WILDERNESS
WORKSHOP

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Via electronic submission to:
https://cara.ecosystemmanagement.org/Public//CommentInput?Project=55031
And via e-mail to: cmcdonald@fs.fed.us & kwarner@fs.fed.us

Dear Mr. Warner and Mr. McDonald,

Please accept these comments on the Notice of Proposed Action (NOPA) for the **Basalt Mountain Salvage and Rehabilitation Project** from Wilderness Workshop.

Wilderness Workshop (WW) is a 501(c)(3) dedicated to preservation and conservation of the wilderness and natural resources of the White River National Forest and adjacent public lands. WW engages in research, education, legal advocacy and grassroots organizing to protect the ecological integrity of local landscapes and public lands. WW focuses on the monitoring and conservation of air and water quality, wildlife species and habitat, natural communities and lands of wilderness quality. WW is the oldest environmental nonprofit in the Roaring Fork Valley, dating back to 1967, and has a membership base of over 800. Many WW members live near, work on or by, recreate and otherwise use and enjoy lands managed by the White River National Forest, including the areas within and adjacent to the Basalt Mountain Salvage and Rehabilitation area.

I. Introduction

Wilderness Workshop (WW) appreciates the opportunity to comment on the proposed Basalt Salvage and Rehabilitation Project. WW also appreciates the additional information and response to questions by WW staff and the field trip organized by WRNF – Aspen-Sopris District staff to view the effects of the Lake Christine Fire and where the proposed project would occur.

WW sees this project as a mixed bag with some good elements, some neutral elements and some elements potentially causing significant ecological harm. As you know, WW is not categorically opposed to logging, as we understand that timber production is one of the legally required multiple uses of national forest lands. However, the scientific literature is replete with the harmful effects of salvage logging that the FS must take into account as the NEPA for this project is prepared. As our comments describe, the FS must both disclose the impacts of proposed salvage logging and should modify the project to reduce ecological harms. Post-fire landscapes are likely rare across the White River National Forest and within the Roaring Fork Valley; the FS should manage this landscape accordingly, emphasizing preservation and allowing natural process to occur, given the importance of burnt areas to wildlife and forest succession.

Additionally, WW appreciates efforts to create defensible space to protect properties at risk from wildfire but is not sure the proposed defensible space treatment plan would actually be effective nor are worth the potential ecological harm in a roadless area. WW fully understands the need to eliminate hazard trees and is in full support of this component of the proposal. Lastly, we understand the FS' need to restock the timber base after harvest but question the need to replant beyond the limited areas of salvage logging.

II. Salvage Logging

Our biggest concern is with the 2,228 acres of proposed salvage logging. We understand that most of Basalt Mountain is in the suitable timber base and that the FS sees an opportunity to capture some economic value from salvageable trees. However, the peer-reviewed scientific literature is replete with studies describing the harmful effects of salvage logging and we want to register our concern, asking the FS to please review the available literature and disclose how this project will avoid the documented impacts from salvage logging.

Salvage logging burned forests is not ecologically sound. Logging trees in burned areas after fires to maximize profits from dead trees can have negative impacts that likely outweigh economic benefits of timber. There is no scientific support for salvage-logging areas to prevent or minimize future fires.[1] Instead, post-fire salvage logging has a number of ecologically harmful impacts including the following:

- Creation of slash fuel materials such as dry branches that can increase fire risk,[2]
- Removal of cone seed stock from forests and inhibition of tree regeneration,[3]
- Removal of organic material that provides soil nutrients necessary for soil productivity,[4]

[1] See: Beschta, R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W. Minshall, J.R. Karr, D.A. Perry, F.R. Hauer, and C.A. Frissell.
[2] Thompson, J.R., T.A. Spies, L.M. Ganio. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. Proceedings of the National Academy of Sciences. 104(25): 10743-10748.
[3] Lindenmayer, D.B, D.R. Foster, J.F. Franklin, M.L. Hunter, R.F. Noss, F.A. Schmiegelow, and D. Perry. 2004. Salvage harvesting policies after natural disturbance. Science. 303(5662): 1303.
[4] Jennings, T.N, J.E. Smith, K. Cromack, E.W. Sulzman, D. McKay, B.A. Caldwell, and S.I. Beldin. 2012. Impact of postfire logging on soil bacterial and fungal communities and soil biogeochemistry in a mixed-conifer forest in central Oregon. Plant Soil. 350: 393-411.

