based on these findings, which were funded by and reported to the Joint Fire Science Program, and other peer-reviewed research that large trees promote fire resistance in treated stands (Arno 2000) and treating fuels "from below" by increasing canopy base height "yields the most direct and effective impact" to potential fire behavior (Keyes and O'Hara 2002: 107). Omi and Martinson (2002) also noted the incompatibility of open forest conditions created by vegetation treatments designed to maximize horizontal discontinuity of canopy fuels with equally important objectives to conserve habitat for sensitive wildlife and prevent rapid understory initiation and ladder fuel development. The EIS should give due attention to these important factors.		
4	Mechanical logging operations usually create large quantities of activity-created slash fuel by relocating tree stems, branches and		Most of the mechanical thinning will be implemented with whole tree removal. Biomass utilization will be promoted,

	needles from the canopy to the ground surface (Graham et al. 2004, Stephens 1998, van Wagtendonk 1996). Logging slash promotes more intense fire behavior than any other fuel type (*e.g.*, Dodge 1972, Stephens and Moghaddas 2005). According to the Congressional Research Service, Timber harvesting removes the relatively large diameter wood that can be converted into wood products, but leaves behind the small material, especially twigs and needles. The concentration of these "fine fuels" on the forest floor increases the rate of spread of wildfires. Thus, one might expect acres burned to be positively correlated with timber harvest volume. The proposed action may add 15 tons per acre of slash fuel to the ground surface, or more, depending on pre-treatment forest structure, and make unplanned wildfires more difficult to control where activity fuels are not effectively managed. Van Wagtendonk (1996) modeled the effectiveness of "low thinning" combined with a pile-and-burn slash treatment on flat ground. It yielded nearly identical fire behavior as thinning without <u>any</u> slash treatment because surface fuels that existed prior to the treatment were not reduced. In the same simulation, lop-and-scatter treatments of logging slash "significantly increased subsequent fire behavior" by leaving on the ground a dense surface fuel bed (van Wagtendonk 1996: 1160). Activity slash fuels may persist for decades: In both even aged and un-even aged treatments, it is often assumed that harvest related slash will decompose over time thereby reducing fire hazards. In reality, logging slash may persist for long periods, and therefore, will influence fire hazards for extended periods. Rates of woody fuel decay are highly variable (Lahio and Prescott, 2004). The rates of decomposition of understory fuels are primarily dependant upon several factors including temperature, soil moisture, insect activity, and material size (Lahio and Prescott, 2004). Decaying conifer activity fuels have been reported to persist for 30 years in xeric forest environments (Stephens, 2004). (Stephens and Moghaddas 2005: 377). To solve the dilemma posed by creation of slash fuel in mechanical vegetation		expected, and analyzed. A certain amount of coarse woody debris will be left on site for wildlife, watershed, erosion control, regeneration micro-sites, and nutrient recycling. However, the Rim Country analysis will not specify particular harvest systems. Design features will be developed by fuels specialists to ensure fuel loads are not increased by thinning operations. Management of "activity fuels" will be discussed in the Rim Country Fire Ecology and Air Quality Report. The potential effects of residual fuels following mechanical treatments, as well as the potential effects of leaving slash on the ground will be addressed in the Rim Country EIS and the Fire Ecology and Air Quality Report. Prescribed fire is proposed on all acres of mechanical thinning and most of the rest of the Rim Country project area. The intent of restoration is not to remove fire from the landscape, but to return fire to the landscape as frequent low-severity fires. All treated acres are planned to have two prescribed fires, the first entry and at least one maintenance burn. Timing would be an implementation decision, based on BMPS, mitigations, and design features. Potential effects from surface fuel loading will be modeled for the Rim Country analysis. Forest plan direction does not quantify surface fuel loading, except as it applies to soil and wildlife as coarse woody debris, or by the response of ecosystems to disturbance (including restoration treatments). The potential effects of residual fuels following mechanical treatments (Fulé et al. 2012), as well as the potential effects of leaving slash on the ground, are well known. These will be addressed in detail in the Fire Ecology and Air Quality Report. Grass fuels, historically the dominant fuel type (with some needles), produce a fast, flashy fire that produces the majority of the effects beneficial to ponderosa pine and dry mixed conifer cover types.

	treatments, prescribed burning is recommended as the only treatment that effectively reduces activity fuels and pre-existing surface fuels below the pre-treatment condition (Stephens 1998, van Wagtendonk 1996). Burning is uniquely effective because fire consumes the finest and most ignitable woody fuels that pose the greatest hazard of fire ignition and spread (Deeming 1990). In the proposed action, much but not all of the project area would be treated by prescribed fire. The EIS should describe the intensity and timing of proposed activity slash fuel treatments and candidly disclose the effectiveness of treatment options. The Center will object to a draft decision that includes mechanical-only vegetation treatments uncoupled to burning because they will make fires more erratic and difficult to control, endanger public safety, and undermine the purpose and need.		The FS agrees that mechanical-only vegetation treatments without prescribed burning would not meet the purpose and need of the Rim Country Project.
5	The EIS should disclose potentially significant effects of the proposed action to public health and safety, including wildland fire control efforts (*e.g.*, Backer et al. 2004). It should give a hard look to post-logging fuel density and structure, and characterize fire hazard at fine scales, particularly on steep slopes where prescribed fire may not be used, rather than generalizing them across the project area. Again, analysis assumptions should be corroborated by site-specific data collected in the field, and the methodology applied to modeling potential fire behavior should be clearly described in plain English so that the public may meaningfully comment. The direction of potential fire spread (*i.e.*, backing, flanking or heading) is an important consideration in treatment design because fire interacts with weather, topography and vegetation to "back" and "flank" around certain conditions, or "head" through others, with distinctive environmental effects (Graham et al. 2004). For example, steep slopes facilitate wind-driven convection currents that drive radiant heat upward and bring flames nearer to unburned vegetation, pre-heating fuels and amplifying fire intensity as it heads upslope (Whelan 1995). Severe fire effects often concentrate at upper slope positions and on ridges, but are relatively rare on the lee side of slopes that do not directly receive frontal wind (Finney 2001). Therefore, fuel treatments should be oriented with prevailing spatial patterns of fire spread in mind. Fire behavior modeling is helpful at illustrating potential fire spread patterns, but it must be		The potential effects of restoration activities on public health and safety, post-treatment fuel density and structure, and fire hazard, as well as discussions of analysis assumptions, and the strategic locations of fuel treatments will be addressed in the Rim Country EIS and Fire Ecology and Air Quality Report. Fuel treatments should be designed to best mimic the historic structure...which would align with the general fire bx (fire paths). Fire paths could be modeled, and could help inform treatments but, like all modeling, would only be as good as the inputs available. Northerly and northeasterly slopes have heavier fuels, so when they do burn with a headfire (it can, and often does, hook around), the severity is likely to be higher and the burn more intense.

	corroborated by site-specific field data. Modeling is such a technical exercise that its inclusion in an EIS may defeat the purpose of NEPA if its methodology is not clearly explained. Overlapping fuel treatments that reduce fuel continuity can fragment severe fire effects into small patches if they disrupt heading fire behavior and maximize the area burned by flanking and backing fires (Finney 2001). Slope aspects facing away from frontal or diurnal winds are a lesser treatment priority because backing fires are the most likely to exhibit mild intensity and effects, consistent with the purpose and need. An additional approach to the strategic location of fuel treatments is to identify landscape features that are currently resistant to severe fire effects and use them as anchor points for a landscape fire management strategy. Such features may include natural openings, meadows, open ridges, riparian areas, mature forest patches on gentle slopes, and areas where fuel treatments already have been completed. Using those features to support fire use will maximize the efficiency of restoration efforts. Moreover, identification of those features in the design of vegetation treatments will facilitate emergency application of confinement and containment strategies as alternatives to full control, and provide safe areas for workers to ignite prescribed fires for hazard reduction. The EIS should consider such factors.		
6	**Desired conditions** This project is the first instance when desired conditions advanced by the revised Forest Plan for the Apache-Sitgreaves National Forests (USDA 2015a) and site-specific treatment prescriptions developed by the Forest Service have surfaced for public discussion in the context of the 4FRI. Because the desired conditions of the Forest Plan are new, and never were subject to collaborative planning by the 4FRI stakeholders, they merit a hard look in the EIS at effects to the environment with comparison of reasonable alternatives, as described below. According to the environmental impact statement supporting the revised Forest Plan for the Apache-Sitgreaves National Forests (USDA 2015b), desired conditions for ponderosa pine and dry		The Apache-Sitgreaves NF (USDA 2015a) had an extensive public involvement and comment period. On July 13, 2016, the Apache-Sitgreaves NF received a decision on the appeals of the Final EIS and Record of Decision (ROD) for their revised Forest Plan. The Rim Country Project analysis will be consistent with the A-S Forest Plan. The desired conditions for the A-S Forest Plan come from many scientific sources. The plan was not specifically written from, by, or for GTR-310 (Reynolds et al. 2013). GTR-310 is one of many scientific sources used regarding restoration, reference conditions, and desired conditions. The literature cited in Table 4 (and the lengthy references section) of Reynolds et al, 2013 is extensive and, as the

	mixed conifer forest come from an item of grey literature (Reynolds et al. 2013) that the Forest Service never subjected to blind peer review. Most of the information used by Reynolds and others (2013) to describe desired conditions for dry conifer forest comes from studies accomplished on the Mogollon Plateau south of the Colorado River (*e.g.*, Abella and Denton 2009, Bakker and Mast 2007, Biondi 1996, Fulé et al. 1997, Mast et al. 1999, Pearson 1950, Sanchez Meador et al. 2009, Sanchez Meador et al. 2010, Sanchez Meador et al. 2011, White 1985), in eastern Arizona, New Mexico and southern Colorado (*e.g.*, Boyden et al. 1995, Brown and Wu 2005, Cooper 1960, Cooper 1961, Swetnam and Baisan 1996), or else outside of the Southwestern Region (*e.g.*, Larson and Churchill 2012, Mast and Veblen 1999, Taylor 2010, Taylor and Skinner 2003, Woodall 2000). The body of information used by Reynolds and others (2013: 12-13; Table 4) speaks for itself. Reynolds and others (2013: 12) admit uncertainty about desired (or "reference") conditions for dry conifer forest resulting from a paucity of supporting information and geographic imbalance of accessible data: [T] here is a clear need for additional reference condition data sets, including sites from a wider spectrum across environmental gradients (e.g., soils, moisture, elevations, slopes, aspects) occupied by frequent-fire forests in the Southwest, especially in dry mixed-conifer. While the quantity of reference data sets is increasing, existing data represent a largely unbalanced sampling across gradients (e.g., most data sets are from basaltic soils and on dry to typic plant associations), and there have been few studies quantitatively examining and reporting spatial patterns of trees and the sizes and shapes of grass-forb-shrub interspaces. Their approach to managing uncertainty is to *blur* site-specific forest variation and *scale up* reference conditions to broad landscapes with a generic "natural range of variability" (Reynolds et al. 2103: 11): The natural range of variability can be estimated by pooling reference conditions across sites within a forest type. Reference conditions for a forest type typically vary from site to site due to		abstract clearly represents, it covers frequent fire forests of "Arizona, New Mexico, southwest Colorado, and southern Utah." There is further current research into the reference conditions of the dry conifer complex of forests. All relevant literature will be reviewed in the Rim Country EIS and Silviculture Report. Discussions of "scale" are not intended to "blur" forest variation, but instead are to enhance the understanding of the variability that exists. The Rim Country analysis will discuss moving toward the forest plan desired conditions at three scales: fine-, mid-, and landscape scales. Reynolds et al (2013) acknowledges the importance of 'scale' on page 10: "Inferences about patterns and processes in forests are contingent upon the scale at which they are investigated. For example, a fine-scale model for ponderosa pine regeneration showed that the majority of the variance (76 percent) in seedling density was explained by properties such as soil texture and pH, precipitation, seed tree proximity, and composition of the plant community (Puhlick and others 2012). However, at the mid- to landscape-scale, models including abiotic conditions and tree density at this broader scale accounted for less (USDA Forest Service RMRS-GTR-310. 2013), of the variability in observed seedling densities (only 13 percent)" (Puhlick and others 2012). And page 11 pf GTR 310 states: "Spatial heterogeneity can exist at any scale, and the value of metrics used to assess forest conditions varies in usefulness with scale. At mid- and landscape scales, elements such as single tree and group density become less useful as a metric and elements such as patches, the grass-forb-shrub matrix, stand density, canopy cover, and basal area become more appropriate." Pooled data is an appropriate method to describe the Natural Range of Variation when discussing the range of differences within an ecosystem and not describing their averages. The NRV is not a static single figure but a range.

