

Data Submitted (UTC 11): 4/18/2023 6:00:00 AM

First name: Rocky

Last name: Smith

Organization: et al.

Title:

Comments: Dear Forest Service,

Attached are the comments of Rocky Smith et al on the proposed St.

Vrain Project. A few of the references are Forest Service publications which you already have. The remainder will be sent in a separate e-mail a little later.

Please acknowledge receipt of these comments and the references with a reply to this e-mail.

Thanks,

Rocky Smith

Kevin McLaughlin, Boulder District Ranger

2140 Yarmouth Avenue

Boulder, Colorado 80301

Via e-mail: comments-rocky-mountain-arapaho-roosevelt-boulder@usda.gov

April 17, 2023

Dear Ranger McLaughlin and staff:

The following are the comments of Rocky Smith et al on the proposed St. Vrain Forest Health Project, as described in the preliminary environmental assessment (PEA) and other documents available on the project's web page.

We submitted scoping comments on this project, dated July 6, 2022. We hereby incorporate them by reference.

I INTRODUCTION

The undersigned appreciate the desire to reduce fuels and restore natural structure in the project area. We also appreciate the adjustments made in the project since scoping, especially with the Design Features. However, we still believe that the best strategy to protect communities from wildlife is the "home outward" strategy (see our scoping comments at pp. 8-9), under which treatment is concentrated in areas nearest the homes and other infrastructure. Areas of national forest closest to infrastructure should be the focus for this proposed project. There is no need to treat in the subalpine areas, i. e., in Englemann spruce-subalpine fir stands and most lodgepole stands outside of areas adjacent to infrastructure, as these areas are not departed from the historic range of variability.

We have numerous concerns with the proposed action, as detailed in the sections below.

II. MANAGEMENT CONCEPTS AND POSSIBLE ACTIONS

PODs. PODs (potential operational delineations) would be established throughout the project area. See PEA Appendix D, Map 9. Various types of treatment are proposed for POD boundaries. But PODs would typically be 300-500 feet wide and up to 1000 feet wide. PEA at 27, A-9. Depending on what is considered to be at the POD boundary, that leaves a lot of room in the POD for treatment. What treatments would be done inside the PODs but not necessarily at their boundaries?

These areas would fragment habitat, encourage introduction and spread of weeds and invasive species, and allow increased off-route motorized use. These issues are further discussed in various sections below.

Recently burned stands. "Management actions should move burned areas towards the desired conditions set for unburned forest types in the same biophysical zones". PEA at 25. Burned areas are very fragile. Any management would disturb the soil and could easily thwart or at least delay vegetative recovery. Except for removal of hazard trees by hand and efforts to reduce excessive soil erosion, recently burned areas should be left alone. If native ground vegetation does not reestablish within a few years, seeding and planting can be considered.

Aspen management. Under the project some stands would be managed to promote aspen, by removing encroaching conifers in higher elevation lodgepole pine. PEA at 29. However, removing conifers could damage aspen. Felling and skidding could create wounds in aspen which would invite entry of fungi that would hasten the death of aspen trees so affected.

As noted in the PEA, *ibid.*, lower-elevation aspen may decline with a warming climate, but aspen could also expand at higher elevations due to warmer conditions. Aspen may also sprout, or have done so already, after the recent fires in and near the project area.

The aspen-conifer mix is desirable ecologically, as it may provide habitat for wildlife species using either aspen or conifer. See our scoping comments at 10-11 for further discussion.

There is no need to treat aspen stands in the project area.

Cable and aerial yarding. Mention is made of using skyline cable systems (PEA at 18) or "aerial-based systems" (*id.* at 28) for the project. This should not be considered. Such systems require experienced operators to use safely. There has been little use of these systems in Colorado over the last 40 years, and probably none near the project area. The equipment is also expensive, meaning a company using aerial or cable systems would want a good return on investment. That would mean allowing loggers to cut larger trees, which would have the most value to any contractor. However, large trees must be retained. They are the most fire-resistant, store the most carbon, are important storehouses for genetic diversity, and have the best chance to grow into old growth.

Cable and aerial yarding should not be considered for this project.

Whole tree yarding (WTY). This practice leads to a large amount of material at landings, and too little coarse and fine woody debris in the remainder of each unit. The Hydrology, Watershed, and Soils (HWS) Analysis states:

This assessment of soil properties and associated interpretations across the project area indicate the soils and long term soil productivity are sensitive to damage from removal or disturbance of forest floor and/or surface layers and damage from moderate to high soil burn severity. Retention of adequate woody material is essential

for supporting nutrient cycling.

HWS Analysis at 9.

Skidding whole trees with limbs attached also tears out any ground vegetation, increasing the chances of erosion. Using this practice would contradict a Design Feature:

Following implementation of treatments, at least 70% effective ground cover shall be retained within mechanical and manual treatment units to lower the risk of soil erosion.

HSWF 1 d, PEA at B-4.

But under Design Feature Fuels 7 (PEA at B-3), WTY would be required for clearcuts and patchcuts. WTY should not be used, or if it is, contractors should be required to redistribute at least enough coarse and fine material across cut units to meet forest plan standards. The distribution of debris, especially pieces three inches and larger in diameter, should be discontinuous to avoid undesirable fuel loading. Retaining woody debris is required by Design Feature HSWF 1 e, but this would necessitate more passes by heavy equipment, resulting in more soil compaction and displacement. It is better to avoid the problem by not using WTY.