- Removal of organic material including fallen logs and trees that will soon fall, necessary to generate new forest vegetation and to provide important wildlife habitat after high-severity fires,[5]
- Removal of snags (standing dead trees) that provide roosting, nesting and foraging sites for a host of species including birds and small mammals,[6]
- Diminishment of a forest's ability to store and sequester carbon,[7] and
- Extension of the period that soil erosion occurs after fires[8] due to the loss of trees and other organic materials that stabilize soils.

"In fact, the demonstrated negative ecological effects associated with post-fire salvage logging are probably the most consistent and dramatic of any wildlife management effects ever documented for any kind of forest management activity."[9]

Salvage logging can cause more damage than logging in green timber, and is a tax on ecosystem recovery. In 2004, a group of the world's most well-respected ecological scientists warned of four overlooked but significant ecological impacts of salvage logging: (1) "Major [natural] disturbances...can aid ecosystem restoration by recreating some of the structural complexity lost through previous intense management of natural resources...salvage harvesting activities undermine many of the ecosystem benefits of major disturbances"; (2) "...removal of large quantities of biological legacies can have negative impacts on many taxa"; (3) "...salvage logging can impair ecosystem recovery"; (4) "...some taxa may be maladapted to the interactive effects of two disturbance events in rapid succession."[10]

Subsequently, the most extensive scientific review of the ecological impacts of salvage logging conducted by Lindenmayer et al. (2008) concluded: "The ecological impacts of salvage logging have the potential to substantially exceed those of green logging, even traditional high-intensity silvicultural systems such as clearcutting followed by even-aged stand management" (p. 169). [11]

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[5] Swanson, M.E., J.F. Franklin, R.L. Beschta, C.M. Crisafulli, D.A. DellaSala, R.L. Hutto, D.B. Lindenmayer, and F.J. Swanson. 2011. The forgotten stage of forest succession: early successional ecosystems on forest sites. Frontiers in Ecology and the Environment. 9(2): 117-125; DellaSala, D.A., M.L. Bond, C.T. Hanson, R.L. Hutto, and D.C. Odion. 2014. Complex early seral forests of the Sierra Nevada: what are they and how can they be managed for ecological integrity? Natural Areas Journal. 34(3): 310-324.

[6] Kotliar, N.B., S.J. Hejl, R.L. Hutto, V.A. Saab, C.P. Melchier, and M.E. McFadzen. 2002. Effects of fire and post-fire salvage logging on avian communities in conifer-dominated forests of the western United States. Studies in Avian Biology. 25: 49-64; Hutto, R.L. and S.M. Gallo. 2006. The effects of post-fire salvage logging on cavity-nesting birds. The Condor. 108: 817-831; Rost, J., R.L. Hutto, L. Brotons, and P. Pons. 2013. Comparing the effect of salvage logging on birds in the Mediterranean Basin and the Rocky Mountains: Common patterns, different conservation implications. Biological Conservation. 158: 7-13.

[7] Powers, E.M., J.D. Marshall, J. Zhang, and L. Wei. 2013. Post-fire management regimes affect carbon sequestration and storage in a Sierra Nevada mixed conifer forest. Forest Ecology and Management. 291: 268-277.

[8] Karr, J.R., J.J. Rhodes, G.W. Minshall, F.R. Hauer, R.L. Beschta, C.A. Frissell, and D.A. Perry. 2004. BioScience. 54(11): 1029-1033.

[9] Hutto, R.L., R.E. Keane, R.L. Sherriff, C.T. Rota, L.A. Eby, and V.A. Saab. 2016. Toward a more ecologically informed view of severe forest fires. Ecosphere. 7(2): e01255.

[10] Lindenmayer, D. B. D. R. Foster, J. F. Franklin, M. L. Hunter, R. F. Noss, F. A. Schmiegelow, and D. Perry. 2004. Salvage harvesting policies after natural disturbance. Science 303: 1303. Online at: https://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/Lindenmayer_Science_2004.pdf

[11] Lindenmayer, D. B., P. J. Burton, and J.F. Franklin. 2008. Salvage logging and its ecological consequences. Island Press,

