PO Box 824
Durango, CO 81302
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Dear San Juan National Forest,

I am writing to comment on the June 2024 Jackson Mountain Landscape project Environmental Assessment.

The central problems of this EA are that it does not use the best available science and it does not provide or use the extensive available scientific evidence about either the current or the historical structure and fire in the forests of the project area. Use of historical range of variability (HRV) is central to the SJNF Forest Plan. The proposed actions lack a sound scientific basis, and are not congruent with the HRV focus of the Forest Plan.

1. The EA under Issue 3 dismissed, without presenting any evidence, the public concern that "mechanical thinning and mastication do not mimic natural processes and can have negative impact on soils and vegetation on sloping land" (EA p. 7). The EA expresses what are apparently just USFS opinions that mechanical treatments and harvests are "more precise, predictable and reliable" than prescribed fires alone. Moreover, these opinions do not review and address, using evidence, the central public concerns: "do not mimic natural processes and can have negative impact on soils and vegetation." There is substantial scientific evidence that thinning and harvesting are not needed prior to prescribed fires, which can more effectively restore forests (e.g., van Mantgem, P.J. et al. 2011). This evidence was not reviewed in the EA. Also, Baker et al. (2023) presented evidence that prescribed burning, which much better mimics the natural fire process than do mechanical treatments, is also much more likely to be able to choose best-adapted winners and losers among extant trees than are mechanical treatments. This means that there is likely to be much better adaptation to both fire and climate change from prescribed burning than from mechanical treatments. There is also no review of the scientific literature or other evidence about mastication, which has well documented adverse ecological effects, in addition to its tendency to increase dangerous holdover fires. The 2012 Lower North Fork Fire in northern Colorado flared up as a holdover fire in masticated fuels, killing two people and destroying many houses. There was no explanation to the public in this document about the adverse ecological effects and documented dangers to the public from masticating fuels. Mastication does not mimic any natural process, and thus produces fuels that are historically unprecedented and ecologically damaging in ecosystems. I strongly recommend that mastication not be used. Now that the Chevron ruling has been nullified, the agency must present compelling scientific evidence justifying every decision, including this one regarding Issue 3.

2. Under section 2.2 Alternative 2 - Proposed Action, the purpose of the treatments is to "reduce shrubs and small trees that act as ladder fuels which can transition a fire from the forest surface to the crowns of trees" (EA p. 8). However, again no evidence is provided that shrubs and small trees are excessive relative to the historical range of variability (HRV), which is the central basis in the San Juan Forest Plan for determining whether an action is appropriate. Nor is there any evidence presented in the EA about whether there were understory fuels historically in these forests. Where is the EA review of the essential historical and modern evidence? I would expect graphs and/or tables showing both historical and modern forest conditions by forest type

(ponderosa vs. dry mixed conifer), with specific evidence for each attribute that is going to be modified by the proposed project. For reference regarding the HRV, it is essential to actually present and use the evidence in Baker (2020), about historical forest composition, tree structure, understory shrubs, and fire in historical ponderosa pine forests and dry mixed conifer forests.

The historical fire evidence is that both ponderosa pine and dry mixed-conifer forests had moderate- to high-severity fires (Wu 1999, Baker 2020). There is strong evidence from comparing historical and recent rates of fires in the San Juan Mountains that over the 40 years from 1980-2020, there has been a deficiency, not a surplus, relative to historical moderate- and high-severity fires in both ponderosa pine and dry mixed-conifer forests (Baker 2022). This is based on comparing recent US government fire records with historical records from a synthesis of multiple sources of evidence, nine published tree-ring reconstructions of fire at 33 sites, fires mapped in early forest atlases and documented in early historical records, US General Land Office land surveys, paleo-charcoal reconstructions, and miscellaneous early reports, newspaper accounts, journal articles, and miscellaneous other sources (Baker 2022). This finding of recent deficiency, not a surplus, of fires of all fire severities, including moderate- to high-severity fires also was found across all dry forests of the western USA, except in California (Baker 2024). There is no scientifically valid basis for using fuel-reduction treatments, as are proposed in the EA, to reduce fuels or fire severity in ponderosa pine or dry mixed-conifer forests of the Jackson Mountain area.