Slash piling and burning. Pile burning would occur to reduce activity fuels and natural fuels. Biological Assessment/Biological Evaluation (BA-BE) at 11[1]. Leaving some small piles may be beneficial for wildlife, as provided by Design Feature Terrestrial Wildlife 5 b. But piles to be burned should be no more than about three feet high and be composed of material no more than about three inches in diameter. Burning large piles and those with larger diameter material would create detrimental soil conditions, as is explained below. Unfortunately, the use of landings for burning large piles is considered desirable:

Where mechanical treatments occur, it is preferable to use landing sites for large burn pile construction, which will reduce the footprint of burn piles on less disturbed lands.

HWS Analysis at 16.

Very large landing piles should especially not be burned, as a long hot fire would result, volatilizing nutrients, killing soil microorganisms and fungi, and resulting in hard packed, water-repellent soil similar to what is created by a high intensity fire. Design Feature HSWF 3 b, for alleviating soil damage from pile burning, is good, but it's better not to create the problem in the first place.

Burn piles should never be located in or near riparian areas, as this would create an unnatural soil and post-burn vegetation condition. Design Feature Terrestrial Wildlife 5 a should be amended to prohibit slash piling in and adjacent to riparian areas.

Biophysical zones. Biophysical zones are said to be a key feature of this project (PEA at A-4-5); however:

Biophysical zones have limited applicability in guiding wildland-urban interface mitigation zones, PODs, and infrastructure management actions, as the primary purposes for those actions are different than forest resilience.

Id. at C-1. Most of the treatments proposed for the project are in PODs or WUI mitigation zones. Combined, these areas "encompass approximately 70 percent of the national forest lands in the Project area". PEA at 27. Thus it appears the biophysical zones have a small role, if any, in this project.

Also, biophysical zones may be difficult or impractical to apply, as there are 29 of them, most of which are not even named. See PEA Appendix D, Map 5. It is hard to see how "[hellip]the use of biophysical zones in varying management prescriptions may adequately address the need to promote [climate] refugia". PEA at 22.

The use of biophysical zones in this project should be clarified or dropped.

Old growth. We are pleased to see the following focus for the project:

Maintain[ing] old growth characteristics including dead trees, tree canopy gaps, and large downed woody material in present stands and promot[ing] these habitat conditions in stands with the potential for old growth character.

PEA at 21.

However, it is important to note the role of mature and old-growth forests to store carbon and serve as a natural climate-crisis solution must be part of any detailed project-level analysis. Forest soils are a major factor in the ability to provide such an essential ecosystem service. In addition, mature and old-growth forest soils have extremely well-developed networks of mycorrhizal fungi that should also be included in any characterization of mature and old-growth forests.

Notably, mycorrhizae attached to plant roots, provide nutrient and chemical pathways within and among plants that increase uptake of water and nutrients. Simard et al., 2013. "All forest trees form mycorrhizas involving thousands of fungal species (Molina et al., 1992)." Id. Mycorrhizae form meta-networks with connections strongest for trees within the same cohort (clustering of large trees) and same species (particularly the progeny of older trees). Id. See also Simard, 2009; Simard, et al., 2012; Simard, 2018; Simard, et al., 2021.

Further, "[m]ycorrhizal fungi can link the roots of different plant hosts, forming mycorrhizal networks (Molina and Horton 2015)." Simard, 2018, emphasis added. These networks link trees of same and different species of varying age classes, but older trees serve as hubs facilitating the transfer of water, carbon, nutrients and compounds that act in a similar fashion as neurotransmitters enabling chemical communication. Id. When hub trees in the cohort are removed, the entire cohort can be impaired by breaking the meta-network linkages. See Simard et al., 2013.

Identifying and preserving these hub trees is essential for the functionality of mature and old growth forests. As such any management proposed for old growth stands, including those that are proposed to enhance and perpetuate old growth characteristics over time, should take into consideration and analyze the potential impacts to associated mycorrhizal fungi.

III. PROTECT ROADLESS AREAS

Activities are proposed in two Colorado Roadless Areas (CRAs), North St. Vrain CRA and 2-3 subunits of the Indian Peaks Adjacent CRA. Impacts from treatments in Colorado Roadless Areas (CRAs) may be kept at a low level, as only hand treatments would occur. Roadless Report at 6. However, some treatments could be extensive.

Treatment could include "saw line[s]" 50-100 feet wide, or wider in some cases:

Where natural features don't exist to contain a prescribed fire, the preparation treatments may require more intensive and/or extensive fuel mitigation. This may include treating a wider area to the maximum extent allowed and require hand piling and burning of fuels to manage fire behavior during a broadcast prescribed fire.

Roadless Report at 2. It is not clear what the "maximum extent allowed" is. Does the 300-700 acres limit for a "typical daily prescribed burn" apply to the overall size of burn units?

In any case, it seems that fairly extensive treatment, activity that would be noticeable after completion, is intended for roadless areas. For some time, the area would no longer appear natural and undisturbed, robbing it of its roadless characteristics.

Roadless treatment could occur in subalpine portions of roadless areas. Indeed, the Indian Peaks Adjacent RA is comprised mostly of subalpine fir, Englemann spruce, and lodgepole pine forests. Roadless Report at 3-4.

Where lodgepole pine and spruce-fir forest cover types occur within roadless areas, management actions are limited to POD boundary treatments and treatments in the WUI mitigation zone consistent with proposed action descriptions in the Fire-Adapted Communities section that follows.

PEA at 25.

Treatments in POD boundaries could be 300-500 feet wide, or even up to 1000 feet wide. PEA at 27, A-9. Such a wide swath of treatment would damage the undisturbed character of the roadless areas treated.