	differences in factors such as soil, elevation, slope, aspect, and micro-climate and manifests as differences in fire effects, tree densities, patterns of tree establishment and persistence, and numbers and dispersion of snags and logs. When pooled, these sources of variability comprise the natural range of variability of a site or forest type. The structure and composition of dry conifer forest is influenced by available moisture and soil chemistry (Abella and Covington 2006), as well as by variations in fire frequency mediated by topography, weather and climate (Odion et al. 2014, Swetnam and Baisan 1996, Williams and Baker 2012). It follows that variability of forest structure, composition and disturbance pattern is place-specific and cannot be generalized over broad landscapes or timeframes (Agee 1993, DellaSala et al. 2004). Ecologists stress the importance of locally-specific reference conditions to justify restoration goals and monitor outcomes recognizing that ecological patterns and need for restoration are scale-dependent (Noss 1985, Swetnam et al. 1999, White and Walker 1997). Desired conditions for dry conifer forest in the revised Forest Plan for the Apache-Sitgreaves National Forests (USDA 2015a) are <u>not</u> specific to the project area. They fail to address scientific uncertainty and qualified disagreement among experts about forest ecology and management in the Southwestern Region (*see* USDI 2015b). In particular, desired conditions advanced by the new Forest Plan do not: (1) account for historical variability in forest structure, composition or pattern, (2) establish a scientifically credible reference condition for restoration, or (3) prioritize management actions that will facilitate ecological restoration of fire-adapted forest ecosystems. Indeed, close inspection of place-specific information reveals that Reynolds and others (2013) selectively interpreted it to make a poorly supported case for sustained mechanical intervention (*i.e.*, logging) as a surrogate for restoration of natural fire regimes. It is appropriate to test the applicability of Forest Plan desired conditions to the project area with available information that documents its ecological distinctiveness.		The Apache-Sitgreaves Forest Plan is specific to the Rim Country project area and the dry conifer forests isnide the boundaries of the A-S National Forest. Any perceived failures of the A-S Forest Plan were best discussed and brought forward during the public comment and appeal periods for that planning effort. This comment is outside the scope of the Rim Country Project Proposed Action. The Rim Country EIS, as a project-level analysis, will tier to the A-S Forest Plan. Odion et al. 2014 will be reviewed along with all other relevant literature on historical forest structure and function in the Rim Country EIS and Silviculture Report.

	Williams and Baker (2012) quantified forest structure and disturbance patterns in dry conifer forest of the project area using historical land survey data and corroborated the findings with information from tree ring studies. They determined that ponderosa pine forest was structurally variable in 1880, and "park-like" only on some of the Mogollon Plateau and Black Mesa landscapes in the project area. A mixed-severity fire regime was common prior to 1880, and contemporary fires that include severe physical and biological effects to vegetation and soil are not outside of the natural range of variability (Odion et al. 2014, Williams and Baker 2012). That reconstruction of landscape pattern based on General Land Office ("GLO") survey data more extensively sampled the Mogollon Plateau than any other landscape in the western United States (area = 405,214 ha) (Williams and Baker 2012: 5 (Table 1)). In 1880, approximately 25 percent of the Mogollon Plateau and Black Mesa landscapes (area = 151,080 ha), respectively, exhibited dry conifer forest with tree densities exceeding 178 stems per hectare (72 trees/acre). Dense forest structure was evenly distributed across each landscape and only somewhat concentrated on the southeast portion of the Mogollon Plateau (Williams and Baker 2012: Fig. 2). Notably, dense forest (>178 stems/ha^{-1}) on parts of the Mogollon Plateau coincided with observed "high" severity fire effects on vegetation (Williams and Baker 2012: Fig. 3). Observable severe fire effects also occurred in areas with lower tree density on the northwest portion of the Black Mesa landscape. An implication of this research is that desired conditions in the new Forest Plan (USDA 2015a) may inappropriately generalize historical structure, composition and fire regime of ponderosa pine and dry mixed conifer forest in the project area. Another implication is that desired conditions in the Forest Plan overlook the ecological importance of the mixed-severity fire regime that preceded European settlement of the project area (DellaSala and Hanson 2015, Odion et al. 2014). Climate warming and chronic drought will produce novel environmental conditions in the project area that have not been observed from dendrochronological records (Seager and Vecchi 2010, Williams et al. 2010). Moreover, invasion of annual		

	grasses accelerated by forest management will, in some instances, cause ecosystem structure, composition and dynamics to diverge from desired conditions (Bradley 2009, Brooks et al. 2004, McGlone et al. 2009). Therefore, it is reasonable to expect new biotic adaptations to climate change (Malcolm et al. 2002, Millar and Woolfendon 1999, Reinhardt et al. 2008, Seager et al. 2007, Weng and Jackson 1999). Ecological restoration oriented to attainment of historical conditions is not sustainable (Millar and Woolfendon 1999, Noss et al. 2006, Swetnam et al. 1999). Johnson and Duncan (2007) propose a "future range of variability" to account for inevitable ecological change as disturbance regimes and vegetation patterns track climate trends. An active fire regime will regulate ecosystem structure and composition in equilibrium with climate (Falk et al. 2006). Current forest density and composition are not likely to persist in the emerging environment because climate warming and weed invasions also make extensive stand-replacing fires more likely to occur (Running 2006). However, the degree to which inevitable change merits intensive manipulation of forest structure by mechanical means, as proposed in this project, is not certain (*e.g.*, Naficy et al. 2010, Odion et al. 2014). Structure and composition of fire-adapted forests reflect underlying ecological processes (Allen et al. 2002, Falk et al. 2006). Current unsustainable conditions reflect the absence of natural fire disturbance (Covington and Moore 1994). Therefore, fire use should be the desired condition (Brown et al. 2004, DellaSala et al. 2004). In other words, desired conditions for dry conifer forest should emphasize resilience to inevitable fire disturbance that will increase in frequency and severity as climate exhibits a warming trend (McKenzie et al. 2004, Seager et al. 2007, Seager and Vecchi 2010, Weng and Jackson 1999, Westerling et al. 2006, Williams et al. 2010). A process-centered approach to restoration (*e.g.*, Falk et al. 1996) is more likely to accomplish the purpose and need than one that mimics imagined structural patterns of a historic condition (*e.g.*, Reynolds et al. 2013).		
7	Fulé and Laughlin (2007) quantified effects of wildland fire use to forest structure and composition on the Kaibab Plateau in northern Arizona, outside of the project area. The Fire		Direction in the management of wildfires is outside the scope of this project, though it is expected that management activities for the Rim Country Project would

	Management Plan of Grand Canyon National Park (USDI 2009) emphasizes fire use to accomplish resilience of natural systems and restricts mechanical tree harvesting to a limited area designated as "interface." Fulé and Laughlin (2007) determined that fire use events in 2003 affected sufficient area to permit reliable statistical inference that physical and biological effects resulting from naturally-ignited wildfires supported reference conditions for ponderosa pine forest. They noted significant reductions of tree density, canopy cover and fuel load on burned sites compared to sites that did not burn. Those results demonstrate that "thinning effects" of fire in ponderosa pine forest, even after fire had been excluded since 1880, was consistent with restoration objectives related to forest structure (Fulé and Laughlin 2007: 144). Scientifically credible reference conditions for ecological restoration of dry conifer forest include a mosaic of tree patches of variable ages, sizes and densities, a robust and diverse herbaceous understory, frequent low-intensity surface fires ignited by lightning, and occasional stand-replacing fires at mid-scales (~10 to 100 acres). Management of ponderosa pine forest should reduce density of trees in smaller size classes that emerged due to management history, disrupt vertical connectivity in forest canopies (*i.e.*, canopy base height) at site and mid-scales (1 to 100 acres) to minimize torching fire behavior, restore surface fire with expectation of <u>some</u> active canopy fire behavior at mid-scales, and increase herbaceous ground cover. Reference conditions for ponderosa pine forest outlined here differ from desired conditions in the revised Forest Plan for the Apache-Sitgreaves National Forests (USDA 2015a), which rely on Reynolds and others (2013). The biggest difference is that the Forest Service proposes intensive mechanical treatments, whereas this analysis agrees with the National Park Service (USDI 2009) and Fulé and Laughlin (2007) that fire use can be effective as a primary management tool in ponderosa pine forest where existing forest structure is fire resistant (*i.e.*, in large tree groups) despite a history of management-imposed fire exclusion. Mixed conifer forest is transitional among ponderosa pine and spruce-fir communities. With inherently diverse species		increase the decision space for line officers when making decisions on how to manage wildfires. This will be addressed in more detail in the Rim Country EIS and Fire Ecology and Air Quality Report.

	composition and structure, mixed conifer forests exhibit an intermediate fire regime including low-severity surface fires and stand-replacing fires that maintain a patchy mosaic of forest structure over broad scales (Odion et al. 2014, Williams and Baker 2012). According to Fulé and others (2003: 483-484), the fire regime of mixed conifer forest varies by slope and aspect at very small spatial scales: The transition zone studied here, changing from surface to stand-replacing fires, may be the most complex case for fire regime reconstruction ... [E]ven if we were fully able to reconstruct the details of every fire from 1700 to 1879, the pattern of severe burning did not appear to be stable over the spatial and temporal scale of the study. These considerations imply that managers may be best advised to view the historical condition in high-elevation southwestern forests as a relatively general guide to reference conditions, in contrast to the more specific and temporally stable reference data available for lower-elevation ponderosa pine forests.		
8	Elevated density of small, shade-tolerant, and fire-intolerant tree species (*e.g.*, white fir) is an artifact of fire suppression in some mixed conifer forests that creates more homogenous forest structure and promotes high-intensity fire behavior in extreme weather conditions (Fulé et al. 2003), but the effect of fire suppression is not uniform at mid-scales (10 to 100 acres). We recommend limiting vegetation treatments in mixed conifer forest to the driest sites (*i.e.*, south and west aspects) where fire suppression is most likely to have changed forest composition and structure relative to natural rotation in the fire regime. Treatments should reduce the density of small stems of shade-tolerant species and increase canopy base height to disrupt vertical fuel continuity so that surface fires are less likely to initiate crown fires. More aggressive treatments in mixed conifer forest, particularly at mesic locations (*e.g.*, north aspects and riparian areas) are almost certain to degrade recovery habitat of threatened Mexican spotted owl with uncertain and controversial effects to conservation and recovery of that species (USDI 1995, USDI 2012).		The species composition of trees, shrubs, and surface vegetation in the Rim Country project area has shifted due to fire suppression. Mechanical treatments will be designed for frequent low-severity fire ponderosa pine and dry mixed conifer ecosystems. Many of our dry mixed conifer stands are located on south-facing slopes, but not all. The Rim Country Project is not proposing silviculture treatments to meet restoration desired conditions for the wet mixed conifer ecosystems.
9	**Large trees**		The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country

Large trees that historically dominated forest structure in the project area were destroyed by past logging (Covington and Moore 1994). The ecological significance of large trees is amply documented (*e.g.*, Friederici 2003, Kaufmann et al. 1992). Large tree removal is not necessary to accomplish restoration of fire-adapted forest ecosystems (Arno 2000, Allen et al. 2002, Brown et al. 2004, Noss et al. 2005). Indeed, it is counterproductive.

