

Date submitted (Mountain Standard Time): 7/13/2019 12:15:48 PM

First name: Sarah

Last name: Hyden

Organization:

Title:

Comments:

Santa Fe Mountains Landscape Resiliency Project

Dear Staff of the Santa Fe National Forest,

I was very involved in writing the WildEarth Guardians and Defenders of the Wildlife comments, so I have gone into many of the issues relating to the SFMLRP Scoping Document and the project. The following comments are my personal comments.

I am strongly urging the USFS to complete an Environmental Impact Statement for this large-scale and clearly impactful project. NEPA law requires an EIS for projects that may have significant impact on the human environment, which this project will because many people, including myself, experience that the prescribed burn smoke negatively impacts our health. Thinning and prescribed burning takes away from the beauty and enjoyment of our local forest. We feel emotions ranging from sad, to devastated, to angry when we see stump fields and strewn cut up trees where a beautiful forest used to be. NEPA law also requires that an EIS be completed for projects that may have significant impacts on resources such as Inventoried Roadless Area, wildlife, riparian ways, air quality and recreation. It is clear there will be significant impacts, and this project is also highly controversial.

Analysis should be site-specific, it is not acceptable to use the condition-based approach, and likely not in accordance with NEPA law.

We need much more information than was contained in the Scoping Document, in almost every respect.

I have been deeply concerned about where this project is headed. I think there is a fairly high probability that if you go forward with the types of thinning prescriptions that have been done in recent years on the Eastside SFNF on a large-scale, or even with prescriptions that are a little better, some type of environmental disaster will occur. I fear for the forest. I am asking that you step back and re-evaluate many of the assumptions you are proceeding with. Take some time to plan a good project that promotes forest health instead of damaging it. Do an EIS and include a broad range of scientific research and perspective. Genuinely include the public in the process.

I understand that the forest is in trouble either way, whether we do fuel treatments or not, but I trust nature to find it's appropriate balance in order to recover from past damaging practices such as logging, grazing and unchecked OHV use in the forest, and from the warming and drying of the climate. And sometimes it will be very painful to see.

But humans going out and cutting down the vast majority of trees, trampling the fragile soil and demolishing the understory is so much worse. And then burning off whatever tries to come back. What right do we have to do that? What right do we have to demolish wildlife habitat, the habitat of the wildlife living in the forest right now-who are alive and sentient and feel pain. And trees are alive too.

Are you certain you know how to redesign the ecosystem? It's very complex. It's easy for it to go very wrong.

Here in Canada de los Alamos, when trees were thinned under the NRCS grant program, we saw that the pinons that were not cut started to look very unhealthy with short and sparse needles. They still do. That is important and should be considered, as well as the bark beetle outbreak that started from the slash left through the warm season. How will you prevent that from happening on a much larger scale? I am requesting that you try to understand the lessons of what happened here from thinning prescriptions almost identical to the prescriptions USFS silviculturists write.

I understand you are under a lot of pressure from up the USFS chain of command and some elected representatives to get the job done, and do fuel treatments over large areas of our local forest-and fast. If ever there was a time to stand up for what is right, this is it. It is unclear if our forests would recover from the impacts of such large-scale and heavy-handed treatments. Slow down and do full and thorough analysis.

The concept of cutting down the majority of trees, then burning periodically after that, so the forest understory never really recovers and the ground is dry and parched in-between the widely spaced individual leave trees, even if some grasses grow back until they are burned off again, is not an ecologically sound concept.

It's not respectful to the natural world which has order, value and life of it's own.

Please consider something much more light-handed, targeted and limited. Please enlist the help of environmental organizations who want to help. Please listen to the many people of Santa Fe who want to protect the forests from such extreme treatments. If you look at the comments coming in on the FS scoping comment reading room site, about 90% want the USFS to slow down, do the analysis and respect the "mind" and "knowing" of the natural world, and do an EIS. And some want you to stop entirely.

Please respect the understanding of those of us who choose to live among the trees and see them on a daily basis, and see that they are often very badly impacted by thinning treatments and the forest does not seem to be recovering from the impacts of thinning projects.

I request that the Santa Fe Conservation Alternative be fully analyzed and seriously considered as a more reasonable way to protect what we value, while being ecologically sound and respectful of the natural world-both during the environmental assessment you are in process of completing, and for a subsequent EIS.

Thank you,

Sarah Hyden  
Resident of Canada de los Alamos

**From:** [Sarah Hyden](#)  
**To:** [Melonas, James -FS](#)  
**Cc:** [Bergemann, Hannah - FS](#); [Hurlocker, Sandy -FS](#); [Romero, Steve F -FS](#)  
**Subject:** Scoping  
**Date:** Friday, June 14, 2019 8:07:02 AM

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Dear James,

I am requesting a 30 day extension to the 30 day scoping period so the public can fully engage in the process. I am finding there are a lot of people who are unfamiliar with forest issues, and the proposed action is causing them to realize it's time to get more informed and get engaged. There needs to be additional time.

An EIS must be completed for such a large-scale, intensive and potentially impactful fuel treatment program, but full engagement with the public is necessary throughout the entire process.

Thank you,

Sarah



July 10, 2019

James Melonas, Forest Supervisor  
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Submitted via email at: [comments-southwestern-santafe@fs.fed.us](mailto:comments-southwestern-santafe@fs.fed.us)

**RE: Scoping Comments on the Santa Fe Mountains Landscape Resiliency Project**

Dear Supervisor Melonas,

WildEarth Guardians and Defenders of Wildlife respectfully submit these scoping comments to the U.S. Forest Service concerning the Santa Fe Mountains Landscape Resiliency Project (SFMLRP), spanning approximately 50,566 acres located within the Espanola and Pecos/Las Vegas Ranger Districts on the Santa Fe National Forest. This landscape-scale vegetation management project involves a number of activities requiring rigorous environmental analysis, including mechanical and hand thinning on up to 21,000 acres, prescribed fire on up to 43,000 acres, riparian restoration on up to 557 acres, and road improvement, decommissioning and closure on up to 115 miles of National Forest System roads. Please add our names and organizations to the contact list to receive any future public notices regarding this project.

WildEarth Guardians is a nonprofit conservation organization headquartered in Santa Fe, NM with offices in several western states. With more than 230,000 members and supporters, WildEarth Guardians works to protect and restore the wildlife, wild places, wild rivers, and health of the American West.

Defenders of Wildlife is a nonprofit organization with 1.8 million members and supporters across the nation, including nearly 20,000 in New Mexico. Defenders is dedicated to the protection of all native animals and plants in their natural communities. Defenders of Wildlife protects and restores imperiled species by transforming policies and institutions and promoting innovative solutions needed to conserve wildlife and habitat. Defenders has field offices across the country, including in Santa Fe, New Mexico.

Please consider the following comments regarding this project:

Some of our organizations members and supporters live in the Project area, and many more have enjoyed recreating and observing wildlife in the remarkable forests included in this project. Together, we stand united in our defense of wildlife and healthy ecosystems on our public lands.

We support light-handed, targeted and ecologically sound restoration projects in southwestern ecosystems insofar as they (1) follow science-based methods for strategically placing limited fuel treatments; (2) reduce and do not add to existing road systems; (3) develop and describe in detail science-based monitoring and adaptive management systems; (4) meet the requirements of the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), the National Forest Management Act (NFMA), the National Historic Preservation Act (NHPA) and other environmental protection laws; (5) include the unambiguous retention of all large and old trees and forests, and of a diverse range of tree size classes and species; (6) utilize a full range of the best available site-specific scientific information for development of project-specific and climate appropriate desired conditions; (7) develop management courses of action and prescriptions from relevant field-based information; (8) maintain or increase protections for threatened, endangered, sensitive, or candidate species and for roadless, unloaded and wilderness areas; and (9) address the impacts of livestock grazing on project success and ecological sustainability.

While this Project makes steps in the direction of these shared objectives, our experiences at the public meetings and with previous projects on the Santa Fe National Forest, and our review of the Scoping Document leaves us concerned that the project still has a long way to go before we can consider supporting it. For each of these criteria, the Proposed Action falls short.

**I. An Environmental Impact Statement must be prepared, with site-specific analysis and a range of alternatives**

A. Environmental Impact Statement

A project of this size and scope clearly contemplates significant effects that are best analyzed in an EIS, and the Forest Service must conduct site-specific analysis as a part of the DEIS. This includes explicitly delineating where thinning and prescribed fire treatments will occur, what type of treatments will occur and where, where roads activities will be conducted (including maintenance, “improvements”, construction of temporary or new roads, reconstruction of closed roads, etc.), and the resulting impacts of such activity on important forest resources.

NEPA requires that the hard look assessment take place at the site-specific level if there are no additional NEPA processes yet to occur in the future to fully implement the project and the environmental impacts are reasonably foreseeable. Specifically, NEPA requires the Forest Service to disclose and analyze the direct, indirect, and cumulative impacts and consequences of its activities. 40 C.F.R. §§ 1502.16(a), 1502.16(b), 1508.25(c), 1508.27(b)(7).

The Forest Service should prepare an EIS for robust analysis of the Santa Fe Mountains Landscape Resiliency Project, ensuring that it complies with NEPA’s “hard look” requirement. The National Environmental Policy Act (NEPA) requires the Forest Service to prepare an EIS if a project "may" cause significant impacts to resources such as roadless areas, wildlife habitat,

riparian areas, soils and recreation. A project of this size and intensity meets that requirement. An Environmental Assessment simply does not provide for sufficient analysis and range of alternatives for such a large-scale and impactful project.

The term "Significantly" as used in NEPA requires considerations of both context and intensity (40 CFR §1508.27):

Context "means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality." 40 C.F.R. § 1508.27(a).

The SFMLRP is proposed to occur on National Forest land adjacent to the City of Santa Fe and surrounding communities including Rio en Medio, Tesuque Village, La Cueva, Cañada de los Alamos, Glorieta, Cañoncito and Nambe. The Project Area is also used and valued by tribal communities, including the Pueblos of Tesuque, Ohkay Owingeh, Santa Clara, San Ildefonso, San Felipe, Cochiti, Jemez, Santo Domingo, Nambe, and Pojoaque. Much of the project area is intensively used and valued by a large number of residents of these communities due to close proximity and excellent recreational opportunities, and adverse impacts are amplified by this proximity, including health impacts from prescribed burn smoke.

Intensity "refers to the severity of impact... The following should be considered in evaluating intensity:" (40 C.F.R. § 1508.27(b))

- (1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

The Forest Service must analyze both beneficial and adverse impacts. We are concerned that the agency is ignoring the best available science and a host of likely adverse impacts. By insisting that it need only prepare an EA instead of an EIS, the agency has demonstrated bias and a refusal to objectively analyze and evaluate all potential impacts and alternatives. We provide more detail on potentially significant impacts, below.

- (2) The degree to which the proposed action affects public health or safety.

There is a serious concern among the public about the health effects of prescribed burn smoke, and doubts about the accuracy of air quality monitoring during prescribed burns. Many members of the public, especially sensitive individuals, report a number of adverse health effects from prescribed burn smoke, including asthma, burning eyes, irritated nasal passages and throat, and headache, etc. Members of the public testified to these effects at two Santa Fe Board of County Commission meetings dated 3/26/19 and 4/9/19, and at a City Council meeting dated 6/12/19. These impacts must be analyzed in an EIS. Please see below for more discussion on this issue.

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

All unique areas and characteristics within the project area must be identified and analyzed in an EIS.

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

The SFMLR Project is highly controversial, much of the public is very concerned about impacts to the Santa Fe National Forest and surrounding areas, largely based on the impacts of previous thinning and prescribed fire projects in the Greater Santa Fe Fireshed area. This is evidenced by the large amount of discussion and debate about the project in both the media (newspapers and radio) and on social media. Testimony at the above-mentioned Board of County Commission meetings and City Council meeting, gave evidence of the high degree of controversy concerning impacts to air quality, forest and watershed health, wildlife habitat, roadless areas, water quality, riparian areas and recreation, among other issues. At two recent Forest Service meetings concerning this project on 6/24/19 and 6/29/19, members of the public expressed concern, upset and some anger about the extent and potential impact of this project.

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

There are a number of highly uncertain effects and unique or unknown risks with this project. The Forest Service claims that it can reduce the risk of catastrophic wildfire and improve ecosystem resilience by restoring forest structure and composition through human intervention – intensive thinning and prescribed burning. Such human intervention has not worked in the past, and there is significant debate, controversy and uncertainty throughout the scientific community surrounding such a claim. The Forest Service cannot ignore this uncertainty or the scientific research behind it.

Further, the lack of site-specific data and information on current conditions and specific project locations, and thus site-specific impacts, and make this entire project highly uncertain with unknown risks, requiring preparation of an EIS.

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

If the SFMLR Project is not thoroughly analyzed with an EIS, this will be the first time this has occurred in relation to a large landscape-scale project of more than 50,000 acres in the Santa Fe National Forest, that may have substantial impacts on resources. This sets a very concerning precedent that future large landscape-scale projects to be completed in the Santa Fe National Forest will be planned without genuine regard to public concerns, and without an EIS. The Santa Fe National Forest is in a long-term drought and has become ecologically fragile, and any widespread and potentially impactful actions require careful consideration and analysis.

The Santa Fe Watershed Project, which comprised approximately 7,270 acres, was analyzed with an EIS, and the Ski Basin expansion, which included only approximately 785 acres, was also analyzed with an EIS. The SFMLR Project involves approximately 2,000 acres in the Santa Fe watershed, that provides a substantial portion of the City of Santa Fe's water supply. This 50,566-acre project should also be analyzed in an EIS.

- (7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

The Forest Service must analyze the cumulative impacts of the proposed project with all other past, present and foreseeable future projects within the broader landscape, including, but not limited to, the Hyde Park WUI Project, the Pacheco Canyon Forest Resiliency Project, the Santa Fe Watershed Project, The La Cueva Fuel Break Project, livestock grazing, roads and motorized use. The impacts of all these actions are cumulative and significant.

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

The Forest Service must identify all scientific, cultural and historical resources within the project area and identify the potential direct, indirect and cumulative impacts of the project on each site.

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

The Forest Service must identify all threatened and endangered species within the project area and analyze the impacts of the project on all such species and their critical habitat. The Scoping Document identifies only Mexican Spotted Owl as a threatened species within the project area. Fuel treatments could potentially harm owl habitat by reducing the canopy cover and/or removing large trees. Removal of understory vegetation and use of heavy equipment such as masticators may impact MSO prey species. In addition, recent studies have found that thinning and other tree-removal treatments may have more significant impacts on MSO than wildfire.

- (10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The EIS must identify all relative federal, state and local laws and requirements, such as state water quality and air quality standards, and analyze whether the project will violate them.

An EA is used to determine whether the project may have significant impacts and, thus, an EIS is necessary. However, the Forest Service may choose to prepare an EIS in the first instance, which is what we have consistently recommended. If the Forest Service persists in preparing an EA for this project, it must do so in an objective manner and thoroughly analyze all of the significance factors. Throughout these comments we provide additional ways that this project may have significant adverse impacts, including the following:

- 1) The project may have adverse impacts on recreational use of the project area because the heavy thinning proposed here would affect the naturalness of the area and the ability to view birds and wildlife. In many areas the thinning prescriptions would leave few trees, multitudes of stumps and little forest understory, giving it a barren and dry appearance and reducing some types of bird and wildlife habitat quality. The Forest Service periodically burns off new understory growth. Many forest users are concerned that the views, vistas and wildlife and bird habitat near their favorite hiking, downhill skiing, and cross-country skiing, mountain biking and back-country trails are going to change significantly.

2) While we do not oppose burning of slash piles, and prescribed burns under certain infrequent conditions, the resulting smoke may have significant adverse impacts on the health of residents of the greater Santa Fe area. During prescribed burns there are frequent complaints by residents about the adverse effects of the smoke on their health, even when monitoring indicates that levels are in an acceptable range. These complaints are mostly undocumented – we request that the Forest Service document such complaints. Monitoring does not measure any of the other harmful chemicals in prescribed burn smoke other than particulate smaller than PM 2.5. The adverse health effects of prescribed burn smoke needs to be especially considered for the chemically sensitive, residents with asthma, heart conditions, the elderly and children. Further, when and where prescribed burns take place must take into account, and make every effort to avoid, the negative health impacts of smoke on all residents.

3) Prescribed fire and mechanical thinning can and does put WUI residents' homes and the public's enjoyment of the forest at risk due to the possibility of accidentally set wildfire. Two examples of this occurring in New Mexico in recent decades are the Cerro Grande Fire of 2000, precipitated by a prescribed burn (by the National Parks Service) which burned down more than 200 homes and burned 47,650 acres of the SFNF, and the Dog Head Fire of 2016 started by a spark from a Forest Service masticator which burned down 12 homes and burned 17,912 acres.

4) Large-scale thinning and burning may have significant impacts on soils, water quality, and fish and wildlife habitat throughout the SFMLR Project area. We are concerned that thinning, followed by prescribed burns which removes most of the forest understory, could harm soils and increase erosion and sedimentation flow into waterways.

The Forest Service must consider the best available science. The agency cannot cherry-pick the science and data to support its proposal while ignoring contrary, credible views and data. The agency may not ignore topics if the information is uncertain or unknown. Where information is lacking or uncertain, the Forest Service must make clear that the information is lacking, demonstrate the relevance of the lacking information to the evaluation of foreseeable significant adverse effects, summarize the existing science, and provide its own evaluation based on theoretical approaches. 40 C.F.R. § 1502.22.

B. The Forest Service's "condition-based approach" violates NEPA

“NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.”

40 C.F.R. §1500.1(b).

Based on the Scoping Document, it appears that the Forest Service will not provide the required high-quality environmental information or accurate scientific analysis. The Proposed Action states: “This Proposed Action does not define specific treatment units, but rather general areas

throughout the project area where treatments are most likely to occur and the suite of tools that would be used. We do not have complete information about the conditions found on every acre, but we do have enough information to make informed decisions about the types of treatments that work best in certain conditions.” It goes on to state that the “condition-based approach” will be utilized. Scoping Document, p. 11.

NEPA requires that analysis disclose specific information about the when, where, and how of any agency action, so that the impacts and alternatives can be described and weighed. The “condition-based approach” is likely to contain almost no such data. Instead, in seeking flexibility to respond to changing conditions as part of its “toolbox approach,” the Forest Service intends to postpone site-specific project design and analysis until after the agency decision is made. This upends NEPA’s central purpose that agencies look before they leap.

The Scoping Document states that “prior to project implementation, the Forest Service would identify specific treatment units and prescriptions based on site-specific conditions. Treatments would be guided by landscape features (what we find on the ground). Examples of landscape features are cover types, slope, scenic sensitivity levels, or threatened and endangered species habitat. Once a set of landscape features is identified, we would then identify the types of treatment tools, design criteria, and any applicable resource protection measures that we could use to treat those features.” Scoping Document, p. 11.

But this is exactly what NEPA was enacted to ensure occurs *before* decisions are made. The purpose of NEPA is to ensure informed agency decision-making and to provide the public with the information necessary for informed participation. By waiting to provide most of the relevant information until after the decision is made contradicts the whole purpose of NEPA. The Forest Service and the Fireshed Coalition have been preparing for this project for a significant time. Further, the Forest Plan requires regular monitoring of all of the above listed resources. It appears that the Forest hasn’t completed the required monitoring because it does not know what the condition of the project area is, particularly in MSO and other important species’ habitats. The Forest Service cannot now use its lack of monitoring to circumvent NEPA compliance, which includes an analysis of baseline conditions as well as the direct, indirect and cumulative impacts of the project.

In addition, the Proposed Action provides only general guidelines as to what the desired conditions are for various vegetation types. It provides a wide latitude of parameters for the Forest Service to make site-specific decisions after NEPA analysis is complete, including allowing for the removal of trees in dry ponderosa pine and dry mixed conifer up to 24 inches DBH. It does not state where treatments will take place in the 50,556 acre project area except for very general indications, which are not enough to conduct the site-specific analysis NEPA requires.

The Forest Service’s strategy means that the basic design elements of each project would be decided after the NEPA process is completed and will not be vetted through a range of alternatives. This is not acceptable for a project of this scope and size that may impact threatened and sensitive species and roadless areas, and that may have significant and substantial impacts. In fact the Scoping Document is so generalized that it is difficult to prepare effective comments.

For example, the Scoping Document contains no information about what treatments would be completed in Inventoried Roadless Areas, which comprise approximately half of the project area, and no maps that indicate where IRAs are located within the project area. This brings into question whether the Agency has fulfilled its NEPA obligations in preparing this Scoping Document. It is of critical importance to know how much of the SFMLR Project area is in IRAs, and how much is in areas being evaluated for Wilderness expansion, if any, and what types of treatments the Forest Service intends to do in these areas.

The Scoping Document should also identify where fuel treatments will occur near local communities. Many residents of WUI communities are very concerned about what types of fuel treatments would be completed, the extent of fuel treatments and where they will occur in the SFNF in relation to their communities. These residents require that information to respond to during the NEPA process, not afterwards when they no longer have any ability to comment or influence the agency's decision.

There is also concern among the conservation community and the public about how extensively the Forest Service will thin larger trees (12" DBH to 24" DBH), and how much old growth will be cut. The Proposed Action gives no indication other than to say "most" trees cut will be under 12" DBH. "Most" does not suffice. The Forest Service must identify all areas of old growth where treatments are proposed.

The Proposed Action also indicates that there would be road improvement on up to 94 miles of selected roads throughout the project area, without identifying where in the project area specific road improvements will take place, or what types of "improvements" will be done. Accordingly, the public has no ability to provide input and potential impacts cannot be evaluated.

The lack of information provided by the Forest Service violates NEPA's overarching mandate that high quality environmental information and accurate scientific analysis are available to public officials and citizens before decisions are made and before actions are taken.

C. The Forest Service must analyze a range of alternatives, including the Santa Fe Conservation Alternative submitted by WildEarth Guardians, the Sierra Club, and Defenders of Wildlife.

NEPA Section 102(2)(E) requires the Forest Service to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." Accordingly, the Forest Service must analyze a broad range of alternatives for this project because there are numerous uncertainties and unresolved conflicts involved in execution of the Proposed Action. Alternative plans must be considered, including a plan that supports conservation of our forest and substantially lessens risk of adverse environmental consequences.

WildEarth Guardians, along with Sierra Club and Defenders of Wildlife have developed an environmentally preferable alternative called the Santa Fe Conservation Alternative that seeks to reduce the adverse impacts and risks of the Proposed Action while achieving the primary goals

in a focused and targeted way. We submitted this alternative to the Forest Service on May 17, 2019, attached as Exhibit A. Whether the Forest Service prepares an EA or an EIS, the Santa Fe Conservation Alternative must be fully analyzed, along with additional alternatives to the Proposed Action.

## **II. Additional Concerns**

According to the Scoping Document, the purpose of the Santa Fe Mountains Landscape Resiliency Project is to improve the ecosystem resilience of a priority landscape to future disturbances by restoring forest structure and composition and reducing the risk of catastrophic wildfire. Scoping Document, p. 4. Resilience is defined as the “ability of a social or ecological system to absorb disturbance while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change.” Forest Service Manual 2020.5.

The Scoping Document further states that to increase the resilience of the forests and watersheds of the Santa Fe Mountains Project Area, there is a need to:

1. Move frequent-fire forests in the Project Area towards their characteristic species composition, structure and spatial patterns in order to improve ecological function;
2. Create conditions that facilitate the safe reintroduction of fire, allowing fire to play its natural role in frequent fire forest types;
3. Reduce the risk for large high-intensity wildfires, create safe, defensible zones for firefighters and minimize the risk of fire to nearby valued resources;
4. Improve and maintain diverse wildlife habitats to provide a large array of habitat types, habitat components, seral stages and corridors for a variety of species that utilize the area; and
5. Improve watershed conditions by restoring the vegetative structure and composition of riparian ecosystems and by maintaining and improving water quality.

Scoping Document, p. 5

### **A. Assumptions**

The assumptions underlying the stated purpose of the SFMLR Project need to be re-examined and re-evaluated before proceeding with this project. First is the overall assumption that human interference on such a broad scale can increase forest resilience. As discussed above, and as we have provided through scientific literature and testimony, this is a highly controversial and unproven assumption. The Forest Service must recognize and address these diverse views in an EIS.

A primary assumption contained above is that it is both possible and desirable to move our forest towards “characteristic” species composition, structure and spatial patterns, and that ecological function will be improved by doing so. In our changing climate, we may be on a new ecological trajectory, and what has been characteristic of the project area historically, may no longer be possible, or may no longer be a healthy state for our forest.