Both roadless areas contain habitat for species that need mature forest habitat, such as goshawk, boreal owl, olive-sided flycatcher, and marten. Roadless Report at 8, 9. Thinning and other treatments could degrade habitat for these species.

The CRAs also have habitat for three riparian species, Prebles meadow jumping mouse (PMJM), boreal toad, and leopard frog. Roadless Report at 9. PMJM is a threatened species under the Endangered Species Act; the other two are Region 2 sensitive species. Treatment could result in "shift" of wildlife species in the area. RA report at 10. It isn't clear what this shift would be or how it would contribute to the conservation of existing threatened and sensitive species.

There is lynx habitat within the Indian Peaks Adjacent CRA in the project area. Roadless Report at 11. See further discussion in section IV below.

One of the largest populations of Larimer aletes (*Aletes humilis*) is located in the North St. Vrain CRA. Roadless Report at 11, 12. This species is found only in northern Colorado and southern Wyoming. Treatments must avoid populations of this species. See more in section VIII below.

Both roadless areas have considerable recreation. In St. Vrain, there are unmanaged uses, including "unauthorized mountain biking and equestrian trail creation and maintenance, unauthorized OHV use, and target shooting. [hellip]Unmanaged uses may proliferate throughout the treatment areas with the implementation of projects. Roadless Report at 12, 13. The proposed treatments would exacerbate this problem.

Proposed treatment in the North St. Vrain CRA would not enhance its ability to serve as a reference landscape, contrary to what is stated at Roadless Report p. 15. If it is treated, it is no longer a reference landscape. The Roadless Report admits that

The project's proposed activities have to potential to impact the area's ability to represent an unmanaged landscape and therefore affect its usefulness as a comparison benchmark.

Roadless Report at 15-16. The area has already had some management such that its "existing condition is not representative of a completely unmanaged landscape". Id at 16. The proposed treatments would put the CRAs further outside the undisturbed condition.

Subalpine zones have low, if any, departure from historical conditions. These areas are mostly well away from residences and other infrastructure. Treatment in the subalpine zone in roadless areas is unnecessary and should not be approved.

The Roadless Report at 4 notes that pile burning and other burning could result in some areas of "moderate to high soil burn severity". In the lower elevations, such as in the North St. Vrain CRA, this would not be within the range of natural variability, as fires there were likely low severity. As detailed above in section II, piles should be kept small enough and be made up of small diameter material (less than three inches diameter) to prevent or reduce the possibility of detrimental impacts to soils.

IV. PROTECT WILDLIFE HABITAT

Maintain habitat effectiveness. As the Biological Assessment/Biological Evaluation (BA-BE) observes,

the proposed clearcut, salvage and thinning treatments are likely to result in much more open stand structure and increased horizontal visibility for some distance along roads, potentially within the full 1,000-foot width of POD boundaries.

BA-BE at 42

This would reduce habitat effectiveness (HE) and increase fragmentation, as it would open up what are now solid blocks of forested habitat. This is especially true in the 300-1000 feet wide PODs. It is important to maintain habitat effectiveness, given the high human use of much of the project area. Forest Plan Guideline 109 says that open roads and trails should not reduce HE below 50 percent in any geographic area (GA), nor further reduce HE where it is already under 50 percent. Two GAs are well under 50 percent HE, and one is just over 50 percent. BA-BE at 34. The project must be revised to be consistent with the Guideline 109.

Raptor nest protection. BA-BE states that there will be a "project design criterion" for a $\frac{1}{4}$ mile buffer around raptor nests during the nesting and fledging period. Id. at 77. However, we do not find a design feature with this requirement. One design feature in PEA Appendix B, Terrestrial Wildlife 1 e, would require a Forest Service biologist to see that the Forest Plan requirement is met when nesting is found in treatment units or would be affected by treatment. Plan standard 101 requires a no-disturbance buffer around raptor nests from nest site selection to fledging, but does not specify a distance, leaving it to be determined on-site by various factors. Another design feature, Terrestrial Wildlife 6 b, prohibits treatment in 30 acres around goshawk nests.

The protection for raptor nests needs to be clarified. We recommend a quarter mile during the nest building through fledging period for all species. See additional comments below under Northern goshawk.

Snags. The importance of snags for wildlife nesting and perching is well established. Generally, snags should be retained unless they are hazard trees. Direction to retain snags in Design Feature Terrestrial Wildlife 1 h is good; however, under another Design Feature, snags could be cut along all POD boundaries:

Snags may be felled along Potential Operational Delineation (POD) boundaries and prescribed fire control lines if deemed necessary to minimize danger to personnel.

Design Feature Fuels 2, PEA at B-3. Given the number of PODs and their width, application of this measure could result in the loss of too many snags. As discussed above, intensive treatment is neither needed nor appropriate in areas above about 7200 feet elevation. Thus snags in areas away from infrastructure should be retained except for hazard trees.

Snags that have enough rot to be excavated into nests but still remain standing are limited in the project areas. BA-BE at 73, 74-75. This makes it important to retain existing snags, especially those with internal rot.

Lynx (*Lynx Canadensis*). Some of the proposed treatment would occur in suitable lynx habitat:

Unevenaged management treatments could be planned for mature multi-storied and late-successional stands that contain mixed lodgepole pine and spruce-fir that have sufficient dense horizontal cover near the ground.

BA-BE at 45, 46.

Specifically, up to 1066 acres of suitable habitat could be treated mechanically, and up to 944 acres treated manually. BA-BE at 45-46. Of the manual treatment, 557 acres "are in spruce-fir and primary lynx habitat". Id. at 46.