Live conifer stems larger than 16-inches diameter are rare at a landscape scale. Trees larger than 16-inches diameter comprise approximately three percent (3%) of ponderosa pine forests in Arizona and New Mexico, according to Forest Service data (USDA 1999, USDA 2007). The same data indicate that more than eighty-two percent (82%) of ponderosa pines in the region are smaller than 11-inches diameter; approximately ninety-six percent (96%) are smaller than 15-inches; and less than one-tenth of one percent (.01%) are larger than 21-inches (Table 1). Clearly, the size distribution of trees is heavily skewed toward small-diameter stems, and this condition is dramatically different from historical conditions (Fulé et al. 1997).

Table 1. Tree size class distribution in southwestern ponderosa pine

Size class	Distribution
< 11 inches dbh	82%
< 15 inches dbh	96%
> 16 inches dbh	3%
> 21 inches dbh	0.1%

Source: Forest Inventory and Analysis National Program Forest Inventory Data Online (FIDO). http://www.fia.fs.fed.us/tools

Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies.This will be fully discussed in the Rim Country EIS and Implementation Plan.

Large trees, 16” in diameter and larger, are not rare in the Rim Country project area. Ponderosa pine trees 16” or more currently represent 35.5% of the ponderosa pine basal area. 27% of the ponderosa pine basal area is in trees larger than 24” in diameter.

The figures presented by the commenter represent older FIA data across the entire region (Arizona and New Mexico) and do not represent the current conditions within the Rim Country project area.

The commenter is correct that, on a trees-per-acre basis, there is an abundance of small trees that are above the NRV.

The Large Tree Implementation Strategy and Old Tree Implementation Strategy as collaboratively designed in the 1st 4FRI EIS are being carried forward to the Rim Country Project as agreed. The original Old Growth Protection and Large Tree Retention Strategy (OGP/LTRS) as developed by the 4FRI Stakeholder Group will be evaluated and considered more directly in the Rim Country EIS or through these strategies.

We agree that large trees are a valuable component of the forest ecosystems being analyzed for restoration treatments in the Rim Country project area. Concerns about large trees relating to fire treatments will be addressed in more detail in the Rim Country Fire Ecology and Air Quality Report.

	The Forest Service should develop action alternatives that generally retain large trees. The agency is in possession of the collaborative *Old Growth Protection and Large Tree Retention Strategy* ("Strategy") developed by public stakeholders, including the Center, for implementation in 4FRI projects. The Strategy is an "agreement-based outcome and product" developed in recognition that "translation of such agreement greatly enhances chances for success, and reduces the risk of conflict." Given the enormous commitment of stakeholder time and energy to development of the Strategy, and its clear relevance and applicability to the project area, it is reasonable to develop action alternatives based on the Strategy. The Strategy is a reasonable alternative in this project for three reasons. First, it meets the purpose and need by actively managing hazardous fuels and forest structure, and it specifically allows for removal of large trees in limited circumstances, as distinct from a broad "diameter cap."[1] Second, the Strategy avoids significant cumulative impacts that may result from unnecessary removal of fire-resistant trees, which are deficient compared to historic conditions (Covington and Moore 1994, Fulé et al. 1997, USDA 1999, USDA 2007). Finally, it mitigates adverse effects to wildlife species that require closed canopy forest habitat for essential life behaviors. Retention of large trees is fundamentally important to fire resistance of treated stands (DellaSala et al. 2004). Large ponderosa pine trees feature relatively thick bark and insulated buds that promote resistance to heat injury (Weaver 1951). Mature ponderosa pines feature high branch structure and open canopies, which discourage torching behavior (Keeley and Zedler 1998). Moreover, large ponderosa pine trees are capable of surviving crown scorch (McCune 1988). Therefore, large tree structure enhances forest resilience to severe fire effects (Arno 2000, Omi and Martinson 2002, Pollett and Omi 2002), whereas removing them may undermine fire resilience (Brown et al. 2004, Naficy et al. 2010). Large trees are the most difficult of		

[1] The 4FRI stakeholders expressly developed the Strategy to avoid reliance on strict diameter-limits while addressing the significant issues of old growth protection and large tree retention in ponderosa pine and mixed conifer forest restoration treatments. The Strategy identifies circumstances, ecological objectives and selection criteria for cutting large trees under site-specific conditions.

	all elements of forest structure to replace once removed (Agee and Skinner 2005). Research demonstrates no advantage to fire hazard mitigation resulting from treatments that remove large trees compared to treatments that retain them. Modeled treatments that removed only trees smaller than 16-inches diameter were marginally more effective at reducing long-term fire hazard than so-called "comprehensive" treatments that removed trees in all size classes (Fiedler and Keegan 2003). Thinning small trees and pruning branches of large trees to increase canopy base height significantly decreased the likelihood of crown fire initiation in many studies (Graham et al. 2004, Keyes and O'Hara 2002, Omi and Martinson 2002, Perry et al. 2004, Pollett and Omi 2002). Crown fire initiation is a precondition to active crown fire behavior (Agee 1996, Graham et al. 2004, Van Wagner 1977). Therefore, low thinning and underburning to reduce surface and ladder fuels at strategic locations will effectively reduce fire hazard at a landscape scale and meet the purpose and need. A variety of factors other than logging may affect the persistence of large trees. Prescribed fire can injure tree roots that have migrated into accumulated duff layers and cause post-treatment mortality among large trees (Sackett et al. 1996). Burning of pine stands with high surface fuel density (*e.g.*, slash fuel) can result in large tree mortality due to cambial injury (Hunter et al. 2007). High-intensity burns also may render large trees susceptible to delayed bark beetle infestation (Wallin et al. 2003). In addition, large standing dead trees ("snags") and downed logs supply critical habitat for wildlife and may be destroyed by fuel treatments (Hunter et al. 2007). Where such treatments create coarse woody debris by killing live trees, gains generally do not offset losses, as existing coarse wood is irretrievably destroyed (Randall-Parker and Miller 2002). Recruitment of large live trees will become more limiting over time as climate change imposes chronic drought resulting in reduced tree growth rates and more widespread tree mortality (Diggins et al. 2010, Savage et al.1996, Seager et al. 2007, van Mantgem et al. 2009, Williams et al. 2010). A large tree retention alternative based on the collaborative Strategy		

	discussed above will maintain trees that are most likely to survive fire injury, improving fire resilience, and will supply recruitment potential for old growth habitat in the future. Finally, large tree removal reduces forest canopy and diminishes recruitment of large snags and downed logs, which in turn affects long-term forest dynamics, stand development and wildlife habitat suitability (Quigley et al. 1996, Spies 2004, van Mantgem et al. 2009). If the proposed action includes significant reduction of crown bulk density then it is highly unlikely that the project will maintain habitat for threatened and sensitive wildlife species associated with closed-canopy forest (Beier and Maschinski 2003, Keyes and O'Hara 2002, USDI 1995). A large tree retention alternative will maintain wildlife habitat in the short-term and mitigate adverse effects of vegetation treatments.		
10	**Old growth** Old growth forest differs in structure, composition and function from younger forests (Kaufmann et al. 1992). Old growth is the preferred habitat of many sensitive wildlife species and it supports a host of ecological services including watershed function, clean water, soil retention and storage of greenhouse gasses (*e.g.*, Luyssaert et al. 2008). Old growth dry conifer forest habitat consists of large trees with fire-resistant "plated" bark structure and tall canopies, snags with nesting cavities and broken tops valuable to wildlife, and structural diversity within stands. The 1996 Plan Amendment (USDA 1996) to the Forest Plans of the Coconino and Tonto national forests, respectively, includes standards and guidelines for old growth management. Each of those national forests must allocate 20 percent of each forested "ecosystem management area" to old growth habitat. To determine what habitat comprises old growth, the Forest Service established numeric criteria applicable to various forest types with different site capabilities and disturbance regimes that include the size, age and number of live trees and snags, as well as downed trees and canopy cover. In addition, the forest plans of the Coconino and Tonto national forests, respectively, require the Forest Service to analyze old growth habitat at multiple		Old growth forest structure is a natural component of uneven-aged management and is included in forest plans. Old growth retention and development will be discussed in the Rim Country EIS and Silviculture Report. The analysis for Rim Country will follow the Apache-Sitgreaves Revised Forest Plan (2015), the Coconino Draft Revised Forest Plan (2017), and the amended Tonto Forest Plan. The revised plans no longer allocate acres for old growth habitat, but instead describe old growth habitat as a natural occurrence in an uneven-aged management system, and that the old growth is not static, but moves around the landscape through time. Apache-Sitgreaves Revised Forest Plan: Old growth occurs throughout the landscape, in small, discontinuous areas consisting of clumps of old trees, or occasionally individual old trees. Other old growth components are also present including dead trees (snags), downed wood (coarse woody debris), and/or structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality) (pp. 44, 46).

	scales: (1) the ecosystem management area; (2) one scale above the ecosystem management area; and (3) one scale below the ecosystem management area. The Forest Service must analyze and disclose how many acres within each ecosystem management area currently meet the minimum numeric criteria for old growth habitat; assess potential impacts of proposed actions to old growth at the required scales; allocate no less than 20 percent of each management area to old growth; and must not log any old growth where the mandatory requirements are not met. The revised Forest Plan for the Apache-Sitgreaves National Forests (USDA 2015a) does not contain any of the standards and guidelines for old growth habitat discussed above. In effect, it rolled back management requirements that previously applied to those forests under the regional plan amendment (USDA 1996). As a result, old growth lacks substantive protection in the revised Forest Plan. The EIS supporting the new Forest Plan (USDA 2015b) did not consider or disclose environmental effects of changing the management approach to old growth. In contrast, the EIS supporting the regional plan amendment (USDA 1996) discussed reasons why it is important to constrain management discretion in order to conserve old growth habitat.		Coconino Draft Revised Forest Plan: Old growth structure occurs throughout the landscape consistent with vegetative characteristics of a frequent, low severity fire regime. Old growth is a component of uneven-aged forests, generally comprised of groups of similarly aged trees and single trees interspersed with open grass–forb–shrub interspaces, but occasionally, it occurs in larger even-aged patches where local microsites facilitate less frequent fire regimes. Within group variability may be low but variation among groups is typically high and proportions of patches with different developmental stages may vary depending on site-specific conditions. Old growth components include old trees, dead trees (snags), and dead and downed wood (coarse woody debris including large size classes). Snags and large dead and downed fuels are irregularly distributed across the landscape and may not exist in some patches. The location of old growth components shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality) (pp. 59, 65).
11	**Pinyon-juniper woodlands** Differently from the first 4FRI EIS significant acreages of pinyon-juniper woodlands (P-J) are being considered for mechanical treatment. Several scientific sources show that there are several kinds of P-J woodlands with different disturbance regimes and dramatically different natural conditions and ecological dynamics. Cutting in these woodlands should be considered in at least 2 different contexts. First, woodlands in a clearly defined wildland urban interface (WUI) should be considered with community protection as the primary objective. Outside the WUI it is important to determine the type of PJ being addressed and treatments should be tailored to deal with variation in type and disturbance regime. Not all P-J is invasive and not all should be removed under the guise of grassland "restoration".		The goal of 4FRI is to plan and implement restoration treatments across its 2.4 million acres of ponderosa pine forest, so we are constrained to treatments within frequent-fire cover types that include ponderosa pine. The pinyon-juniper and juniper cover types are not frequent-fire types targeted for restoration in the Rim Country Project. Facilitative operations are only proposed in this cover type where they are needed to support the safe and effective use of prescribed fire in adjacent target cover types. If fire managers cannot safely conduct prescribe fire operations within the woodlands then mechanical treatments may be considered to the extent necessary for firefighter safety or property protection. Treatments in the wildland urban interface (WUI) are a special case; the protection of lives and infrastructure is primary and mechanical treatments may be applied where necessary.