A second assumption is that “with a changing climate, the frequency, intensity, and extent of disturbances are expected to worsen. Moving forest conditions towards their characteristic composition, structures, and spatial patterns would improve these forests’ resilience to disturbances and improve ecosystem function.” Scoping Document, p. 6. It is necessary to provide more information and analysis on the assumption that disturbances are, in fact, worsening due to climate change. What is the scientific basis for the Forest Service’s claim that disturbances are expected to worsen? And, exactly what disturbances is the Forest Service referring to? Fire has always been a necessary and natural part of forest and grassland ecological processes and functions. In fact, prior to the 1960’s, wildfires were much more widespread and intense than they are today. Accordingly, fires (even more intense fires) are not necessarily a “worsening” disturbance. Multiple lines of evidence suggests that mixed conifer and ponderosa pine forests such as those found in the project area were historically characterized by mixed-severity fire that include ecologically significant amounts of weather-driven, high-severity fire.

Indeed, it is more likely that disturbances have and will “worsen” due to human influences such as fire suppression, livestock grazing, roads and motorized use, development in forest and grassland ecosystems, and increased logging and thinning under the guise of “restoration.” To best improve ecological function, the Forest Service must analyze how each of these activities are “worsening” disturbances, and develop this project and a range of alternatives to address them. Merely thinning and burning, without addressing the underlying causes why the forests are outside of their “characteristic” composition and why disturbances are worsening will not result in healthy watersheds or reduced fire intensities.

We request the scientific justification for the Forest Service’s assumptions. Instead of assuming that historic structure and composition provide the framework of what’s needed, the Forest Service must analyze the impacts of climate change and all other human influences on ecological functions, species composition, etc. to determine what is needed for the ecological resilience of the Forest’s different ecosystems, watersheds and species.

A third assumption is that is that widespread thinning will necessarily reduce insect attack on trees. Disturbances to the forest often increase trees susceptibility to insect attack, especially during times of drought. And, it is well known that slash left through a warm season can promote bark beetle outbreaks. Thinning is a massive disturbance, even hand-thinning. With our forest in a generally dry and fragile condition, care and restraint should be primary.

A bark beetle outbreak was precipitated in the area of Canada de Los Alamos from slash left from a NRCS thinning projects done by prescriptions written by the New Mexico State Forestry Division, that were very similar to typical Forest Service prescriptions. This was confirmed in a memo written for community members of Canada de Los Alamos by the New Mexico State Forestry Division entomologist John Formby, attached as Exhibit B. Some residual pinons became unhealthy, lost needles, new needles are shorter, and needles have generally become sparse. No one is certain about what is happening to the pinons, but it is apparent to local residents that it is related to the thinning project as the affected pinons are adjacent to where the cut trees were.

A fourth assumption is that thinning and burning will result in attaining the agency’s identified

“desired conditions.” Yet, the Santa Fe National Forest has no example to show of having achieved desired conditions in the Greater Santa Fe Fireshed area as a result of completing fuel treatments. At a meeting at the Defenders of Wildlife office on 4/29/19, Ranger Hurlocker, Ranger Romero and Fireshed Coordinator Hannah Bergemann were asked to show an example of a project that has successfully resulted in meeting desired conditions on the Eastside SFNF. They stated there is no example to show, despite the fact that there have been a number of fuel treatment projects done in recent years. Out of all projects that have been completed, even those after the publication of GTR-310, there are none that the Forest Service believes have achieved the stated desired condition. Accordingly, the Forest Service is relying on unproven assumptions – indeed, it appears that the Forest Service’s assumptions may have been proven wrong.

A fifth assumption concerns reducing risk for high-intensity fires nearby valued resources. Many resources such as structures and roads only require a 100-foot thinned and fire-proofed zone surrounding it, according to the research of now retired USFS physical scientist Jack Cohen and others.<sup>1</sup> The assumption appears to be that thinning further out from some types of valued resources will help protect those resources. This assumption needs to be clarified and evaluated, and we request that the Forest Service incorporate the scientific research that we provided previously from Mr. Cohen and others.

A sixth assumption is that fuel treatments can and will improve or maintain diverse wildlife habitat. The Forest Service provides no scientific basis or analysis for this assumption, and can provide no nearby examples. Fuel treatments and associated roads can have significant impacts on wildlife and fish by, for example, fragmenting habitat, inhibiting movement, delivering sediment to streams, and removing overhead cover and the understory relied on by small mammals and prey species. The Forest Service cannot assume that all fuels treatments are beneficial and must provide an objective, scientifically-based analysis of the impacts the project will have on diverse wildlife habitat.

#### B. Risk of fire and flooding in Project area

We believe it is necessary to estimate the risk of high-intensity fire within the SFMLRP area. This was not done in the Fireshed Wildfire Risk Assessment completed by Steve Bassett of The Nature Conservancy. Only the relative risk of fire from one pixel on the map to another was determined.<sup>2</sup> A scientific estimate of the absolute risk of fire in the project area would assist in completing a realistic cost/benefit analysis of damage that fuel treatments may cause to forest ecology vs. the benefit in fire risk reduction and fire behavior modification. The cost and efficacy of methods to reduce or mitigate fire risk (thinning, prescribed burning, etc.) has also not been analyzed, and we request that these be analyzed as well. Please provide information as to how the Fireshed Wildfire Risk Assessment was and will be utilized in the development of the SFMLR Project.

Human behavior has been a large component of some major fires in New Mexico, such as the Las Conchas Fire (power lines not properly maintained), the Cerro Grande Fire (prescribed burn that went out of control) and the Dog Head Fire (a spark from a masticator). Campfires are left unextinguished regularly in the SFNF. The Agency should evaluate the effects of modifying

human behaviors on wildfire risk. Our Conservation Alternatives incorporates human behavior modification and enforcement.

Lightening strike fires which account for the majority of fires in the SFMLR Project area by number, tend to be accompanied by rain, which usually substantially limits the size of the fires. Accordingly, when considering assumptions relating to the cause and effects of fire, the size of fires should be taken into account and weighted appropriately, as a relatively large proportion of high intensity fires are human caused.

The Scoping Document (pp. 8-9) states “Large, high-intensity wildfire would threaten the many ecosystem services provided by the forests of the Project Area, such as wildlife habitat, clean air, recreation, and drinking water production, and would also have devastating post-fire effects to downstream communities, such as floods”. The Agency should quantify flood risk and indicate on the project map the communities and values that are at substantial risk from floods. In addition, the Forest Service must incorporate into the project measures other than fuel treatments to reduce flood risk, such as stream and riparian restoration, road decommissioning, and removing livestock.

#### C. Cost/benefit analysis

A cost/benefit analysis of potential damage to forest ecology and wildlife habitat from execution of fuel treatments vs. the likelihood and benefit of reducing or mitigating fire risk, or moderating fire behavior should be completed. This would include use of heavy equipment, increased usage and impacts of widening roads, the drying effect of opening up the tree canopy, damage to wildlife and wildlife habitat during thinning and prescribed fire operations, the spread of invasive weeds, etc.

#### D. Thinning

We are in full agreement that safe, defensible zones for firefighters are needed, and support thinning to create such zones where needed. However, the severity of widespread and large-scale thinning projects in recent years in the SFNF are a serious concern to conservation groups and to members of the public. It is unclear from the public meetings and the Scoping Document what forest structure and composition the Forest Service is attempting to achieve. Forests are dynamic systems that change over time due to climate, wildfire, and innumerable other influences. Attempting to achieve and maintain a chosen, static ecological condition is contrary to forest and fire ecology. The Forest Service must provide the scientific basis for its chosen structure and composition beyond the historical range of variability, and how that will best meet species’ needs and provide for ecological resilience over time without repeated fuel reduction intrusions. We request that the Forest Service evaluate the effects of leaving a greater density of trees in thinning projects, average BA 80 or more, and substantially decreasing the total acres thinned.

The Proposed Action does not give any clear indication to what densities the USFS intends to thin in each vegetation type, except in terms of tons per acre which is not a metric that is easily usable to determine what densities of vegetation would be left residual after thinning projects in terms of basal area. There should be clarification of what density trees will be left residual after

thinning in the four vegetation types, including site-specific information.

Please quantify approximately how much understory vegetation will exist post mechanical thinning and hand thinning, both immediately after treatment is completed, and at follow-up intervals.

The Proposed Action states that the desired condition for ponderosa pine and dry mixed conifer forests would generally include multiple age classes in groups, including seedlings, saplings, old growth and snags, and interspaces”, p. 6. The thinning specifications for the Hyde Park WUI Project states “Cut all ponderosa pine and southwestern white pine that are less than or equal to 9 inches DBH and taller than 3 feet. Cut all white fir and Douglas-fir trees that are less than or equal to 11 inches DBH and taller than 3 feet.” Hyde Park WUI Project work order, attached as Exhibit C. Trees that are 9 inches DBH and 11 inches DBH can be 25 feet tall. These thinning specifications require the complete removal of an entire group of size classes of trees and do not conform with the desired condition. This is concerning as it is a current project, and is presumably designed in accordance to the guidelines of GTR-310. If the Forest Service is going to incorporate similar prescriptions in this project, the agency must evaluate the effects on ecological function of removing an entire group of size classes of trees.

In the Proposed Action the Forest Service prioritizes trees species for retention based at least partially on their understanding of historical forest species composition. In our warming and drying climate those may not be the trees that are most likely to survive, it may be more heat tolerant species like junipers. The Agency should evaluate the desired species composition in the light of potential future climatic conditions in the project area.

#### E. Slash management

Slash from thinning projects is often left on the ground in the Espanola and Pecos/Las Vegas Ranger Districts for years, both in slash piles and broadcast. This is a serious fire hazard which makes the treated area more at risk from fire than when the trees are standing.

The Forest Service often uses the 2018 Venado Fire as an example of how forest fuel treatments can moderate high intensity fire behavior, but it could equally be considered a lesson about how risky it is to leave slash piles in the forest during fire season. Once the Venado Fire dropped down after encountering the San Joaquin fuel treatment, it veered to the east and encroached into an area of the San Joaquin fuel treatment area that had slash piles remaining. which could have greatly increased fire intensity. Fortunately, rain came, wetting down the forest and remaining slash piles, and giving firefighters the opportunity to go out at night and burn the slash piles before the fire hit them. The Forest Service has not presented the totality of the facts when recounting this fire in public meetings and in the media.

Further, leaving slash on the ground through one dry and hot season can precipitate a bark beetle outbreak, potentially a large-scale one due to the current long-term drought conditions in the SFNF, and is unacceptable. Yet, burning slash piles on the ground can cause damage to the soil under the piles from excessive heat. So far, a fire- and ecologically-safe method for managing large amounts of slash has not been developed for use in the SFNF. This must be done as part of

this project and no slash larger than 3” in diameter should be left throughout a dry season. Slash piles should only be burned in winter when the ground is cold.

Please evaluate existing slash treatment methods and develop a method that does not create a fire and bark beetle hazard, and does not damage soils underneath slash piles. We urge you to have developed an ecologically sound slash management procedure before moving forward with the NEPA process so that the public has the opportunity to review and comment.

#### F. Prescribed burns

The Proposed Action states that up to 43,000 acres of the SFMLR Project area will be treated with prescribed fire.

According to the 2005 report “Prescribed Fire Lessons Learned, posted on fs.fed.us, one in a hundred prescribed burns are either “near misses” or escaped control.<sup>3</sup> While that is a good record of successful burns (99%), the impacts of out-of-control prescribed burns can be substantial. The Cerro Grande Fire is an example of a prescribed burn going out of control with tragic results. Every time a fire is started in the forest, there are risks of the fire spreading, especially in the SFNF where winds can arise quickly and sometimes unexpectedly.

The Agency should evaluate the probability of a broadcast prescribed burn precipitating a fire in the SFNF. The Agency should also evaluate the effects of a substantially reduced amount of slash burned primarily in pile burns on fire safety, air quality and bark beetle risk.

Repeated prescribed burns after mechanical or hand thinning prevents the forest understory from substantially returning, and severely impacts forest ecology due to the lack of forest understory to protect soils, for wildlife, and to maintain a healthy forest structure which should include trees of all size and age classes. A portion of the Santa Fe watershed was thinned in 2002 and treated with prescribed fire twice since then, photo attached as Exhibit D. There appears to be primarily only grasses, and few young trees or shrub understory. It is unclear what “desired condition” this is meeting and how it has impacted soils and wildlife in the area.

The Agency must analyze the direct, indirect and cumulative impacts of repeated prescribed burns on soils and forest health in terms of forest understory and structure, and wildlife habitat.

#### G. Health impacts from prescribed burns

Many residents of Santa Fe report negative health effects from prescribed burn smoke, even when particulate is measured to be within an acceptable range. As stated in Section I. A., many members of the public testified to the negative effects on their health, including asthma attacks, from prescribed burn smoke. The USFS has not seriously considered resident’s reports, but instead simply state that the particulate levels are in an acceptable range. Please consider and evaluate the incongruity between Santa Fe area residents experiences with prescribed burn smoke and the impacts on their health, and the levels obtained by current monitoring methods.

USFS spokespeople and other USFS personnel often express the viewpoint that “we will have to

breathe smoke either through prescribed burns or wildfire,” and this viewpoint is reflected in policy concerning prescribed burns in the SFNF. This statement contains assumptions that need to be re-evaluated.

This viewpoint is addressed in a fact sheet put out by the John Muir Project “Forest and Fire Myths”, attached as Exhibit E.

Would Landscape-Scale Prescribed Burning Reduce Smoke Particulates? No, it’s the opposite. Any short-term reduction in potential fire behavior following prescribed fire lasts only 10-20 years, so using low-intensity prescribed fires ostensibly as a means to prevent mixed-intensity wildland fires would require burning a given area of forest every 10-20 years (Rhodes and Baker 2008). This would represent a tenfold increase, or more, over current rates of burning occurring from wildland fire (Parks et al. 2015). Contrary to popular assumption, high-intensity fire patches produce relatively lower particulate smoke emissions (due to high efficiency of flaming combustion) while low intensity prescribed fires produce high particulate smoke emissions, due to the inefficiency of smoldering combustion. Therefore, even though high-intensity fire patches consume about three times more biomass per acre than low-intensity fire (Campbell et al. 2007), low-intensity fires produce 3-4 times more particulate smoke than high-intensity fire, for an equal tonnage of biomass consumed (Ward and Hardy 1991, Reid et al. 2005). As a result, a landscape-level program of prescribed burning would cause at least a ten-fold increase in smoke emissions relative to current fire levels, and it would not stop wildland fires when they occur (Stephens et al. 2009).

According to the 2016 USFS study, “Evaluating spatiotemporal tradeoffs under alternative fuel management and suppression policies: measuring returns on investment” by Thompson, Riley, Loeffler and Hass, the probability a fire will ever meet with a fuel treated area is very small.<sup>4</sup> Most prescribed burn (and thinning) treatments are not preventing a wildfire, so the smoke the public breathes from prescribed burns is not likely to be a trade-off for breathing smoke from wildfire.

The Agency should prepare an estimation of the amount of particulate and other pollutants that are put into the air by wildfire smoke vs. prescribed burn smoke in the past decade, and the number of days particulate levels are elevated to the extent that the sensitive population would be affected.

Smoke from prescribed burns contains more than particulate, it contains a range of pollutants including heavy metals and their impacts on human and wildlife health should be considered and evaluated.

Many Santa Fe area residents are also very concerned that they are being exposed to fire accelerant chemicals potassium permanganate and diesel volatilized in prescribed burn smoke. The USDA document “Residues of Fire Accelerant Chemicals Vol.1”, states under “Human Health Risk Characterization,” “Risks from inhalation exposures (of the various accelerants) were outside the scope of this assessment, requiring a complex analysis of simultaneous exposure to the products of burning vegetation to accurately depict the overall risk from inhalation at a prescribed burn.”, p. 26.<sup>5</sup> This is the document that the USFS uses to evaluate

potential harm to the public and the environment from exposure to fire accelerant chemicals that they use regularly in prescribed burns.

The International Programme on Chemical Safety card on potassium permanganate states under the heading “fire and explosion”, that potassium permanganate is “Not combustible but enhances combustion of other substances.<sup>6</sup> Gives off irritating or toxic fumes (or gases) in a fire.” It also states under the heading “chemical dangers” that potassium permanganate “Decomposes on heating. This produces toxic gases and irritating fumes.”

The Forest Service currently has no data to base an assumption that potassium permanganate in prescribed burn smoke is not toxic to humans and wildlife, and there are indications it is of concern. It certainly depends on the levels of the chemical in prescribed burn smoke, but the Forest Service does not know what levels generally exist in prescribed burn smoke. It is not valid to make assumptions about levels of the chemical in the form of smoke based solely on the amounts that are applied on the ground.

The Agency should analyze the risks to the public and to wildlife from breathing prescribed burn smoke in relation to volatilized potassium permanganate and diesel, and any other chemicals or toxins contained in prescribed burn smoke.

#### H. Wildlife

The Forest Service must analyze the existing baseline conditions of, as well as the direct, indirect and cumulative impacts of the project on, threatened, endangered and sensitive species, species of concern, and management indicator species.

The Scoping Document states “The Project Area is currently occupied by many wildlife species including the Mexican spotted owl (MSO), a federally listed Threatened species, and the northern goshawk, a Forest Service Sensitive species. There are currently four Mexican Spotted Owl Protected Activity Centers (PAC), along with restricted areas, and critical habitat in the Project Area.” Scoping Document, p. 9.

The Scoping Document also states “the Project Area can provide continued habitat needs for these species [Mexican spotted owl and northern goshawk] and others into the future if habitats are maintained and improved to be healthy and resilient.” Scoping Document, p. 9. According to the 2016 Santa Fe National Forest Plan At-Risk Species Selection Process and Justification Document, “timber harvest, prescribed burning, and other management activities are designed following the Mexican Spotted Owl Recovery Plan 2012 along with consultation with the USFWS. These management activities can still have disturbance affects to the Mexican spotted owl and its habitat.”<sup>7</sup>

We agree that the management activities in the Proposed Action can have disturbance affects on MSO. The Forest Service’s assumptions regarding the beneficial impacts of fuel treatment practices on MSO are, at best, unproven and, more likely, incorrect. WildEarth Guardians is currently in litigation against the U.S. Fish and Wildlife Service and the U.S. Forest Service concerning their failure to conserve and recover MSO in New Mexico and Arizona due to the

Forest Service's long and continuing history of failing to implement the "adaptive management" approach that it adopted to comply with its ESA obligations in connection with MSO.

According to our Motion for Summary Judgement in this case (which is available for public review):

since the listing of the MSO as a threatened species in 1993 there has been a widely acknowledged institutional failure on the part of FWS and USFS to develop critical information on the impacts of various USFS timber management practices on the MSO. The FWS admits that "unfortunately, empirical data on the effects of thinning and other mechanical forest treatments on Mexican spotted owls are nonexistent," and that "although this has been clearly noted for years, no studies on this topic have been funded to date." Alarming, the FWS went on to state that extrapolations from studies of other subspecies of spotted owls "suggest that at least some kinds of mechanical forest treatments may negatively affect spotted owls." However, even as the population of Mexican spotted owls continued to plunge in the years following its ESA listing, and even as studies of other spotted owl subspecies indicated that USFS timber management practices "negatively affect spotted owls," the FWS and the USFS knowingly (1) neglected to conduct any studies to assess how on-going USFS timber management activities in Arizona and New Mexico affect the survival and recovery of the MSO and (2) neglected to conduct rigorous MSO population trend monitoring.

*See, Plaintiff's Motion for Summary Judgment, WildEarth Guardians v. U.S. Fish and Wildlife Service et al., D. AZ, No. 13-151-RCC, filed 3/31/2016. While the case has yet to be decided, our briefing is replete with information and examples of the negative impacts of Forest Service timber management practices on spotted owls, and counters the repeated assumptions made by the Forest Service that its "adaptive management" benefits MSO.*

The effects of mechanical thinning on the Mexican spotted owl have not been extensively studied and are not well understood. Prominent owl scientists have recently stated that "*Existing studies on the effects of fuels reduction treatments on spotted owls universally suggest negative effects from these treatments*"<sup>8</sup> and that "*forest restoration and thinning activities also may threaten owls and their existing habitat.*"<sup>9</sup>

Unfortunately, the Forest Service assumes that fuel treatments will yield desired results and all of the MSO PACs in the project area may be treated, despite the stark fact that "*No empirical studies have evaluated these management activities on the Mexican spotted owl.*"<sup>10</sup> The Forest Service must address these studies, which undermine the basis for this project, in the NEPA document.

Some relevant studies from dry, frequent fire adapted forests of southern California have published findings indicating deleterious effects of thinning of spotted owls. Stephens and colleagues<sup>11</sup> reported that in the Plumas National Forest of California, spotted owl territorial sites declined 43% within 3-4 years of landscape-scale thinning treatments, and following treatment owls redistributed across the landscape. Elsewhere in the Sierra Nevada, Tempel and

colleagues<sup>12</sup> found that, as expected, canopy cover and demographic rates were strongly positively related, and that medium intensity fuel reduction treatments were negatively related to owl reproduction. Other researchers have concluded that thinning effects would be less impactful than severe wildfire,<sup>13</sup> leading to uncertainty of the true impacts of thinning on spotted owls.

The Forest Service also has information—based on recent monitoring of Mexican spotted owls in the area of the Nuttall-Gibson Fire of 2004 in the Coronado National Forest—that Mexican spotted owls appear to survive and thrive in a post-fire environment.<sup>14</sup> This information directly undercuts the 2012 Mexican spotted owl revised Recovery Plan’s assumptions with respect to Mexican spotted owl responses to fire and, more importantly, the conclusion that the risk to Mexican spotted owl habitat posed by the threat of fire justifies large-scale “restoration” projects which is itself associated with significant negative effects to the Mexican spotted owl and its habitat. Indeed, the evidence suggests that wildfire may actually promote the recovery of the Mexican spotted owl despite the 2012 Revised Recovery Plan’s suggestion to the contrary.

Accordingly, there is considerable uncertainty about the impacts of wildfire and thinning on MSO. This uncertainty requires that the agency proceed with extreme caution and should only begin planning a project such as this one *after* collecting extensive baseline data and developing extensive, mandatory post-project monitoring protocols. Neither have happened so far in this instance.

The Forest Service must ensure that the project will conserve and recover MSO in the project area. To do so, the agency must provide detailed site-specific baseline data, as well as a site-specific analysis of the direct, indirect and cumulative impacts of the project. As this project is currently proposed, the agency is unable to do this.

The Forest Service must analyze and incorporate all of the relevant scientific information in the NEPA document. This is particularly important because the Forest Service is advancing similar landscape-scale projects throughout MSO habitat and the region that may cumulatively unravel MSO habitat and existing management direction and protections for MSO. The Forest Service is required to give a hard look to the overall cumulative effect of this project and others that affect management of the threatened species and its critical habitat.

Similar site-specific baseline data and post-project, mandatory monitoring protocols must be implemented for all threatened, endangered and sensitive species, species of concern, and management indicator species, as well as site-specific impact analyses. Vague generalization about “some risk” and unsupported assumptions of beneficial impacts do not suffice.

Large trees, high tree densities and dense canopies have been demonstrated to be important components of northern goshawk foraging habitat. The agency must demonstrate how it is planning for expansion of northern goshawk populations.

In the Biological Assessment for the Hyde Park WUI Project, The New Mexico meadow jumping mouse was listed as a species that may occur within or near the project area and is a federally listed endangered species, p. 3.<sup>15</sup> There was no mention of the New Mexican meadow

jumping mouse in the Scoping Document. Please survey for New Mexico meadow jumping mouse population and create a plan for protection of this species if they exist in the project area.

The Santa Fe National Forest Plan At-Risk Species Selection Process and Justification (2016), prepared by this Forest as part of its current Forest Plan Revision process, yields in addition to Mexican Spotted Owl and Northern Goshawk, at least eleven (11) at-risk species of mammals, birds and amphibians, based upon the Forest's own geographic data and ERU assessments, may occur within or near the SFMLR Project area.<sup>16</sup> These species are spotted bat, snowshoe hare, Pacific marten, masked shrew, water shrew, boreal owl, black swift, American peregrine falcon, pinyon jay, white-tailed ptarmigan, and Lewis's woodpecker. The flammulated owl is also listed as a Species of Greatest Conservation Need by the County of Santa Fe.

The Agency must identify all at-risk species that exist in the SFMLR Project area, analyze baseline conditions, and create a plan for both short-term and long-term protection of at-risk species and species of concern.