There is no need for this treatment. Spruce-fir stands usually have two or more ages, thus providing the structure needed by lynx and its favorite prey, snowshoe hare. Any treatment is likely to destroy much of the understory. See Alexander, 1987, at 44. Design Feature Terrestrial Wildlife 10, recommending avoiding understory vegetation in lynx habitat, is good as far as it goes, but it is better to ensure any activities stemming from this project occur outside of lynx habitat, as there is no need to treat in these areas, and any treatment would degrade the quality of habitat.

Marten (*Martes Americana*). This species has requirements similar to lynx in that it needs mature forest with good canopy closure. It especially needs down logs, as these are used for under-snow foraging and sometimes for denning. It is important to retain coarse woody debris in areas of potential marten habitat, as well as understory vegetation that can provide habitat for prey. Any treatment in subalpine areas would degrade or destroy marten habitat by removing the understories and making the resulting habitat too open. See BA-BE at 59.

Boreal owl (*Aegolius funereus*). Similar to marten, treatment in lodgepole pine and spruce-fir stands could degrade habitat for this species by reducing or removing structure. See BA-BE at 71-72. Habitat outside the project area "has been manipulated in relative recent history and is currently not performing as high functioning habitat". Id. at 72. Thus retaining habitat within the project areas is important; this is another reason spruce-fir stands should not be treated.

Golden-crowned Kinglet (*Regulus satrapa*). This is another species whose habitat would be degraded by any treatment in spruce-fir stands.

Abert's squirrel (*Sciurus aberti*). This species is a ponderosa pine obligate, as it feeds on the inner bark of leader stems. It needs clumps of trees for nesting security. Therefore, any thinning must maintain the clumpy structure of ponderosa pine stands.

Pygmy Nuthatch (*Sitta pygmaea*). This species has a "strong affinity" for ponderosa pine. BA-BE at 91. It is also a primary cavity nester, so it needs trees with rot that it can excavate into nests. It is very important to retain canopy cover and snags suitable for excavation into nests.

Flammulated owl (*Otus flammeolus*). This species prefers ponderosa pine or aspen snags with cavities for nesting, and large mature or old growth ponderosa for roosting. In surveys conducted in 2022, this species was detected in the project area, "including a number within potential treatment units". BA-BE at 73.

Treatment units will need to be designed to retain clumps of mature trees. This would help retain owl nesting and

perching areas, and to avoid fragmenting habitat into pieces too isolated or too small to be useful. Thinning dense stands mainly composed of smaller trees may be beneficial in helping retain the older trees.

Mexican Spotted Owl (MSO) (*Strix occidentalis lucida*). This species could exist, now or in the future, in the project area. It is

most often associated with multistoried, uneven aged stands with high canopy coverage and protected flyways, with an understory component of fallen logs and tree snags.

BA-BE at 56. Its elevational range extends to 9000 feet. Ibid.

While light thinning and low-intensity burning probably would not be harmful, the proposed treatments could remove or greatly reduce the understories in parts of the treated units, reducing or destroying habitat for MSO prey. Clumps of ponderosa pine and/or Douglas-fir (individually or separately) which include some smaller trees, should be retained in each treated unit. Units above 7200 feet elevation should not be treated.

Northern goshawk (*Accipiter gentilis*). This species needs stands with relatively high canopy cover, which project treatments would reduce. The BA-BE notes that "[t]here are several additional documented nests, sightings, and territories within and near the project boundary." Id. at 76. The species could benefit from thinning very dense stands, as it needs a relatively open understory to forage. However, if stands become too open after treatment, goshawk habitat would be degraded.

Protecting nests is very important, as goshawks are extremely intolerant of human presence near the nest during the nesting season. Per Reynolds et al, 1992, we recommend that all project activity be prohibited year-round in areas of nests and potential alternative nests, an area of approximately 180 acres.

See additional comments at pp. 23-24 of our scoping comments.

Olive-sided Flycatcher (OSFL) *Contopus cooperi*. According to the Cornell Lab of Ornithology, Olive-sided Flycatcher populations are in decline. And according to Partners in Flight, their overall population has fallen by 79% since 1970. See https://www.allaboutbirds.org/guide/Olive-sided_Flycatcher/lifehistory (last accessed April

13, 2023).

The BA-BE contradicts itself by stating in the Distribution section that OSFL has been confirmed to breed in Boulder County. In the Existing Habitat section, a sentence later, it is stated that OSFL have not been confirmed to breed in Boulder County. Id. at 78. Data on OSFL should be carefully reviewed to clarify if OSFL breed in Boulder Co. Data from eBird (www.ebird.org) show regular observations of OSFL within the project area in the month of June, suggesting high likelihood of breeding in the project area.

OSFL commonly use mature and old-growth coniferous forest, and high-elevation spruce-fir forest. BA-BE at 78. To avoid impacts to this rapidly declining species we suggest not treating areas of high-elevation spruce-fir, and to maintain current mature and old growth conditions within the project area.

Virginia's Warbler *Leiothlypis virginiae*. As noted by the Cornell Lab of Ornithology, Virginia's Warbler is a species that has been losing about 1% of its population a year since the late 1960's. The species is a ground nesting bird, and "controlled burning can reduce available breeding habitat". Furthermore, Cornell notes the species is uncommon throughout it's range, not common as stated in the BA-BE. Id. at 63. The eBird database (ebird.org) shows regular observations of Virginia's Warbler in the project during the breeding period of May through July.