			Treating woodlands in the WUI is not part of the Rim Country analysis and is addressed in forest fire plans. Circumstances where woodland species are considered for removal will be fully discussed in the Rim Country EIS alternatives and analyzed in the EIS and SilvicultureReport. There are several types of juniper and pinyon/juniper woodlands in the Rim Country project area. Those acres of pinyon/juniper that may be treated mechanically in facilitative operations would only receive treatments that maintain current conditions, but may move the treated area toward the desired conditions defined in the forest plans. There are different kinds of pinyon/juniper systems, ranging from frequent low-severity fire regimes to infrequent high-severity regimes, with the associated vegetation structure and composition. This will be addressed in the Rim Country EIS andFire Ecology and Air QualityReport.
12	**Mexican spotted owl** On April 17, 2009, the Forest Service sought to reinitiate consultation with the U.S. Fish and Wildlife Service ("FWS") about effects to threatened and endangered species resulting from continued implementation of forest plans in the Southwestern Region. Its letter stated, "It has now become apparent that the Forest Service will likely soon exceed the amount of take issued for at least one species, the Mexican spotted owl." Moreover, "[I]t has become apparent that the Forest Service is unable to fully implement and comply with the monitoring requirements associated with the Reasonable and Prudent Measures for several species (including MSO) in the [biological opinion]." On June 22, 2010, the FWS formally reinitiated consultation with the Forest Service regarding effects to listed species from continued implementation of forest plans in the Southwestern Region. Pursuant to that reinitiated consultation on forest plan implementation, in 2012, the FWS produced 11 biological opinions and incidental take statements for Mexican spotted owl		Region-wide MSO monitoring across Region 3 (11 national forests, which contain the bulk of U.S. MSO habitat) began in 2014, utilizing a multi-state robust design occupancy model. Monitoring results will be incorporated into the Rim Country effects analyses as they become available and will be used to inform decisions regarding future treatments within MSO habitats. A working group was convened to design a study to evaluate the effects of vegetation treatments on MSO and its habitat on a broader scale. The group consists of subject matter experts, including representatives from the FS, FWS, Rocky Mountain Research Station, and MSO Recovery Team, in cooperation with the Center for Biological Diversity and other stakeholders. The group will analyze key questions related to characterizing the effects of vegetation treatments on MSO and its habitat and to identify the resources needed to evaluate these effects at the appropriate scale.

	("MSO"), each of which is specific to one national forest in the Southwestern Region, including the Apache-Sitgreaves, Coconino and Tonto national forests, respectively. The 2012 biological opinions and incidental take statements omitted mandatory terms and conditions which the Forest Service admitted on April 17, 2009 that it had violated. In particular, the 2012 opinions and statements of the FWS omitted the prior requirement to monitor MSO habitat and populations, and replaced it with a more modest expectation of reporting incidental take (*i.e.*, harm or harassment measured by the extent and timing of management disturbance to protected activity centers ("PAC")). More, the 2012 opinions of the FWS broke precedent and fragmented consultation on MSO to cover each national forest within the range of the Southwestern Region, with separate incidental take statements, rather than issuing one opinion that quantified allowable incidental take of MSO throughout the region. The Center subsequently determined from conversations with Southwestern Region biologists that they stopped tracking incidental take of MSO pursuant to the newer biological opinions, and deferred to the FWS tracking of incidental take. None of the 2012 forest-specific biological opinions account for range-wide impacts to MSO and critical habitat, and none required monitoring of population or habitat trends, which remain unknown. The 2012 biological opinions and incidental take statements of the FWS discussed above continue to govern management of MSO habitat in the Coconino and Tonto national forests, respectively, under the Endangered Species Act ("ESA"). In our view, compliance with terms and conditions of the 2012 opinions and statements will <u>not</u> avoid jeopardy to MSO or adverse modification of critical habitat. The conservation status of MSO and the effect of forest management throughout its range, including this project, are not known to the Forest Service or the FWS. Moreover, the FWS admits uncertainty about vegetation treatments in PAC supporting conservation and recovery MSO (USDI 1995, USDI 2012). On May 13, 2015, the FWS issued another biological opinion that ostensibly shields Forest Service personnel from liability for incidental take of MSO resulting from implementation of the		

	revised Forest Plan for the Apache-Sitgreaves National Forests. In that opinion, the FWS stated that out of 150 known PAC on the forests, the occupancy status of 76 PAC (52 percent) were unknown following the 2011 Wallow fire event. "Nonetheless, until we receive site specific occupancy information, we will assume that all of the 150 currently designated PACs are occupied and may continue to be occupied over the life of this project" (USDI 2015: 44). The FWS authorized incidental take of up to 14 individual PAC based on a questionable assumption that all PAC remained occupied after the Wallow fire. That assumption is a Type-II error that favors implementation of the Forest Plan at the expense of MSO conservation and recovery. Jones and others (2016) reported that California spotted owl extirpation was seven times more frequent after high severity fire compared to what occurred in adjacent habitat that did not burn in 2014. The research findings of Jones and others (2016) on spotted owl extirpation after severe fire warrants consideration by the FWS to determine if its occupancy assumption was correct. If the assumption is predicated on an error then the authorization of incidental take of MSO is arbitrary and capricious. Moreover, the FWS did not include in its May 13, 2015 opinion any notice that requires additional consultation in the event that new information may change its analysis. Failure to issue a reinitiation notice in the biological opinion was contrary to regulation, it was arbitrary and capricious, and it violated the ESA. The Forest Service has an independent obligation under the National Forest Management Act ("NFMA") to monitor changes in MSO populations and habitat because the forest plans of the Coconino and Tonto national forests, respectively, require it. It admitted in an October 2008 Annual Report to the FWS, again in its April 17, 2009 letter discussed above, and in subsequent litigation that it failed to accomplish required monitoring of MSO habitat and populations to ensure that its actions would not jeopardize the continued existence of the species or adversely modify its critical habitat.		
13	The Center expects that the Forest Service will claim in the EIS that a need exists to amend the Coconino and Tonto forest plans, respectively, to suspend the requirements to monitor MSO habitat and populations. We expect that the Forest Service will		The FS does not anticipate a need to amend the Coconino or Tonto Forest Plans in order to suspend MSO habitat and population monitoring.

	punt discussion of MSO monitoring to a FWS biological opinion on the project. In the prior round of 4FRI planning, the Center deferred to the Forest Service and the FWS, and voluntarily withdrew its objection claim related to MSO monitoring. However, progress on MSO monitoring to date has not justified our good faith. Any new claim that a need exists to amend forest plans to eliminate the MSO habitat and population monitoring requirements presents a significant issue for analysis in the EIS. In our view, it amounts to a back-door attempt to revise forest plans without requisite disclosure of potentially significant effects to threatened species and critical habitat. Notably, the revised Forest Plan for the Apache-Sitgreaves National Forests (USDA 2015a) does not include any standard or guideline on monitoring of MSO habitat or populations, and the supporting EIS (USDA 2015b) does not discuss any environmental effect that may result from management of MSO habitat without the benefit of monitoring information that was previously required by the regional plan amendment (USDA 1996). The agencies are flying blind on MSO conservation and recovery, and it is no longer acceptable to kick the can down the road while implementing vegetation treatments in PAC. A complete monitoring plan for MSO, including study design and analysis protocols, should be made available for public review and comment before a decision is made to implement the project. The Center has specific questions regarding a monitoring plan for the project, including but not limited to: (1) criteria for selection of PAC as paired treatment and control sites; (2) criteria for selection of measurable indicators of change; (3) sampling design power analysis and expected observational error rates; (4) sampling procedures including monitoring cycle; (5) confidence levels to be applied in data analysis and reporting; (6) incorporation of monitoring information from concurrent projects affecting MSO and critical habitat; (7) timeframe for evaluation of results; and (8) triggers for management adaptation using new information.		The FS will carry the 1st 4FRI EIS Monitoring Plan forward with modifications to comply with the USFWS Biological Opinion for the Rim Country analysis. Monitoring will be determined by proposed treatments and consultation with USFWS, as well as collaboratively with the Multi-party Monitoring Board.
14	Prather and others (2008) discussed means to accomplish the purpose and need without adversely affecting MSO. "[E]ven without application of treatments that would seriously affect		All Rim Country action alternatives will apply design criteria and conservation measures from the 2012 Revised MSO Recovery Plan. Road construction within PACs

	MSO habitat, managers could achieve approximately 60% of the fuels reduction that would be achieved if there were no restrictions on treatments. With reasonable tradeoffs considered in planning, such as largely treating in lower suitability owl habitat, this figure would rise to over 80%" (Prather et al. 2008: 148). "When conservation and restoration planning is scaled-up from a stand to landscape scale, many apparent conflicts disappear as management actions are spatially partitioned and prioritized" (Prather et al. 2008: 149). The Forest Service should develop alternatives for vegetation treatment that implement existing forest plan standards and guidelines for MSO habitat on the Coconino and Tonto national forests, respectively, without amendment. Such an alternative would provide meaningful basis for comparative analysis of environmental effects to inform the project decision on an obviously significant issue. The revised Apache-Sitgreaves Forest Plan repealed standards and guidelines affecting management of MSO habitat. It replaced prior standards and guidelines (USDA 1996) with vaguely worded "desired conditions" and "objectives" that are designed to maximize agency discretion and evade accountability in project-level management activities. The Forest Service intends that desired conditions will drive site-specific project design and decision-making, even if those plan components have no force or effect. The only relevant guideline in the revised Forest Plan for the Apache-Sitreaves National Forests states, "Activities occurring within federally listed species habitat should apply habitat management objectives and species protection measures from recovery plans" (USDA 1995a: 62) [emphasis added]. That guideline will not avoid jeopardy to MSO or adverse modification of critical habitat, and the Forest Service claim that the revised Forest Plan will ensure MSO viability is arbitrary and capricious because: (1) It ignores criteria prescribed by the NFMA for viability determinations, including "changes in vegetation type, timber age classes, community composition, rotation age, and year-long suitability of habitat related to mobility of management indicator species." 36 C.F.R. § 219.19(a)(1) (1982). MSO is a management indicator species under the		would be minimized wherever possible. Limiting mechanical treatment in PACs will be considered as the FS develops alternatives. This was addressed in the response to comments on the Apache-Sitgreaves National Forests Land Management Plan (pp. 598-599). A-S Forest Plan guidelines notwithstanding, all Rim Country alternatives will follow MSO Recovery Plan design criteria and conservation measures. Project planning continues to include input from FWS specialists, with the intent not just to avoid jeopardy to MSO, but to improve habitat conditions (p. 11).