The Agency should document how it will comply with the Migratory Bird Treaty Act as a component of fuel treatment planning in the SFMLR Project area, and evaluate whether any aspects of the Proposed Action may violate the Migratory Bird Treaty Act.

Since approximately half of the SFMLR Project area is located in Inventoried Roadless Areas, much of which has never been logged or thinned, we are concerned about the potential impacts on wildlife associated with older forest. The Forest Service must evaluate these potential impacts.

In forests with a variety of species and mixed disturbance regimes, 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. If significant reductions of crown bulk density are deemed necessary to meet the purpose and need then it is highly unlikely that the project will maintain habitat for threatened and sensitive wildlife species associated with closed-canopy forest. An unambiguous commitment to old and large tree retention would maintain wildlife habitat in the short-term and mitigate adverse effects of the proposed treatments.

The Fireshed Wildfire Risk Assessment does not contain a wildlife layer. If this risk assessment has been or will be used in project planning, the Agency should add a wildlife layer.

#### I. Invasive weeds

The introduction of invasive species into the SFMLR Project area is a potential adverse impact of widespread thinning, extensive soil disturbance, roads and motorized use, and prescribed fire. In ponderosa pine and dry mixed conifer forests of western North America, the response of invasive species to fuel treatments is not well documented, particularly of species that are capable of altering environmental conditions (transformers). WildEarth Guardians is very concerned about potential adverse impacts from invasive species, especially transformers.

As part of its baseline conditions analysis, the Forest Service must identify areas of known concentrations of invasive weeds within the Project area, including species names and locations, and the causes of these invasive species infestations. The Agency should also analyze all invasive weed impacts from previous fuel treatments in the SFMLR Project area.

The Agency should quantify the extent to which invasive weeds are expected to increase or decrease in the Project Area as a result of the Proposed Action, and address the expected effects of opening the forest canopy on the spread of invasive weeds.

Please provide the Agency's protocol to limit the propagation of invasive weeds in the Project area.

#### J. Inventoried Roadless Areas and Wilderness Management Area

There is no mention of Inventoried Roadless Areas at all in the Scoping Document other than to state IRAs will be discussed at two upcoming meetings. IRAs in the project area are not shown on the project map in the Scoping Document, and it is not stated what percentage of the SFMLR Project area is in IRAs. After repeated inquiries, the Agency has approximated that about half the project area is contained in IRAs and finally provided a map of the project area that shows IRAs.

WildEarth Guardians believes that the impacts of mechanical thinning, and even hand thinning may be contrary to the purpose of maintaining the wilderness character of IRAs. The Agency must create a protocol for any thinning undertaken in IRAs to maintain the existing wilderness character.

There is no indication of what percentage of the up to 21,000 acres of mechanical and hand thinning will be done in IRAs. Please provide detailed maps of each IRA that includes all areas where mechanical or hand thinning, and prescribed burning is proposed.

It is essential that the public be informed of the existing conditions and potential impacts of fuel treatments on Roadless area values and characteristics. The Forest Service must identify all roads in or adjacent to IRAs that will be "improved" and what specific improvements will occur.

There are areas designated to have either high or moderate "Wilderness Evaluation Characteristic Rating" in the SFMLR Project area. Nowhere in the Scoping Document does the Agency discuss the potential impacts to the wilderness character of the affected IRAs, nor the potential for designation as wilderness under the Wilderness Act of 1964. This is an unacceptable lack of critical information.

The new Draft Forest Plan revision includes a proposed Wilderness Management Area designation adjacent to the SFMLR Project area (Thompson Peak). The Forest Service should include a map with Recommended Wilderness areas identified that are either in or adjacent to the SFMLR Project area. Fuel treatments should not occur in IRAs adjacent to the proposed Thomson Wilderness Management Area expansion because it is currently unknown what the boundary of the Wilderness Management Area expansion will be. The Agency should state specifically what they intend to do in this area.

#### K. Riparian areas and water quality

According to the Scoping Document, “the primary resource concerns for riparian areas in the Project Area include departed vegetative conditions, wildfire risk, and impacts to water quality from roads and trails.” Scoping Document, p. 10. The Forest Service must provide detailed baseline analysis of the causes of these departed vegetative conditions, and provide detailed information on the impacts to water quality and riparian areas from all roads and trails. We also request that the Forest Service provide the watershed analyses that determined that sub-watersheds within the project area are “functioning at risk.” Are these streams currently meeting water quality standards? The Forest Service must ensure compliance with the Clean Water Act and state water quality standards.

The Forest Service must also analyze the direct, indirect, and cumulative impacts of the project on riparian areas, streams and water quality, including an evaluation of the risks of increased sedimentation in waterways from proposed fuel treatments, and subsequent decrease in water quality relating to sedimentation flow.

The Proposed Action states that “Native species such as willow, cottonwood, alder, grasses and forbs would be planted if natural regeneration is determined to be insufficient following conifer and non-native species removal.” We are in favor of these potential restoration activities, but the Agency should evaluate thoroughly to what extent conifers should be removed and how to do it without excessive impacts on riparian areas.

#### L. Roads

According to the Scoping Document, “there is a need for improving the transportation system that would be used for project implementation activities.” Scoping Document, p. 11. This statement demonstrates a serious lack of appreciation of the impacts that roads have on ecosystem health, and of the requirements of the Roads Rule and other environmental laws. The stated Purpose of this project is to “improve the ecosystem resilience of a priority landscape to future disturbances including wildfire, climate change, and insect outbreaks.” Scoping Document, p. 2. As explained below, roads have a significant impact on ecosystem resilience. Thus, to meet the stated purpose of this project, the Forest Service must pay significantly more attention to the impacts that roads are having throughout the project area, and must do more as part of this project to reduce those impacts. There is not merely a need to ensure a safe transportation system for this project – there is a need to reduce the impacts of the existing transportation system on the forest at a landscape scale.

According to the 2008 Travel Management Record of Decision for the Santa Fe National Forest, 2,878 miles of open system roads were to be closed for public use. We cannot easily determine how many miles of those roads are in the SFMLR Project area, but we can assume there would be a significant number of miles, perhaps several hundred. A map should be created showing the existing road system in the project area, and how many miles of existing roads are closed for public use in the Travel Management decision.

The Forest Service should fully consider the Santa Fe National Forest's travel analysis report, identify the minimum road system for the project area, and identify more unneeded roads to prioritize for decommissioning or other uses.

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. The Santa Fe National Forest is no exception, with many miles of system roads, the required maintenance of which exceeds annual maintenance costs. To address its unsustainable 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. § 212, subpart A. The Roads Rule created two important obligations for the agency. One obligation is to identify the minimum road system needed for safe and efficient travel and for the protection, management, and use of National Forest system lands. *Id.* §212.5(b)(1). Another 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).

Identifying a resilient future road network is one of the most important endeavors the Forest Service can undertake to restore aquatic systems and wildlife habitat, facilitate adaptation to climate change, ensure reliable recreational access, and operate within budgetary constraints. And it is a win-win-win approach: (1) it's a win for the Forest Service's budget, closing the gap between large maintenance needs and drastically declining funding through congressional appropriations; (2) it's a win for wildlife and natural resources because it reduces negative impacts from the forest road system; and (3) it's a win for the public because removing unneeded roads from the landscape allows the agency to focus its limited resources on the roads we all use, improving public access across the forest and helping ensure roads withstand strong storms.

If this is truly a landscape resilience project, then the Forest Service must consider the SFNF's road system on a landscape-scale, using a thoughtful, strategic approach to improving public access to the forest, reducing negative impacts from forest roads to water quality and aquatic habitats, and improving watersheds and forest resiliency by returning expensive, deteriorating, and seldom used forest roads to the wild.

Please explain how the travel analysis report and list of unneeded roads informed identification of the minimum road system in the NEPA analysis. The Santa Fe National Forest must demonstrate how it is utilizing its travel analysis report, and following direction under subpart A, for identifying and implementing the minimum road system. National guidance directs this to happen through analysis of site-specific projects under NEPA. The Forest Service must demonstrate how it has relied on the travel analysis process to develop the proposed road treatments. Given the Forest Service is considering changes across over 50,000 acres of NFS lands that include a large number of miles of roads, this is the perfect opportunity for the Forest Service to utilize its travel analysis report and to identify and begin implementing the minimum road system.

The Forest Service should assess its proposed road actions in relation to the risks and benefits analysis in its forest-wide and district level travel analysis reports, as well as the factors for a minimum road system, with the goal of minimizing adverse environmental impacts. To the

extent that any of the alternatives differ from what is recommended in the travel analysis report, the Forest Service should explain that inconsistency. *See, e.g., Smiley v. Citibank*, 517 U.S. 735 (1996) (“Sudden and unexplained change . . . or change that does not take account of legitimate reliance on prior interpretation . . . may be arbitrary, capricious [or] an abuse of discretion”) (internal citations omitted).

Subpart A directs the agency to “identify the roads on lands under Forest Service jurisdiction that are no longer needed,” and therefore should be closed or decommissioned. While we strongly support the Forest Service’s proposal to decommission up to 20 miles of system roads, we also urge the agency to further identify decommissioning opportunities. Based on current natural resource conditions, assessed risks from the existing road network, road densities across the landscape, the agency’s limited resources, and long-term funding expectations, we believe additional decommissioning or closures are warranted. The Forest Service should decommission any high-risk road or explain the need for such a road, how the Forest Service will mitigate those risks and its capacity to do so under current and future budget projections. The agency should also provide this explanation for any medium risk road retained in the project area.

The Forest Service must disclose current open and total road densities in all watersheds and the project area as a whole. We also urge the Forest Service to include total open route densities in order to incorporate the fact that unauthorized routes contribute to degraded watershed conditions and reduce wildlife habitat effectiveness.

The Forest Service must accurately define the official road network as the baseline for the NEPA analysis. The baseline and no-action alternative can, and sometimes do differ. Analysis of the road system in this project area should recognize and build on those distinctions. Current management direction does not compel the Forest Service to recognize decommissioned roads and unauthorized roads as part of the official road system. But disclosure of the actual number and location of decommissioned routes and unauthorized routes on the landscape, as well as the impacts of those routes, is a necessary component of the no-action alternative that should be disclosed to inform meaningful public comment. An assessment of the no-action alternative should therefore be separate and distinct from the identification of the baseline (the official open road system).

The Forest Service should consider a broad array of impacts related to forest roads in its NEPA analysis. Here, site-specific analysis is crucial. The Scoping Document provides no site-specific identification of existing roads, or those proposed for “treatment.” There is no identification of unauthorized routes and whether the Forest Service will be using or “improving” those routes as part of this project. Road treatments include road improvement, decommissioning, and/or closure. The Forest Service must provide analysis demonstrating the agency’s ability to effectively implement closures and decommissioning.

The best available science shows that forest roads have significant adverse impacts on forest resources. A 2014 literature review from The Wilderness Society surveys the extensive and best available scientific literature—including the Forest Service’s General Technical Report synthesizing the scientific information on forest roads (Gucinski 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).<sup>17</sup> Erosion, compaction, and other alterations in forest geomorphology and hydrology associated with roads seriously impair water quality and aquatic species viability. 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. 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. In fact, much of this project focuses on reducing wildland fire risk, but makes no mention of the intersection between roads and fire ignitions or fire behavior. The Forest Service must disclose how road densities can change micro-climates and alter fire behavior in comparison to roadless conditions.

Roads often contribute to degraded baseline conditions in watersheds containing native fish species. Roads are a primary source of sediment impacts to developed watersheds. Accumulation of fine sediment is detrimental to fish habitat. Sediment delivered to streams is greatest in riparian areas where roads cross the streams. Fords and approaches to the crossings deliver sediment directly to streams. Culverts can produce a large amount of sediment if the culvert plugs and fails. Travel management decisions affecting roads and trails are most likely to affect substrate embeddedness and stream bank condition. Plus, roads and trails paralleling streams can interfere with large wood reaching the stream and cause increased erosion and decreased stream bank condition.

We strongly support decommissioning or closing all unauthorized routes, and urge they not be added to the NFS road or trail system. The agency states it proposes to close or decommission up to 21.5 miles of road. Does this include unauthorized routes? How many miles of unauthorized routes are in the project area? The agency should increase its road closures and decommissioning to include all user-created trails and unauthorized roads. The continuing presence of user-created routes on the landscape, certainly known to those who created them, continues to allow harassment of wildlife, fragmentation of wildlife habitat, littering, fires and invasive plant distribution all while contributing to the degradation of fish habitat and riparian areas. The agency must also consider the cumulative impacts suffered by the landscape.

Ranger Sandy Hurlocker stated at the SFMLR Project Scoping meeting of June 29, 2019 that they would widen UTV tracks into roads in some situations to accommodate trucks and vehicles for thinning operations. This was not stated in the Scoping Document, and we do not know if that constitutes “road improvement”, as UTV tracks are not roads, or if it is actually road construction. The Forest Service should define what is meant by “road improvement.”

#### M. Old growth

The Scoping Document states “In accordance with the Old Growth Standards outlined in the current Forest Plan, 20% of the forested areas in the Project Area would be identified, allocated and managed as old growth. The desired condition in these areas is a healthy and resilient forest ecosystem with a component of old, large trees or a component of trees that would develop toward old, large trees in the long-term.” Scoping Document, p. 8.

The Forest Service should utilize the Forest Plan's detailed old growth management criteria and standards for identifying old growth and apply the standards carefully in site specific analysis.

Old growth is one of the most fire resistant forest landscapes, and we encourage the Agency to manage much more than 20% of the project area as old growth. It is stated in "Fire Ecology in Rocky Mountain Landscapes", by William L. Baker, "Another low-impact defensive approach (tool for living with fire in landscapes) is to restore dense, old-growth forests, which would be ecological restoration and would also lower fire risk relative to middle-aged forests. Old-growth mixed-conifer forests without fuel reduction were modeled to be as resistant to crown fire as forests thinned from below, because high tree canopies resist crowning and shade keeps moisture high (Stephens and Moghaddas 2005a)." Pg. 434.<sup>18</sup>

#### N. Monitoring

There is no information about monitoring in the Scoping Document. Monitoring is a critical aspect of a landscape-scale fuel treatment project that is essentially a land experiment. Please develop a comprehensive, mandatory monitoring program that includes vegetation and species monitoring, soil sampling, water quality sampling and improved air quality sampling to monitor prescribed burn particulate levels. Please develop and identify locations for test plots.

#### O. WUI concerns

Members of the public live in communities near the SFNF for a variety of reasons, including beauty of the forest, the enjoyment of living among the trees, and the opportunities to observe birds and wildlife. There is an increasing awareness among residents of forest communities that their safety in a wildfire depends on how they fire-proof their own homes and the 100-foot radius around their homes. USFS physical scientist Jack Cohen (now retired) has identified very precisely the steps residents in the wildland/urban interface need to take to protect themselves from the effects of wildfire.<sup>19</sup>

Residents in the WUI adjacent to the SFNF want to know what the Forest Service intends to do in the forest adjacent to their neighborhoods. Please provide specific information about where fuel treatments are proposed to occur in the WUI, so those residents can provide meaningful comments.

The Agency should consider the needs of communities to have natural and intact National Forest nearby, especially as most Eastside forest communities are upwind of the SFNF and not in significant risk of fire from the SFNF. The primary fire risk for many Eastside SFNF communities comes from private lands. There appears to be little flooding risk that could impact most Eastside SFNF communities. The agency should evaluate flooding risk for all WUI areas if they intend to do fuel treatments to protect Eastside forest communities adjacent to the SFNF from flooding hazard.

Please evaluate the effects of greater educational outreach by the US Forest Service concerning fire safety for WUI residents.

### **III. The Santa Fe Conservation Alternative (SFCA)**

WildEarth Guardians, along with Sierra Club and Defenders of Wildlife have developed an alternative for analysis in both an EA and/or an EIS, the Santa Fe Conservation Alternative, to address the purpose and need of the SFMLR Project in a way that conserves forest resources.

The purpose of the SFMLR Project is to improve the resilience of a priority landscape to further disturbances by restoring forest and watershed health and to reduce the risk for catastrophic wildfire. This purpose contains two primary objectives that may be incompatible. One primary objective is to reduce fire risk and moderate fire behavior. The Proposed Action indicates this would be accomplished by removing large amounts of vegetation across a widespread landscape, and then repeatedly burning off new growth with prescribed fire. The other primary objective is to restore the ecological function of the forest in the project area, or to increase forest health. Based on past thinning projects carried out in the Eastside SFNF, these types of projects, even recent ones that followed GTR-310 specifications, have resulted in less functional ecosystems—substantially less healthy forests, and the forest does not seem to be regaining productivity in treated areas. Also, there is no local research that indicates widespread fuel treatments will significantly moderate fire behavior, especially high intensity fire, during hot and dry weather.

Thinning is a massive disturbance, even hand-thinning, but especially mechanical thinning. With our forest in a generally dry and fragile condition, care and restraint is the best and safest policy, and the Santa Fe Conservation Alternative is designed to be light-handed and targeted to the specific limited areas that would protect valued resources from the effects of fire, and that would reduce tree density in very dense stands of trees.

The Santa Fe Conservation Alternative seeks to resolve the incompatibility of the primary objectives of the SFMLRP by limiting thinning treatments and being very site-specific and strategic in placement of the treatments carried out. Almost all environmental impacts from thinning can be greatly reduced by leaving more residual trees per acre, and substantially decreasing the amount of acres thinned. Ecologically sound slash management, which is nearly impossible on a large scale, can be completed when thinning treatments are carried out on a much smaller scale. Treatments can be focused around important values, including up to 150 feet from structures.

Areas that are thinned would be no less than an average of 80 BA, instead of the average of 35-45 BA commonly prescribed for thinning treatments in the Greater Santa Fe Fireshed area in recent decades. Trees greater than 9” would not be cut, residual trees would be left in all size and age classes, and the majority of trees would be left in their natural groupings. The understory would be left largely intact, and broadcast prescribed burns would generally not be done, except to burn thinning slash under circumstances where slash piles can’t reasonably be done. Naturally caused fires would be allowed to burn when safe to do so.

The SFCA has a strong focus on forest reclamation and restoration including reclamation of any USFS roads deemed unessential in Travel Management Plan, hand building of structures (example Zuni bowls) in arroyos to slow flood water, planting native, stream side vegetation

where appropriate to slow floodwaters, and reintroduction of beaver where appropriate.

The Proposed Action indicates native species such as willow, cottonwood, alder, grasses and forbs would be planted if natural regeneration is determined to be insufficient following conifer and non-native species removal. The reclamation and restoration methods outlined in the SFCA are compatible with these objectives.

It is important to start with small projects and monitor to find out what desired condition is possible and actually does support better ecological function and forest health, and protects values from the effects of fire in a very targeted and site-specific way.

This alternative also focuses on prevention of fire through increased fire safety education, both for forest users and WUI residents, and increased law enforcement in the project area to decrease illegal human behaviors that put the project area at risk.

We are requesting that this alternative be fully analyzed because it supports forest health, and greatly reduces the possibility of creating an ecological disaster. Removing large amounts of trees over widespread areas and performing repeated prescribed burns--fundamentally damaging forest ecology in order to protect the forest from damage as a result of fire - is an equation that may not be reasonable or valid. A better plan needs to be considered.

The basic principles of the Santa Fe Conservation Alternative are:

#### Thinning

- Limited hand thinning (up to 9") only in dry pine and mixed conifer outside of IRAs.
- Stumps cut down to the ground
- No thinning adjacent to the WUI for the purpose of protection of structures or communities except within 150 feet of structures, and for fire fighter safety zones.
- Maximum trees removed in most thinned areas to 80 BA
- Leave more tree groupings (50% minimum) and maintain a shrub understory. Utilize a wildlife habitat-based determination of tree and vegetation retention
- Identify riparian area concerns and create plan to protect

#### Slash management

- Pile burning of activity fuels
- Reevaluate slash management timing and methods to avoid potential bark beetle outbreaks, and sterilization of soil under slash piles. No slash over 3" left on the ground during the dry season

#### Prescribed burning

- Managed wildland fire and pile burning only. No broadcast prescribed burns

## IRAs

- No thinning in IRAs
- Identify Roadless Area concerns and develop a policy to restore

Monitoring (key means of reaching desired outcomes of healthy forest habitat and protection of public health)

- Test plots for monitoring purposes
- Soil sampling - plot number and spacing to be determined
- Baseline species evaluation (i.e. population capacity and presence/absence)
- Improved air quality standards and monitoring to protect sensitive (human) population

## Reclamation and restoration

- Reclamation of any USFS roads deemed unessential in Travel Management Plan
- Hand building of structures (example Zuni bowls) in arroyos to slow flood waters
- Planting native, stream side vegetation where appropriate to slow floodwaters
- Reintroduction of beaver where appropriate

## WUI and community forests

- Develop a program to support fire-proofing of structures and surrounding 100 feet, at least through increased outreach and education. This should be a homeowner responsibility
- If possible, support development of an alternative egress for communities with a single egress
- Leave most areas that the public uses for recreation, including forests adjacent to communities, natural and intact.
- Take into greater account the need to preserve areas that are special to communities, like Cougar Canyon
- Increased law enforcement to protect against unsafe fire behavior by forest visitors

## Scenic quality

- Maintain the scenic quality of all treated areas. Develop a standard for acceptable scenic quality.

We thank you for the opportunity to provide these scoping comments.

Sincerely,



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# EXHIBIT A

Mr. James Melonas  
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May 17, 2019

**Re: Santa Fe Conservation Alternative  
Santa Fe Mountains Landscape Resiliency Project (SFMLRP)**

Dear Supervisor James Melonas,

The members of Northern New Mexico Sierra Club, Defenders of Wildlife and WildEarth Guardians appreciate the opportunity to submit a community based "Conservation Alternative" to the Santa Fe Mountains Landscape Resiliency Project (SFMLRP). Our non-profit conservation organizations are deeply involved in promoting best forestry and watershed management practices and preserving our unique New Mexico wildlife species and habitats for generations to come.

According to the Project Statement of Purpose and Need:

The purpose of the Santa Fe Mountains Landscape Resiliency Project is to increase the resilience of a priority landscape to future disturbances such as high-severity wildfire, drought, and insect and disease outbreaks. Resilience is the "ability of a social or ecological system to absorb disturbance while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change" (Forest Service Manual 2020.5).

The Statement outlines how Santa Fe National Forest will achieve this change in forest status:

To increase the resilience of the forests, watersheds, and communities of the Fireshed, there is a need to:

- Move forests and woodlands (including ponderosa pine, dry mixed conifer, aspen, and piñon-juniper) in the Project Area towards their characteristic species composition, structure and spatial patterns in order to improve ecological function;
- Reduce the risk for high-severity wildfire, create safe, defensible zones for firefighters in areas of continuous fuels and near valued resources that are at risk, and avoid negative post-fire impacts;

- Improve the diversity and quality of habitat for wildlife; and
- Improve soil and watershed conditions.

The SFMLRP has been presented to the public through public forums, county commission hearings, and face-to-face meetings with many conservation organizations and concerned landowners who live in Santa Fe County. The residents who have spoken in opposition to the project represent thousands of our organizations' local members, deeply concerned about the SFMLRP and its potential impact on Santa Fe's forest, watershed, wildlife habitat, recreational values, landmark appearance, and wildfire risk.

The future ability of the forest to “adapt to stress and change” is at the heart of this project and has raised ongoing questions how treatments work, for how long, at what cost, and with what success in reducing wildfire damage.

As several members of the public have asked: “If we’re spending millions to cut and burn trees in the forest when many are likely to die from insects or wildfire anyway (i.e. the natural process), why not spend those funds on protecting communities, public preparedness training, and early fire detection?”

### **1. Treated/untreated acres respond differently but are short-lived and over time are “nearly identical”**

There is evidence that high intensity wildland fire impacts can be reduced if they burn over treated areas, and that some can contribute to achieving short-term resiliency goals. Other evidence suggests that fuel treatments are much more effective in reducing low and moderate intensity fire, and are generally not that effective for very high intensity fire, for example Las Conchas Fire. Low to moderate and even some high intensity fire is considered to be beneficial to the fire-adapted forest landscape, so that makes the efficacy of fuel treatments questionable in many cases. Treatments are short-lived and require repeated thins and prescribed burns to maintain their function.

In the study: “Evaluating spatiotemporal tradeoffs under alternative fuel management and suppression policies: measuring returns on investment.” (USFS, Thompson, Riley, Loeffler and Hass. 2016) Modeling results confirmed that fire-fuel treatment encounters are rare, such that median fire suppression cost savings is zero. Sierra National Forest was used as study site to reflect a microcosm of many of the challenges surrounding contemporary fire and fuels management in the western U.S. [https://www.firescience.gov/projects/13-1-03-12/project/13-1-03-12\\_final\\_report.pdf](https://www.firescience.gov/projects/13-1-03-12/project/13-1-03-12_final_report.pdf)

There is also evidence that post-fire recovery is initially similar in treated and untreated areas and that treatment benefits are nullified in the long term.