Although "shrublands are not necessarily targeted for removal in this project," clearly they will be impacted by fire. BA-BE at 80. Desired future conditions of Ponderosa Pine stands within the project, which makes up a portion of Virginia Warbler habitat, includes the removal of "surface[hellip]fuels" which likely includes shrubs, resulting in adverse effects for Virginia Warbler habitat availability, Appendix A: Condition Based Management Guide and Management Card. We suggest that prior to conducting burn activities, monitoring for presence and nesting Virginia Warbler's be conducted. Furthermore, to reduce loss of habitat, or existing nests, we highly discourage conducting spring burning during the nesting season of May through July.

Prebles Meadow Jumping Mouse (*Zapus hudsonius preblei*) (PMJM). The design features to protect this threatened species are good. We recommend not burning in the spring, as that would reduce riparian vegetation cover just as the species comes out of hibernation. It is better to burn in the fall, or if possible, in the winter.

As the BA-BE states, livestock grazing occurs in some PMJM habitat, in some places having "medium impacts"

Id. at 99. If areas where grazing impacts PMJM habitat are to be treated, livestock must be kept off the area for at least a few years after treatment, to allow the vegetation and soils to fully recover. Overall, it would be beneficial to adjust grazing allotment or pasture boundaries to avoid livestock grazing in PMJM habitat.

Elk (*Cervus elaphus*). The BA-BE notes that evidence of elk is found throughout the project area. Id. at 83. It also notes the difficulty the species faces in the project area:

Increased openings combined with high human use of the project area has created challenges that can restrict movement for migrating elk, potentially resulting in additional stress that is especially concerning in spring when animals are stressed from the rigors of winter and at their lowest physical condition.

Ibid.

While thinning and burning is stated as arguably benefiting elk (BA-BE at 84), there are inadequate provisions to ensure that the amount of removed trees would not reduce hiding and thermal cover in a landscape that already lacks sufficient sizable portions of this type of habitat. As a result, the project risks making elk more even more susceptible to stress from human presence. Cumulative impacts on hiding and thermal cover from recent past, ongoing, and reasonably foreseeable actions must be considered in this regard, but that required analysis remains lacking. See BA-BE at 97.

The one Design Feature prohibiting activities on winter range applies only to severe winter range and winter concentration areas. Terrestrial Wildlife 6 c, PEA at B-15. However, all but the far western portion of the project area is winter range. BA-BE at 83. There needs to be a design feature that protects other winter range, and also provides for extending these closures past the March 30 end date in 6 c if deep snow years have resulted in the elk remaining in their winter habitat longer.

The concerns for elk also apply to mule deer (*Odocoileus hemionus*).

In sum, the proposed project would cause adverse impacts to a wide variety of wildlife species. The design and location of treatment units must minimize these impacts, in part by ensuring that substantial canopy cover remains, and that stands are not too open after treatment. Impacts from the proposed treatments must consider cumulative impacts in the project area and adjacent areas, especially from the recent fires.

V. PROTECT STREAMS, LAKES, WATERSHEDS, AND FENS

Four watersheds at least partially in the project area are rated as non-functional. HWS Analysis at 10-12. A substantial portion of Middle Left Hand Creek has burned recently. Id. at 11. It should be mostly left alone and allowed to recover. However, under the proposed action, over 2500 acres (of 3161 acres of national forest land) would be burned (id. at 10), to dispose of fire-killed trees. That is a very bad idea. Additional burning would destroy any natural revegetation and cause additional detrimental impacts to soils. The recent fires likely consumed most of the fine fuels and cooked the trees, so it would take a high-intensity fire to burn up the fire-killed trees. The hardened soil created by past fires might be exacerbated by additional fire, leading to accelerated soil runoff and stream sedimentation during precipitation events.[2]

A similar situation exists in the South St. Vrain Outlet Watershed. Here, 7087 of 7804 acres of national forest land would be burned under the proposed action. Id. at 10, 11. That is unconscionable. That would almost certainly exacerbate existing effects on soils and watershed and delay recovery.

The proposed burning in these watersheds would violate the agency's Soils Management Handbook, FSH 2509.18, R2 Supplement and Forest Plan standard 19. A soil quality standard there prohibits more than 15 percent of an area being left in a detrimentally burned condition (section 2.2), and:

If a standard is exceeded in an initial entry, future entries must have no additional detrimental effect unless mitigative measures have been applied or natural recovery has taken place between entries.

Ibid. Given that the fire in these watersheds likely burned hot, it created a severely and detrimentally burned soil condition in at least part of each watershed.

No treatment, especially burning, can occur in these watersheds, other than planting and other revegetation efforts as needed, until the watersheds have recovered, and any treatment would meet the soil quality standards in FSH 2509.18.

Four watersheds, including Middle Left Hand Creek, exceed the 2.4 miles per square mile road density threshold. HWS Analysis at 10, 12. New temporary roads would also be constructed in two other watersheds exceeding the road density standard. Id at 12. This should not occur, and unneeded roads should be closed and obliterated to the maximum extent possible throughout the project area, and especially in these watersheds.

It is very important to monitor the impacts of treatments, both during and after project implementation. The monitoring measures listed at HWS Analysis p. 17 are good and should be applied. Monitoring data should be evaluated and used to determine additional mitigation measures, and to improve future implementation.

Connected disturbed area. We do not see any Design Features to specifically address connected disturbed area (CDA). This should be a concern with the well-graded condition of the project area, as CDA helps transport sediment into streams. Management measure 11.1, design criterion 1a in the agency's Watershed Conservation Practices Handbook (WCPH), FSH 2509.25, specifically requires that expansion of CDA be limited to no more than 10 percent in each third-order watershed. The existing design features may help limit CDA, but the analysis of impacts must address how CDA will be limited as required by the WCPH.