	revised Forest Plan. The Forest Service admits uncertainty regarding MSO habitat and population trends on the Apache-Sitgreaves National Forests. (2) It relies on discretionary plan components (*i.e.*, desired conditions, objectives and guidelines) as the sole basis for viability findings, and asserts that projects "would incorporate" applicable recovery plans for federally listed species including MSO. The only relevant proposed guideline would not constrain project-level decisions because guidelines "may be modified for a specific project," and "the forest supervisor may amend the plan at any time." (3) The MSO Recovery Plan (USDI 2012) is not enforceable in project-level management decisions, and the Forest Service is well aware of this fact. Merely referencing it in a plan guideline fails to ensure viability. *See* USDI (1996a: 39) (concluding jeopardy to MSO and adverse modification of critical habitat where forest management plans "lack the management direction to prevent the development of forest project-level activities that are likely to adversely affect the Mexican spotted owl," and, "The definition of standards and guidelines [in the 1996 forest plan amendment] states that standards and guidelines are, 'the bounds or constraints within which all management activities are to be carried out in achieving forest plan objectives'"); *also see* USDI (1996b: 29) (concluding no jeopardy to MSO and no adverse modification of critical habitat because the Forest Service formally adopted recommendations of the MSO Recovery Plan as "standards and guidelines" in forest management plans with a Record of Decision). (4) The efficacy of management direction, as described in desired conditions and objectives for ponderosa pine and mixed conifer vegetation types, in promoting MSO viability and recovery is uncertain (USDI 2012). The Forest Service is required by NEPA to disclose controversy and uncertainty regarding effects to MSO and		

	its critical habitat, but it has not done so in the EIS supporting the revised Forest Plan. The revised Forest Plan for the Apache-Sitgreaves National Forests (USDA 2015a) repealed many standards and guidelines MSO habitat that previously governed project-level actions (USDA 1996). The repealed standards and guidelines: (1) required survey of suitable MSO habitat prior to project implementation and designation of PAC where owls are found; (2) prohibited vegetation treatments in MSO nest cores and allowed limited treatments in PAC; (3) required selection of an equal number of PAC as untreated control areas when treatments occur; (4) prohibited harvest of trees larger than 9-inches diameter in PAC; (5) maintained a portion of "target/threshold" habitat suitable for MSO nesting and roosting behaviors; (6) retained at least 150-170 ft^2/acre basal area and 20 trees/acre larger than 18-inches diameter at breast height ("DBH") in target/threshold habitat; (7) retained trees larger than 24-inches DBH in suitable nesting and roosting habitat (*i.e.*, "restricted areas"); and (8) required monitoring of MSO habitat and population trends. *See* USDA (1996: 87-91). No such requirements occur in the revised Forest Plan. The supporting EIS supplied no explanation for the sea change in management approach, and it did not disclose any potentially significant environmental effects that may result from repeal of the standards and guidelines for MSO habitat. At minimum, the Forest Service should apply recommendations of the MSO Recovery Plan (USDI 2012) to all action alternatives. The Center objected to the Flagstaff Watershed Protection Project in the Coconino National Forest, in part, because that draft decision included extensive road construction in PAC, contrary to scientific recommendations of the Recovery Plan. We ultimately deferred to the Forest Service and voluntarily withdrew that objection when the agency deferred construction of one road segment in PAC. However, given the scale of the proposed action, the Center's previously stated concerns about road construction in PAC are revived. Please take note of the comment above describing recommendations of Prather and others (2008). The Forest Service should avoid road construction in PAC.		

15	**Northern goshawk** Most of the proposed action will occur in ponderosa pine forest habitat of sensitive northern goshawk. The Forest Service advanced standards and guidelines for management goshawk habitat that accounted for the viability of 14 vertebrate prey species associated with ponderosa pine forest (USDA 1996; Reynolds et al. 1992). However, the revised Forest Plan for the Apache-Sitgreaves National Forests repealed nearly all of those standards and guidelines without disclosing potentially significant effects to viability of goshawk or its prey. More, the proposed action may include amendment of the Coconino and Tonto forest plans, respectively, which we assume will reflect similar plan amendments in concurrent actions on the affected national forests. Plan amendments of that flavor present a significant issue for analysis because: (1) the Forest Service has never reasoned why repealing standards and guidelines for goshawk habitat is warranted; (2) the agency has never explained why newer grey literature (Reynolds et al. 2013) should override its own NEPA analysis; and (3) it has not stated how the viability of sensitive wildlife dependent on closed-canopy forest habitat will be assured if new management direction calls for creation of so-called "interspace" in addition to the grass/forb/shrub openings described as "VSS 1." The Center raised specific concern about goshawk prey viability in its administrative appeal of the revised Forest Plan for the Apache-Sitgreaves National Forests. Those concerns also apply to similar amendments of the Coconino or Tonto forest plans, as stated in comments and objections on concurrent projects (*e.g.*, 4FRI Round One, Clints Well, Cragin, Larson, Mahan-Landmark, Marshall, Turkey Butte, Rim Lakes, Upper Beaver, Wing Mountain). Prior NEPA analysis established a habitat-proxy relation of ponderosa pine forest structure to goshawk viability, and a proxy-on-proxy relation of goshawk habitat to viability of the 14 prey species.		The viability of goshawk prey will part of the effects analysis for goshawk for each of the Rim Country EIS alternatives in the EIS and the Wildlife Report.
16	**Aquatic species** One significant difference between the Rim Country EIS planning area and the first 4FRI EIS planning area is the presence of significant aquatic species and habitats. Extreme		The national BMPs for Water Quality Management on National Forest System Lands include guidelines for aquatic ecosystems, prescribed fire, and vegetation management to minimize effects on aquatic systems. There is also manual and handbook direction on using BMPs to

	care should be taken concerning these species and their habitats given their rarity and the potential impacts from mechanical logging techniques. Given the scope of this project is worth considering impacts to aquatic species and habitats in a regional context similar to the effects of listed species such as the Mexican Spotted Owl. A regional aquatic protection strategy including regional standards and guidelines should be considered.		reduce effects in watershed. Guidance for aquatic species who have recovery plans will be incorporated into the Proposed Action. Forest plans also provide standards, guidelines, and management approaches for aquatic habitats and their protection. Design features, BMPs, and conservations measures will be developed and incorporated into the Rim Country EIS and specialist reports.
17	**Cumulative effects** Significant cumulative effects may result from the proposed action in combination with past, ongoing and foreseeable management activities. The Forest Service should give a hard look to such impacts and disclose them rather than merely list potential causes or mention that some risk may result from a catalogue of activities. Active livestock grazing allotments are ubiquitous in the project area. Grazing concurrent with the proposed action may adversely impact forest resilience and undermine the purpose and need. It directly contributes to fire hazard by altering vegetation communities, delaying fire rotations, increasing forest density, and reducing forage opportunities for herbivorous species and predators (Arnold 1950, Belsky and Blumenthal 1997, Cooper 1960, Madany and West 1983, Mitchell and Freeman 1993, Rummell 1951). Potentially significant cumulative effects to soil productivity, plant communities, fire regime and wildlife may result from vegetation treatments in combination with livestock grazing. Livestock also facilitate the spread of exotic species, particularly in combination with fire, and reduce the competitive and reproductive capacities of native species. Exotic plant species, once established, can displace native species, in part, because native grasses are not adapted to frequent and close grazing in combination with fire disturbance (Mack and Thompson 1982, Melgoza et al. 1990, Belsky and Gelbard 2000). Exotic plant spread is a potentially significant cumulative impact of the proposed action. Treatments similar to the proposed action left forest sites overrun with cheatgrass (*Bromus tectorum*) (McGlone et al. 2009). Exotic grass invasion is foreseeable and has important long-term implications		Grazing management is outside the scope of the Rim Country Project, but the effects of grazing will be addressed in the Rim Country effects analysis, and design features and monitoring will be included. The effects of grazing, as well as invasive plants, on other resources will be analyzed as both indirect (ongoing) and cumulative effects in the Rim Country EIS and specialist reports

	for native plant communities in fire-adapted ecosystems and wildlife. Thank you for taking note of this comment. Please timely notify me of all developments with the project. I wish to be involved at every opportunity.		
Letter 41		**Jason Gerdes EPA**	
1	The U.S. Environmental Protection Agency has reviewed the Forest Service's Notice of Intent to prepare an Environmental Impact Statement for the Four Forest Restoration Initiative Rim Country Proj ect. Our review and comments are provided pursuant to NEPA, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. The EPA strongly supports the objectives of the Four Forest Restoration Initiative. We praised the Forest Service for its dedication to public outreach and collaboration during the earlier 4FRI NEPA process, and the efforts made to incorporate the best available science into the Draft EIS. In particular, I appreciate that the 4FRI team took me on a site visit of the planning area during the scoping process, and worked with me and EPA Region Viii's Richard Graham to include information in the EIS on the potential for smoke from prescribed fire treatments to contain radioactive substances. We subsequently reviewed the 4FRI EIS and provided comments to the Forest Service on May 16, 2013. We recommend that the Forest Service consider a number of issues when preparing the 4FRI Rim Country EIS, including: the range of alternatives to be evaluated; the regulatory framework surrounding the proposed action; air quality; environmental justice; and climate change. These issues are discussed further in the attached Detailed Comments. We appreciate the opportunity to review this scoping notice and are available to discuss our comments. When the EIS prepared for this proposed action is released for public review, please send one hard copy and one CD to the address above (mail code: ENF-4-2). If you have questions, please contact me at (415) 947-4221 or gerdes.j asonepa.gov.		Project support A range of reasonable alternatives will be developed in response to issues that are developed from scoping comments. The FS will work with the EPA to ensure our analysis is complete and thorough.
2	Statement of Purpose and Need The Environmental Impact Statement (EIS) prepared for this proposed action should clearly		The Purpose and Need as presented in the scoping document reflects the overarching purpose of the Rim

	identify the underlying purpose and need to which the Forest Service is responding in proposing the alternatives (40 CFR 1502.13). The purpose of the proposed action is typically the specific objectives of the activity, while the need for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity. Recommendation: The purpose and need should be a clear, objective statement of the rationale for the proposed project.		Country Project and the multiple reasons this project is needed (pp. 2-5 of the scoping document).
3	Alternatives Analysis All reasonable alternatives that fulfill the proposed action's purpose and need should be evaluated in detail, including alternatives outside the legal jurisdiction of the Forest Service (40 CFR Section 1502. 14(c)). The ElS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail. A robust range of alternatives will include options for avoiding significant environmental impacts. The ElS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27). The environmental impacts of the proposed action and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g. acres of wetlands impacted; change in water quality).		As NEPA requires, a range of reasonable alternatives will be analyzed. Each alternative considered will be studied to determine if it meets the purpose and need for the Rim Country Project. Those that do will be analyzed in detail and compared to the no action alternative, the Proposed Action, and any other action alternatives in terms of moving toward the desired conditions in the forest plans. An EIS will be prepared for the Rim Country Project. Consideration of the context and intensity to determine the significance of an action is completed for the Finding of No Significant Impact (FONSI) required when preparing an Environmental Assessment (EA) and is not relevant to this project. The environmental effects as analyzed will be presented in comparative form by alternative, as well as how the alternatives address the issues, as quantitatively as possible considering the scale of the project and the flexible toolbox options offered for the Rim Country Project.
4	Regulatory Framework The EIS prepared for the proposed action should include a comprehensive description of the regulatory context of the project. This section should include a description of any permits and/or modifications to those permits that the proposed action will require (e.g. National Pollutant Discharge Elimination System permits for discharges to Waters of the United States).		The Rim Country EIS will include a section for Laws, Regulations, and Policy which will list the regulatory context by resource area. Any needed permits will also be disclosed.
5	Biological Resources, Habitat and Wildlife The EIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these		The EIS will identify and analyze effects on threatened and endangered species, FS sensitive species, management indicator species (MIS), and migratory bird species as required.