The 2002 Rodeo–Chediski fire, one of the largest wildfire in south-western USA history, burned over treated stands and adjacent untreated stands in the Apache–Sitgreaves National Forest, setting the stage for a natural experiment testing the effectiveness of fuel reduction treatments under conditions of extraordinary fire severity. In seven pairs of treated– untreated study sites measured 2 years after the fire, thinning was strongly associated with reduced burn severity. **Initial post-fire recovery was relatively similar between treated and untreated areas.** Only fuel loadings and Manzanita density were significantly different. Fuel loading in terms of fine and coarse woody debris, as well as forest floor weight, were substantially greater in treated areas

**Treated areas initially had more trees, but as untreated areas had more regeneration,** they quickly became denser; this difference slowly declined over the course of the simulation. All treatment and regeneration combinations led to some self- thinning, but Regen-2 (scheduling measured regeneration in 2004 and adjusted regeneration in 2024) in untreated areas led to an especially high pulse of density and a correspondingly steep decline. After 100 years, treated and untreated areas were nearly identical.<sup>1</sup>

Given the similar long-term effects of fire over treated and untreated areas, and the probability that any fuel treatment will be encountered by a fire is very low, the potential benefits do not seem to justify the ecological damage from the impacts of *widespread* fuel treatments. Removing the forest understory mechanically and then burning regrowth of the understory with periodic prescribed burns profoundly damages many of the ecological cycles of the forest.

## **2. What steps work effectively to reduce Wildland Fire damage?**

USFS Deputy Chief Victoria Christiansen testimony to the Senate Energy & Natural Resources Committee (2017) read: “Wildland Fire Management programs at U.S. Forest Service and the Department of the Interior seek to achieve a cost-efficient and a technically effective fire management plan that meets resource and safety objectives. The guiding principles and priorities, as outlined in the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy), are to “safely and effectively respond to wildfires, promote fire-adapted communities, and create fire-resilient landscapes through direct program activities and strong Federal, State, tribal and local collaboration. Firefighter and public safety are the primary considerations for all operations.”

Wildfire prevention is a critical element to working collaboratively across land ownership boundaries. The agency uses cooperative fire agreements to further

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<sup>1</sup> Barbara A. Strom and Peter Z. Fulé, “Pre-wildfire fuel treatments affect long-term ponderosa pine forest dynamics”. *International Journal of Wildland Fire*, 2007, **16**, 128–138

the goals and implementation of the Cohesive Strategy. Nationally, nearly 9 out of 10 wildfires are caused by humans, including some of the most costly wildfires. *(Note: In northern NM, Cerro Grande Fire was caused by a prescribed burn, Las Conchas Fire was caused by a downed transmission line, and Doghead Fire was caused by a spark from a USFS masticator).* If we prevent unwanted, human-caused fires from igniting, we can proactively use our resources to create resilient landscapes, improve our response to the other wildfires that need attention, and engage communities to be prepared for and live with wildfire.

The goal of wildfire prevention is to stop unwanted human-caused wildfires before they start and to reduce the negative effects of wildfires. Prevention occurs in three main areas:

- **Education** aimed at changing behavior through awareness and knowledge.
- **Engineering** designed to shield an ignition source or prevent wildfire from impacting something we value. Examples include clearing debris from around a house, installing spark arrestors on equipment, and utilizing well-designed campfire pits. (It can also be used to protect valuable infrastructure in flood-prone areas.)
- **Enforcement** efforts to gain compliance with fire regulations and laws (primarily a State and local role). Elements of enforcement include detection to keep fires small, patrols to increase visibility and public awareness of fire danger, and public compliance with wildfire regulations.

Wildfire prevention education activities can reduce the number of human-caused wildfires and thus fire-related costs. A 2009 study on wildfire prevention education programs in the state of Florida found that the benefit to cost ratio could be as much as **35 to 1**. That is, every additional dollar spent would have reduced wildfire related losses (e.g., home and timber losses, etc.) and suppression costs by 35 dollars.<sup>2</sup>

A good example of fire prevention “enforcement” was the administrative decision to close Santa Fe National Forest, during High Fire Danger weather in 2018, to remove fire hazards from outdoor activities and camping, and to increase public awareness of wildfire risk.

### **3. Wildfire education, prevention of human source ignition, and enforcement are top priorities for Santa Fe County residents**

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<sup>2</sup> Testimony of Victoria C. Christiansen, Deputy Chief, State & Private Forestry, USDA, Forest Service. US Senate Energy & Natural Resources Committee hearing. August 3, 2017.

Housing developments and new construction in the wildland-urban interface are issues residents are willing to discuss but not prohibit. The promotion of Firewise communities has gained popularity and with strong political leadership could become the norm with tighter housing ordinances in both city and county. Treated right-of-ways for neighborhood access roads, underground utility lines, fire retardant building and roofing materials, water tanks and surface ponds for fire fighting, are all desired conditions for residents living near the forest.

Wildfire preparedness clinics are well attended in Santa Fe as are workshops that demonstrate landowner treatments and clean ups. Programs that show fire behavior and wildfire simulations are equally popular. Funding for such ongoing programs by SFNF and City & County Fire Departments should be ongoing.

Mapping of potential Firewise Communities has already been done as part of the proposed project. Focal areas for Firewise education, fire prevention and enforcement, include Chupadero inholdings, Summit Estates (Hyde Park Road), Canyon Atalaya, La Barbaria, Canada de los Alamos, Glorieta and La Cueva. Within Santa Fe National Forest, Hyde Park Road to Ski Santa Fe has also been identified as a high risk, high value corridor.

Controlling low to moderate intensity wildfires away from focal areas, but letting them burn through forest areas with heavy fuel loads is generally well accepted by the public.

#### **4. Santa Fe Conservation Alternative (SFCA): Recommendations**

The “desired conditions” of the SFCA are as follows:

- 1) Require a site specific plan for each project within the SFMLRP that strategically targets limited areas to treat, creates buffered boundary areas to protect property and access ROWs, and safety zones to protect lives;
- 2) Require that riparian areas and critical wildlife habitat receive additional restoration monitoring and mitigation procedures developed in collaboration with NM Department of Game and Fish; and,
- 3) Encourage public input regarding preservation of places, landscapes, cultural sites and landmarks of local significance.

Thinning (Note: Projections for post treatment density are: 165.05 TPA across treatment stands – 4.0”+ DBH. 29.3% of stands are >81 TPA and 90.3% of stands have >52% trees <16” DBH.)

- Limited hand thinning (up to 9”) only in dry pine and mixed conifer outside of IRAs.
- Stumps cut down to the ground
- No thinning adjacent to the WUI for the purpose of protection of structures or communities except within 150 feet of structures, and for fire fighter safety zones.

- Maximum trees removed in most thinned areas to 80 BA
- Leave tree groupings (50% minimum) and maintain a shrub understory. Utilize a wildlife habitat based determination of tree and vegetation retention
- Identify riparian area concerns and plan to protect from erosion or sedimentation

#### Slash management

- Pile burning of activity fuels
- Reevaluate slash management timing and methods to avoid potential bark beetle outbreaks, and sterilization of soil under slash piles. No slash over 3" left on the ground during the dry season

#### Prescribed burning

- Utilize managed wildland fire and pile burning wherever possible. Utilize minimal broadcast prescribed burns only in areas that are not assessable for pile burns.

#### IRAs

- No thinning in IRAs
- Identify Roadless Area concerns and develop policy to restore

#### Monitoring (Essential method of reaching desired outcomes of healthy forest habitat and

protection of public health)

- Set aside test plots for monitoring purposes
- Soil sampling - plot number and spacing to be determined
- Baseline species evaluation (i.e. population capacity and presence/absence)
- Improved air quality standards and monitoring to protect sensitive (human) population

#### Reclamation and restoration

- Reclamation of any USFS roads deemed unessential in Travel Management Plan
- Hand build structures (ex. Zuni bowls) in arroyos to slow flood waters
- Planting native, stream side vegetation where appropriate to slow floodwaters
- Reintroduction of beaver where appropriate

#### WUI and community forests

- Develop program to support fire-proofing of structures and surrounding 100 feet, at least through increased outreach and education (County should make this a homeowner responsibility)
- If possible, support development of an alternative egress for communities with a single egress
- Leave most areas accessible to the public for recreation
- Take into account local opinion to preserve areas that are special to communities, like Cougar Canyon
- Increase law enforcement to protect against unsafe fire behavior by forest visitors

Scenic quality

—Maintain the scenic quality of treated areas. Develop a standard for acceptable scenic quality with local input

All of Santa Fe and the surrounding inhabitants depend on the thousands of acres of forest that give us clean air and water, seasonal runoff and acequias, historically thriving pueblos and small rural communities, native fish and wildlife, several converging ecoregions with differing landscapes, and inspiring natural beauty.

We are all deeply invested in the success of this important project.

Respectfully,



Teresa Seamster  
Chair, Northern New Mexico Group of Sierra Club  
[Ctc.seamster@gmail.com](mailto:Ctc.seamster@gmail.com)



Bryan Bird  
Southwest Program Director, Defenders of Wildlife  
[bbird@defenders.org](mailto:bbird@defenders.org)



Sarah Hyden  
SFNF Protection Advocate, WildEarth Guardians  
[sarah.hyden@me.com](mailto:sarah.hyden@me.com)

cc: Sandy Hurlocker, Steve Romero, Hannah Bergemann

# EXHIBIT B

## Observations, Condition, and Management of the *Ips* Infested Trees in the Areas Around the NRCS Thinning on Cougar Ridge Road

John P. Formby, Ph.D.  
Forest Health Program Manager  
New Mexico State Forestry  
(505) 469-6660

- Observed numerous trees around the thinned area infested with *Ips* bark beetles (see pictures below)
- Some green trees may be freshly attacked this year, but will not show signs (crowns fading from top down) until next year (will need to monitor trees next year for infestations)
- Current *Ips* infested trees are breeding grounds for thousands of offspring, which could cause a larger localized *Ips* outbreak in the community (especially if drought conditions worsen)
- Offspring development time for *Ips* spp. in ponderosa pine = 30-45 days, i.e. time is critical and trees need to be immediately felled/removed or felled/chopped into firewood to limit spread of the species in the community. All tree materials that are > 3" in diameter need to be removed from the site or immediately cut into firewood pieces. All materials < 3" in diameter can be cut into short sections and left on site.
- Other bark beetles (*Dendroctonus* spp.) may be attracted to the *Ips* attacked trees, which could lead to a larger bark beetle outbreak in the community (another reason to fell currently infested trees)



Ponderosa pines infested with *Ips* bark beetles



Ponderosa pines infested with *Ips* bark beetles



Ponderosa pines infested with *Ips* bark beetles



*Ips* frass from boring activity in ponderosa pine

# EXHIBIT C

from Hyde Park WUI Project work order

**The following stand and treatment descriptions are in general in nature and may not apply to specific conditions. The designation by prescription may be altered if agreed upon by the Contractor and COR to better meet the Forest Service objectives.**

## 1) Thinning Specifications

- 1) Cut all ponderosa pine and southwestern white pine that are less than or equal to 9 inches DBH and taller than 3 feet. Cut all white fir and Douglas-fir trees that are less than or equal to 11 inches DBH and taller than 3 feet.
- 2) Cut trees shall be felled within unit boundaries and away from archeological sites, roads, trails, telephone/power lines, fences, and land corners. Any tree falling on such areas shall be removed.
- 3) All cut trees shall be completely severed from the stump; hung trees shall not be permitted.
- 4) The maximum stump height shall not exceed 8 inches above ground level or 4 inches above any natural object that would prevent severing the tree at a lower point. All live limbs below the cutting point shall be removed.
- 5) Deciduous tree species will be found in the project area. These species shall not be cut unless they pose a safety hazard or impede access.

## 2) Slash and Piling Specifications

- 1) Contractor shall cut limbs flush with the bole and cut the tree top off where the diameter is at 6 inches. Contractor generated slash smaller than 6 inches in diameter shall be piled.
- 2) Tree boles shall be bucked into 8-10 foot long pieces so that the bole shall be in contact with the ground in at least three points. Creating jackpots of boles shall be avoided.
- 3) Slash treatments shall be concurrent and progress with the thinning.
- 4) Piles shall be constructed to facilitate full consumption when they are burned. Piles shall be tight and compact with most small diameter slash on the bottom.
- 5) Piles shall not be less than 10 feet in diameter and 6 feet in height.
- 6) All slash that protrudes 2 or more feet from the outer edge of the pile shall be bucked off and placed on the pile.

- 7) Slash piles shall not be placed in roads, ditches or within 10 feet of project boundary. Slash treatment along roads shall be done without affecting the proper functioning of channels leading to and from drainage structures.

### **RESOURCE PROTECTION STANDARDS:**

**Water Quality** - The following measures shall be observed to protect stream courses:

- 1) **Wheeled or track-laying equipment** shall cross streams at crossings designated by the COR.

### **Other Resource Protection**

All of the activities associated with this project shall be conducted in such a manner that there shall not be any adverse impact to the following resources listed.

- 1) **Protection of Improvements and Survey Monuments** - The Contractor(s) shall avoid any damage to improvements such as, but not limited to, fences, gates, utility poles, survey markers or monuments, survey witness trees and cultural sites. The Contractor will be required to repair or pay fair market value to replace any damaged improvements.
- 2) **Cultural Sites** – Protected cultural areas will be flagged by the Forest Service for avoidance with **white** ribbon. Should any additional heritage or cultural sites be discovered during operations, the Contractor shall immediately stop treatment in that area and contact the COR.

### **Safety**

When the Contractor's operations are in progress adjacent to or on Forest Service/County controlled roads and trails open to public travel, the Contractor shall furnish, install and maintain all temporary traffic controls that provide the user with adequate warning of hazardous or potentially hazardous conditions associated with the Contractor's operations.

Contractor shall take precautions when operating directly adjacent to private land to avoid creating hazardous conditions that compromise the safety of residents or that may damage buildings and property.

## EXHIBIT D



A portion of the Santa Fe Municipal Watershed thinned in 2002 and treated with prescribed fire twice since

# EXHIBIT E



**THE JOHN MUIR PROJECT**  
OF EARTH ISLAND INSTITUTE

P.O. Box 897, Big Bear City, CA 92314  
Telephone: 530-273-9290 Facsimile: 909-906-1187

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## Common Myths about Forests and Fire

**Does Logging in Forests Distant from Homes Protect Communities?** No. Defensible space work within 100 feet or less from homes, along with making homes themselves more fire-safe, is very effective in protecting homes from wildland fire, but vegetation management activities beyond 100 feet from homes has no additional influence on whether or not a home survives a wildland fire (Syphard et al. 2014, DellaSala and Hanson 2015).

**Do “Thinning” Logging Operations Stop or Slow Wildland Fires?** No. “Thinning” is just a euphemism for intensive commercial logging, which kills and removes most of the trees in a stand, including many mature and old-growth trees. With fewer trees, winds, and fire, can spread faster through the forest. In fact, extensive research shows that commercial logging, conducted under the guise of “thinning”, often makes wildland fires spread *faster*, and in most cases also *increases* fire intensity, in terms of the percentage of trees killed (Cruz et al. 2008, 2014).

**Does Reducing Environmental Protections, and Increasing Logging, Curb Forest Fires?** No, based on the largest analysis ever conducted, this approach increases fire intensity (Bradley et al. 2016). Logging reduces the cooling shade of the forest canopy, creating hotter and drier conditions, leaves behind kindling-like “slash” debris, and spreads combustible invasive weeds such as cheatgrass.

**Do “Thinning” Logging Operations Improve Forest Carbon Storage?** No. In fact, this type of logging results in a large overall net *reduction* in forest carbon storage, and an *increase* in carbon emissions, relative to wildland fire alone (no logging), while protecting forests from logging maximizes carbon storage and removes more CO<sub>2</sub> from the atmosphere (Campbell et al. 2012, Law et al. 2018). To mitigate climate change, we must protect forests.

**Are Our Forests Unnaturally Dense and “Overgrown”, and Do Denser Forests Necessarily Burn More Intensely?** No. We currently have a similar number of trees per acre compared to historical forests (Williams and Baker 2012, Baker 2014, Baker and Hanson 2007), but we have fewer medium/large trees, and less overall biomass—and therefore less carbon (McIntyre et al. 2015). Our forests actually have a carbon deficit, due to decades of logging. Historical forests were variable in density, with both open and very dense forests (Baker et al. 2018). Recent studies by U.S. Forest Service scientists, regarding historical tree density, omitted historical data on small tree density, and density of non-conifer trees. When these missing data were included, it was revealed that historical tree density was 7 times higher than previously reported in ponderosa pine forests, and 17 times higher than previously reported in mixed-conifer forests (Baker et al. 2018). Wildland fire is driven mostly by weather, while forest density is a “poor predictor” of future fire behavior (Zald and Dunn 2018).

**Do Forests with More Dead Trees Burn More Intensely?** Small-scale studies are mixed within 1-2 years after trees die, *i.e.*, the “red phase” (Bond et al. 2009, Stephens et al. 2018), but the largest analysis, spanning the entire western U.S., found no effect (Hart et al. 2015). Later, after needles and twigs fall and quickly decay into soil, and after many snags have fallen, such areas have similar or *lower* fire intensity than areas with fewer dead trees (Hart et al. 2015, Meigs et al. 2016).

**Do We Currently Have an Unnatural Excess of Fire in our Forests?** No. There is a broad consensus among fire ecologists that we currently have far less fire in western US forests than we did historically, prior to fire suppression (Hanson et al. 2015). We also have less high-intensity fire now than we had historically (Mallek et al. 2013, DellaSala and Hanson 2015, Baker et al. 2018).

**Do Current Fires Burn Mostly at High-Intensity Due to Fire Suppression?** Current fires burn mostly at low/moderate-intensity in western US forests, including the largest fires (Mallek et al. 2013, Baker et al. 2018). For example, over 70% of the Rim Fire burned at low and moderate intensity. The most long-unburned forests experience mostly low/moderate-intensity fire (Odion and Hanson 2008, Miller et al. 2012, van Wagtenonk et al. 2012).

**Are Forest Fires Causing Forests to Become a Carbon Source?** No. Recent unpublished reports from the Forest Service, and some state agencies, regarding wildfire carbon emissions are based on a discredited model (FOFEM) that has repeatedly been shown to exaggerate carbon emissions by nearly threefold (French et al. 2011). Further, the FOFEM model falsely assumes that nothing grows back after a fire to pull CO<sub>2</sub> out of the atmosphere. Field studies of large fires find only about 11% of forest carbon is consumed, and only 3% of the carbon in trees (Campbell et al. 2007), and vigorous post-fire forest regrowth absorbs huge amounts of CO<sub>2</sub> from the atmosphere; within a decade after fire, post-fire growth absorbs more carbon from the atmosphere than the fire emitted (Meigs et al. 2009).<sup>1</sup>

**Would Landscape-Scale Prescribed Burning Reduce Smoke Particulates?** No, it's the opposite. Any short-term reduction in potential fire behavior following prescribed fire lasts only 10-20 years, so using low-intensity prescribed fires ostensibly as a means to prevent mixed-intensity wildland fires would require burning a given area of forest every 10-20 years (Rhodes and Baker 2008). This would represent a tenfold increase, or more, over current rates of burning occurring from wildland fire (Parks et al. 2015). Contrary to popular assumption, high-intensity fire patches produce relatively lower particulate smoke emissions (due to high efficiency of flaming combustion) while low-intensity prescribed fires produce high particulate smoke emissions, due to the inefficiency of smoldering combustion. Therefore, even though high-intensity fire patches consume about three times more biomass per acre than low-intensity fire (Campbell et al. 2007), low-intensity fires produce 3-4 times more particulate smoke than high-intensity fire, for an equal tonnage of biomass consumed (Ward and Hardy 1991, Reid et al. 2005). As a result, a landscape-level program of prescribed burning would cause at least a ten-fold *increase* in smoke emissions relative to current fire levels, and it would not stop wildland fires when they occur (Stephens et al. 2009).

**Are Recent Large Fires Unprecedented?** No. Fires similar in size to the Rim fire and Rough fire, or larger, occurred in the 1800s, such as in 1829, 1864, and 1889 (Bekker and Taylor 2010, Caprio 2016). Forest fires hundreds of thousands of acres in size are not unprecedented.

**Do Large High-Intensity Fire Patches Destroy Wildlife Habitat or Prevent Forest Regeneration?** No. Hundreds of peer-reviewed scientific studies find that patches of high-intensity fire create “snag forest habitat”, which is comparable to old-growth forest in terms of native biodiversity and wildlife abundance (summarized in DellaSala and Hanson 2015). In fact, more plant, animal, and insect species are associated with mature forests that burn at high-intensity, where most or all of the trees are killed, than any other habitat type in the forest (Swanson et al. 2014). Forests naturally regenerate in heterogeneous, ecologically beneficial ways in large high-intensity fire patches (DellaSala and Hanson 2015, Hanson 2018).

**Do Occasional Cycles of Drought and Native Bark Beetles Make Forests “Unhealthy”?** Actually, it's the opposite. During droughts, native bark beetles selectively kill the weakest and least climate-adapted trees, leaving the stronger and more climate-resilient trees to survive and reproduce (Six et al. 2018). In areas with many new snags from drought and native bark beetles, most bird and small mammal species *increase* in numbers in such areas, because snags provide such excellent wildlife habitat (Stone 1995).

**Is Climate Change a Factor in Recent Large Fires?** Yes. Human-caused climate change increases temperatures, which influences wildland fire. Some mistakenly assume this means we must have too much fire but, due to fire suppression, we still have a substantial fire deficit in our forests.

For more information, contact Chad Hanson, Ph.D., Ecologist, John Muir Project ([cthanson1@gmail.com](mailto:cthanson1@gmail.com)).

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<sup>1</sup> For example, Campbell et al. (2007) found that the Biscuit fire of 2002 emitted an average of 19 tons of carbon per hectare, and Campbell et al. (2016) found that decay of fire-killed trees in the Biscuit fire emitted an average of about 0.75 tons of carbon per hectare per year over the first 10 years post-fire (there were lower emissions from decay in subsequent decades). Therefore, for the first 10 years post-fire, the total carbon emissions from the Biscuit fire (carbon emissions from the fire itself, plus subsequent emissions from decay) were approximately 26 tons of carbon per hectare. Meigs et al. (2009) (Table 5) report that, by only five years after fire, regrowth was pulling 3.1 tons of carbon per hectare per year out of the atmosphere. Therefore, by 10 years post-fire, this equates to approximately 31 tons of carbon pulled out of the atmosphere by regrowth—i.e., an overall net increase in carbon of 5 tons per hectare relative to pre-fire levels.

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Date submitted (Mountain Standard Time): 7/10/2019 11:06:28 PM

First name: Sarah

Last name: Hyden

Organization:

Title:

Comments:

Comments for the Santa Fe Mountains Landscape Resiliency Project

Dear Staff of the Santa Fe National Forest,

I was very involved in writing the WildEarth Guardians and Defenders of the Wildlife comments, so I have gone into many of the issues relating to the SFMLRP Scoping Document and the project. The following comments are my personal comments.

I am strongly urging the USFS to complete an Environmental Impact Statement for this large-scale and clearly impactful project. NEPA law requires an EIS for projects that may have significant impact on the human environment, which this project will because many people, including myself, experience that the prescribed burn smoke negatively impacts our health. Thinning and prescribed burning takes away from the beauty and enjoyment of our local forest. We feel emotions ranging from sad, to devastated, to angry when we see stump fields and strewn cut up trees where a beautiful forest used to be. NEPA law also requires that an EIS be completed for projects that may have significant impacts on resources such as Inventoried Roadless Area, wildlife, riparian ways, air quality and recreation. It is clear there will be significant impacts, and this project is also highly controversial.

Analysis should be site-specific, it is not acceptable to use the condition-based approach, and likely not in accordance with NEPA law.

We need much more information than was contained in the Scoping Document, in almost every respect.

I have been deeply concerned about where this project is headed. I think there is a fairly high probability that if you go forward with the types of thinning prescriptions that have been done in recent years on the Eastside SFNF on a large-scale, or even with prescriptions that are a little better, some type of environmental disaster will occur. I fear for the forest. I am asking that you step back and re-evaluate many of the assumptions you are proceeding with. Take some time to plan a good project that promotes forest health instead of damaging it. Do an EIS and include a broad range of scientific research and perspective. Genuinely include the public in the process.

