Sufferin' Springs Vegetation Management Preliminary Environmental Assessment and Effects Analysis Appendices and Specialist Reports comments from Blue Mountains Biodiversity Project

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Comments on the Sufferin' Springs Vegetation Management Preliminary Environmental Assessment (aka Suffering or Sufferin' Springs sale or project area):

<u>Summary of proposed actions:</u>

Commercial logging: 10,364 acres
- Tractor logging: 9,498 acres
- Skyline/tethered 329 acres

Commercial logging within RHCA: 171
- Tractor: 166
- Skyline/tethered 5

Commercial logging of conifers in aspen stands: 13 acres

Commercial logging in Old Forest 3,555
- Within moist PVG 718
- Dry 2,836

Noncommercial logging: 550 acres

10.75 miles "temp" roads
5.35 miles of new road

Culvert replacement: 13
- New culverts: 5
- Culvert removal: 8
- Bridge repair: 1

Re: The illegal use of the Emergency Situation Determination

Emergency actions should be reserved for addressing real, immediate crises—situations that threaten human life or safety. Relying upon emergency actions to respond to entirely speculative fire risks, particularly when the so-called "emergency" stems from more than a century of Forest Service mismanagement of public lands, undermines the meaning of the term. Mislabeling speculative concerns as emergencies risks eroding public trust when genuine crises occur. As such, the use of emergency actions in the Sufferin' Springs project is inappropriate and, as discussed below, illegal.

Under the Forest Service's NEPA regulations in place when the Sufferin' Springs project began scoping in February 2024, 36 C.F.R. § 220.4(e) (2024), the Forest Service was required to abide by the CEQ's scoping regulations (40 C.F.R. § 1501.9 (2024)). These regulations require the use of "an early and open process to determine the scope of issues for analysis[.]" *Id.* The Forest Service did not include any indication in the Sufferin' Springs scoping letter that emergency actions would be appropriate or necessary to complete this project. Although the current emergency action determination ("EAD")[1]—established by the U.S. Department of Agriculture Secretary's Memorandum 1078-006—was not authorized at the time of scoping, there were other emergency authorizations that may have theoretically been relied upon if such an emergency actually existed, such as 36 C.F.R. § 218.21 and 36 C.F.R. § 220.4(b) (2024). Because the Forest Service did not scope the potential use of emergency actions for the Sufferin' Springs project, its use of the current EAD is in conflict with the requirements and intent of NEPA because it did not alert the public to the potential use of emergency actions for the Sufferin' Springs project.

Moreover, the extended timeline of the Sufferin' Springs project—with scoping beginning nearly two years before the publication of the PEA—calls into question whether the use of the EAD is necessary or appropriate. Under the Investment in Infrastructure and Jobs Act ("IIJA")—the underlying authority for the EAD—"[t]he term 'emergency situation' means a situation of National Forest System land for which *immediate implementation* of 1 or more authorized emergency actions is necessary…." Given that two years have passed since the Forest Service began scoping the Sufferin' Springs project, it does not follow that immediate implementation of any emergency action is actually necessary for this project area. If it were, surely the Forest Service could have relied on one of its other emergency authorizations to move forward with this project. As such, the Forest Service cannot reasonably rely upon the EAD to circumvent the otherwise required public participation in the NEPA process and the Forest Service's own objection process.

Because there is not any imminent threat of severe wildfire, nor insect and disease outbreaks or invasive species epidemics that one could reasonably classify as an emergency, there is no justifiable rationale for the Forest Service to severely curtail public involvement in the development of the Sufferin' Springs project. The stifling of public engagement and limited alternatives analysis under the EAD may, in fact, prohibit the Forest Service from determining the actual best management solution for the Sufferin' Springs project area.

NEPA was enacted in order to "promote efforts which will prevent or eliminate damage to the environment." 42 U.S.C. § 4321. In pursuit of this purpose, NEPA requires that federal agencies take a "hard look" at the environmental consequences of their actions and foster

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[1] BMBP uses "emergency action determination" ("EAD") to refer to emergency actions relying on the authority put forth in the USDA's Secretary's Memo 1078-006 to avoid confusion with other Forest Service emergency situation regulations.

meaningful public engagement in the decisionmaking process. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349−50 (1989). NEPA does not require certain outcomes, but does "prescribe the necessary process." At the heart of the NEPA process is the development and analysis of "a reasonable range of alternatives to the proposed agency action." 42 U.S.C. § 4332(C)(iii). However, section 40803 of the IIJA allows the Forest Service to develop and analyze only a single action alternative and the baseline no-action alternative under an EAD. 16 U.S.C. § 6592c(c)(1). That said, there is nothing in the IIJA that expressly limits the range of alternatives analyzed to just the one proposed action and the no-action alternative. Even under the EAD, the Forest Service may—and should—analyze a full suite of reasonable alternatives to the proposed action.