This same comprehensive review also found that: "Salvage logging and other post-disturbance practices can have profound negative impacts on ecological processes and biodiversity. Salvage logging will rarely, if ever, contribute in a direct or positive way to ecological recovery; generally it can be viewed as a tax on ecological recovery that can be large or small depending on how it is conducted" (p. 168). Some of the major adverse ecological impacts of salvage logging, relative to unlogged post-disturbance areas, documented by Lindenmayer et al. (2008) include: (1) reduced nesting and foraging habitat for vertebrates, (2) altered bird communities, (3) altered in-stream macroinvertebrate communities, (4) reduced vegetation recovery and altered plant species composition, (5) altered patterns of landscape heterogeneity important to wildlife, (6) "bycatch" or the loss of live, surviving trees due to damage during salvage logging, (7) altered hydrologic regimes, (8) increased sediment flows, (9) reduced soil nutrient levels, (10) disturbed soil layers and increased soil compaction, (11) reduced shading leading to increased soil temperatures, (12) increased edge effects, (13) increased fine fuels adding to fire risk, (14) increased stem density if post-disturbance tree planting occurs, which can increase future risk of fires and beetle outbreaks, (15) increased periods of time over which forests are carbon sources rather than carbon sinks, (16) larger cumulative effects due to the substantially added stress of logging during a period when organisms are already having to cope with the altered conditions after the disturbance, and (17) compounded effects from past alterations that left taxa more vulnerable (e.g., past logging reduced standing dead trees important to cavity-nesting mammals and birds, leaving them more vulnerable to adverse impacts of salvage logging). Additionally, opening the forest canopy, through any logging, during a time of higher temperatures and drought, will likely reduce tree growth and hamper ecosystem recovery.[12]

The Basalt Mountain Salvage and Rehabilitation Project EA/EIS should thoroughly review the literature cited in these comments and additional best available science on the impacts of salvage logging and explain in detail all the known adverse ecological impacts from salvage logging. The EA/EIS must include alternatives and best management practices to effectively reduce these adverse impacts. Given the substantial and well documented impacts of salvage logging, the EA or EIS must include an alternative that limits salvage logging to near existing roads, where there are already impacts and where tree removal is justified for public safety, and allow natural recovery to occur in areas away from roads.

While the general consensus of scientific literature on salvage logging does not suggest that no logging ever be done in naturally disturbed areas (including post-fire landscapes), it is clear that it is better ecologically not to log at all immediately following a disturbance due to the increased stress an ecosystem faces as it recovers from a burn. The forest ecosystem on Basalt Mountain is also under additional stress due to a warmer and drier climate making post-fire recovery even more challenging for the ecosystem. A more prudent and ecologically sound course of forest management would be to monitor tree survival and recovery with the goal of increasing the chances that the forest will naturally recover post-fire, rather than conducting a

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Washington, D.C.

[12] Lindenmayer, D. B., P. J. Burton, and J.F. Franklin. 2008. Salvage logging and its ecological consequences. Island Press, Washington, D.C.

salvage operation that would only decrease the chances that this forest ecosystem will recover.

If salvage logging is implemented, it is important to retain a sufficient number of standing dead trees for snags and future coarse woody debris. At a minimum, the Forest Plan standards for this must be met. See Plan at 2-5, 2-7. To reduce the loss to windthrow, standing dead trees should be retained in groups, preferably with remaining live trees where ever possible.

Lastly, the FS has an obligation to analyze and disclose how its decisions impact the changing climate. Salvage logging of biomass left after the fire and delivering it to the Gypsum biomass facility ensures the release of 100% of its carbon into the atmosphere. Whereas, leaving that biomass in place on the forest allows much of the stored carbon to return to the soil to be up-taken into new vegetation, including trees. The FS must include a detailed analysis and discussion in the EA or EIS of the carbon cycle of biomass left on site to decay and merge with the soil compared with biomass delivered to the Gypsum plant as feedstock for energy production.