I understand that the forest is in trouble either way, whether we do fuel treatments or not, but I trust nature to find it's appropriate balance in order to recover from past damaging practices such as logging, grazing and unchecked OHV use in the forest, and from the warming and drying of the climate. And sometimes it will be very painful to see.

But humans going out and cutting down the vast majority of trees, trampling the fragile soil and demolishing the understory is so much worse. And then burning off whatever tries to come back. What right do we have to do that? What right do we have to demolish wildlife habitat, the habitat of the wildlife living in the forest right now-who are alive and sentient and feel pain. And trees are alive too.

Are you certain you know how to redesign the ecosystem? It's very complex. It's easy for it to go very wrong.

Here in Canada de los Alamos, when trees were thinned under the NRCS grant program, we saw that the pinons that were not cut started to look very unhealthy with short and sparse needles. They still do. That is important and should be considered, as well as the bark beetle outbreak that started from the slash left through the warm season. How will you prevent that from happening on a much larger scale? I am requesting that you try to understand the lessons of what happened here from thinning prescriptions almost identical to the prescriptions USFS silviculturists write.

I understand you are under a lot of pressure from up the USFS chain of command and some elected representatives to get the job done, and do fuel treatments over large areas of our local forest-and fast. If ever

there was a time to stand up for what is right, this is it. It is unclear if our forests would recover from the impacts of such large-scale and heavy-handed treatments. Slow down and do full and thorough analysis.

The concept of cutting down the majority of trees, then burning periodically after that, so the forest understory never really recovers and the ground is dry and parched in-between the widely spaced individual leave trees, even if some grasses grow back until they are burned off again, is not an ecologically sound concept.

It's not respectful to the natural world which has order, value and life of it's own.

Please consider something much more light-handed, targeted and limited. Please enlist the help of environmental organizations who want to help. Please listen to the many people of Santa Fe who want to protect the forests from such extreme treatments. If you look at the comments coming in on the FS scoping comment reading room site, about 90% want the USFS to slow down, do the analysis and respect the "mind" and "knowing" of the natural world, and do an EIS. And some want you to stop entirely.

Please respect the understanding of those of us who choose to live among the trees and see them on a daily basis, and see that they are often very badly impacted by thinning treatments and the forest does not seem to be recovering from the impacts of thinning projects.

I request that the Santa Fe Conservation Alternative be fully analyzed and seriously considered as a more reasonable way to protect what we value, while being ecologically sound and respectful of the natural world- both during the environmental assessment you are in process of completing, and for a subsequent EIS.

Thank you,

Sarah Hyden  
Resident of Canada de los Alamos

Date submitted (Mountain Standard Time): 8/7/2019 12:00:00 AM

First name: Sarah

Last name: Hyden

Organization:

Title:

Comments:

Dear James,

I am requesting a 30 day extension to the 30 day scoping period so the public can fully engage in the process. I am

finding there are a lot of people who are unfamiliar with forest issues, and the proposed action is causing them to

realize it's time to get more informed and get engaged. There needs to be additional time.

An EIS must be completed for such a large-scale, intensive and potentially impactful fuel treatment program, but

full engagement with the public is necessary throughout the entire process.

Date submitted (Mountain Standard Time): 7/10/2019 12:00:00 AM

First name: Sarah

Last name: Hyden

Organization:

Title:

Comments:

WildEarth Guardians and Defenders of Wildlife comments, revised copy, please use only this one

Please accept the following comments concerning the Santa Fe Mountains Landscape Resiliency Project submitted by WildEarth Guardians and Defenders of Wildlife.

We have been struggling with combining two drafts which has created some errors in our comments. We want a clean copy in the project record, so are submitting for a third time. Please delete the previous two copies, and use only this one. Please only keep and use this copy with the title "Comments from WildEarth Guardians and Defenders of Wildlife on SFMLR Project";.

Thank you for your understanding and consideration.

Sarah Hyden

(Attached Comment)

July 10, 2019

James Melonas, Forest Supervisor Santa Fe National Forest

11 Forest Lane Santa Fe, NM 87508

Submitted via email at: [comments-southwestern-santafe@fs.fed.us](mailto:comments-southwestern-santafe@fs.fed.us)

RE: Scoping Comments on the Santa Fe Mountains Landscape Resiliency Project

Dear Supervisor Melonas,

WildEarth Guardians and Defenders of Wildlife respectfully submit these scoping comments to the U.S. Forest Service concerning the Santa Fe Mountains Landscape Resiliency Project (SFMLRP), spanning approximately 50,566 acres located within the Espanola and Pecos/Las Vegas Ranger Districts on the Santa Fe National Forest. This landscape-scale vegetation management project involves a number of activities requiring rigorous environmental analysis, including mechanical and hand thinning on up to 21,000 acres, prescribed fire on up to 43,000 acres, riparian restoration on up to 557 acres, and road improvement, decommissioning and closure on up to 115 miles of National Forest System roads. Please add our names and organizations to the contact list to receive any future public notices regarding this project.

WildEarth Guardians is a nonprofit conservation organization headquartered in Santa Fe, NM with offices in several western states. With more than 230,000 members and supporters, WildEarth Guardians works to protect and restore the wildlife, wild places, wild rivers, and health of the American West.

Defenders of Wildlife is a nonprofit organization with 1.8 million members and supporters across the nation, including nearly 20,000 in New Mexico. Defenders is dedicated to the protection of all native animals and plants in their natural communities. Defenders of Wildlife protects and restores imperiled species by transforming policies and institutions and promoting innovative solutions needed to conserve wildlife and habitat. Defenders has field offices across the country, including in Santa Fe, New Mexico.

Please consider the following comments regarding this project:

Some of our organizations members and supporters live in the Project area, and many more have enjoyed recreating and observing wildlife in the remarkable forests included in this project.

Together, we stand united in our defense of wildlife and healthy ecosystems on our public lands.

We support light-handed, targeted and ecologically sound restoration projects in southwestern ecosystems insofar as they (1) follow science-based methods for strategically placing limited fuel treatments; (2) reduce and do not add to existing road systems; (3) develop and describe in detail science-based monitoring and adaptive management systems; (4) meet the requirements of the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), the National Forest Management Act (NFMA), the National Historic Preservation Act (NHPA) and other environmental protection laws; (5) include the unambiguous retention of all large and old trees and forests, and of a diverse range of tree size classes and species; (6) utilize a full range of the best available site-specific scientific information for development of project-specific and climate appropriate desired conditions; (7) develop management courses of action and prescriptions from relevant field-based information; (8) maintain or increase protections for threatened, endangered, sensitive, or candidate species and for roadless, unloaded and wilderness areas; and (9) address the impacts of livestock grazing on project success and ecological sustainability.

While this Project makes steps in the direction of these shared objectives, our experiences at the public meetings and with previous projects on the Santa Fe National Forest, and our review of the Scoping Document leaves us concerned that the project still has a long way to go before we can consider supporting it. For each of these criteria, the Proposed Action falls short.

I. An Environmental Impact Statement must be prepared, with site-specific analysis and a range of alternatives

#### A. Environmental Impact Statement

A project of this size and scope clearly contemplates significant effects that are best analyzed in an EIS, and the Forest Service must conduct site-specific analysis as a part of the DEIS. This includes explicitly delineating where thinning and prescribed fire treatments will occur, what type of treatments will occur and where, where roads activities will be conducted (including maintenance, [ldquo]improvements[rdquo], construction of temporary or new roads, reconstruction of closed roads, etc.), and the resulting impacts of such activity on important forest resources.

NEPA requires that the hard look assessment take place at the site-specific level if there are no additional NEPA processes yet to occur in the future to fully implement the project and the environmental impacts are reasonably foreseeable. Specifically, NEPA requires the Forest Service to disclose and analyze the direct, indirect, and cumulative impacts and consequences of its activities. 40 C.F.R. [sect][sect] 1502.16(a), 1502.16(b), 1508.25(c), 1508.27(b)(7).

The Forest Service should prepare an EIS for robust analysis of the Santa Fe Mountains Landscape Resiliency Project, ensuring that it complies with NEPA[rsquo]s [ldquo]hard look[rdquo] requirement. The National

Environmental Policy Act (NEPA) requires the Forest Service to prepare an EIS if a project "may" cause significant impacts to resources such as roadless areas, wildlife habitat, riparian areas, soils and recreation. A project of this size and intensity meets that requirement.

An Environmental Assessment simply does not provide for sufficient analysis and range of alternatives for such a large-scale and impactful project.

The term [rdquo]Significantly" as used in NEPA requires considerations of both context and intensity (40 CFR [sect]1508.27):

Context [ldquo]means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality.[rdquo] 40 C.F.R. [sect] 1508.27(a).

The SFMLRP is proposed to occur on National Forest land adjacent to the City of Santa Fe and

surrounding communities including Rio en Medio, Tesuque Village, La Cueva, Cañada de los Alamos, Glorieta, Cañoncito and Nambe. The Project Area is also used and valued by tribal communities, including the Pueblos of Tesuque, Ohkay Owingeh, Santa Clara, San Ildefonso, San Felipe, Cochiti, Jemez, Santo Domingo, Nambe, and Pojoaque. Much of the project area is intensively used and valued by a large number of residents of these communities due to close proximity and excellent recreational opportunities, and adverse impacts are amplified by this proximity, including health impacts from prescribed burn smoke.

Intensity refers to the severity of impact. The following should be considered in evaluating intensity: (40 C.F.R. § 1508.27(b))

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

The Forest Service must analyze both beneficial and adverse impacts. We are concerned that the agency is ignoring the best available science and a host of likely adverse impacts. By insisting that it need only prepare an EA instead of an EIS, the agency has demonstrated bias and a refusal to objectively analyze and evaluate all potential impacts and alternatives. We provide more detail on potentially significant impacts, below.

(2) The degree to which the proposed action affects public health or safety.

There is a serious concern among the public about the health effects of prescribed burn smoke, and doubts about the accuracy of air quality monitoring during prescribed burns. Many members of the public, especially sensitive individuals, report a number of adverse health effects from prescribed burn smoke, including asthma, burning eyes, irritated nasal passages and throat, and headache, etc. Members of the public testified to these effects at two Santa Fe Board of County Commission meetings dated 3/26/19 and 4/9/19, and at a City Council meeting dated 6/12/19.

These impacts must be analyzed in an EIS. Please see below for more discussion on this issue.

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

All unique areas and characteristics within the project area must be identified and analyzed in an EIS.

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

The SFMLR Project is highly controversial, much of the public is very concerned about impacts to the Santa Fe National Forest and surrounding areas, largely based on the impacts of previous thinning and prescribed fire projects in the Greater Santa Fe Fireshed area. This is evidenced by the large amount of discussion and debate about the project in both the media (newspapers and radio) and on social media. Testimony at the above-mentioned Board of County Commission meetings and City Council meeting, gave evidence of the high degree of controversy concerning impacts to air quality, forest and watershed health, wildlife habitat, roadless areas, water quality, riparian areas and recreation, among other issues. At two recent Forest Service meetings concerning this project on 6/24/19 and 6/29/19, members of the public expressed concern, upset and some anger about the extent and potential impact of this project.

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

There are a number of highly uncertain effects and unique or unknown risks with this project. The Forest Service claims that it can reduce the risk of catastrophic wildfire and improve ecosystem resilience by restoring forest structure and composition through human intervention [dash] intensive

thinning and prescribed burning. Such human intervention has not worked in the past, and there is significant debate, controversy and uncertainty throughout the scientific community surrounding such a claim. The Forest Service cannot ignore this uncertainty or the scientific research behind it.

Further, the lack of site-specific data and information on current conditions and specific project locations, and thus site-specific impacts, and make this entire project highly uncertain with unknown risks, requiring preparation of an EIS.

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

If the SFMLR Project is not thoroughly analyzed with an EIS, this will be the first time this has occurred in relation to a large landscape-scale project of more than 50,000 acres in the Santa Fe National Forest, that may have substantial impacts on resources. This sets a very concerning precedent that future large landscape-scale projects to be completed in the Santa Fe National Forest will be planned without genuine regard to public concerns, and without an EIS. The Santa Fe National Forest is in a long-term drought and has become ecologically fragile, and any widespread and potentially impactful actions require careful consideration and analysis.

The Santa Fe Watershed Project, which comprised approximately 7,270 acres, was analyzed with an EIS, and the Ski Basin expansion, which included only approximately 785 acres, was also analyzed with an EIS. The SFMLR Project involves approximately 2,000 acres in the Santa Fe watershed, that provides a substantial portion of the City of Santa Fe's water supply. This

50,566-acre project should also be analyzed in an EIS.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

The Forest Service must analyze the cumulative impacts of the proposed project with all other past, present and foreseeable future projects within the broader landscape, including, but not limited to, the Hyde Park WUI Project, the Pacheco Canyon Forest Resiliency Project, the Santa Fe Watershed Project, The La Cueva Fuel Break Project, livestock grazing, roads and motorized use. The impacts of all these actions are cumulative and significant.

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

The Forest Service must identify all scientific, cultural and historical resources within the project area and identify the potential direct, indirect and cumulative impacts of the project on each site.

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

The Forest Service must identify all threatened and endangered species within the project area and analyze the impacts of the project on all such species and their critical habitat. The Scoping Document identifies only Mexican Spotted Owl as a threatened species within the project area. Fuel treatments could potentially harm owl habitat by reducing the canopy cover and/or removing large trees. Removal of understory vegetation and use of heavy equipment such as masticators may impact MSO prey species. In addition, recent studies have found that thinning and other tree-removal treatments may have more significant impacts on MSO than wildfire.

(10) Whether the action threatens a violation of Federal, State, or local law or requirements

imposed for the protection of the environment.

The EIS must identify all relative federal, state and local laws and requirements, such as state water quality and air quality standards, and analyze whether the project will violate them.

An EA is used to determine whether the project may have significant impacts and, thus, an EIS is necessary. However, the Forest Service may choose to prepare an EIS in the first instance, which is what we have consistently recommended. If the Forest Service persists in preparing an EA for this project, it must do so in an objective manner and thoroughly analyze all of the significance factors. Throughout these comments we provide additional ways that this project may have significant adverse impacts, including the following:

- 1) The project may have adverse impacts on recreational use of the project area because the heavy thinning proposed here would affect the naturalness of the area and the ability to view birds and wildlife. In many areas the thinning prescriptions would leave few trees, multitudes of stumps and little forest understory, giving it a barren and dry appearance and reducing some types of bird and wildlife habitat quality. The Forest Service periodically burns off new understory growth. Many forest users are concerned that the views, vistas and wildlife and bird habitat near their favorite hiking, downhill skiing, and cross-country skiing, mountain biking and back-country trails are going to change significantly.
- 2) While we do not oppose burning of slash piles, and prescribed burns under certain infrequent conditions, the resulting smoke may have significant adverse impacts on the health of residents of the greater Santa Fe area. During prescribed burns there are frequent complaints by residents about the adverse effects of the smoke on their health, even when monitoring indicates that levels are in an acceptable range. These complaints are mostly undocumented [ndash] we request that the Forest Service document such complaints. Monitoring does not measure any of the other harmful chemicals in prescribed burn smoke other than particulate smaller than PM 2.5. The adverse health effects of prescribed burn smoke needs to be especially considered for the chemically sensitive, residents with asthma, heart conditions, the elderly and children. Further, when and where prescribed burns take place must take into account, and make every effort to avoid, the negative health impacts of smoke on all residents.
- 3) Prescribed fire and mechanical thinning can and does put WUI residents[rsquo] homes and the public[rsquo]s enjoyment of the forest at risk due to the possibility of accidentally set wildfire. Two examples of this occurring in New Mexico in recent decades are the Cerro Grande Fire of 2000, precipitated by a prescribed burn (by the National Parks Service) which burned down more than 200 homes and burned 47,650 acres of the SFNF, and the Dog Head Fire of 2016 started by a spark from a Forest Service masticator which burned down 12 homes and burned 17,912 acres.
- 4) Large-scale thinning and burning may have significant impacts on soils, water quality, and fish and wildlife habitat throughout the SFMLR Project area. We are concerned that thinning, followed by prescribed burns which removes most of the forest understory, could harm soils and increase erosion and sedimentation flow into waterways.

The Forest Service must consider the best available science. The agency cannot cherry-pick the science and data to support its proposal while ignoring contrary, credible views and data. The agency may not ignore topics if the information is uncertain or unknown. Where information is lacking or uncertain, the Forest Service must make clear that the information is lacking, demonstrate the relevance of the lacking information to the evaluation of foreseeable significant adverse effects, summarize the existing science, and provide its own evaluation based on theoretical approaches. 40 C.F.R. [sect] 1502.22.

B. The Forest Service[rsquo]s [ldquo]condition-based approach[rldquo] violates NEPA

[ldquo]NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to

implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.[rdquo]

40 C.F.R. [sect]1500.1(b).

Based on the Scoping Document, it appears that the Forest Service will not provide the required high-quality environmental information or accurate scientific analysis. The Proposed Action states: [ldquo]This Proposed Action does not define specific treatment units, but rather general areas throughout the project area where treatments are most likely to occur and the suite of tools that would be used. We do not have complete information about the conditions found on every acre, but we do have enough information to make informed decisions about the types of treatments that work best in certain conditions.[rdquo] It goes on to state that the [ldquo]condition-based approach[rdquo] will be utilized. Scoping Document, p. 11.

NEPA requires that analysis disclose specific information about the when, where, and how of any agency action, so that the impacts and alternatives can be described and weighed. The [ldquo]condition-based approach[rdquo] is likely to contain almost no such data. Instead, in seeking flexibility to respond to changing conditions as part of its [ldquo]toolbox approach,[rdquo] the Forest Service intends to postpone site-specific project design and analysis until after the agency decision is made. This upends NEPA[rsquo]s central purpose that agencies look before they leap.

The Scoping Document states that [ldquo]prior to project implementation, the Forest Service would identify specific treatment units and prescriptions based on site-specific conditions. Treatments would be guided by landscape features (what we find on the ground). Examples of landscape features are cover types, slope, scenic sensitivity levels, or threatened and endangered species habitat. Once a set of landscape features is identified, we would then identify the types of treatment tools, design criteria, and any applicable resource protection measures that we could use to treat those features.[rdquo] Scoping Document, p. 11.

But this is exactly what NEPA was enacted to ensure occurs before decisions are made. The purpose of NEPA is to ensure informed agency decision-making and to provide the public with the information necessary for informed participation. By waiting to provide most of the relevant information until after the decision is made contradicts the whole purpose of NEPA. The Forest Service and the Fireshed Coalition have been preparing for this project for a significant time.

Further, the Forest Plan requires regular monitoring of all of the above listed resources. It appears that the Forest hasn[rsquo]t completed the required monitoring because it does not know what the condition of the project area is, particularly in MSO and other important species[rsquo] habitats.

The Forest Service cannot now use its lack of monitoring to circumvent NEPA compliance, which includes an analysis of baseline conditions as well as the direct, indirect and cumulative impacts of the project.

In addition, the Proposed Action provides only general guidelines as to what the desired conditions are for various vegetation types. It provides a wide latitude of parameters for the Forest Service to make site-specific decisions after NEPA analysis is complete, including allowing for the removal of trees in dry ponderosa pine and dry mixed conifer up to 24 inches DBH. It does not state where treatments will take place in the 50,556 acre project area except for very general indications, which are not enough to conduct the site-specific analysis NEPA requires.

The Forest Service[rsquo]s strategy means that the basic design elements of each project would be decided after the NEPA process is completed and will not be vetted through a range of alternatives. This is not acceptable for a project of this scope and size that may impact threatened and sensitive species and roadless areas, and that may have significant and substantial impacts.

In fact the Scoping Document is so generalized that it is difficult to prepare effective comments.

For example, the Scoping Document contains no information about what treatments would be completed

in Inventoried Roadless Areas, which comprise approximately half of the project area, and no maps that indicate where IRAs are located within the project area. This brings into question whether the Agency has fulfilled its NEPA obligations in preparing this Scoping Document. It is of critical importance to know how much of the SFMLR Project area is in IRAs, and how much is in areas being evaluated for Wilderness expansion, if any, and what types of treatments the Forest Service intends to do in these areas.

The Scoping Document should also identify where fuel treatments will occur near local communities. Many residents of WUI communities are very concerned about what types of fuel treatments would be completed, the extent of fuel treatments and where they will occur in the SFNF in relation to their communities. These residents require that information to respond to during the NEPA process, not afterwards when they no longer have any ability to comment or influence the agency's decision.

There is also concern among the conservation community and the public about how extensively the Forest Service will thin larger trees (12" DBH to 24" DBH), and how much old growth will be cut. The Proposed Action gives no indication other than to say "most trees cut will be under 12" DBH. "Most" does not suffice. The Forest Service must identify all areas of old growth where treatments are proposed.

The Proposed Action also indicates that there would be road improvement on up to 94 miles of selected roads throughout the project area, without identifying where in the project area specific road improvements will take place, or what types of "improvements" will be done. Accordingly, the public has no ability to provide input and potential impacts cannot be evaluated.

The lack of information provided by the Forest Service violates NEPA's overarching mandate that high quality environmental information and accurate scientific analysis are available to public officials and citizens before decisions are made and before actions are taken.

C. The Forest Service must analyze a range of alternatives, including the Santa Fe Conservation Alternative submitted by WildEarth Guardians, the Sierra Club, and Defenders of Wildlife.

NEPA Section 102(2)(E) requires the Forest Service to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." Accordingly, the Forest Service must analyze a broad range of alternatives for this project because there are numerous uncertainties and unresolved conflicts involved in execution of the Proposed Action. Alternative plans must be considered, including a plan that supports conservation of our forest and substantially lessens risk of adverse environmental consequences.

WildEarth Guardians, along with Sierra Club and Defenders of Wildlife have developed an environmentally preferable alternative called the Santa Fe Conservation Alternative that seeks to reduce the adverse impacts and risks of the Proposed Action while achieving the primary goals

in a focused and targeted way. We submitted this alternative to the Forest Service on May 17, 2019, attached as Exhibit A. Whether the Forest Service prepares an EA or an EIS, the Santa Fe Conservation Alternative must be fully analyzed, along with additional alternatives to the Proposed Action.

## II. Additional Concerns

According to the Scoping Document, the purpose of the Santa Fe Mountains Landscape Resiliency Project is to improve the ecosystem resilience of a priority landscape to future disturbances by restoring forest structure and composition and reducing the risk of catastrophic wildfire. Scoping Document, p. 4. Resilience is defined as the "ability of a social or ecological system to absorb disturbance while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change." Forest Service Manual 2020.5.

The Scoping Document further states that to increase the resilience of the forests and watersheds

of the Santa Fe Mountains Project Area, there is a need to:

1. Move frequent-fire forests in the Project Area towards their characteristic species composition, structure and spatial patterns in order to improve ecological function;
2. Create conditions that facilitate the safe reintroduction of fire, allowing fire to play its natural role in frequent fire forest types;
3. Reduce the risk for large high-intensity wildfires, create safe, defensible zones for firefighters and minimize the risk of fire to nearby valued resources;
4. Improve and maintain diverse wildlife habitats to provide a large array of habitat types, habitat components, seral stages and corridors for a variety of species that utilize the area; and
5. Improve watershed conditions by restoring the vegetative structure and composition of riparian ecosystems and by maintaining and improving water quality.

Scoping Document, p. 5

#### A. Assumptions

The assumptions underlying the stated purpose of the SFMLR Project need to be re-examined and re-evaluated before proceeding with this project. First is the overall assumption that human interference on such a broad scale can increase forest resilience. As discussed above, and as we have provided through scientific literature and testimony, this is a highly controversial and unproven assumption. The Forest Service must recognize and address these diverse views in an EIS.

A primary assumption contained above is that it is both possible and desirable to move our forest towards [ldquo]characteristic[rddquo] species composition, structure and spatial patterns, and that ecological function will be improved by doing so. In our changing climate, we may be on a new ecological trajectory, and what has been characteristic of the project area historically, may no longer be possible, or may no longer be a healthy state for our forest.