	species; emphasis should be placed on the protection and recovery of species due to their status or potential status under the federal or state Endangered Species Act. Recommendations: Identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. Identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative. Discuss how the proposed action would comply with ESA requirements, including any Section 7 consultation efforts with the U.S. Fish and Wildlife Service. Any relevant documents associated with the ESA Section 7 consultation process, including Biological Assessments and Biological Opinions, should be summarized and included in an appendix in the EIS. Air Quality The EIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards, criteria pollutant nonattainment areas, and potential air quality impacts of the proposed action (including cumulative and indirect impacts). Such an evaluation is necessary to assure compliance with State and Federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality. The EIS should describe and estimate air emissions from potential construction, operation and maintenance activities, as well as proposed mitigation measures to minimize those emissions. The EPA recommends an evaluation of the following measures to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics). Recommendations: • Existing Conditions — The ElS should provide a detailed discussion of ambient air conditions, National Ambient Air Quality Standards, and criteria pollutant nonattainment areas in the vicinity of the project. • Quantj5’ Emissions — The document should estimate emissions of criteria pollutants from the proposed project and discuss the timeframe for release of these emissions over the lifespan of the project. The document should describe and		Many of the items listed under Air Quality are operational considerations and will be considered in developing design features for the Rim Country Project; others may be considered in implementation contracts.

	estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions. • Spec/’ Emission Sources — The document should specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention. • Construction Emissions Mitigation Plan — Include, in the EIS, a list of all mitigation measures to be implemented as part of a construction emissions mitigation plan. In addition to measures necessary to meet all applicable local, state, and federal requirements, we recommend that the following measures be included: Fugitive Dust Source Controls: • Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions. • hstall wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions. • When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph. Mobile and Stationary Source Controls: • Minimize use, trips, and unnecessary idling of heavy equipment. • Maintain and tune engines per manufacturer’s specifications to perform at EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies. • Limit unnecessary idling and ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications. The California Air Resources Board has a number of mobile source anti-idling requirements which should be employed (http ://www.arb.ca. gov/msprog/truck idling/truck-idling.htm). • Prohibit any tampering with engines and require continuing adherence to manufacturer’s recommendations. Administrative controls: • Specify the means by which impacts to sensitive receptors, such as children, the elderly, and the infirm, would be avoided. For example, locate construction equipment and		

	staging zones away from sensitive receptors and fresh air intakes to buildings and air conditioners. • Prepare an inventory of all equipment prior to construction. • Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow. • Identify where implementation of mitigation measures is rejected based on economic infeasibility.		
6	Climate Change On August 5, 2016, the Council on Environmental Quality issued final guidance on considering greenhouse gas (GHG) emissions and climate change in NEPA reviews. Fundamental to this guidance are the recommendations that when addressing climate change, agencies should consider: (1) The potential effects of a proposed action on climate change as indicated by assessing GHG emissions (e.g., to include, where applicable, carbon sequestration); and, (2) The effects of climate change on a proposed action and its environmental impacts. The CEQ final guidance also includes a section regarding biogenic GHG emissions from land management actions, including actions, such as prescribed burning and fuel load reductions, proposed in the 4FRI Rim Country Project. The guidance states that in addressing biogenic GHG emissions, resource management agencies should include a comparison of estimated net GHG emissions and carbon stock changes that are projected to occur with and without implementation of proposed land or resource management actions; additionally, this analysis should take into account the GHG emissions, carbon sequestration potential, and the changes in carbon stocks that are relevant to decision making in light of the proposed actions and timeframes under consideration.' Recommendations: The EIS should include an estimate of the GHG emissions associated with the proposed action, qualitatively describe relevant climate change impacts, and analyze reasonable alternatives and/or practicable mitigation measures to reduce project-related GHG emissions. The NEPA analysis should address the appropriateness of considering changes to the design of the proposal to incorporate GHG reduction measures and resilience to foreseeable climate change. The EIS should make		The FS agrees that the Council on Environmental Quality issued its final guidance to agencies on consideration of GHG emissions and climate change on August 5, 2016. The CEQ guidance is not a law, but directs agencies to develop their own guidance: "Consistent with this guidance, agencies may develop their own agency-specific practices and guidance for framing the NEPA review. Grounded on the principles of proportionality and the rule of reason, such aids can help an agency determine the extent to which an analysis of GHG emissions and climate change impacts should be explored in the decision-making process and will assist in the analysis of the no action and proposed alternatives and mitigation." The Forest Service (the resource management agency proposing this action) has yet to release full guidance for these new CEQ recommendations. The Rim Country Project will analyze emissions and carbon pool fluxes within the project area and discuss the effects of climate change on the modeled outcomes of mechanical and prescribed fire treatments and compare them to those outcomes expected from no action (the No Action Alternative). However, NEPA does not require that all Rim Country alternatives be developed to minimize GHG emissions or maximize carbon sequestration, but only to analyze the effects of the proposed activities in the alternatives. In regard to biogenic GHG emissions from land management activities – such as prescribed burning, timber stand improvements, fuel load reductions, scheduled harvesting, and livestock grazing – it is important to recognize that these land management activities involve

	clear whether commitments have been made to ensure implementation of design or other measures to reduce GHG emissions or to adapt to climate change impacts. The EIS should include a comparison of net GHG emissions and carbon stock changes that are anticipated to occur, with and without implementation of the proposed vegetation management actions.		GHG emissions and carbon sequestration that operate within the global carbon and nitrogen cycle, which may be affected by these activities. The Rim Country analysis will take into account the estimated GHG emissions (biogenic and fossil), carbon sequestration potential, and the net change in carbon stocks relevant in light of the activities proposed in the action alternatives and timeframes under consideration. The effects from climate change will be analyzed in detail in the Rim Country EIS and Silviculture and Fire Ecology and Air Quality Reports. For example, emissions will be modeled for existing condition, the no action alternative, and the action alternatives. The EIS and specialist reports will include design features, mitigation measures, and BMPs, such as those that will be applied for prescribed burns.
7	Coordination with Tribal Governments Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments" (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes. Recommendation: The EIS should describe the process and outcome of government-to-government consultation between the Forest Service and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative. National Historic Preservation Act and Executive Order 13007 Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act (NHPA). Historic properties under the NHPA are properties that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties,		The EIS will describe the process and outcome of government-to-government coordination and consultations between the FS and each of the tribal governments within the project area related to any concerns that were raised, and how those concerns were addressed in the alternatives. Under NEPA, any effects on tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the National Historic Protection Act (NFPA) requires that the FS consider the effects of actions on cultural resources, following regulations in 36 CFR 800. Executive Order 13007, "Indian Sacred Sites" (May 24, 1996), requires that federal land management agencies accommodate access to, and ceremonial use of,Indian sacred sites by Indian religious practitioners, and to avoid adversely affecting the physical integrity, accessibility, or use of sacred sites. The EIS will address the existence of Indian sacred sites in the project area. It will address Executive Order 13007, distinguishing it from Section 106 of the NHPA, and

	consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO). Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources, following regulation in 36 CFR 800. Executive Order 13007, "Indian Sacred Sites" (May 24, 1996), requires federal land managing agencies to accommodate access to, and ceremonial use of Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity, accessibility, or use of sacred sites. It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site. Recommendation: The EIS should address the existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how the Service will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist. The EIS should provide a summary of all coordination with Tribes and with the SHPO/THPO, including identification of NRHP eligible sites, and development of a Cultural Resource Management Plan.		discuss how the FS will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist.
8	Environmental Justice Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (February 11, 1994), and the "Memorandum of Understanding on Environmental Justice and Executive Order 12898," released on August 4, 2011, direct federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance 2 by CEQ clarifies the terms low-income and minority population (which includes American Indians) and describes the factors to consider when evaluating disproportionately high and adverse human health effects. Recommendation: The EIS should include an evaluation of environmental justice populations within the geographic scope of the project. If such		The Rim Country EIS will include an analysis of environmental justice for minority populations within the geographic scope of the project,as well as the potential effects on these populations. The Rim Country EIS will comply with Executive Order 12898. The economic analysis will identify if the planning area contains meaningfully greater shares of low income or minority residents than the state. If minority populations exist within the planning area, the potential for disproportionate and adverse effects on these populations will be analyzed and disclosed in the economics analysis. Public involvement efforts, including the meaningful involvement of minority populations, will be described in the EIS.

	populations exist, the EIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations.		
9	Coordination with Land Use Planning Activities The EIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project area. The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed it they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b).		The Rim Country EIS will reflect the extensive coordination that has occurred and is ongoing with other land management agencies and discuss their land use planning activities.
10	Invasive Species Executive Order 13112, "Invasive Species" (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Executive Order 13112 also calls for the restoration of native plants and tree species. If the proposed project will entail new landscaping, the EIS should describe how the project will meet the requirements of Executive Order 13112. Recommendation. The EIS should include an invasive plant management plan to monitor and control noxious weeds.		The Rim Country EIS will include a plan for weed management for existing and new populations in the project area.
Letter 42		**Steve Spangle, USFWS**	
1	Thank you for your June 21, 2016 request for comments concerning the proposed action for the 4FRI Rim CountrY Project, Apache-Sitgreaves, Coconino, and Tonto National Forests, in Apache, Coconino, Gila, Navajo, and Yavapai Counties, Arizona. The Forest Service is proposing to conduct various restoration activities within a 1,240,000-acre ponderosa pine and mixed conifer forest ecosystem (project area) over approximately 10 years. Treatment areas are located on the Black Mesa and Lakeside districts of the Apache-Sitgreaves National Forest, on the Mogollon Rim and Red Rock districts of the Coconino National Forest, and the Payson and Pleasant Valley districts of the Tonto National Forest.		Project support

	The purpose of the project is to reestablish and restore forest structure and pattern, forest health, and vegetation composition and diversity in ponderosa pine ecosystems to conditions within the natural range of variation, thus moving the project area toward desired conditions. Overall, the U.S. Fish and Wildlife Service (FWS) supports the Forest Service's efforts to plan and implement landscape-level forest restoration, and will continue to actively assist your agency in the development of the Draft Environmental Impact Statement (EIS) for the project. The comments provided below are intended to assist in providing technical assistance toward the development of the proposed action and EIS. Our comments are based upon the June 2016 Proposed Action.		
2	General Comments Existing Conditions 1. The proposed action write-up includes very few citations, but there are multiple areas where the proposal would be substantially stronger if supporting literature was provided. For example, Table 2, which provides numbers regarding the existing and desired conditions for forest cover types, does not include any citations or references indicating the source of the desired conditions. We are particularly interested in the sources used to define the desired conditions for dry mixed conifer. It appears that the average basal area and average trees per acre data was obtained from Reynolds et al. (2013). However, there is additional data on mixed conifer that has been collected since that General Technical Report was published that may aid in refining the ranges provided (e.g., Margolis and Malevich (2016) found that tree density in dry conifer forests historically ranged from open [36 trees per acre] to moderately dense [162 trees per acre]). We recommend that the Forest Service cite the basis for the desired conditions stated in the proposed action and update information with the best available science as the EIS is developed. In addition, the range for the desired average basal area for dry mixed conifer is different in Table 2 from that listed in Table 7.		The intent of the scoping document is to give as much information as possible in a concise document for readability, so it does not reference/cite the scientific literature used to support the desired conditions or proposed activities. A thorough review and use of the best available science will be completed for the Rim Country analysis. The existing conditions in Table 2 of the scoping document represent the current overall stand metrics as established by on-the-ground Common Stand Exams and through statistical imputations in the FSVeg Spatial Data Analyzer. The desired conditions shown in Table 2 use the basal area as outlined in the forest plans (Note: the forest plans only show a desired condition in terms of basal area and not trees per acre or stand density index). The desired conditions in Table 2 for Average Trees Per Acre are informed from GTR-310, but are influenced by forest plan basal area and standard silviculture stand dynamic metrics. The desired conditions for % of Max Stand Density Index are derived from well-established stand dynamic thresholds. Thank you for pointing out the discrepancy between Tables 2 and 7. The desired condition for Dry Mixed Conifer Average Basal Area in Table 2 should be 30-100 and not 40-124.