Of course there historically were abundant understory ladder fuels in these forests, and removing them, as this EA proposes, is, consequently, effectively fire suppression. Wu (1999), which is cited but not reviewed in the EA, provides compelling scientific evidence that many forests in and near the project area were historically subject to moderate- to high-severity fires, strongly suggesting that understory fuels, including ladder fuels, were historically common in these forests. Baker (2020 Tables 10 and 11) presented direct evidence from 1880s land-surveys in ponderosa pine and dry mixed-conifer forests. Mixed-mountain shrubs historically covered 63.4-83.1% of ponderosa pine understories and 52.4-85.4% of dry mixed-conifer understories, and were "dense" on 60% of pine understories and 70% of dry mixed-conifer understories (Baker 2020 Tables 10 and 11). Understory trees were rare in ponderosa pine forests, but present on 13-14% of dry mixed-conifer understories. These historically abundant understory ladder fuels were naturally conducive to the historical dominance (77-79%) of moderate- to high-severity fires across both ponderosa pine and dry mixed-conifer forest landscapes (Wu 1999, Baker 2020 Table 12). Please change the goals of this project and the methods employed to ecologically restore, not suppress, historical wildfires, including all historical fire severities. The San Juan Forest Plan clearly articulates that ecological restoration, not fire suppression, is the central goal of the Forest Plan, but fire suppression by altering fuels is what this project currently proposes. A revised EA must change the project goals and explain that well known adverse ecosystem effects of fire suppression were the reason, and explain why the project had to be extensively revised to avoid these adverse ecosystem effects.

3. Supposedly "dynamic thinning and regeneration treatment is focused on adding age class diversity across the landscape..." (EA p. 9), but no evidence is presented about what the current age-class diversity is or what it will be after this dynamic thinning. Dynamic thinning is also not defined or its expected effects shown in the EA. The scientific basis for the four treatment types (EA p. 9) is not provided, and I strongly doubt that any of the proposed treatments have a sound

scientific basis, given the historical evidence cited above. On EA p. 10, the proposal is to remove "single trees or groups of single trees," but there is no review of the well-documented historical spatial structure of ponderosa pine forests (e.g., Larson and Churchill 2012), which should have been cited and used to determine what is needed to ecologically restore forest spatial patterns. Please remedy this significant deficiency throughout the EA. An adequate EA must reveal to the public what exactly is the current state, what does science show about these current states, what will be done, why, and what effects will occur, and what will the outcome be? Use tables and graphs. Review and cite all the scientific sources. This is nearly completely missing from all aspects of the EA, but is a fundamental requirement of NEPA. I doubt that an adequate review of the scientific evidence will support the proposed dynamic thinning and regeneration treatment.

4. The Fire Regime Condition Class analysis (EA p. 18) is not adequate, as it is not based on science specific to the study area and the evidence used to create the classes was not based on the best available science at all. There was no inclusion, for example, of any of the publications that I cite in this paper.

5. Reasons listed for not just using prescribed burning (EA p. 20) are not valid. First, stand densities and fuel loadings in mixed conifer stands likely are within HRV–you would need to produce evidence that this is not the case, before removing fuels. If limited control features is a problem, then spend the $$ to create these features, because if SJNF cannot do a prescribed burn in this area, then a natural fire in this area will likely also be damaging to adjoining property. The vulnerability problem is not in the forest (Calkin et al. 2024); if there is a problem, it likely is in the adjoining properties. Yes, the fear of a potentially severe fire (EA p. 21) is real, as severe fires were characteristic of historical forests in the San Juan Mountains (Wu 1999, Baker 2020). However, this situation cannot be changed in the forests themselves without creating artificial forests, that likely never occurred, in this area. SJNF could, however, work with adjoining landowners to create, close to private lands, low-density shaded fuelbreaks, PODs and other features that are within HRV and will minimize the chance of adverse impacts on adjoining lands. I strongly suggest that this occur, rather than modifying forests over the project area to artificial conditions that did not occur historically, as is proposed.