A second assumption is that [ldquo]with a changing climate, the frequency, intensity, and extent of disturbances are expected to worsen. Moving forest conditions towards their characteristic composition, structures, and spatial patterns would improve these forests[rdsquo] resilience to disturbances and improve ecosystem function.[rddquo] Scoping Document, p. 6. It is necessary to provide more information and analysis on the assumption that disturbances are, in fact, worsening due to climate change. What is the scientific basis for the Forest Service[rdsquo]s claim that disturbances are expected to worsen? And, exactly what disturbances is the Forest Service referring to? Fire has always been a necessary and natural part of forest and grassland ecological processes and functions. In fact, prior to the 1960[rdsquo]s, wildfires were much more widespread and intense than they are today. Accordingly, fires (even more intense fires) are not necessarily a [ldquo]worsening[rddquo] disturbance. Multiple lines of evidence suggests that mixed conifer and ponderosa pine forests such as those found in the project area were historically characterized by mixed- severity fire that include ecologically significant amounts of weather-driven, high-severity fire.

Indeed, it is more likely that disturbances have and will [ldquo]worsen[rddquo] due to human influences such as fire suppression, livestock grazing, roads and motorized use, development in forest and grassland ecosystems, and increased logging and thinning under the guise of [ldquo]restoration.[rddquo] To best improve ecological function, the Forest Service must analyze how each of these activities are [ldquo]worsening[rddquo] disturbances, and develop this project and a range of alternatives to address them. Merely thinning and burning, without addressing the underlying causes why the forests are outside of their [ldquo]characteristic[rddquo] composition and why disturbances are worsening will not result in healthy watersheds or reduced fire intensities.

We request the scientific justification for the Forest Service[rdsquo]s assumptions. Instead of assuming that historic structure and composition provide the framework of what[rdsquo]s needed, the Forest Service

must analyze the impacts of climate change and all other human influences on ecological functions, species composition, etc. to determine what is needed for the ecological resilience of the Forest's different ecosystems, watersheds and species.

A third assumption is that widespread thinning will necessarily reduce insect attack on trees. Disturbances to the forest often increase trees susceptibility to insect attack, especially during times of drought. And, it is well known that slash left through a warm season can promote bark beetle outbreaks. Thinning is a massive disturbance, even hand-thinning. With our forest in a generally dry and fragile condition, care and restraint should be primary.

A bark beetle outbreak was precipitated in the area of Canada de Los Alamos from slash left from a NRCS thinning projects done by prescriptions written by the New Mexico State Forestry Division, that were very similar to typical Forest Service prescriptions. This was confirmed in a memo written for community members of Canada de Los Alamos by the New Mexico State Forestry Division entomologist John Formby, attached as Exhibit B. Some residual pinons became unhealthy, lost needles, new needles are shorter, and needles have generally become sparse. No one is certain about what is happening to the pinons, but it is apparent to local residents that it is related to the thinning project as the affected pinons are adjacent to where the cut trees were.

A fourth assumption is that thinning and burning will result in attaining the agency's identified "desired conditions." Yet, the Santa Fe National Forest has no example to show of having achieved desired conditions in the Greater Santa Fe Fireshed area as a result of completing fuel treatments. At a meeting at the Defenders of Wildlife office on 4/29/19, Ranger Hurlocker, Ranger Romero and Fireshed Coordinator Hannah Bergemann were asked to show an example of a project that has successfully resulted in meeting desired conditions on the Eastside SFNF. They stated there is no example to show, despite the fact that there have been a number of fuel treatment projects done in recent years. Out of all projects that have been completed, even those after the publication of GTR-310, there are none that the Forest Service believes have achieved the stated desired condition. Accordingly, the Forest Service is relying on unproven assumptions

[ndash] indeed, it appears that the Forest Service's assumptions may have been proven wrong.

A fifth assumption concerns reducing risk for high-intensity fires nearby valued resources. Many resources such as structures and roads only require a 100-foot thinned and fire-proofed zone surrounding it, according to the research of now retired USFS physical scientist Jack Cohen and others.<sup>1</sup> The assumption appears to be that thinning further out from some types of valued resources will help protect those resources. This assumption needs to be clarified and evaluated, and we request that the Forest Service incorporate the scientific research that we provided previously from Mr. Cohen and others.

A sixth assumption is that fuel treatments can and will improve or maintain diverse wildlife habitat. The Forest Service provides no scientific basis or analysis for this assumption, and can provide no nearby examples. Fuel treatments and associated roads can have significant impacts on wildlife and fish by, for example, fragmenting habitat, inhibiting movement, delivering sediment to streams, and removing overhead cover and the understory relied on by small mammals and prey species. The Forest Service cannot assume that all fuels treatments are beneficial and must provide an objective, scientifically-based analysis of the impacts the project will have on diverse wildlife habitat.

## B. Risk of fire and flooding in Project area

We believe it is necessary to estimate the risk of high-intensity fire within the SFMLRP area. This was not done in the Fireshed Wildfire Risk Assessment completed by Steve Bassett of The Nature Conservancy. Only the relative risk of fire from one pixel on the map to another was determined.<sup>2</sup> A scientific estimate of the absolute risk of fire in the project area would assist in completing a realistic cost/benefit analysis of damage that fuel treatments may cause to forest ecology vs. the benefit in fire risk reduction and fire behavior modification. The cost and efficacy of methods to reduce or mitigate fire risk (thinning, prescribed burning, etc.) has also not been analyzed, and we request that these be analyzed as well. Please provide information as to how the Fireshed

Wildfire Risk Assessment was and will be utilized in the development of the SFMLR Project.

Human behavior has been a large component of some major fires in New Mexico, such as the Las Conchas Fire (power lines not properly maintained), the Cerro Grande Fire (prescribed burn that went out of control) and the Dog Head Fire (a spark from a masticator). Campfires are left unextinguished regularly in the SFNF. The Agency should evaluate the effects of modifying human behaviors on wildfire risk. Our Conservation Alternatives incorporates human behavior modification and enforcement.

Lightening strike fires which account for the majority of fires in the SFMLR Project area by number, tend to be accompanied by rain, which usually substantially limits the size of the fires. Accordingly, when considering assumptions relating to the cause and effects of fire, the size of fires should be taken into account and weighted appropriately, as a relatively large proportion of high intensity fires are human caused.

The Scoping Document (pp. 8-9) states [ldquo]Large, high-intensity wildfire would threaten the many ecosystem services provided by the forests of the Project Area, such as wildlife habitat, clean air, recreation, and drinking water production, and would also have devastating post-fire effects to downstream communities, such as floods[rldquo]. The Agency should quantify flood risk and indicate on the project map the communities and values that are at substantial risk from floods. In addition, the Forest Service must incorporate into the project measures other than fuel treatments to reduce flood risk, such as stream and riparian restoration, road decommissioning, and removing livestock.

#### C. Cost/benefit analysis

A cost/benefit analysis of potential damage to forest ecology and wildlife habitat from execution of fuel treatments vs. the likelihood and benefit of reducing or mitigating fire risk, or moderating fire behavior should be completed. This would include use of heavy equipment, increased usage and impacts of widening roads, the drying effect of opening up the tree canopy, damage to wildlife and wildlife habitat during thinning and prescribed fire operations, the spread of invasive weeds, etc.

#### D. Thinning

We are in full agreement that safe, defensible zones for firefighters are needed, and support thinning to create such zones where needed. However, the severity of widespread and large-scale thinning projects in recent years in the SFNF are a serious concern to conservation groups and to members of the public. It is unclear from the public meetings and the Scoping Document what forest structure and composition the Forest Service is attempting to achieve. Forests are dynamic systems that change over time due to climate, wildfire, and innumerable other influences.

Attempting to achieve and maintain a chosen, static ecological condition is contrary to forest and fire ecology. The Forest Service must provide the scientific basis for its chosen structure and composition beyond the historical range of variability, and how that will best meet species[rsquo] needs and provide for ecological resilience over time without repeated fuel reduction intrusions. We request that the Forest Service evaluate the effects of leaving a greater density of trees in thinning projects, average BA 80 or more, and substantially decreasing the total acres thinned.

The Proposed Action does not give any clear indication to what densities the USFS intends to thin in each vegetation type, except in terms of tons per acre which is not a metric that is easily usable to determine what densities of vegetation would be left residual after thinning projects in terms of basal area. There should be clarification of what density trees will be left residual after thinning in the four vegetation types, including site-specific information.

Please quantify approximately how much understory vegetation will exist post mechanical thinning and hand thinning, both immediately after treatment is completed, and at follow-up intervals.

The Proposed Action states that the desired condition for ponderosa pine and dry mixed conifer forests would generally include multiple age classes in groups, including seedlings, saplings, old growth and snags, and interspaces[rldquo], p. 6. The thinning specifications for the Hyde Park WUI Project

states [ldquo]Cut all ponderosa pine and southwestern white pine that are less than or equal to 9 inches DBH and taller than 3 feet. Cut all white fir and Douglas-fir trees that are less than or equal to 11 inches DBH and taller than 3 feet.[rdquo] Hyde Park WUI Project work order, attached as Exhibit C. Trees that are 9 inches DBH and 11 inches DBH can be 25 feet tall. These thinning specifications require the complete removal of an entire group of size classes of trees and do not conform with the desired condition. This is concerning as it is a current project, and is presumably designed in accordance to the guidelines of GTR-310. If the Forest Service is going to incorporate similar prescriptions in this project, the agency must evaluate the effects on ecological function of removing an entire group of size classes of trees.

In the Proposed Action the Forest Service prioritizes trees species for retention based at least partially on their understanding of historical forest species composition. In our warming and drying climate those may not be the trees that are most likely to survive, it may be more heat tolerant species like junipers. The Agency should evaluate the desired species composition in the light of potential future climatic conditions in the project area.

#### E. Slash management

Slash from thinning projects is often left on the ground in the Espanola and Pecos/Las Vegas Ranger Districts for years, both in slash piles and broadcast. This is a serious fire hazard which makes the treated area more at risk from fire than when the trees are standing.

The Forest Service often uses the 2018 Venado Fire as an example of how forest fuel treatments can moderate high intensity fire behavior, but it could equally be considered a lesson about how risky it is to leave slash piles in the forest during fire season. Once the Venado Fire dropped down after encountering the San Joaquin fuel treatment, it veered to the east and encroached into an area of the San Joaquin fuel treatment area that had slash piles remaining. which could have greatly increased fire intensity. Fortunately, rain came, wetting down the forest and remaining slash piles, and giving firefighters the opportunity to go out at night and burn the slash piles before the fire hit them. The Forest Service has not presented the totality of the facts when recounting this fire in public meetings and in the media.

Further, leaving slash on the ground through one dry and hot season can precipitate a bark beetle outbreak, potentially a large-scale one due to the current long-term drought conditions in the SFNF, and is unacceptable. Yet, burning slash piles on the ground can cause damage to the soil under the piles from excessive heat. So far, a fire- and ecologically-safe method for managing large amounts of slash has not been developed for use in the SFNF. This must be done as part of this project and no slash larger than 3[rdquo] in diameter should be left throughout a dry season. Slash piles should only be burned in winter when the ground is cold.

Please evaluate existing slash treatment methods and develop a method that does not create a fire and bark beetle hazard, and does not damage soils underneath slash piles. We urge you to have developed an ecologically sound slash management procedure before moving forward with the NEPA process so that the public has the opportunity to review and comment.

#### F. Prescribed burns

The Proposed Action states that up to 43,000 acres of the SFMLR Project area will be treated with prescribed fire.

According to the 2005 report [ldquo]Prescribed Fire Lessons Learned, posted on fs.fed.us, one in a hundred prescribed burns are either [ldquo]near misses[rdquo] or escaped control.<sup>3</sup> While that is a good record of successful burns (99%), the impacts of out-of-control prescribed burns can be substantial. The Cerro Grande Fire is an example of a prescribed burn going out of control with tragic results. Every time a fire is started in the forest, there are risks of the fire spreading, especially in the SFNF where winds can arise quickly and sometimes unexpectedly.

The Agency should evaluate the probability of a broadcast prescribed burn precipitating a fire in

the SFNF. The Agency should also evaluate the effects of a substantially reduced amount of slash burned primarily in pile burns on fire safety, air quality and bark beetle risk.

Repeated prescribed burns after mechanical or hand thinning prevents the forest understory from substantially returning, and severely impacts forest ecology due to the lack of forest understory to protect soils, for wildlife, and to maintain a healthy forest structure which should include trees of all size and age classes. A portion of the Santa Fe watershed was thinned in 2002 and treated with prescribed fire twice since then, photo attached as Exhibit D. There appears to be primarily only grasses, and few young trees or shrub understory. It is unclear what [ldquo]desired condition[rdquo] this is meeting and how it has impacted soils and wildlife in the area.

The Agency must analyze the direct, indirect and cumulative impacts of repeated prescribed burns on soils and forest health in terms of forest understory and structure, and wildlife habitat.

#### G. Health impacts from prescribed burns

Many residents of Santa Fe report negative health effects from prescribed burn smoke, even when particulate is measured to be within an acceptable range. As stated in Section I. A., many members of the public testified to the negative effects on their health, including asthma attacks, from prescribed burn smoke. The USFS has not seriously considered resident[rsquo]s reports, but instead simply state that the particulate levels are in an acceptable range. Please consider and evaluate the incongruity between Santa Fe area residents experiences with prescribed burn smoke and the impacts on their health, and the levels obtained by current monitoring methods.

USFS spokespeople and other USFS personnel often express the viewpoint that [ldquo]we will have to breathe smoke either through prescribed burns or wildfire,[rdquo] and this viewpoint is reflected in policy concerning prescribed burns in the SFNF. This statement contains assumptions that need to be re-evaluated.

This viewpoint is addressed in a fact sheet put out by the John Muir Project [ldquo]Forest and Fire Myths[rdquo], attached as Exhibit E.

Would Landscape-Scale Prescribed Burning Reduce Smoke Particulates? No, it[rsquo]s the opposite. Any short-term reduction in potential fire behavior following prescribed fire lasts only 10-20 years, so using low-intensity prescribed fires ostensibly as a means to prevent mixed-intensity wildland fires would require burning a given area of forest every 10-20 years (Rhodes and Baker 2008). This would represent a tenfold increase, or more, over current rates of burning occurring from wildland fire (Parks et al. 2015). Contrary to popular assumption, high-intensity fire patches produce relatively lower particulate smoke emissions (due to high efficiency of flaming combustion) while low intensity prescribed fires produce high particulate smoke emissions, due to the inefficiency of smoldering combustion. Therefore, even though high-intensity fire patches consume about three times more biomass per acre than low-intensity fire (Campbell et al. 2007), low-intensity fires produce 3-4 times more particulate smoke than high-intensity fire, for an equal tonnage of biomass consumed (Ward and Hardy 1991, Reid et al. 2005). As a result,

a landscape-level program of prescribed burning would cause at least a ten-fold increase in smoke emissions relative to current fire levels, and it would not stop wildland fires when they occur (Stephens et al. 2009).

According to the 2016 USFS study, [ldquo]Evaluating spatiotemporal tradeoffs under alternative fuel management and suppression policies: measuring returns on investment[rdquo] by Thompson, Riley, Loeffler and Hass, the probability a fire will ever meet with a fuel treated area is very small.<sup>4</sup> Most prescribed burn (and thinning) treatments are not preventing a wildfire, so the smoke the public breathes from prescribed burns is not likely to be a trade-off for breathing smoke from wildfire.

The Agency should prepare an estimation of the amount of particulate and other pollutants that are put into the air by wildfire smoke vs. prescribed burn smoke in the past decade, and the number of days particulate levels are elevated to the extent that the sensitive population would be affected.

Smoke from prescribed burns contains more than particulate, it contains a range of pollutants including heavy metals and their impacts on human and wildlife health should be considered and evaluated.

Many Santa Fe area residents are also very concerned that they are being exposed to fire accelerant chemicals potassium permanganate and diesel volatilized in prescribed burn smoke. The USDA document [Idquo]Residues of Fire Accelerant Chemicals Vol.1[rdquo], states under [Idquo]Human Health Risk Characterization,[rdquo]

"Risks from inhalation exposures (of the various accelerants) were outside the scope of this assessment, requiring a complex analysis of simultaneous exposure to the products of burning vegetation to accurately depict the overall risk from inhalation at a prescribed burn.[rdquo], p. 26.5 This is the document that the USFS uses to evaluate potential harm to the public and the environment from exposure to fire accelerant chemicals that they use regularly in prescribed burns.

The International Programme on Chemical Safety card on potassium permanganate states under the heading [Idquo]fire and explosion[rdquo], that potassium permanganate is [Idquo]Not combustible but enhances combustion of other substances.6 Gives off irritating or toxic fumes (or gases) in a fire.[rdquo] It also states under the heading [Idquo]chemical dangers[rdquo] that potassium permanganate [Idquo]Decomposes on heating. This produces toxic gases and irritating fumes.[rdquo]

The Forest Service currently has no data to base an assumption that potassium permanganate in prescribed burn smoke is not toxic to humans and wildlife, and there are indications it is of concern. It certainly depends on the levels of the chemical in prescribed burn smoke, but the Forest Service does not know what levels generally exist in prescribed burn smoke. It is not valid to make assumptions about levels of the chemical in the form of smoke based solely on the amounts that are applied on the ground.

The Agency should analyze the risks to the public and to wildlife from breathing prescribed burn smoke in relation to volatilized potassium permanganate and diesel, and any other chemicals or toxins contained in prescribed burn smoke.

#### H. Wildlife

The Forest Service must analyze the existing baseline conditions of, as well as the direct, indirect and cumulative impacts of the project on, threatened, endangered and sensitive species, species of concern, and management indicator species.

The Scoping Document states [Idquo]The Project Area is currently occupied by many wildlife species including the Mexican spotted owl (MSO), a federally listed Threatened species, and the northern goshawk, a Forest Service Sensitive species. There are currently four Mexican Spotted Owl Protected Activity Centers (PAC), along with restricted areas, and critical habitat in the Project Area.[rdquo] Scoping Document, p. 9.

The Scoping Document also states "the Project Area can provide continued habitat needs for these species [Mexican spotted owl and northern goshawk] and others into the future if habitats are maintained and improved to be healthy and resilient." Scoping Document, p. 9. According to the 2016 Santa Fe National Forest Plan At-Risk Species Selection Process and Justification Document, [Idquo]timber harvest, prescribed burning, and other management activities are designed following the Mexican Spotted Owl Recovery Plan 2012 along with consultation with the USFWS. These management activities can still have disturbance affects to the Mexican spotted owl and its habitat.[rdquo]7

We agree that the management activities in the Proposed Action can have disturbance affects on MSO. The Forest Service[rsquo]s assumptions regarding the beneficial impacts of fuel treatment practices on MSO are, at best, unproven and, more likely, incorrect. WildEarth Guardians is currently in litigation against the U.S. Fish and Wildlife Service and the U.S. Forest Service concerning their

failure to conserve and recover MSO in New Mexico and Arizona due to the Forest Service's long and continuing history of failing to implement the "adaptive management" approach that it adopted to comply with its ESA obligations in connection with MSO.

According to our Motion for Summary Judgment in this case (which is available for public review):

since the listing of the MSO as a threatened species in 1993 there has been a widely acknowledged institutional failure on the part of FWS and USFS to develop critical information on the impacts of various USFS timber management practices on the MSO. The FWS admits that "unfortunately, empirical data on the effects of thinning and other mechanical forest treatments on Mexican spotted owls are nonexistent" and that "although this has been clearly noted for years, no studies on this topic have been funded to date." Alarmingly, the FWS went on to state that extrapolations from studies of other subspecies of spotted owls "suggest that at least some kinds of mechanical forest treatments may negatively affect spotted owls." However, even as the population of Mexican spotted owls continued to plunge in the years following its ESA listing, and even as studies of other spotted owl subspecies indicated that USFS timber management practices "negatively affect spotted owls," the FWS and the USFS knowingly (1) neglected to conduct any studies to assess how on-going USFS timber management activities in Arizona and New Mexico affect the survival and recovery of the MSO and (2) neglected to conduct rigorous MSO population trend monitoring.

See, Plaintiff's Motion for Summary Judgment, *WildEarth Guardians v. U.S. Fish and Wildlife Service et al.*, D. AZ, No. 13-151-RCC, filed 3/31/2016. While the case has yet to be decided, our briefing is replete with information and examples of the negative impacts of Forest Service timber management practices on spotted owls, and counters the repeated assumptions made by the Forest Service that its "adaptive management" benefits MSO.

The effects of mechanical thinning on the Mexican spotted owl have not been extensively studied and are not well understood. Prominent owl scientists have recently stated that "Existing studies on the effects of fuels reduction treatments on spotted owls universally suggest negative effects from these treatments" and that "forest restoration and thinning activities also may threaten owls and their existing habitat."

Unfortunately, the Forest Service assumes that fuel treatments will yield desired results and all of the MSO PACs in the project area may be treated, despite the stark fact that "No empirical studies have evaluated these management activities on the Mexican spotted owl." The Forest Service must address these studies, which undermine the basis for this project, in the NEPA document.

Some relevant studies from dry, frequent fire adapted forests of southern California have published findings indicating deleterious effects of thinning of spotted owls. Stephens and colleagues<sup>11</sup> reported that in the Plumas National Forest of California, spotted owl territorial sites declined 43% within 3-4 years of landscape-scale thinning treatments, and following treatment owls redistributed across the landscape. Elsewhere in the Sierra Nevada, Tempel and colleagues<sup>12</sup> found that, as expected, canopy cover and demographic rates were strongly positively related, and that medium intensity fuel reduction treatments were negatively related to owl reproduction. Other researchers have concluded that thinning effects would be less impactful than severe wildfire,<sup>13</sup> leading to uncertainty of the true impacts of thinning on spotted owls.

The Forest Service also has information based on recent monitoring of Mexican spotted owls in the area of the Nuttall-Gibson Fire of 2004 in the Coronado National Forest that Mexican spotted owls appear to survive and thrive in a post-fire environment.<sup>14</sup> This information directly undercuts the 2012 Mexican spotted owl revised Recovery Plan's assumptions with respect to Mexican spotted owl responses to fire and, more importantly, the conclusion that the risk to Mexican spotted owl habitat posed by the threat of fire justifies large-scale "restoration" projects which is itself associated with significant negative effects to the Mexican spotted owl and its habitat. Indeed, the evidence suggests that wildfire may actually promote the recovery of the Mexican spotted owl despite the 2012 Revised Recovery Plan's suggestion to the contrary.

Accordingly, there is considerable uncertainty about the impacts of wildfire and thinning on MSO. This uncertainty requires that the agency proceed with extreme caution and should only begin planning a project such as this one after collecting extensive baseline data and developing extensive, mandatory post-project monitoring protocols. Neither have happened so far in this instance.

The Forest Service must ensure that the project will conserve and recover MSO in the project area. To do so, the agency must provide detailed site-specific baseline data, as well as a site-specific analysis of the direct, indirect and cumulative impacts of the project. As this project is currently proposed, the agency is unable to do this.

The Forest Service must analyze and incorporate all of the relevant scientific information in the NEPA document. This is particularly important because the Forest Service is advancing similar landscape-scale projects throughout MSO habitat and the region that may cumulatively unravel MSO habitat and existing management direction and protections for MSO. The Forest Service is required to give a hard look to the overall cumulative effect of this project and others that affect management of the threatened species and its critical habitat.

Similar site-specific baseline data and post-project, mandatory monitoring protocols must be implemented for all threatened, endangered and sensitive species, species of concern, and management indicator species, as well as site-specific impact analyses. Vague generalization about [ldquo]some risk[rdquo] and unsupported assumptions of beneficial impacts do not suffice.

Large trees, high tree densities and dense canopies have been demonstrated to be important components of northern goshawk foraging habitat. The agency must demonstrate how it is planning for expansion of northern goshawk populations.

In the Biological Assessment for the Hyde Park WUI Project, The New Mexico meadow jumping mouse was listed as a species that may occur within or near the project area and is a federally listed endangered species, p. 3.15 There was no mention of the New Mexican meadow jumping mouse in the Scoping Document. Please survey for New Mexico meadow jumping mouse population and create a plan for protection of this species if they exist in the project area.

The Santa Fe National Forest Plan At-Risk Species Selection Process and Justification (2016), prepared by this Forest as part of its current Forest Plan Revision process, yields in addition to Mexican Spotted Owl and Northern Goshawk, at least eleven (11) at-risk species of mammals, birds and amphibians, based upon the Forest[rsquo]s own geographic data and ERU assessments, may occur within or near the SFMLR Project area.<sup>16</sup> These species are spotted bat, snowshoe hare, Pacific marten, masked shrew, water shrew, boreal owl, black swift, American peregrine falcon, pinyon jay, white-tailed ptarmigan, and Lewis[rsquo]s woodpecker. The flammulated owl is also listed as a Species of Greatest Conservation Need by the County of Santa Fe.

The Agency must identify all at-risk species that exist in the SFMLR Project area, analyze baseline conditions, and create a plan for both short-term and long-term protection of at-risk species and species of concern.