3	2. Tables 3 and 4 describe existing crown fire potential in forest cover types. However, there is a column titled "'No fire" in both tables that is undefined. We recommend that all terms be clearly defined throughout the document to minimize the potential for confusion.		Thank you for your comment. We appreciate you letting us know which terms are confusing and that need clear definitions. The FS will endeavor to be more consistent in our use of terms and a glossary will be provided in the Rim Country EIS and specialist reports. This will be discussed in detail in the Rim Country EIS and Fire Ecology and Air Quality Report. The term 'no fire' includes water, rock, roads, cinders, areas of sparse vegetation, and other aread on which there are insufficient fuels to carry fire under the conditions modeled. The term 'no fire' will be clarified in the Rim Country EIS and in the Fire Ecology and Air Quality Report.
4	3. Table 7 describes the desired conditions by cover type. We noticed in our review that the ranges listed for the average basal area for Ponderosa Pine/Gambel Oak and Dry Mixed Conifer do not include the full range for these cover types. Ponderosa Pine/Gambel Oak should have an upper limit of 110, and dry mixed conifer should have an upper limit of 120 for basal area. We also recommend providing data/information regarding why the average trees per acre for dry mixed conifer (20-100 trees per acre [TP A]) is less than the ponderosa pine (11-124 TPA) cover types.		The average basal area ranges displayed in Table 7 are those for General Forest. Other basal area ranges apply in special areas such as MSO recovery nest/roost habitat and northern goshawk PFAs. The ranges reported are correct. On the Apache-Sitgreaves NF: Pine BA is 20-80 (ASNF, p. 41) MCD BA is 30-100 (ASNF, p. 44) On the Coconino NF (draft): Pine BA is 22-89 (CNF, p. 59) MCD BA is 30-100 (CNF, p. 66) On the Tonto NF: 60-80 BA in >5" (TNF, p. 133) The higher basal areas and fewer trees per acre imply that the trees are larger in diameter than we see in the pine types. Generally, mixed conifer sites are higher productivity sites than most all pure pine sites. That is the reason for the apparent disparity between basal area and trees per acre.
5	4. The proposed action (page 11) states "For the dry mixed conifer type, forest plan direction is to allow fire to play its natural role, with high frequency (averaging about 12 years) ... " We recommend including more specificity about what is known regarding dry mixed conifer fire return intervals and not using averages to describe the desired condition. If the goal is to allow		The Rim Country EIS and Fire Ecology and Air Quality Report will include more specifics on fire return interval ranges and averages for the different vegetation types within the Rim Country project area.

	fire to play its natural role, then the fuU range of fire return intervals for dry mixed conifer should be included in the proposed action. Swetnam and Baisan (1996) contains a summary of tree-ring studies conducted at 24 mixed conifer sites in Arizona and New Mexico, and reported historical mean fire intervals that ranged from about 4 to 15 years for mixed-conifer sites dominated by ponderosa pine. On sites with a more even mix of mixed-conifer tree species, but still containing ponderosa pine, Swetnam and Baisan (1996) found fire-return intervals ranged from about 8 to 26 years. Longer mean fire-return intervals (19-30 years} were reported by Grissino-Mayer *et al.* (2004) for three mixed-conifer sites containing ponderosa pine in southern Colorado. Other researchers have documented historical fire return intervals at sites in New Mexico, northern Arizona, and southern Colorado within this range (4-30 years) (Brown et al. 2001, Heinlein *et al.* 2005, Fule *el al.* 2003, Fule *el al.* 2009, Margolis and Balmat 2009, Bigio *et al.* 2010). The range of fire intervals in dry mixed conifer characterizes the diversity of this forest type and likely reflects interactions between climate, fuels, and topography. Longer fire-return intervals can result from a heterogeneous landscape structure that restricts fire spread (Iniguez *et al.* 2009) or long periods between climate conditions favorable for fire (Margolis and Swetnam 2013). We recommend that the Forest Service include this information in the "toolbox of treatments" to ensure the range of fire return intervals in dry mixed conifer is allowed for across the project area.		Two of the references given will be incorporated into the Rim Country EIS and Fire Ecology and Air Quality Report, Swetnam and Baison (1996) and Heinlein et al. (2005), in regards to fire history, fire regimes, and the role of fire in vegetation types proposed for restoration in the Rim Country Project. Several of the rest of these have good discussions on fire and climate, but many are not from Arizona, but from southern Colorado or New Mexico, so information from them would need to be interpreted carefully.
6	5. The proposed action (page 11) briefly describes desired conditions for Mexican spotted owls. We recommend modifying the "higher tree densities" to specifically state that we are attempting to increase the density of larger trees on the landscape in owl habitat, not manage for unsustainable levels of "high tree density." We refer you to Table C.2 (pages 275-277) in the Revised Recovery Plan for the Mexican spotted owl (USDI FWS 2012) for more detail regarding desired conditions, particularly in protected activity centers and nest/roost replacement recovery habitat.		The summary of desired conditions contains very general statements in the interest of making the document easier to read and more concise. More detailed desired conditions will be spelled out in the Rim Country EIS and Wildlife Report.
7	6. The discussion regarding stream and aquatic habitat does not provide many details regarding the desired conditions or how		The East Clear Creek (ECC) Watershed Recovery Strategy was a multi-year project built upon intense data collection

	the Forest Service intends to improve conditions in these areas. We recommend that language regarding these critically important habitats be very specific. In the "East Clear Creek Watershed Recovery Strategy for the Little Colorado Spinedace and Other Riparian Species" (Multiple Agencies, 1999), we defined criteria for rating individual stream (drainage) reaches and prioritizing treatment for these areas. We recommend that the Forest Service, Arizona Game and Fish Department, and other interested stakeholders work with us to use the data and evaluations developed for the eastern Coconino-western Apache-Sitgreaves National Forests to define actions that still need to be completed, identify new activities, and build criteria for assessing areas outside of the Clear Creek watershed for habitat improvement actions.		for all streams in the watershed. That strategy does provide specific desired conditions and guidance for every stream. That level of information is not available for every stream within the Rim Country project area. Information from the ECC strategy will be incorporated to the extent feasible, but it has also been identified that the strategy needs to be updated. A flexible toolbox approach will be developed to describe current conditions and treatment options to consider to move streams and riparian areas toward desired conditions. Resource protection measures such as design features, conservation measures for aquatic species, and BMPs for water quality will be developed. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports.
8	7. The discussion regarding forest cover types and how these cover types are broken out in Table 10 is not consistent with existing and revised forest plans or the Revised Recovery Plan for the Mexican spotted owl (USDI FWS 2012). Within the project area, there are two types of owl habitat - mixed conifer and ponderosa pine/Gambel oak (see "Key to Forest Types Referenced in the Recovery Plan" pages 254-256). It is confusing to have new categories of mixed conifer and ponderosa pine/oak listed as northern goshawk habitat, but not owl habitat. There is also some confusion regarding definitions. Ponderosa pine with less than 10% of the stand basal area in Gambel oak greater than five inches diameter-at-root collar is not considered "pine-oak." There is likely still oak in many pine stands that could be enhanced through active management, but that does not make it a "ponderosa pine/Gambel oak" cover type. The same is true for mixed conifer in terms of how it has been described in the proposed action. We would like to meet with you to further discuss the classification system used in the proposed action and the benefit to continuing to use the definitions for these cover types described in the Recovery Plan to ensure consistency between this and other forest plans and projects.		The definition of ponderosa pine stands with less than 10% of the stand basal area in Gambel oak greater than five inches diameter-at-root-collar is now changed from "pine-oak" to “ponderosa pine”.

9	8. The scope and size of the Rim County Analysis Area is very large. To effectively implement forest restoration and other activities to improve wildlife habitat at this scale, there is a need to have a robust monitoring framework. Therefore, we recommend the Forest Service work with us to develop specific desired conditions for each restoration element affecting listed species, clearly articulate triggers for management change, and ensure the adaptive management strategy identifies a process for modifying management actions when objectives are not met. We appreciate this opportunity to provide comments on the Rim Country Project, and we look forward to continuing our work with your agency in development of the EIS.		Monitoring will be addressed through the inclusion of a collaboratively developed Monitoring and Adaptive Management Plan. Current and future active participation by stakeholder groups focused on aquatic species and hydrology in the Multi-party Monitoring Board would help ensure that both terrestrial and aquatic monitoring is appropriately integrated in the plan.
Letter 43		**Jean Public**	
1	I oppose logging the trees. trees should be left alone and respected for nature. each tree makes oxygen for 4 people to breathe. there is nothing more essential. the attacka and marauding by the fs on our national land are indicative of moneygrubbing, not necessary attention at all. I very much oppose prescribed burning of the trees and the air pollution that is engendered will flow east and cause death and injury to people from breathing fine particulate matter.		The concerns relayed here will be addresses in describing the need for proposed treatments in the Rim Country EIS and specialist reports.
2	I agree with decommissioning roads. why is natural hydrology being changed with streams. also "restore streams" seems impossible. I oppose protective barriers. I think nature has an important role to play here		We appreciate your input during the planning process for the Rim Country Project. The hydrology of many stream systems in the project area has been altered from historical conditions as a result of roads, past overgrazing, and the lack of frequent low-intensity fire. The purpose of many of the proposed activities is to restore stream channel conditions that were changed as a result of these alterations.
3	I find that this agency is all about attacking nature with stupid man made attempts to gain money. so much of our federal govt agency work is abouit money coming into the agency. it never comes to the general treasury. it comes to the agency. the logging brings huge sums to this agency. that is why they want toi do it. its crass. its unnatural. its damaging to everybody's environment. this comment is for the public record.		The FS is guided by the Multiple Use Sustained Yield Act that directs the agency to administer national forests to provide timber, range, water, recreation, and wildlife. The FS will follow applicable law, regulation, and policy in developing alternatives for analysis in the Rim Country EIS.
Letter 44		**John Hamill, Theodore Roosevelt**	

		Conservation Partnership	
1	1. **Project Objective, Purpose and Need:** TRCP supports the objective of the Rim Country Proposed Action "to reestablish and restore forest structure and pattern, forest health, and vegetation composition and diversity in ponderosa pine ecosystems to conditions within the natural range of variation, thus moving the project area toward the desired conditions." We further support the Purposes and Needs stated for the Proposed Action to: • Increase forest resiliency and sustainability; • Reduce risk of 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.		Project support
2	2. **Increase and broaden the wildlife focus** The Proposed Action should include and emphasize a broader scope of wildlife habitat restoration needs and actions in addition to those benefitting federally protected species. Many Arizona sportsmen utilize and depend on the project area for a quality hunting and fishing experience. A recent state-wide survey conducted by TRCP and the Arizona Game and Fish Department indicates that the project area includes some of the State's most highly valued hunting and fishing areas for elk, deer, turkey, trout, and pronghorn antelope (see: www.azgfd.com/Recreation/ValueMapping). Hunting and fishing for these species are economically and socially important to local and neighboring communities. As such, we recommend that the Purpose and Need be expanded to include "Support quality hunting and fishing and other compatible recreation opportunities". The proposed action and treatments should emphasize actions that will improve terrestrial and aquatic habitat conditions, maintain/restore functioning wildlife migration corridors, and provide reasonable access. In addition, the Proposed Action should address increasing wildlife diversity by increasing spatial heterogeneity of habitat components for both aquatic and terrestrial wildlife.		In the development of alternatives and the analysis of wildlife habitat in the Rim Country Project area, the FS will look at the spatial heterogeneity of aquatic and terrestrial wildlife habitat, and consider different scopes of wildlife habitat restoration activities, including for those highly valued hunting and fishing species. The Purpose and Need states the need to "Improve terrestrial and aquatic species habitat." In meeting this need, project activities will be supplying additional habitat for highly valued hunting and fishing species. Additional wildlife habitat restoration activities may be considered in the fully developed Proposed Action and/or in other action alternatives that are fully analyzed in the NEPA process.