Remove roads. All temporary roads, including existing paths, that are used for the project should be closed and obliterated after completion of work in a respective area. We are glad to see the intent is to do exactly that. BA-BE at 35. As the BA-BE notes, *ibid.*, there are opportunities to close and obliterate other unauthorized roads in the project area. The Forest Service should make an effort to close as many miles of such roads as possible, consistent with maintaining healthy streams, soils, and watersheds.

The Design Features for road decommissioning, HSWF 7 a and b, are good.

In Design Feature HSWF 2 a, second bullet appears to require a buffer only for lakes and watersheds that are over one acre in size in watersheds containing TES species. There are likely wetlands and lakes less than one acre in size that deserve protection regardless of whether TES species are present. This design feature should be amended accordingly.

Design Feature HSWF 6 b states: "Keep roads and trails out of wetlands unless there is no other practicable alternative." If an activity requires a road or trail to go through a wetland, it should not be approved.

VI. PROTECT SOILS

In addition to protecting soils in burned watersheds as discussed above, treatments in the project area are subject to limitations:

Soil erosion hazard ratings are moderate or high for over 90% of the analysis area. This is an indicator that the risk for erosion is moderate or high if effective ground cover is removed.

HWS Analysis at 16.

Soil productivity could also be impaired:

Long term soil productivity could be impacted if adequate litter/duff, coarse woody debris, and fine woody debris is not retained on patch cut/clear cut sites or other intensively treated activity areas following treatment.

Ibid.

As discussed above in section II, whole-tree yarding is likely to remove much coarse woody debris from treated units. Using this practice (even requiring for some treatments as discussed in section II) would remove coarse woody debris or at least prevent such debris from being deposited on the ground as trees die. The passes by heavy equipment hauling whole trees to the landing disturbs soil and likely results in some areas of compacted or displaced soil. This would make it difficult to re-establish ground cover as required by Design Feature HSWF 1 d.

Soil productivity and stability should be retained by: 1) staying off steep slopes and slopes with high erosion potential; 2) not burning areas already detrimentally impacted, such as by fire, compaction or displacement; and 3) not using whole tree yarding.

VII. MAINTAIN STAND WINDFIRMNESS

A considerable acreage of the project area would be thinned. Trees develop windfirmness together as they grow in a stand. Thinning opens a stand to wind and can reduce or destroy the windfirmness of an entire stand. See PEA at 55.

Ponderosa pine trees have taproots and rarely blowdown, but other conifer species in the project area could

become susceptible to blowdown with the very strong winds the project area experiences every year. The BA-BE, p. 97, states: "[e]vidence of windthrow, primarily in lodgepole pine stands, adjacent to patchcuts or clearcuts are still noticeable".

Before any stands are approved for thinning, they should be evaluated for blowdown risk, and the intensity of thinning and the boundaries of units adjusted accordingly. Similarly, stands adjacent to those proposed for patchcutting or clearcutting must be evaluated for blowdown risk. The most wind-prone areas should probably be avoided altogether. Implementing thins over several years as proposed (PEA at 55) may not stop residual trees from blowing down.

VIII. FIGHT WEEDS AND PROTECT RARE PLANTS

The PEA notes the threat posed by non-native, invasive species:

Invasive species are among the most substantial environmental and economic threats facing our Nation's forests, grasslands, and aquatic ecosystems. They endanger native species and threaten ecosystem services and resources,[hellip]

Id. at 32.

Actions taken for protection will be commensurate with the potential impact. Design Feature Botany 1, PEA at B-2. This design feature should have more detail on what measures would be undertaken to protect rare plant populations such as buffers and what would be considered in determining the size of protective buffers.

Design Feature Invasive Species 2 should be rewritten to specify that any areas to be treated or where ground will otherwise be disturbed shall be surveyed for weeds, and that any populations found shall be eradicated to the greatest extent practicable prior to commencement of activities. Also, all treated areas, not just those areas with weeds prior to the start of the project, should be surveyed, and any populations found in the three-years of follow-up surveys shall be eradicated.

Surveys for weeds can also be used to delineate populations of rare plants. Design Feature Botany 2 should require surveys for rare plants in all areas prior to any ground-disturbing treatment, not just those thought to have "high quality suitable habitat". Plants could be found anywhere in areas not previously surveyed.

IX. MANAGE RECREATION

The proposed treatments will remove trees, creating more open area in the stands treated. This could create unauthorized routes that will get used by motor vehicles. The PEA notes this possibility:

Treatments that occur along Forest Roads may increase unmanaged recreation opportunities as recreationists may see these areas as new opportunities for unmanaged recreation opportunities such as off-road driving, camping, campfires, target shooting, etc.

Id. at 50.

This is an issue within roadless areas, as discussed above in section III.

The creation of new unnatural-appearing corridors (e.g., firelines) directly adjacent to National Forest System Roads and Trails or High Use Areas should be minimized or avoided. In areas where that is unavoidable, block openings with natural materials to prevent the creation of unauthorized routes.

Design Feature Recreation 5, PEA at B-12. Design Feature Recreation 6 has some guidance for how to block this off-route use. But barriers would be needed much more frequently than every 300 feet. It is better to not create the opportunity for off-route use by leaving an untreated buffer area and retaining trees, as this feature suggests.

X. THE PROJECT DOES NOT COMPLY WITH NEPA

The process for approving the project would not comply with NEPA because potential impacts would not be disclosed prior to the decision to approve the overall project. The Forest Service should instead prepare an EIS and then for each individual project or group of projects, prepare an EA. At a minimum, the Forest Service must conduct an EIS for the proposal with revised mitigation measures and actual site-specific analysis. The proposal

cannot lawfully move forward with approval through an EA/FONSI.