The Agency should document how it will comply with the Migratory Bird Treaty Act as a component of fuel treatment planning in the SFMLR Project area, and evaluate whether any aspects of the Proposed Action may violate the Migratory Bird Treaty Act.

Since approximately half of the SFMLR Project area is located in Inventoried Roadless Areas, much of which has never been logged or thinned, we are concerned about the potential impacts on wildlife associated with older forest. The Forest Service must evaluate these potential impacts.

In forests with a variety of species and mixed disturbance regimes, 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. If significant reductions of crown bulk density are deemed necessary to meet the purpose and need then it is highly unlikely that the project will maintain habitat for threatened and sensitive wildlife

species associated with closed-canopy forest. An unambiguous commitment to old and large tree retention would maintain wildlife habitat in the short-term and mitigate adverse effects of the proposed treatments.

The Fireshed Wildfire Risk Assessment does not contain a wildlife layer. If this risk assessment has been or will be used in project planning, the Agency should add a wildlife layer.

#### I. Invasive weeds

The introduction of invasive species into the SFMLR Project area is a potential adverse impact of widespread thinning, extensive soil disturbance, roads and motorized use, and prescribed fire. In ponderosa pine and dry mixed conifer forests of western North America, the response of invasive species to fuel treatments is not well documented, particularly of species that are capable of altering environmental conditions (transformers). WildEarth Guardians is very concerned about potential adverse impacts from invasive species, especially transformers.

As part of its baseline conditions analysis, the Forest Service must identify areas of known concentrations of invasive weeds within the Project area, including species names and locations, and the causes of these invasive species infestations. The Agency should also analyze all invasive weed impacts from previous fuel treatments in the SFMLR Project area.

The Agency should quantify the extent to which invasive weeds are expected to increase or decrease in the Project Area as a result of the Proposed Action, and address the expected effects of opening the forest canopy on the spread of invasive weeds.

Please provide the Agency's protocol to limit the propagation of invasive weeds in the Project area.

#### J. Inventoried Roadless Areas and Wilderness Management Area

There is no mention of Inventoried Roadless Areas at all in the Scoping Document other than to state IRAs will be discussed at two upcoming meetings. IRAs in the project area are not shown on the project map in the Scoping Document, and it is not stated what percentage of the SFMLR Project area is in IRAs. After repeated inquiries, the Agency has approximated that about half the project area is contained in IRAs and finally provided a map of the project area that shows IRAs.

WildEarth Guardians believes that the impacts of mechanical thinning, and even hand thinning may be contrary to the purpose of maintaining the wilderness character of IRAs. The Agency must create a protocol for any thinning undertaken in IRAs to maintain the existing wilderness character.

There is no indication of what percentage of the up to 21,000 acres of mechanical and hand thinning will be done in IRAs. Please provide detailed maps of each IRA that includes all areas where mechanical or hand thinning, and prescribed burning is proposed.

It is essential that the public be informed of the existing conditions and potential impacts of fuel treatments on Roadless area values and characteristics. The Forest Service must identify all roads in or adjacent to IRAs that will be [ldquo]improved[rdquo] and what specific improvements will occur.

There areas designated to have either high or moderate [ldquo]Wilderness Evaluation Characteristic Rating[rdquo] in the SFMLR Project area. Nowhere in the Scoping Document does the Agency discuss the potential impacts to the wilderness character of the affected IRAs, nor the potential for designation as wilderness under the Wilderness Act of 1964. This is an unacceptable lack of critical information.

The new Draft Forest Plan revision includes a proposed Wilderness Management Area designation adjacent to the SFMLR Project area (Thompson Peak). The Forest Service should include a map with Recommended Wilderness areas identified that are either in or adjacent to the SFMLR Project area. Fuel treatments should not occur in IRAs adjacent to the proposed Thomson Wilderness Management

Area expansion because it is currently unknown what the boundary of the Wilderness Management Area expansion will be. The Agency should state specifically what they intend to do in this area.

#### K. Riparian areas and water quality

According to the Scoping Document, [ldquo]the primary resource concerns for riparian areas in the Project Area include departed vegetative conditions, wildfire risk, and impacts to water quality from roads and trails.[rdquo] Scoping Document, p. 10. The Forest Service must provide detailed baseline analysis of the causes of these departed vegetative conditions, and provide detailed information on the impacts to water quality and riparian areas from all roads and trails. We also request that the Forest Service provide the watershed analyses that determined that sub-watersheds within the project area are [ldquo]functioning at risk.[rdquo] Are these streams currently meeting water quality standards? The Forest Service must ensure compliance with the Clean Water Act and state water quality standards.

The Forest Service must also analyze the direct, indirect, and cumulative impacts of the project on riparian areas, streams and water quality, including an evaluation of the risks of increased sedimentation in waterways from proposed fuel treatments, and subsequent decrease in water quality relating to sedimentation flow.

The Proposed Action states that [ldquo]Native species such as willow, cottonwood, alder, grasses and forbs would be planted if natural regeneration is determined to be insufficient following conifer and non-native species removal.[rdquo] We are in favor of these potential restoration activities, but the Agency should evaluate thoroughly to what extent conifers should be removed and how to do it without excessive impacts on riparian areas.

#### L. Roads

According to the Scoping Document, [ldquo]there is a need for improving the transportation system that would be used for project implementation activities.[rdquo] Scoping Document, p. 11. This statement demonstrates a serious lack of appreciation of the impacts that roads have on ecosystem health, and of the requirements of the Roads Rule and other environmental laws. The stated Purpose of this project is to [ldquo]improve the ecosystem resilience of a priority landscape to future disturbances including wildfire, climate change, and insect outbreaks.[rdquo] Scoping Document, p. 2. As explained below, roads have a significant impact on ecosystem resilience.

Thus, to meet the stated purpose of this project, the Forest Service must pay significantly more attention to the impacts that roads are having throughout the project area, and must do more as part of this project to reduce those impacts. There is not merely a need to ensure a safe transportation system for this project [ndash] there is a need to reduce the impacts of the existing transportation system on the forest at a landscape scale.

According to the 2008 Travel Management Record of Decision for the Santa Fe National Forest, 2,878 miles of open system roads were to be closed for public use. We cannot easily determine how many miles of those roads are in the SFMLR Project area, but we can assume there would be a significant number of miles, perhaps several hundred. A map should be created showing the existing road system in the project area, and how many miles of existing roads are closed for public use in the Travel Management decision.

The Forest Service should fully consider the Santa Fe National Forest[rsquo]s travel analysis report, identify the minimum road system for the project area, and identify more unneeded roads to prioritize for decommissioning or other uses.

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. The Santa Fe National Forest is no exception, with many miles of system roads, the required maintenance of which exceeds annual maintenance costs. To address its unsustainable and deteriorating road system, the Forest Service

promulgated the Roads Rule (referred to as [ldquo]subpart A[rddquo]) in 2001. 66 Fed. Reg. 3206 (Jan. 12, 2001);

36 C.F.R. [sect] 212, subpart A. The Roads Rule created two important obligations for the agency. One obligation is to identify the minimum road system needed for safe and efficient travel and for the protection, management, and use of National Forest system lands. Id.

[sect]212.5(b)(1). Another obligation is to identify unneeded roads to prioritize for decommissioning or to be considered for other uses. 36 C.F.R. [sect]212.5(b)(2).

Identifying a resilient future road network is one of the most important endeavors the Forest Service can undertake to restore aquatic systems and wildlife habitat, facilitate adaptation to climate change, ensure reliable recreational access, and operate within budgetary constraints. And it is a win-win-win approach: (1) it[rsquo]s a win for the Forest Service[rsquo]s budget, closing the gap between large maintenance needs and drastically declining funding through congressional appropriations; (2) it[rsquo]s a win for wildlife and natural resources because it reduces negative impacts from the forest road system; and (3) it[rsquo]s a win for the public because removing unneeded roads from the landscape allows the agency to focus its limited resources on the roads we all use, improving public access across the forest and helping ensure roads withstand strong storms.

If this is truly a landscape resilience project, then the Forest Service must consider the SFNF[rsquo]s road system on a landscape-scale, using a thoughtful, strategic approach to improving public access to the forest, reducing negative impacts from forest roads to water quality and aquatic habitats, and improving watersheds and forest resiliency by returning expensive, deteriorating, and seldom used forest roads to the wild.

Please explain how the travel analysis report and list of unneeded roads informed identification of the minimum road system in the NEPA analysis. The Santa Fe National Forest must demonstrate how it is utilizing its travel analysis report, and following direction under subpart A, for identifying and implementing the minimum road system. National guidance directs this to happen through analysis of site-specific projects under NEPA. The Forest Service must demonstrate how it has relied on the travel analysis process to develop the proposed road treatments. Given the Forest Service is considering changes across over 50,000 acres of NFS lands that include a large number of miles of roads, this is the perfect opportunity for the Forest Service to utilize its travel analysis report and to identify and begin implementing the minimum road system.

The Forest Service should assess its proposed road actions in relation to the risks and benefits analysis in its forest-wide and district level travel analysis reports, as well as the factors for a minimum road system, with the goal of minimizing adverse environmental impacts. To the extent that any of the alternatives differ from what is recommended in the travel analysis report, the Forest Service should explain that inconsistency. See, e.g., *Smiley v. Citibank*, 517 U.S. 735 (1996) ([ldquo]Sudden and unexplained change . . . or change that does not take account of legitimate reliance on prior interpretation . . . may be arbitrary, capricious [or] an abuse of discretion[rddquo]) (internal citations omitted).

Subpart A directs the agency to [ldquo]identify the roads on lands under Forest Service jurisdiction that are no longer needed,[rddquo] and therefore should be closed or decommissioned. While we strongly support the Forest Service[rsquo]s proposal to decommission up to 20 miles of system roads, we also urge the agency to further identify decommissioning opportunities. Based on current natural resource conditions, assessed risks from the existing road network, road densities across the landscape, the agency[rsquo]s limited resources, and long-term funding expectations, we believe additional decommissioning or closures are warranted. The Forest Service should decommission any high-risk road or explain the need for such a road, how the Forest Service will mitigate those risks and its capacity to do so under current and future budget projections. The agency should also provide this explanation for any medium risk road retained in the project area.

The Forest Service must disclose current open and total road densities in all watersheds and the project area as a whole. We also urge the Forest Service to include total open route densities in order to incorporate the fact that unauthorized routes contribute to degraded watershed conditions and reduce wildlife habitat effectiveness.

The Forest Service must accurately define the official road network as the baseline for the NEPA analysis. The baseline and no-action alternative can, and sometimes do differ. Analysis of the road system in this project area should recognize and build on those distinctions. Current management direction does not compel the Forest Service to recognize decommissioned roads and unauthorized roads as part of the official road system. But disclosure of the actual number and location of decommissioned routes and unauthorized routes on the landscape, as well as the impacts of those routes, is a necessary component of the no-action alternative that should be disclosed to inform meaningful public comment. An assessment of the no-action alternative should therefore be separate and distinct from the identification of the baseline (the official open road system).

The Forest Service should consider a broad array of impacts related to forest roads in its NEPA analysis. Here, site-specific analysis is crucial. The Scoping Document provides no site-specific identification of existing roads, or those proposed for [ldquo]treatment.[rdquo] There is no identification of unauthorized routes and whether the Forest Service will be using or [ldquo]improving[rdquo] those routes as part of this project. Road treatments include road improvement, decommissioning, and/or closure. The Forest Service must provide analysis demonstrating the agency[rsquo]s ability to effectively implement closures and decommissioning.

The best available science shows that forest roads have significant adverse impacts on forest resources. A 2014 literature review from The Wilderness Society surveys the extensive and best available scientific literature[mdash]including the Forest Service[rsquo]s General Technical Report synthesizing the scientific information on forest roads (Gucinski 2001)[mdash]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)*.<sup>17</sup> Erosion, compaction, and other alterations in forest geomorphology and hydrology associated with roads seriously impair water quality and aquatic species viability. 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. 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. In fact, much of this project focuses on reducing wildland fire risk, but makes no mention of the intersection between roads and fire ignitions or fire behavior. The Forest Service must disclose how road densities can change micro-climates and alter fire behavior in comparison to roadless conditions.

Roads often contribute to degraded baseline conditions in watersheds containing native fish species. Roads are a primary source of sediment impacts to developed watersheds. Accumulation of fine sediment is detrimental to fish habitat. Sediment delivered to streams is greatest in riparian areas where roads cross the streams. Fords and approaches to the crossings deliver sediment directly to streams. Culverts can produce a large amount of sediment if the culvert plugs and fails. Travel management decisions affecting roads and trails are most likely to affect substrate embeddedness and stream bank condition. Plus, roads and trails paralleling streams can interfere with large wood reaching the stream and cause increased erosion and decreased stream bank condition.

We strongly support decommissioning or closing all unauthorized routes, and urge they not be added to the NFS road or trail system. The agency states it proposes to close or decommission up to 21.5 miles of road. Does this include unauthorized routes? How many miles of unauthorized routes are in the project area? The agency should increase its road closures and decommissioning to include all user-created trails and unauthorized roads. The continuing presence of user-created routes on the landscape, certainly known to those who created them, continues to allow harassment of wildlife, fragmentation of wildlife habitat, littering, fires and invasive plant distribution all while contributing to the degradation of fish habitat and riparian areas. The agency must also consider the cumulative impacts suffered by the landscape.

Ranger Sandy Hurlocker stated at the SFMLR Project Scoping meeting of June 29, 2019 that they would

widen UTV tracks into roads in some situations to accommodate trucks and vehicles for thinning operations. This was not stated in the Scoping Document, and we do not know if that constitutes [ldquo]road improvement[rdquo], as UTV tracks are not roads, or if it is actually road construction. The Forest Service should define what is meant by [ldquo]road improvement.[rdquo]

#### M. Old growth

The Scoping Document states [ldquo]In accordance with the Old Growth Standards outlined in the current Forest Plan, 20% of the forested areas in the Project Area would be identified, allocated and managed as old growth. The desired condition in these areas is a healthy and resilient forest ecosystem with a component of old, large trees or a component of trees that would develop toward old, large trees in the long-term.[rdquo] Scoping Document, p. 8.

The Forest Service should utilize the Forest Plan[rsquo]s detailed old growth management criteria and standards for identifying old growth and apply the standards carefully in site specific analysis.

Old growth is one of the most fire resistant forest landscapes, and we encourage the Agency to manage much more than 20% of the project area as old growth. It is stated in [ldquo]Fire Ecology in Rocky Mountain Landscapes[rdquo], by William L. Baker, [ldquo]Another low-impact defensive approach (tool for living with fire in landscapes) is to restore dense, old-growth forests, which would be ecological restoration and would also lower fire risk relative to middle-aged forests. Old-growth mixed-conifer forests without fuel reduction were modeled to be as resistant to crown fire as forests thinned from below, because high tree canopies resist crowning and shade keeps moisture high (Stephens and Moghaddas 2005a).[rdquo] Pg. 434.18

#### N. Monitoring

There is no information about monitoring in the Scoping Document. Monitoring is a critical aspect of a landscape-scale fuel treatment project that is essentially a land experiment. Please develop a comprehensive, mandatory monitoring program that includes vegetation and species monitoring, soil sampling, water quality sampling and improved air quality sampling to monitor prescribed burn particulate levels. Please develop and identify locations for test plots.

#### O. WUI concerns

Members of the public live in communities near the SFNF for a variety of reasons, including beauty of the forest, the enjoyment of living among the trees, and the opportunities to observe birds and wildlife. There is an increasing awareness among residents of forest communities that their safety in a wildfire depends on how they fire-proof their own homes and the 100-foot radius around their homes. USFS physical scientist Jack Cohen (now retired) has identified very precisely the steps residents in the wildland/urban interface need to take to protect themselves from the effects of wildfire.<sup>19</sup>

Residents in the WUI adjacent to the SFNF want to know what the Forest Service intends to do in the forest adjacent to their neighborhoods. Please provide specific information about where fuel treatments are proposed to occur in the WUI, so those residents can provide meaningful comments.

The Agency should consider the needs of communities to have natural and intact National Forest nearby, especially as most Eastside forest communities are upwind of the SFNF and not in significant risk of fire from the SFNF. The primary fire risk for many Eastside SFNF communities comes from private lands. There appears to be little flooding risk that could impact most Eastside SFNF communities. The agency should evaluate flooding risk for all WUI areas if they intend to do fuel treatments to protect Eastside forest communities adjacent to the SFNF from flooding hazard.

Please evaluate the effects of greater educational outreach by the US Forest Service concerning fire safety for WUI residents.

### III. The Santa Fe Conservation Alternative (SFCA)

WildEarth Guardians, along with Sierra Club and Defenders of Wildlife have developed an alternative for analysis in both an EA and/or an EIS, the Santa Fe Conservation Alternative, to address the purpose and need of the SFMLR Project in a way that conserves forest resources.

The purpose of the SFMLR Project is to improve the resilience of a priority landscape to further disturbances by restoring forest and watershed health and to reduce the risk for catastrophic wildfire. This purpose contains two primary objectives that may be incompatible. One primary objective is to reduce fire risk and moderate fire behavior. The Proposed Action indicates this would be accomplished by removing large amounts of vegetation across a widespread landscape, and then repeatedly burning off new growth with prescribed fire. The other primary objective is to restore the ecological function of the forest in the project area, or to increase forest health.

Based on past thinning projects carried out in the Eastside SFNF, these types of projects, even recent ones that followed GTR-310 specifications, have resulted in less functional ecosystems—substantially less healthy forests, and the forest does not seem to be regaining productivity in treated areas. Also, there is no local research that indicates widespread fuel treatments will significantly moderate fire behavior, especially high intensity fire, during hot and dry weather.

Thinning is a massive disturbance, even hand-thinning, but especially mechanical thinning. With our forest in a generally dry and fragile condition, care and restraint is the best and safest policy, and the Santa Fe Conservation Alternative is designed to be light-handed and targeted to the specific limited areas that would protect valued resources from the effects of fire, and that would reduce tree density in very dense stands of trees.

The Santa Fe Conservation Alternative seeks to resolve the incompatibility of the primary objectives of the SFMLRP by limiting thinning treatments and being very site-specific and strategic in placement of the treatments carried out. Almost all environmental impacts from thinning can be greatly reduced by leaving more residual trees per acre, and substantially decreasing the amount of acres thinned. Ecologically sound slash management, which is nearly impossible on a large scale, can be completed when thinning treatments are carried out on a much smaller scale. Treatments can be focused around important values, including up to 150 feet from structures.

Areas that are thinned would be no less than an average of 80 BA, instead of the average of 35- 45 BA commonly prescribed for thinning treatments in the Greater Santa Fe Fireshed area in recent decades. Trees greater than 9" would not be cut, residual trees would be left in all size and age classes, and the majority of trees would be left in their natural groupings. The understory would be left largely intact, and broadcast prescribed burns would generally not be done, except to burn thinning slash under circumstances where slash piles can reasonably be done. Naturally caused fires would be allowed to burn when safe to do so.

The SFCA has a strong focus on forest reclamation and restoration including reclamation of any USFS roads deemed unessential in Travel Management Plan, hand building of structures (example Zuni bowls) in arroyos to slow flood water, planting native, stream side vegetation where appropriate to slow floodwaters, and reintroduction of beaver where appropriate.

The Proposed Action indicates native species such as willow, cottonwood, alder, grasses and forbs would be planted if natural regeneration is determined to be insufficient following conifer and non-native species removal. The reclamation and restoration methods outlined in the SFCA are compatible with these objectives.

It is important to start with small projects and monitor to find out what desired condition is possible and actually does support better ecological function and forest health, and protects values from the effects of fire in a very targeted and site-specific way.

This alternative also focuses on prevention of fire through increased fire safety education, both for forest users and WUI residents, and increased law enforcement in the project area to decrease

illegal human behaviors that put the project area at risk.

We are requesting that this alternative be fully analyzed because it supports forest health, and greatly reduces the possibility of creating an ecological disaster. Removing large amounts of trees over widespread areas and performing repeated prescribed burns--fundamentally damaging forest ecology in order to protect the forest from damage as a result of fire - is an equation that may not be reasonable or valid. A better plan needs to be considered.

The basic principles of the Santa Fe Conservation Alternative are: Thinning

- [mdash]Limited hand thinning (up to 9") only in dry pine and mixed conifer outside of IRAs.

- [mdash]Stumps cut down to the ground

- [mdash]No thinning adjacent to the WUI for the purpose of protection of structures or communities except within 150 feet of structures, and for fire fighter safety zones.

- [mdash]Maximum trees removed in most thinned areas to 80 BA

- [mdash]Leave more tree groupings (50% minimum) and maintain a shrub understory. Utilize a wildlife habitat-based determination of tree and vegetation retention

- [mdash]Identify riparian area concerns and create plan to protect Slash management

- [mdash]Pile burning of activity fuels

- [mdash]Reevaluate slash management timing and methods to avoid potential bark beetle outbreaks, and sterilization of soil under slash piles. No slash over 3" left on the ground during the dry season

Prescribed burning

- [mdash]Managed wildland fire and pile burning only. No broadcast prescribed burns

IRAs

- [mdash]No thinning in IRAs

- [mdash]Identify Roadless Area concerns and develop a policy to restore

Monitoring (key means of reaching desired outcomes of healthy forest habitat and protection of public health)

- [mdash]Test plots for monitoring purposes

- [mdash]Soil sampling - plot number and spacing to be determined

- [mdash]Baseline species evaluation (i.e. population capacity and presence/absence)

- [mdash]Improved air quality standards and monitoring to protect sensitive (human) population Reclamation and restoration

- [mdash]Reclamation of any USFS roads deemed unessential in Travel Management Plan

- [mdash]Hand building of structures (example Zuni bowls) in arroyos to slow flood waters

- [mdash]Planting native, stream side vegetation where appropriate to slow floodwaters

- [mdash]Reintroduction of beaver where appropriate WUI and community forests

[mdash]Develop a program to support fire-proofing of structures and surrounding 100 feet, at least through increased outreach and education. This should be a homeowner responsibility

[mdash]If possible, support development of an alternative egress for communities with a single egress

[mdash]Leave most areas that the public uses for recreation, including forests adjacent to communities, natural and intact.

--Take into greater account the need to preserve areas that are special to communities, like Cougar Canyon

[mdash]Increased law enforcement to protect against unsafe fire behavior by forest visitors Scenic quality

[mdash]Maintain the scenic quality of all treated areas. Develop a standard for acceptable scenic quality.

We thank you for the opportunity to provide these scoping comments. Sincerely,

Sarah Hyden

Santa Fe National Forest Advocate WildEarth Guardians

Judi Brawer

Wild Places Program Director WildEarth Guardians

Bryan Bird

Southwest Program Director Defenders of Wildlife

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#### EXHIBIT A

Mr. James Melonas Forest Supervisor

Santa Fe National Forest 11 Forest Lane

Santa Fe, NM 87508

Email: jmelonas@fs.fed.us May 17, 2019

Re: Santa Fe Conservation Alternative

Santa Fe Mountains Landscape Resiliency Project (SFMLRP)

Dear Supervisor James Melonas,

The members of Northern New Mexico Sierra Club, Defenders of Wildlife and WildEarth Guardians appreciate the opportunity to submit a community based [ldquo]Conservation Alternative[rdquo] to the Santa Fe Mountains Landscape Resiliency Project (SFMLRP). Our non-[shy]-profit conservation organizations are deeply involved in promoting best forestry and watershed management practices and preserving our unique New Mexico wildlife species and habitats for generations to come.

According to the Project Statement of Purpose and Need:

The purpose of the Santa Fe Mountains Landscape Resiliency Project is to increase the resilience of a priority landscape to future disturbances such as high-[shy]-severity wildfire, drought, and insect and disease outbreaks. Resilience is the [ldquo]ability of a social or ecological system to absorb disturbance while retaining the same basic structure and ways of functioning, the capacity for self-[shy]-organization, and the capacity to adapt to stress and change[rdquo] (Forest Service Manual 2020.5).

The Statement outlines how Santa Fe National Forest will achieve this change in forest status:

To increase the resilience of the forests, watersheds, and communities of the Fireshed, there is a need to:

[bull] Move forests and woodlands (including ponderosa pine, dry mixed conifer,

aspen, and pi[ntilde]on-[shy]-juniper) in the Project Area towards their characteristic species composition, structure and spatial patterns in order to improve ecological function;

[bull] Reduce the risk for high-[shy]-severity wildfire, create safe, defensible zones for firefighters in areas of continuous fuels and near valued resources that are at risk, and avoid negative post-[shy]-fire impacts;

[bull] Improve the diversity and quality of habitat for wildlife; and

[bull] Improve soil and watershed conditions.