5. It was nice to see that USFS will retain live ponderosa pine and Douglas-fir established prior to 1880, but this should be extended to <u>all</u> species of trees and to specific diameter limits that are science based. Brown et al. (2019), cited in the EA, will not work as a method to identify pre-1880 trees, as morphological old-growth characteristics that are the focus of Brown et al. are generally not fully developed by the time trees reach 140 years of age. I strongly suggest that all trees of a diameter that could represent a pre-1880 tree, based on the extensive tree-age data from CSE surveys by USFS (Baker 2021), be retained. Large trees disproportionately store forest carbon, have much better chance of surviving wildfires, and provide most of the seed both before and after fires in dry forest stands (Baker 2021). There is no sound scientific basis for logging these key large trees. The San Juan National Forest has extensive Common Stand Exam (CSE) data that provide an evidence basis for a sound method to retain pre-1880 trees, but these data were not reviewed or used in the EA. Why? Here is a key quote that explains the scientific necessity to use a 17" diameter limit for harvesting in ponderosa pine forests and 15.5" in dry mixed conifer forests in commercial timber sale areas, to accomplish adequate protection of large trees that originated prior to 1880, based on the CSE data the SJNF had available but did not use:

> "A 40.6 cm (16″) diameter cap is used to ensure protection of all historical trees in ponderosa pine in this region (Allen et al., 2002). This regional 40.6 cm diameter cap in ponderosa is also needed here over most of the restoration area to protect a large proportion of historical trees now ≥140 years old. And, 40.6 cm would also meet a 90% criterion for retaining the key ≥120-year age class of ponderosa pine, although a 36 cm (14″) cap is needed to accomplish this in dry mixed conifer (Table 6). However, compromises could be used to achieve restoration in certain areas, such as designated commercial timber areas, as long as most historical structure is still protected. It is possible to achieve substantial protection using a 90% criterion while leaving more flexibility with smaller trees (Figure 7). Using a 90% criterion for retention of historical trees ≥140 years old would also achieve the 80% criterion for trees ≥120 years old with a 43 cm (17″) limit in ponderosa pine and a 39 cm (15.5″) limit in dry mixed conifer (Table 6). Morphological distinctions, such as thick bark, flattened crowns, large lateral branches, and high crown base height could identify some old trees, but may not develop fully until trees are ≥150 years old (Brown et al., 2019; Huckaby et al., 2003). These criteria can be added to identify and protect small, but old trees that would be missed by diameter criteria" (Baker 2021 p. 4090)."

However, since Executive Order 14072 mandated an inventory of "old-growth and mature forest" in the United States, and that inventory is nearly complete (e.g., Woodall et al. 2023), it is likely that there will be some protection for mature forests in the near future. Note that in this publication, a mature ponderosa pine forest is defined as 102 years old or older. I encourage a rewrite of this EA that incorporates Executive Order 14072 and includes protections for mature trees, not just pre-1880 trees.

6. There is no presentation of scientific evidence in the EA for the proposed treatment of 88 acres of old-growth forests or why there is a need for "fuels treatments are proposed on approximately 33 acres mapped as old growth" (EA p. 23). As I explained earlier in this document, there is no scientific basis under the HRV for "reducing shrubs and small trees that act as ladder fuels" (EA p. 23), as these were characteristic of historical forests in the San Juans (Baker 2020). Moreover, the evidence in Wu (1999) strongly suggests that it is within HRV for old-growth mixed-conifer stands to have limited tree regeneration by ponderosa pine and Douglas-fir, which instead, along with aspen, tend to regenerate primarily in the more open conditions after moderate- to high-severity fires that are historically characteristic of these forests. There is no ecological HRV basis for the proposal to treat old-growth mixed-conifer stands to foster tree regeneration by ponderosa pine and Douglas-fir in mature forests. Please just drop all proposed treatments of understory trees and shrubs and tree regeneration in old growth forests. They are not congruent with the scientific evidence of historical forest structure and tree regeneration (Wu 1999, Baker (2020).

Sincerely,

Dr. William L. Baker
Emeritus Professor
Program in Ecology and Evolution
University of Wyoming
Laramie, WY 82071 (Durango resident since 2012)
bakerwl@uwyo.edu

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