The proposed project would be implemented over an estimated 20-year period. PEA at 34. Conditions can change during this long time period. Note guidance from the Council on Environmental Quality:

As a rule of thumb, if the proposal has not yet been implemented, or if the EIS concerns an ongoing program, EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement.

46 Fed Reg 18027, March 23, 1981.

At best, the public and decisionmaker have only a general idea of where and what type of management might occur. Indeed, the PEA is lacks site-specific analysis, which NEPA requires, to afford for transparent and well-reasoned agency decisionmaking and public engagement. Notably, Management Action Opportunity Areas, where action is most likely to occur, are only a "reasonable estimation" for where action would occur. PEA at 19. The analysis of possible impacts is based on actions in these areas. Ibid. WUI mitigation zones have only been preliminarily identified. PEA at 27. "Further refinement of these locations is expected with improved data quality and additional field reconnaissance." Ibid. And overall,

Due to the nature of condition-based analyses, it is challenging to predict exactly where and when each treatment will occur in future years.

HWS Analysis at 18.

Field work would not be done until the "refinement" stage of a "preliminary management action proposal" (see PEA at 35-36), which would only be conceived well after approval of the project and public review and comment has long since closed. Field work might "confirm presence or absence of a particular species". Id. at 36. This and other relevant site-specific information must be available to the public and decisionmaker before a project is approved.

The public would only be able to provide "feedback[hellip]by answering a few short questions" on site-specific proposals shortly before issuance of a final management action plan for those activities. Ibid. This is insufficient for public input on specific for treatment and NEPA compliance.

Roads have significant effects on watersheds, soils, wildlife habitat effectiveness, etc. However, there is only an estimate of how many miles of new temporary roads and existing non-system roads[3] would be needed to implement the project: 30-50 miles. PEA Table 5 at p. 32. The BA-BE shows that 69 miles of existing road would have "road improvement". Id. at 28. There is no indication of where roads, new or improved, might be located, and thus the impacts of the roads could not be sufficiently evaluated by the agency or the public.

See additional comments on NEPA compliance in section II B and C of our scoping comments.

XI. THE PROJECT SHOULD INCLUDE IN ITS PURPOSE AND NEED SECTION A NEED FOR A "SUSTAINABLE" ROAD SYSTEM.

Having a resilient landscape requires a sustainable road system.

Though required by its own regulation, the Forest Service here fails to include the need to identify and achieve a minimum road system needed for safe and efficient travel and for the protection, management, and use of National Forest system lands. See 36 C.F.R. [sect]212.5(b)(1)). An agency has a duty to comply with its own rules, unless it provides a rational explanation for departing from those rules. See *Chrysler Corp. v. Brown*, 441 U.S. 281, 295 (1979). There is no acknowledgement or rational explanation in the PEA for not complying with Subpart A of the Roads Rule. The express language of the rule is clear: "the responsible official must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands." 36 C.F.R. [sect] 212.5(b)(1) (emphasis in original).

Further, "[i]n determining the minimum road system, the responsible official must incorporate a science-based roads analysis." Id. (emphasis added). Finally, the agency's own regulations define that minimum road system as "the road system determined to be needed" to, inter alia, reflect long-term funding expectations and ensure minimization of adverse environmental impacts. Id. The PEA fails to acknowledge the Travel Management Rule and does not incorporate a Travel Analysis Report (TAR) for the Arapaho-Roosevelt National Forest. A TAR was not included as one of the Specialist Analysis Report provided to the public for this proposed action. We ask whether the project team used travel analysis to refine the proposed action, and note this is only

one component of meeting the obligation of the Travel Management Rule. After more than 20 years since the Forest Service promulgated its 2001 Roads Rule, see 66 Fed. Reg. 3217 (Jan. 12, 2001), it is unreasonable for the Forest Service to continue delaying identification of the minimum road system. The Arapaho and Roosevelt National Forests must comply with directive memoranda from the Forest Service's Washington Office directing forests to identify the minimum road system for precisely this type of project. See, e.g., Memorandum from Leslie Weldon to Regional Foresters et al. on Travel Management, Implementation of 36 CFR, Part 212, Subpart A (Mar. 29, 2012) ("The next step in identification of the [minimum road system] is to use the travel analysis report to develop proposed actions to identify the [minimum road system].") This should be reflected in the Purpose and Need for this project.

XII. MITIGATION EFFECTIVENESS MUST BE EVALUATED.

Under NEPA, the agency must have an adequate mitigation plan to minimize or eliminate all potential project impacts. NEPA requires the agency to consider mitigation that would avoid the impact altogether by not taking a certain action or parts of an action, minimize impacts by limiting the degree or magnitude of the action and its implementation, rectify the impact by repairing, rehabilitating, or restoring the affected environment, reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action, and compensate for the impact by replacing or providing substitute resources or environments. 40 C.F.R. [sect] 1508.1(s).

"[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989). NEPA requires that the agency discuss mitigation measures, with "sufficient detail to ensure that environmental consequences have been fairly evaluated." *Id.* at 352.

An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective. Compare *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1381 (9th Cir.1998) (disapproving an EIS that lacked such an assessment) with *Okanogan Highlands Alliance v. Williams*, 236 F.3d 468, 477 (9th Cir.2000) (upholding an EIS where "[e]ach mitigating process was evaluated separately and given an effectiveness rating"). The Supreme Court has required a mitigation discussion precisely for the purpose of evaluating whether anticipated environmental impacts can be

avoided. Methow Valley, 490 U.S. at 351-52, 109 S. Ct. 1835 (citing 42 U.S.C. [sect] 4332(C)(ii)). A mitigation discussion without at least some evaluation of effectiveness is useless in making that determination.