The SFMLRP has been presented to the public through public forums, county commission hearings, and face-[shy]-to-[shy]-face meetings with many conservation organizations and concerned landowners who live in Santa Fe County. The residents who have spoken in opposition to the project represent thousands of our organizations[rsquo] local members, deeply concerned about the SFMLRP and its potential impact on Santa Fe[rsquo]s forest, watershed, wildlife habitat, recreational values, landmark appearance, and wildfire risk.

The future ability of the forest to [ldquo]adapt to stress and change[rdquo] is at the heart of this project and has raised ongoing questions how treatments work, for how long, at what cost, and with what success in reducing wildfire damage.

As several members of the public have asked: [ldquo]If we[rsquo]re spending millions to cut and burn trees in the forest when many are likely to die from insects or wildfire anyway (i.e. the natural process), why not spend those funds on protecting communities, public preparedness training, and early fire detection?[rdquo]

1. Treated/untreated acres respond differently but are short-lived and over time are "nearly identical"

There is evidence that high intensity wildland fire impacts can be reduced if they burn over treated areas, and that some can contribute to achieving short-term resiliency goals. Other evidence suggests that fuel treatments are much more effective in reducing low and moderate intensity fire, and are generally not that effective for very high intensity fire, for example Las Conchas Fire. Low to moderate and even some high intensity fire is considered to be beneficial to the fire-adapted forest landscape, so that makes the efficacy of fuel treatments questionable in many cases.

Treatments are short-lived and require repeated thinning and prescribed burns to maintain their function.

In the study: "Evaluating spatiotemporal tradeoffs under alternative fuel management and suppression policies: measuring returns on investment." (USFS, Thompson, Riley, Loeffler and Hass. 2016) Modeling results confirmed that fire-fuel treatment encounters are rare, such that median fire suppression cost savings is zero. Sierra National Forest was used as study site to reflect a microcosm of many of the challenges surrounding contemporary fire and fuels management in the western U.S. [https://www.firescience.gov/projects/13-1-03-12/project/13-1-03-12\\_final\\_report.pdf](https://www.firescience.gov/projects/13-1-03-12/project/13-1-03-12_final_report.pdf)

There is also evidence that post-fire recovery is initially similar in treated and untreated areas and that treatment benefits are nullified in the long term.

The 2002 Rodeo-Chediski fire, one of the largest wildfires in south-western USA history, burned over treated stands and adjacent untreated stands in the Apache-Sitgreaves National Forest, setting the stage for a natural experiment testing the effectiveness of fuel reduction treatments under conditions of extraordinary fire severity. In seven pairs of treated-untreated study sites measured 2 years after the fire, thinning was strongly associated with reduced burn severity. Initial post-fire recovery was relatively similar between treated and untreated areas. Only fuel loadings and Manzanita density were significantly different. Fuel loading in terms of fine and coarse woody debris, as well as forest floor weight, were substantially greater in treated areas

Treated areas initially had more trees, but as untreated areas had more regeneration, they quickly became denser; this difference slowly declined over the course of the simulation. All treatment and regeneration combinations led to some self-thinning, but Regen-2 (scheduling measured regeneration in 2004 and adjusted regeneration in 2024) in untreated areas led to an especially high pulse of density and a correspondingly steep decline. After 100 years, treated and untreated areas were nearly identical.<sup>1</sup>

Given the similar long-term effects of fire over treated and untreated areas, and the probability that any fuel treatment will be encountered by a fire is very low, the potential benefits do not seem to justify the ecological damage from the impacts of widespread fuel treatments. Removing the forest understory mechanically and then burning regrowth of the understory with periodic prescribed burns profoundly damages many of the ecological cycles of the forest.

2. What steps work effectively to reduce Wildland Fire damage?

USFS Deputy Chief Victoria Christiansen testimony to the Senate Energy & Natural Resources Committee (2017) read: "Wildland Fire Management programs at U.S. Forest Service and the Department

of the Interior seek to achieve a cost-efficient and a technically effective fire management plan that meets resource and safety objectives. The guiding principles and priorities, as outlined in the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy), are to "safely and effectively respond to wildfires, promote fire-adapted communities, and create fire-resilient landscapes through direct program activities and strong Federal, State, tribal and local collaboration. Firefighter and public safety are the primary considerations for all operations."

Wildfire prevention is a critical element to working collaboratively across land ownership boundaries. The agency uses cooperative fire agreements to further

1 Barbara A. Strom and Peter Z. Ful[acute], [ldquo]Pre-[shy]-wildfire fuel treatments affect long-[shy]-term ponderosa pine forest dynamics[rldquo]. International Journal of Wildland Fire, 2007, 16, 128[ndash]138

the goals and implementation of the Cohesive Strategy. Nationally, nearly 9 out of 10 wildfires are caused by humans, including some of the most costly wildfires. (Note: In northern NM, Cerro Grande Fire was caused by a prescribed burn, Las Conchas Fire was caused by a downed transmission line, and Doghead Fire was caused by a spark from a USFS masticator). If we prevent unwanted, human-[shy]-caused fires from igniting, we can proactively use our resources to create resilient landscapes, improve our response to the other wildfires that need attention, and engage communities to be prepared for and live with wildfire.

The goal of wildfire prevention is to stop unwanted human-[shy]-caused wildfires before they start and to reduce the negative effects of wildfires. Prevention occurs in three main areas:

[bull] Education aimed at changing behavior through awareness and knowledge.

[bull] Engineering designed to shield an ignition source or prevent wildfire from impacting something we value. Examples include clearing debris from around a house, installing spark arrestors on equipment, and utilizing well-[shy]-designed campfire pits. (It can also be used to protect valuable infrastructure in flood-[shy]-prone areas.)

[bull] Enforcement efforts to gain compliance with fire regulations and laws (primarily a State and local role). Elements of enforcement include detection to keep fires small, patrols to increase visibility and public awareness of fire danger, and public compliance with wildfire regulations.

Wildfire prevention education activities can reduce the number of human-[shy]-caused wildfires and thus fire-[shy]-related costs. A 2009 study on wildfire prevention education programs in the state of Florida found that the benefit to cost ratio could be as much as 35 to 1. That is, every additional dollar spent would have reduced wildfire related losses (e.g., home and timber losses, etc.) and suppression costs by 35 dollars. 2

A good example of fire prevention [ldquo]enforcement[rldquo] was the administrative decision to close Santa Fe National Forest, during High Fire Danger weather in 2018, to remove fire hazards from outdoor activities and camping, and to increase public awareness of wildfire risk.

3. Wildfire education, prevention of human source ignition, and enforcement are top priorities for Santa Fe County residents

2 Testimony of Victoria C. Christiansen, Deputy Chief, State & Private Forestry, USDA, Forest Service. US Senate Energy & Natural Resources Committee hearing. August 3, 2017.

Housing developments and new construction in the wildland-[shy]-urban interface are issues residents are willing to discuss but not prohibit. The promotion of Firewise communities has gained popularity and with strong political leadership could become the norm with tighter housing ordinances in both city and county. Treated right-[shy]-of-[shy]-ways for neighborhood access roads, underground utility lines, fire retardant building and roofing materials, water tanks and surface ponds for fire fighting, are all desired conditions for residents living near the forest.

Wildfire preparedness clinics are well attended in Santa Fe as are workshops that demonstrate landowner treatments and clean ups. Programs that show fire behavior and wildfire simulations are equally popular. Funding for such ongoing programs by SFNF and City & County Fire Departments should be ongoing.

Mapping of potential Firewise Communities has already been done as part of the proposed project. Focal areas for Firewise education, fire prevention and enforcement, include Chupadero inholdings, Summit Estates (Hyde Park Road), Canyon Atalaya, La Barbaria, Canada de los Alamos, Glorieta and La Cueva. Within Santa Fe National Forest, Hyde Park Road to Ski Santa Fe has also been identified as a high risk, high value corridor.

Controlling low to moderate intensity wildfires away from focal areas, but letting them burn through forest areas with heavy fuel loads is generally well accepted by the public.

#### 4. Santa Fe Conservation Alternative (SFCA): Recommendations

The [ldquo]desired conditions[rdquo] of the SFCA are as follows:

1) Require a site specific plan for each project within the SFMLRP that strategically targets limited areas to treat, creates buffered boundary areas to protect property and access ROWs, and safety zones to protect lives;

2) Require that riparian areas and critical wildlife habitat receive additional restoration monitoring and mitigation procedures developed in collaboration with NM Department of Game and Fish; and,

3) Encourage public input regarding preservation of places, landscapes, cultural sites and landmarks of local significance.

Thinning (Note: Projections for post treatment density are: 165.05 TPA across treatment stands [ndash] 4.0[rdquo]+ DBH. 29.3% of stands are >81 TPA and 90.3% of stands have

>52% trees <16[rdquo] DBH.)

[mdash]Limited hand thinning (up to 9") only in dry pine and mixed conifer outside of IRAs.

[mdash]Stumps cut down to the ground

[mdash]No thinning adjacent to the WUI for the purpose of protection of structures or communities except within 150 feet of structures, and for fire fighter safety zones.

[mdash]Maximum trees removed in most thinned areas to 80 BA

[mdash]Leave tree groupings (50% minimum) and maintain a shrub understory. Utilize a wildlife habitat based determination of tree and vegetation retention

[mdash]Identify riparian area concerns and plan to protect from erosion or sedimentation

Slash management

[mdash]Pile burning of activity fuels

[mdash]Reevaluate slash management timing and methods to avoid potential bark beetle outbreaks, and sterilization of soil under slash piles. No slash over 3[rdquo] left on the ground during the dry season

Prescribed burning

[mdash]Utilize managed wildland fire and pile burning wherever possible. Utilize minimal broadcast prescribed burns only in areas that are not assessable for pile burns.

IRAs

[mdash]No thinning in IRAs

[mdash]Identify Roadless Area concerns and develop policy to restore

Monitoring (Essential method of reaching desired outcomes of healthy forest habitat and protection of public health)

[mdash]Set aside test plots for monitoring purposes

[mdash]Soil sampling -[shy]- plot number and spacing to be determined

[mdash]Baseline species evaluation (i.e. population capacity and presence/absence)

[mdash]Improved air quality standards and monitoring to protect sensitive (human) population

Reclamation and restoration

[mdash]Reclamation of any USFS roads deemed unessential in Travel Management Plan

[mdash]Hand build structures (ex. Zuni bowls) in arroyos to slow flood waters

[mdash]Planting native, stream side vegetation where appropriate to slow floodwaters

[mdash]Reintroduction of beaver where appropriate

WUI and community forests

[mdash]Develop program to support fire-[shy]-proofing of structures and surrounding 100 feet, at least through increased outreach and education (County should make this a homeowner responsibility)

[mdash]If possible, support development of an alternative egress for communities with a single egress

[mdash]Leave most areas accessible to the public for recreation

[mdash]Take into account local opinion to preserve areas that are special to communities, like Cougar Canyon

[mdash]Increase law enforcement to protect against unsafe fire behavior by forest visitors

Scenic quality

[mdash]Maintain the scenic quality of treated areas. Develop a standard for acceptable scenic quality with local input

All of Santa Fe and the surrounding inhabitants depend on the thousands of acres of forest that give us clean air and water, seasonal runoff and acequias, historically thriving pueblos and small rural communities, native fish and wildlife, several converging ecoregions with differing landscapes, and inspiring natural beauty.

We are all deeply invested in the success of this important project. Respectfully,

Teresa Seamster

Chair, Northern New Mexico Group of Sierra Club

Bryan Bird

Southwest Program Director, Defenders of Wildlife

Sarah Hyden

SFNF Protection Advocate, WildEarth Guardians

## EXHIBIT B

Observations, Condition, and Management of the Ips Infested Trees in the Areas Around the NRCS Thinning on Cougar Ridge Road

John P. Formby, Ph.D. Forest Health Program Manager

New Mexico State Forestry (505) 469-6660

[bull] Observed numerous trees around the thinned area infested with Ips bark beetles (see pictures below)

[bull] Some green trees may be freshly attacked this year, but will not show signs (crowns fading from top down) until next year (will need to monitor trees next year for infestations)

[bull] Current Ips infested trees are breeding grounds for thousands of offspring, which could cause a larger localized Ips outbreak in the community (especially if drought conditions worsen)

[bull] Offspring development time for Ips spp. in ponderosa pine = 30-45 days, i.e. time is critical and trees need to be immediately felled/removed or felled/chopped into firewood to limit spread of the species in the community. All tree materials that are > 3[rsquo][rsquo] in diameter need to be removed from the site or immediately cut into firewood pieces. All materials < 3[rsquo][rsquo] in diameter can be cut into short sections and left on site.

[bull] Other bark beetles (Dendroctonus spp.) may be attracted to the Ips attacked trees, which could lead to a larger bark beetle outbreak in the community (another reason to fell currently infested trees)

Ponderosa pines infested with Ips bark beetles

Ponderosa pines infested with Ips bark beetles

Ponderosa pines infested with Ips bark beetles

Ips frass from boring activity in ponderosa pine

## EXHIBIT C

from Hyde Park WUI Project work order

The following stand and treatment descriptions are in general in nature and may not apply to specific conditions. The designation by prescription may be altered if agreed upon by the Contractor and COR to better meet the Forest Service objectives.

### 1) Thinning Specifications

1) Cut all ponderosa pine and southwestern white pine that are less than or equal to 9 inches DBH and taller than 3 feet. Cut all white fir and Douglas-fir trees that are less than or equal to 11 inches DBH and taller than 3 feet.

- 2) Cut trees shall be felled within unit boundaries and away from archeological sites, roads, trails, telephone/power lines, fences, and land corners. Any tree falling on such areas shall be removed.
- 3) All cut trees shall be completely severed from the stump; hung trees shall not be permitted.
- 4) The maximum stump height shall not exceed 8 inches above ground level or 4 inches above any natural object that would prevent severing the tree at a lower point. All live limbs below the cutting point shall be removed.
- 5) Deciduous tree species will be found in the project area. These species shall not be cut unless they pose a safety hazard or impede access.

## 2) Slash and Piling Specifications

- 1) Contractor shall cut limbs flush with the bole and cut the tree top off where the diameter is at 6 inches. Contractor generated slash smaller than 6 inches in diameter shall be piled.
- 2) Tree boles shall be bucked into 8-10 foot long pieces so that the bole shall be in contact with the ground in at least three points. Creating jackpots of boles shall be avoided.
- 3) Slash treatments shall be concurrent and progress with the thinning.
- 4) Piles shall be constructed to facilitate full consumption when they are burned. Piles shall be tight and compact with most small diameter slash on the bottom.
- 5) Piles shall not be less than 10 feet in diameter and 6 feet in height.
- 6) All slash that protrudes 2 or more feet from the outer edge of the pile shall be bucked off and placed on the pile.
- 7) Slash piles shall not be placed in roads, ditches or within 10 feet of project boundary. Slash treatment along roads shall be done without affecting the proper functioning of channels leading to and from drainage structures.

## RESOURCE PROTECTION STANDARDS:

Water Quality - The following measures shall be observed to protect stream courses:

- 1) Wheeled or track-laying equipment shall cross streams at crossings designated by the COR.

### Other Resource Protection

All of the activities associated with this project shall be conducted in such a manner that there shall not be any adverse impact to the following resources listed.

- 1) Protection of Improvements and Survey Monuments - The Contractor(s) shall avoid any damage to improvements such as, but not limited to, fences, gates, utility poles, survey markers or monuments, survey witness trees and cultural sites. The Contractor will be required to repair or pay fair market value to replace any damaged improvements.
- 2) Cultural Sites [ndash] Protected cultural areas will be flagged by the Forest Service for avoidance with white ribbon. Should any additional heritage or cultural sites be discovered during operations, the Contractor shall immediately stop treatment in that area and contact the COR.

### Safety

When the Contractor's operations are in progress adjacent to or on Forest Service/County controlled roads and trails open to public travel, the Contractor shall furnish, install and maintain all temporary traffic controls that provide the user with adequate warning of hazardous or potentially hazardous conditions associated with the Contractor's operations.

Contractor shall take precautions when operating directly adjacent to private land to avoid creating hazardous conditions that compromise the safety of residents or that may damage buildings and property.

#### EXHIBIT D

A portion of the Santa Fe Municipal Watershed thinned in 2002 and treated with prescribed fire twice since

#### EXHIBIT E

##### Common Myths about Forests and Fire

Does Logging in Forests Distant from Homes Protect Communities? No. Defensible space work within 100 feet or less from homes, along with making homes themselves more fire-safe, is very effective in protecting homes from wildland fire, but vegetation management activities beyond 100 feet from homes has no additional influence on whether or not a home survives a wildland fire (Syphard et al. 2014, DellaSala and Hanson 2015).

Do "Thinning" Logging Operations Stop or Slow Wildland Fires? No. "Thinning" is just a euphemism for intensive commercial logging, which kills and removes most of the trees in a stand, including many mature and old-growth trees. With fewer trees, winds, and fire, can spread faster through the forest. In fact, extensive research shows that commercial logging, conducted under the guise of "thinning", often makes wildland fires spread faster, and in most cases also increases fire intensity, in terms of the percentage of trees killed (Cruz et al. 2008, 2014).

Does Reducing Environmental Protections, and Increasing Logging, Curb Forest Fires? No, based on the largest analysis ever conducted, this approach increases fire intensity (Bradley et al. 2016). Logging reduces the cooling shade of the forest canopy, creating hotter and drier conditions, leaves behind kindling-like "slash" debris, and spreads combustible invasive weeds such as cheatgrass.

Do "Thinning" Logging Operations Improve Forest Carbon Storage? No. In fact, this type of logging results in a large overall net reduction in forest carbon storage, and an increase in carbon emissions, relative to wildland fire alone (no logging), while protecting forests from logging maximizes carbon storage and removes more CO<sub>2</sub> from the atmosphere (Campbell et al. 2012, Law et al. 2018). To mitigate climate change, we must protect forests.

##### Are Our Forests Unnaturally Dense and "Overgrown", and Do Denser Forests Necessarily Burn More

Intensely? No. We currently have a similar number of trees per acre compared to historical forests (Williams and Baker 2012, Baker 2014, Baker and Hanson 2007), but we have fewer medium/large trees, and less overall biomass—and therefore less carbon (McIntyre et al. 2015). Our forests actually have a carbon deficit, due to decades of logging. Historical forests were variable in density, with both open and very dense forests (Baker et al. 2018).

Recent studies by U.S. Forest Service scientists, regarding historical tree density, omitted historical data on small tree density, and density of non-conifer trees. When these missing data were included, it was revealed that historical tree density was 7 times higher than previously reported in ponderosa pine forests, and 17 times higher than previously reported in mixed-conifer forests (Baker et al. 2018). Wildland fire is driven mostly by weather, while forest density is a

[ldquo]poor predictor[rdquo] of future fire behavior (Zald and Dunn 2018).

Do Forests with More Dead Trees Burn More Intensely? Small-scale studies are mixed within 1-2 years after trees die, i.e., the [ldquo]red phase[rdquo] (Bond et al. 2009, Stephens et al. 2018), but the largest analysis, spanning the entire western U.S., found no effect (Hart et al. 2015). Later, after needles and twigs fall and quickly decay into soil, and after many snags have fallen, such areas have similar or lower fire intensity than areas with fewer dead trees (Hart et al. 2015, Meigs et al. 2016).

Do We Currently Have an Unnatural Excess of Fire in our Forests? No. There is a broad consensus among fire ecologists that we currently have far less fire in western US forests than we did historically, prior to fire suppression (Hanson et al. 2015). We also have less high-intensity fire now than we had historically (Mallek et al. 2013, DellaSala and Hanson 2015, Baker et al. 2018).

Do Current Fires Burn Mostly at High-Intensity Due to Fire Suppression? Current fires burn mostly at low/moderate-intensity in western US forests, including the largest fires (Mallek et al. 2013, Baker et al. 2018). For example, over 70% of the Rim Fire burned at low and moderate intensity. The most long-unburned forests experience mostly low/moderate-intensity fire (Odion and Hanson 2008, Miller et al. 2012, van Wagendonk et al. 2012).

Are Forest Fires Causing Forests to Become a Carbon Source? No. Recent unpublished reports from the Forest Service, and some state agencies, regarding wildfire carbon emissions are based on a discredited model (FOFEM) that has repeatedly been shown to exaggerate carbon emissions by nearly threefold (French et al. 2011). Further, the FOFEM model falsely assumes that nothing grows back after a fire to pull CO<sub>2</sub> out of the atmosphere. Field studies of large fires find only about 11% of forest carbon is consumed, and only 3% of the carbon in trees (Campbell et al. 2007), and vigorous post-fire forest regrowth absorbs huge amounts of CO<sub>2</sub> from the atmosphere; within a decade after fire, post-fire growth absorbs more carbon from the atmosphere than the fire emitted (Meigs et al. 2009).<sup>1</sup>

Would Landscape-Scale Prescribed Burning Reduce Smoke Particulates? No, it[rsquo]s the opposite. Any short-term reduction in potential fire behavior following prescribed fire lasts only 10-20 years, so using low-intensity prescribed fires ostensibly as a means to prevent mixed-intensity wildland fires would require burning a given area of forest every 10-20 years (Rhodes and Baker 2008). This would represent a tenfold increase, or more, over current rates of burning occurring from wildland fire (Parks et al. 2015). Contrary to popular assumption, high-intensity fire patches produce relatively lower particulate smoke emissions (due to high efficiency of flaming combustion) while low-intensity prescribed fires produce high particulate smoke emissions, due to the inefficiency of smoldering combustion. Therefore, even though high-intensity fire patches consume about three times more biomass per acre than low-intensity fire (Campbell et al. 2007), low-intensity fires produce 3-4 times more particulate smoke than high-intensity fire, for an equal tonnage of biomass consumed (Ward and Hardy 1991, Reid et al. 2005). As a result, a landscape-level program of prescribed burning would cause at least a ten-fold increase in smoke emissions relative to current fire levels, and it would not stop wildland fires when they occur (Stephens et al. 2009).

Are Recent Large Fires Unprecedented? No. Fires similar in size to the Rim fire and Rough fire, or larger, occurred in the 1800s, such as in 1829, 1864, and 1889 (Bekker and Taylor 2010, Caprio 2016). Forest fires hundreds of thousands of acres in size are not unprecedented.

Do Large High-Intensity Fire Patches Destroy Wildlife Habitat or Prevent Forest Regeneration? No. Hundreds of peer-reviewed scientific studies find that patches of high-intensity fire create [ldquo]snag forest habitat[rdquo], which is comparable to old-growth forest in terms of native biodiversity and wildlife abundance (summarized in DellaSala and Hanson 2015). In fact, more plant, animal, and insect species are associated with mature forests that burn at high-intensity, where most or all of the trees are killed, than any other habitat type in the forest (Swanson et al. 2014).

Forests naturally regenerate in heterogeneous, ecologically beneficial ways in large high-intensity fire patches (DellaSala and Hanson 2015, Hanson 2018).

Do Occasional Cycles of Drought and Native Bark Beetles Make Forests [ldquo]Unhealthy[rldquo]? Actually, it[rsquo]s the opposite. During droughts, native bark beetles selectively kill the weakest and least climate-adapted trees, leaving the stronger and more climate-resilient trees to survive and reproduce (Six et al. 2018). In areas with many new snags from drought and native bark beetles, most bird and small mammal species increase in numbers in such areas, because snags provide such excellent wildlife habitat (Stone 1995).

Is Climate Change a Factor in Recent Large Fires? Yes. Human-caused climate change increases temperatures, which influences wildland fire. Some mistakenly assume this means we must have too much fire but, due to fire suppression, we still have a substantial fire deficit in our forests.

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1 For example, Campbell et al. (2007) found that the Biscuit fire of 2002 emitted an average of 19 tons of carbon per hectare, and Campbell et al. (2016) found that decay of fire-killed trees in the Biscuit fire emitted an average of about 0.75 tons of carbon per hectare per year over the first 10 years post-fire (there were lower emissions from decay in subsequent decades). Therefore, for the first 10 years post-fire, the total carbon emissions from the Biscuit fire (carbon emissions from the fire itself, plus subsequent emissions from decay) were approximately 26 tons of carbon per hectare. Meigs et al. (2009) (Table 5) report that, by only five years after fire, regrowth was pulling 3.1 tons of carbon per hectare per year out of the atmosphere. Therefore, by 10 years post-fire, this equates to approximately 31 tons of carbon pulled out of the atmosphere by regrowth[mdash]i.e., an overall net increase in carbon of 5 tons per hectare relative to pre-fire levels.

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