III. Preserving Scarce Post-Fire Landscapes on the Forest

Nearly a century of fire suppression across the American West has left a landscape with limited amounts of post-fire ecosystems, despite the importance of this ecotype for a myriad of species. The White River National Forest is no exception. While the Forest's prescribed fire program is laudable and gaining community support and understanding, the Forest has not and has no plans to conduct prescribed fire in the dominant forest types that burnt in the Lake Christine Fire (spruce-fir and lodgepole pine). As a result the approximately 12,000 acres of post-fire landscape created from the Lake Christine fire represents a rare ecotype on the forest and other nearby public and private lands. While there certainly are other areas on the WRNF that have burnt in similar ecosystems, none have burnt on the Aspen-Sopris Ranger district since at least 2002.[13]

Before replanting in burned areas (see section VI below) or conducting any salvage logging other than the creation of limited defensible space and hazard tree removal (see sections IV and V below) the Forest Service must conduct an analysis of the amount of similar post fire ecosystems on the Forest and compare that to the historical amount of this ecotype found across the White River National Forest. If the historical amount (or range of amounts) is found to be substantially greater than what exists on the forest today, the FS should not conduct salvage logging at the scale contemplated by the Basalt Mountain Salvage and Rehabilitation Project. Given the challenges and risks associated with generating more post-fire landscapes in higher elevation spruce-fir and lodgepole forest types, the Forest Service should prioritize preservation of this ecotype rather than utilizing it for economic gain. The EA/EIS must disclose the relative rarity of the ecotype found in the project area and describe how any salvage logging or re-planting would impact the species that depend on it.

[13] Personal communication with Christopher McDonald Forester – White River National Forest, West Zone

Similarly, as part of the NEPA process, the Forest Service must analyze and disclose the amount of acres of vegetation in the entire burned area that is in a similar condition as the proposed salvage area. Because this is a rare ecotype on the forest, the FS should be very cautious about removing it through logging. An analysis of how much similarly valuable, post-fire habitat exists outside of the salvage logging area will be critical to determining the impact of logging, not just to the project area but to the surrounding landscape and entire forest. Similarly, to help maximize the acreage of naturally recovering post-fire ecotype on the Forest, the F.S. should engage in replanting only in areas that are logged (see more in section VI below).

IV. Defensible Space

While we generally support the creation defensible space, this defensible space proposed under this project larger than necessary. Further concerning is that this defensible space pointlessly impacts a roadless area.

There's ample guidance on what constitutes effective defensible space for structure protection. Research like that of now-retired Forest Service research scientist Dr. Jack Cohen has shown that the factors that determine a structure's survival occur within the immediate vicinity of the structure and the structure itself. Cohen's work has been adapted as the guiding principal of Firewise USA, a program of the National Fire Protection Association. Cohen's research conclusions may seem counter intuitive but are unequivocal, effective structure protection must *focus on the structure and its immediate surroundings*:

> *SIAM [Structure Ignition Assessment Model] modeling, crown fire experiments, and WUI fire case studies show that effective fuel modification for reducing potential WUI fire losses need only occur within a few tens of meters from a home, not hundreds of meters or more from a home. This research indicates that home losses can be effectively reduced by focusing mitigation efforts on the structure and its immediate surroundings. Those characteristics of a structure's materials and design and the surrounding flammables that determine the potential for a home to ignite during wildland fires (or any fires outside the home) will, hereafter, be referred to as home ignitability.*
>
> *The evidence suggests that wildland fuel reduction for reducing home losses may be inefficient and ineffective. Inefficient because wildland fuel reduction for several hundred meters or more around homes is greater than necessary for reducing ignitions from flames. Ineffective because it does not sufficiently reduce firebrand ignitions. To be effective, given no modification of home ignition characteristics, wildland vegetation management would have to significantly reduce firebrand production and potentially extend for several kilometers away from homes.*[14] (emphasis added)

[14] Cohen, Jack D. 1999. Reducing the wildland fire threat to homes: Where and how much?. In: Gonzales-Caban, Armando; Omi, Philip N., technical coordinators. Proceedings of the Symposium on Fire Economics, Planning, and Policy: Bottom Lines; 1999 April 5-9. San Diego, CA. Gen. Tech. Rep. PSW-GTR-173. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. p. 189-195

Cohen has coined the term, Home Ignition Zone (HIZ), to describe the factors that determine a structure's ignitability. And, as quoted above, the HIZ is the structure itself and the fuel conditions in the immediate vicinity of the structure, within "tens of meters." The Basalt Salvage and Rehabilitation Project's NOPA doesn't provide sufficient detail to determine whether or not the proposed defensible space is within the HIZ of the structures at risk. We would welcome a field trip as soon as the snow melts in the early summer to assess this. But, what is abundantly clear is that even if the private structures are right on the USFS/private boundary, 400 feet of proposed defensible space is well in excess of the tens of meters (40 meters in the most severe case) found to be the zone that effectively influences a structure's survival.