3	3. **Emphasize wildlife waters** Many wildlife waters (e.g., water collection aprons, drinkers, etc.) in the project area have been degraded or are no longer functioning due to damage from catastrophic wildfire or lack of maintenance. These waters need to be repaired (i.e., sediment removal) or replaced. For waters that are exclusively wildlife waters, exclusion fencing may need repair or replacement to keep livestock out. There are other areas of wildlife habitat that have been identified for the installation of new waters. These repairs, replacements, and installations will improve habitat for wildlife and improve wildlife distribution across the landscape.		Repairs, replacements, and installations of wildlife waters do not fall as readily into the Purpose and Need for the Rim Country Project, which is focused on restoring forest structure and pattern, forest health, and vegetation diversity to increase ecosystem resiliency. Wildlife waters projects may be considered in the fully developed Proposed Action and/or in other action alternatives as additional activities that may be completed as funding allows.
4	4. **Emphasize wildlife connectivity and migration corridors.** An objective of the Proposed Action should be to **c**reate and restore wildlife corridors through thinning to connect wildlife habitat blocks on the landscape. For example, emphasis should be placed on mechanical treatments that will maintain and/or restore montane meadow connectivity through the removal of trees, including juniper and large young trees where wildlife travel corridors have been identified. Within the Rim Country project area, fence improvements and modifications would benefit wildlife through increasing wildlife connectivity on the landscape. For example, unnecessary fences need to be removed to allow wildlife to move through important movement corridors between habitat blocks. There are also other fences that require repair to keep livestock within allotments and protect sensitive wildlife resources. Wildlife would also benefit from wildlife friendly modifications to other fences that would retain livestock while allowing wildlife to cross.		The Purpose and Need states the need to "Improve terrestrial and aquatic species habitat." In meeting this need, project activities will be restoring wildlife corridors through thinning and connecting wildlife habitat blocks on the landscape. Meadow restoration activities that remove encroaching trees will help restore montane meadow connectivity. Additional meadow restoration activities may be considered in the fully developed Proposed Action and/or in other action alternatives that are fully analyzed in the NEPA process.
5	5. **Clarify that decommissioning roads will be done pursuant to approved Travel Management Rules (TMR)** Decommissioning of roads should be done in accordance with approved TMR's not the Rim Country EIS. Page 5 (Roads) indicates that "there is a need to decommission unneeded routes identified during the forest Travel Management Rule review processes as part of the restoration of the landscape in the		The Rim Country EIS does not supersede the Travel Management Plans of the three forests included in the project area. Rim Country alternatives will include the physical decommissioning of unauthorized roads and also National Forest System roads that are classified as decommissioned during implementation. This project may also decommission other National Forest System roads that are not currently open to public use under travel management. Rim Country will not decommission or close

	project area." However, page 14 indicates that the Proposed Action will: • Decommission approximately 230 miles of existing system and unauthorized roads on the Coconino and Apache-Sitgreaves National Forests. • Decommission approximately 20 miles of unauthorized roads on the Tonto National Forest. • Improve approximately 150 miles of existing non-system roads and construct approximately 350 miles of temporary roads for haul access; decommission when treatments are completed. • Relocate and reconstruct existing open roads adversely affecting water quality and natural resources, or of concern to human safety. It's unclear whether these proposed actions are authorized in approved TMR's. Please clarify that the USFS does not propose to change the transportation network outside of the TMR process.		any road that is designated as open under any forest travel management plan.
6	6. **Emphasize and expand the scope of stream restoration actions.** The project area includes numerous streams that support some of the most productive trout fisheries in the state and contributes to Arizona's vital water supplies. The project area is also home to the endangered, Gila trout that is important from both a conservation and recreational perspective. The proposed forest restoration combined with thoughtful hydrologic rehabilitation can produce resilient, sustainable and highly functioning watersheds that supports both native and recreational fisheries. All perennial, ephemeral, or intermittent streams (not just those identified in Figure 6, page 19) should be eligible under the EIS to receive restoration and/or improvements, if needed. All drainages have an impact downstream and cumulative effects are greater moving down a watershed. Forest restoration treatments will be watershed wide and landscape scale, and as such, impact every collection of water regardless of size. Not all streams may need restoration or special treatment, but the EIS should provide the necessary compliance if restoration or special treatment is deemed appropriate. Prior to mechanical or fire restoration treatments, the hydrologic impacts of the treatment to streams, aquatic ecosystems, and riparian areas should be		A flexible toolbox approach will be used for much of the restoration of streams, riparian areas, springs, meadows, as well as for the associated road work, across the Rim Country project area. These types of treatments will fit most common restoration needs and will be described in detail in the Rim Country EIS. Sideboards for these treatments will be identified so that the effects of these treatments can be analyzed. The pre-implementation phase (up to 2 years before the actual treatment begins) is where site-specific design would occur and project funding acquired. Design features for implementing these treatments will be included in the Rim Country EIS and Watershed and Aquatics Reports. The 360 miles of streams proposed for stream habitat restoration was calculated by mapping all streams and reaches currently occupied by aquatic species or proposed for stocking.Individual species' habitat greatly overlapped, therefore total occupied stream miles within the project area were used to describe the extent of potential stream habitat restoration rather than by each species. Maps of occupancy were reviewed by personnel from different agencies and used the best available information at the

	formally evaluated. Treatments should be adjusted to avoid or mitigate adverse impacts.		time. A flexible toolbox approach will be developed to describe current conditions and treatment options to consider to move streams and riparian areas toward desired conditions. Resource protection measures such as design features, conservation measures for aquatic species, and BMPs for water quality will be developed. Treatments and their effects on streams, as well as resource protection measures, will be analyzed in the Rim Country EIS and Watershed and Aquatics Reports.
7	7. **Emphasize monitoring as a critical element of adaptive management**. Monitoring of fish and wildlife resources both pre- and post-restoration is necessary for determining if restoration activities are effective, and that treatments are managed adaptively to avoid and/or minimize the potential for negative impacts to wildlife and/or the habitats. Aquatic habitat monitoring is particularly critical to ensure treatments are not resulting in long-term negative impacts to watershed health. The Rim Country Proposed Action should be amended to recognize the needs for pre- and post-treatment monitoring and describe how it will be used in the project. Thank you for considering these comments and for all the efforts of the 4FRI EIS team to work collaboratively with stakeholders to prepare the Rim Country EIS. The TRCP looks forward to continued involvement with the 4FRI effort. Please contact me if you have questions or need additional information.		The Rim Country EIS will include a fully developed Proposed Action and other alternatives, as well as a collaboratively developed Monitoring and Adaptive Management Plan (strongly influenced by the collaboratively developed plan from the 1st EIS). Current and future active participation by stakeholder groups focused on aquatic species and hydrology in the Multi-party Monitoring Board would help ensure that both terrestrial and aquatic monitoring is appropriately integrated in the plan. Effectiveness monitoring is a key part of adaptive management. A flexible toolbox approach will be developed to describe current conditions and treatment options to consider to move streams and riparian areas toward desired conditions, and a Monitoring and Adaptive Management Plan will be developed, in collaboration with the Multi-party Monitoring Board, for the Rim Country EIS.
Letter 45		**Dorothy Holasek**	
1	There can be no justification for the increased suffering and death from smoke pollution generated by or preventable by the USFS when there are viable alternative methods to managing our forests. Averting behavior is costly and impractical for many, making it ineffectual. Averting behavior is inaccessible to low income families in downwind populations with high poverty rates. Reminiscent of ‘let them eat cake’’let the poor turn on their air conditioning or take a vacation to San Diego’.		Effects on air quality will be analyzed in the Rim Country EIS. The FS has to balance the effects of increased smoke and the effects of declining forest health and the associated increased risk to communities. The Rim Country EIS and Fire Ecology and Air Quality Report will list design features, BMPs, and mitigations that would be applied in all prescribed burns.

	The human body does not distinguish between dying from PM2.5 for the sake of a 'percieved' noble or ignoble cause.		Particulates are one of the six substances that are covered in the Clean Air Act.
Letter 46		**Melinda Honn**	
1	We have disabled family members who have almost died from the constant smoke you create. You probably don't give a hoot, but at great financial and personal sacrifice we have had to move away from family and friends and to another part of the state to escape your hideous and constant burning. You must have no conscience at all.		Effects on air quality will be analyzed in the Rim Country EIS. The FS has to balance the effects of increased smoke and the effects of declining forest health and the associated increased risk to communities. The Rim Country EIS and Fire Ecology and Air Quality Report will list design features, BMPs, and mitigations that would be applied in all prescribed burns. Particulates are one of the six substances that are covered in the Clean Air Act.
E-mails		**Several commenters**	
1	Several commenters requested an extension of the scoping comment period.		The comment period was not extended. There will be another opportunity for interested parties to provide feedback on the project during the notice and comment period associated with the draft EIS being made available to the public.
Open House		**Open House Comments**	
1	Very interested in stream recovery and springs etc.		The FS will keep commenters informed about this project as the analysis moves forward.
2	I know it is a very large area, but I wish the steps could be accelerated. The longer it takes the greater the likelihood of controllable wildfires taking over areas that are planned for thinning/restoration.		The FS will continue to streamline the NEPA process as much as possible.
3	I am just so happy to see the plans and what's happening. We need to keep your forests healthy and safe! Just hurry up, and get it done!		Project support
4	Time. Your time line is to long!		The FS will continue to streamline the NEPA process as much as possible.
5	As a private citizen and regular rim hiker and camper I always see dense thickets of six foot and under ponderosa pines. From what I have seen and heard here these are a problem. Yet if I cut just one of these thicket trees I am subject to a fine and arrest.		The proposed treatments include thinning of trees of all sizes resulting in stands that have a range of density and basal area. There are opportunities to purchase fuel wood or gather boughs through the purchase of cutting or collection permits from the FS.

	I really think it would be more logical to encourage regulars to the forest to prune (low dead branches) and cut thick groups under 6 feet.		
6	Very interested in stream recovery (and springs etc.)		The FS will keep commenters informed about this project as the analysis moves forward.
7	I know it is a very large area, but I wish the steps could be accelerated. The longer it takes the greater the likelihood of uncontrollable wildfires taking over areas that are planned for thinning/restoration.		The FS will continue to streamline the NEPA process as much as possible, and include measures to facilitate implementation.