In *South Fork Band Council v. Dept. of Interior*, 588 F.3d 718, 727 (9th Cir. 2009), the court rejected an EIS for a mining project for failure to conduct adequate review of mitigation and mitigation effectiveness in EIS). "The comments submitted by [plaintiff] also call into question the efficacy of the mitigation measures and rely on several scientific studies. In the face of such concerns, it is difficult for this Court to see how the [agency's] reliance on mitigation is supported by substantial evidence in the record." *Wyoming Outdoor Council v. U.S. Army Corps of Eng'rs*, 351 F. Supp. 2d 1232, 1251 n. 8 (D. Wyo. 2005). See also *Dine Citizens v. Klein*, 747 F. Supp. 2d 1234, 1258-59 (D. Colo. 2010) (finding "lack of detail as the nature of the mitigation measures" precluded "meaningful judicial review").

The EA is devoid of any detailed analysis of the effectiveness of the purported mitigation measures. While the PEA lists many "design elements and states that they will generally be effective, it does not evaluate the effectiveness of each measure. Whether some of these measures would be effective at all is open to question because many of them are subject to change, waiver, or the whims of agency determination as to practicality. It is impossible for the Forest Service to contend that it fully reviewed the effectiveness of mitigation measures[mdash]as required by NEPA[mdash]when the EA lacks any reference to such analysis. Simply referring generally to potential mitigation measures, as the EA does, does not comply with NEPA. As held recently by the federal courts, an EA violates NEPA if it "fails to address the effectiveness of the mitigation measures." *Gifford Pinchot Task Force v. Perez*, 2014 WL 3019165, at *39 (D. Or. 2014). As in *Gifford Pinchot*, no analysis, let alone mention, of how effective these mitigation measures will be is contained in the EA. As such the EA violates NEPA.

XIII. THE PEA DOES NOT ADEQUATELY REVIEW ALL REASONABLE ALTERNATIVES.

NEPA requires the agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. [sect] 4332(E); 40 C.F.R. [sect] 1501.1(b)(3). It must "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed action. *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310 (9th Cir. 1990). Per 36 C.F.R. [sect] 220.3, the Forest Service is also to include an environmentally preferred alternative, which is "that which causes the least harm to the biological and physical environment; it also is the alternative which best protects and preserves historic, cultural, and natural resources. In some situations, there may be more than one environmentally preferable alternative."

Even if an EA leads to a FONSI, it is essential for the agency to consider all reasonable alternatives to the proposed action. *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228-29 (9th Cir. 1988) (citations omitted, emphasis in original). "While a federal agency need not consider all possible alternatives for a given action in preparing an EA, it must consider a range of alternatives that covers the full spectrum of possibilities." *Ayers v.*

Espy, 873 F. Supp. 455, 473 (D. Colo. 1994).

Here, the EA does not consider any action alternative other than the proposed. This is wholly insufficient for a reasonable range of alternatives. Yet, there are various reasonable alternatives that can and need to be considered that would reduce negative impacts. The following are reasonable alternatives that should be considered:

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* An action alternative that would not create or use temporary roads.

* An action alternative that would not include proposed activities within CRAs.

* An action alternative that would not treat in Preble's meadow jumping mouse critical habitat, areas of suitable Canada lynx habitat, and areas that are wintering habitat for elk and/or mule deer. as areas that would be subjected to proposed activities.

* An action alternative that focuses solely on treatments extending 30 meters around homes and removes the subalpine/higher elevation areas from the proposed action to keep any proposed treatments no higher than 7,200 feet in elevation.

"An agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative . . . would accomplish the goals of the agency's action, and the EIS would become a foreordained formality." Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 196 (D.C. Cir. 1991), cert. denied, 502 U.S. 994, 112 S. Ct. 616 (1991). See Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 814 n.7 (9th Cir. 1999); Friends of Southeast's Future v. Morrison, 153 F.3d 1059, 1066 (9th Cir. 1998).

CONCLUSION

The proposed project needs to be redesigned and cannot be approved via an EA/FONSI. The proposed project should focus on areas below 7200 feet and areas in and immediately adjacent to the home ignition zone. It should not include any treatment or activities in higher altitudes where there is no science to support treatment activities and the risks of negative impacts warrant removal of these areas from the project (risks include, but are not limited to windthrow, erosion, invasive plant encroachment and spread, degradation of roadless characteristics, and degradation of wildlife habitat).

The character and integrity of roadless areas must not be diminished. Treatment in subalpine areas, i.e., spruce-fir and some lodgepole pine stands, should not be implemented in roadless areas or anywhere else within the project area. Stands must not be opened too much to ensure retention of habitat for numerous wildlife species. The clumpy structure of ponderosa pine stands must be retained.

The project must protect watersheds and soils. The portion of watersheds with detrimentally burned soils must not be entered. An increase in off-route motorized recreation must not be allowed to occur.

An environmental impact statement must be prepared for the project. It must disclose site-specific impacts of likely treatment areas and what treatments will be used where. If the Forest Service seeks to punt this legally required analysis to a later date, it must buttress a generalized EIS with site and project specific environmental assessments.

Sincerely,

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[1] In the BA/BE, numbering doesn't start until p. 18 (labelled p. 2). The page numbers we reference are based on the page number in the PDF file.

[2] Coarse-textured soils are particularly susceptible to becoming water repellent during a high-intensity fire.

[3] Both new temporary roads and existing non-system roads are likely to be needed for the project. PEA at 31.