To put a finer point on it, Cohen states "[e]xtensive wildland vegetation management does not effectively change home ignitability." Not only does the proposed defensible space seem too far removed from the HIZ to be effective, cutting in a roadless area to do ineffective defensible space needlessly impacts important and protected habitat. If the structure's HIZ truly extends into the roadless area, then fuels mitigation in that portion of the roadless area that overlaps the HIZ is warranted. The FS should include detailed mapping of the structures the creation of defensible space is meant to protect and limit tree cutting and vegetation removal to the HIZ (at most 150 feet from those structures). Wilderness Workshop will strongly oppose all tree cutting and vegetation removal that overlaps with roadless areas and does nothing to protect structures.

Under the Colorado Roadless Rule (CRR), the applicable exception to the general prohibition on logging in Colorado roadless areas is clearly designed to reduce hazardous fuels. Any such activity must maintain or improve roadless area characteristics over the long term and must also:

> …focus on cutting and removing generally small diameter trees to create fuel conditions that modify fire behavior while retaining large trees to the maximum extent practical as appropriate to the forest type.

CRR at 36 CFR 294.42(c)(1)(iii).

The WRNF must show how the proposed logging in the Basalt Mountain A roadless area would meet the letter and intent of the CRR.

Further, using public resources for private property protection is increasingly a questionable policy choice. Again, Cohen minces no words;

> *Home ignitability also dictates that effective mitigating actions focus on the home and its immediate surroundings rather than on extensive wildland fuel management. Because homeowners typically assert their authority for the home and its immediate surroundings, the responsibility for effectively reducing home ignitability can only reside with the property owner rather than wildland agencies. …*

> *Home ignitability implies that homeowners have the ultimate responsibility for WUI home fire loss potential. As shown, the ignition and flammability characteristics of a structure and its immediate surroundings determine the home fire loss potential. Thus, the home should not be considered a victim of wildland fire, but rather a potential participant in the continuation of the wildland fire. Home ignitability…is the homeowner's choice and responsibility.*[15]

Cohen's research demonstrates that ember showers are the primary cause of home ignitions. In the event that the HIZ can be demonstrated to overlap the roadless area, then expending public resources for private property protection begins to make sense. However, if private property owners aren't taking the measures necessary to reduce their home's ignitability, then public lands fuel treatments alone are ineffective in achieving the cited structure protection goals.

Furthermore, logging creates the small diameter, easily-ignited fuel that can help propagate future fires that could threaten the survival of a regenerating forest. Under the proposed action, the target post-treatment fuel levels in defensible space treatment areas would be 5-15 tons per acres. NOPA at 5. This is within the optimum post-fire fuel levels of "10 to 30 tons per acre for cool Douglas-fir and lodgepole pine types and lower subalpine fir types". Brown et al., 2003[16], at 8. It is also within the forest plan standard for coarse woody debris retention. Plan at 2-5. However, Brown et al. also state that small woody fuels, i. e., less than about three inches in diameter, should not be more than 5 tons per acre. Ibid. The Forest Service needs to show how any salvage logging would not increase the fuel loading, especially of small diameter material, to the point where the future forest would be at risk of being killed by fire.

V. Hazard Tree Removal

We concur with the need to remove hazard trees and lend our support to this aspect of the proposed project. However, the proposed 200' clearcutting along the road is more than is necessary to maintain safety for road users. Understandably, if the roadway or road users are within the arc of a falling tree, that tree poses a hazard and should be removed. However, we doubt there any trees 200' tall along these roads. Perhaps the FS doesn't intend to cut all the trees within 200' of the road but is simply giving itself some leeway and discretion based on site specific factors once fellers are onsite and selecting individual trees. We would appreciate understanding the FS' rational for removing any tree that is not tall enough to impact the roadway when it falls. The NEPA should document the general height of trees along roads and reduce the width of tree cutting to match the average height of the tallest trees rather than using an overly large number of 200 feet.

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[15] Ibid

[16] Brown, James K., Reinhardt, Elizabeth D., and Kramer, Kylie A., 2003. Coarse Woody Debris: Managing Benefits and Fire Hazard in the Recovering Forest. USDA Forest Servie, Rocky Mountain Research Station, General Technical Report RMRS-GTR-105.

VI. Tree Planting

We commend the FS for its intention to replant with locally sourced, native tree species, favoring those that have the best chance of survival. From the project NOPA, p. 6:

> Tree planting would favor tree species that have the best chance of survival and available seed source in the local seed zone. Tree species recommendations would be based on elevation, aspect, soil characteristics, and seed availability. Lodgepole pine, Engelmann spruce and Douglas-fir would be candidates for tree planting.

It's unclear what exactly the NOPA considers to be species with "the best change of survival." We request that the EA/EIS explain in detail what criteria the FS intends to use to evaluate which species have the best chance for survival. How will that best chance be determined? Is the changing climate being considered? Climate change is happening now and is expected to accelerate over the lifetime of this cohort of trees. While we generally appreciate the utility of the historic range of variability, it is likely less applicable in the climate- changed future. Alternatively, the future range of variability does not come clearly into focus – the future climate in the region could be hot and dry, could be warm and moist, could be alternately both. We simply don't know well enough to predict with any certainty what tree species have the best chance of survival.

On the other hand, it's our sense that natural regeneration, will likely be more adapted to a changing climate than what our limited models tell us are the most appropriate species to plant. The fact is, we don't know, therefore we ought employ the precautionary principle. The 1998 Wingspread Statement on the *Precautionary Principle* summarizes the *principle* this way: "When an activity raises threats of harm to the environment or human health, *precautionary* measures should be taken even if some cause and effect relationships are not fully established scientifically."[17] In this instance, the precautionary measure we advocate for is to maximize the acreage where natural regeneration is allowed to occur, using it as a control for those areas where the FS is compelled to plant trees.

The NOPA describes how areas would be selected for tree planting as follows, "Where the natural recovery assessment indicates there is a need for reestablishment of forest vegetation, tree planting would occur to meet minimum Forest Plan stocking level standards."[18] As we understand it, Forest Plan restocking standards are designed to quickly establish and grow merchantable timber[19], a social value that may not align with the arc of natural recovery in a climate changed future. The EA/EIS must explain in detail how the non-harvested, natural recovery areas will be evaluated to determine if natural recovery is sufficient. Other than simply taking a hands-off, wait and see approach, we have no crystal ball to tell us whether these sites on Basalt Mountain will recover as forests that are appropriate for commercial harvest or will

[17] https://www.sehn.org/ppfaqs.html
[18] NOPA, Basalt Mountain Salvage and Rehabilitation Project, at 6.
[19] See Forest Plan at 2-11, standard 3 under Silviculture.

undergo a conversion to either a different type of forest or even ecosystem. If that is to be the case, then replanting efforts are likely to fail or require constant, expensive inputs to allow a new forest to survive, one that may be unfit for its location.

Lastly, we request that the FS require replanting to mimic current and natural forest conditions of diversity and patchiness. Re-planting large swaths of areas of the forest with the same tree species will create an artificial landscape lacking in small-scale diversity and variety. Tree planters should plant a mix of tree species in close proximity to another and in such a way as to mimic the pattern of existing forest type and structure and natural regeneration.

VII. Conclusion

Forest management within a post-fire landscape has the potential to significantly impact a rare and highly important ecosystem at a time when it is recovering from a substantial stressor. The EA/EIS for the Basalt Mountain Salvage and Rehabilitation Project must thoroughly analyze, disclose and propose mitigation or prevention of the numerous impacts associated with salvage logging. The EA/EIS must consider a range of alternatives including one that significantly limits salvage logging to road corridors and creation of defensible space and allow re-planting only in logged areas. The EA/EIS must quantify the amount and value of the post-fire ecotype created by the Lake Christine fire and prioritize its protection in light of it's historical presence and current scarcity on the landscape. Creation of defensible space should minimize to the greatest extent possible tree cutting in roadless areas and focus on the home ignition zone within tens of meters of structures. Hazard tree removal should be conducted within a distance from roads and other infrastructure based on the average height of the tallest tree rather than a greater than necessary 200 feet. Tree planting should be limited to logged areas to preserve this rare occurrence of natural succession on the landscape and the possibility for the forest to adapt to a changing climate with minimal to no human interference.

Management of the Lake Christine Fire is of crucial important and the landscape is large enough for a variety of management actions including limiting tree cutting, however given the rarity of fire in this ecosystem type, strong priority should be given to ecological benefits rather than economic ones. This landscape should be managed cognoscente of the fact that it likely is rare across the forest and certainly within the Roaring Fork Watershed. Preservation and the precautionary principle should be guiding priorities for this project.

Sincerely,

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