By limiting the Sufferin' Springs alternatives analysis to only a single proposed action alternative, the Forest Service is dramatically limiting the consideration of management activities that may differ from its preferred action, yet still meet the purpose and need of the Sufferin' Springs project, including alternatives that may be more environmentally friendly. As it stands, it is unclear whether immediate or expedited action is necessary in the Sufferin' Springs project to begin with. Under these circumstances then, the use of the EAD for the Sufferin' Springs project simply doesn't make sense. There is no justifiable reason to restrict the range of potential solutions to such a complex problem. Rather, the Forest Service should forgo the use of the EAD for the Sufferin' Springs project and instead engage with interested and knowledgeable stakeholders and analyze a full range of alternatives under NEPA before making a final decision.

Further, the EAD permits the Forest Service to forgo their own otherwise required objection process. 36 C.F.R. Part 218. The Forest Service's objection process is designed to allow a final opportunity for interested individuals or entities to seek a final independent Forest Service review, negotiate, and resolve disputes about a proposed project before a final decision is made. *Id.* The overall purpose of the pre-decisional objection process is to facilitate the Forest Service's "collaborative approach to forest management … resulting in better, more informed decisions." 78 Fed. Reg. 18,483 (March 27, 2013). The objection process is not likely to significantly delay any implementation, as the public is required to submit any objections within 45 days after the publication of a legal notice regarding the availability of a draft EIS. 36 C.F.R. § 218.25(a)(1)(ii). The Forest Service may then begin the objection negotiation and resolution process, where discussion with interested stakeholders may produce more nuanced and appropriate management decisions—and potentially less litigation—in the Sufferin' Springs project.

Without the objection process—especially in conjunction with the limited alternatives analysis—the Forest Service is left trying to solve a problem with one arm tied behind its back. The Forest Service has a valuable problem-solving resource in the individuals and organizations that live, recreate, and work in and around the Wallowa Whitman National Forest, and BMBP implores it to take advantage of that resource. The Forest Service should forgo the use of the

EAD for the Sufferin' Springs project and instead continue its collaborative approach to forest management with the objection process.

Moreover, it is highly unlikely that the management activities proposed in the Sufferin' Springs project would actually address the threats the EAD was intended to address. The Secretary's Memo declares that our "National Forests are in crisis due to uncharacteristically severe wildfires, insect and disease outbreaks, invasive species, and other stressors whose impacts have been compounded by too little active management," and thus requires the Secretary to make an ESD under section 40803 of the IIJA. Memo at 2. "These threats," the Memo continues, "combined with overgrown forests, a growing number of homes in the wildland-urban interface, and more than a century of rigorous fire suppression" led to 112,646,000 acres (59% of all National Forest System lands) falling under this EAD. *Id*.

The Sufferin' Springs PEA, without citing any scientific support, claims that the "widespread departure [from HRV conditions] makes the project area less resilient to acute impacts from wildfire, insects, and disease." PEA at 6. To address these acute impacts, the Forest Service is planning, *inter alia*, 10,364 acres of commercial logging, commercial logging within RHCAs, treatments within old growth stands, and increases to the already bloated road mileage on the Wallowa Whitman National Forest. *Id.* at 11−12. Per the Secretary's Memo, the threat of severe wildfire and insect and disease outbreaks are the cause for the EAD, meaning only the needs associated with fire and insect and disease outbreaks are squarely at issue when discussing the EAD. However, the authorized emergency actions under the EAD—and the management actions proposed in the Sufferin' Springs project—are unlikely to address these threats nor provide relief. In many cases, the authorized emergency actions may actually worsen these conditions. And in the case of increased road mileage, are not expressly authorized by the EAD at all.

BMBP agrees that the ecological health of our National Forests has degraded and must be addressed. However, this degradation was borne of the Forest Service's fire suppression and logging practices over the last century. Further contributing to the declining health of our forests is climate change, the increasingly seen and felt effects of which are only being expedited by logging on National Forest System lands. The Forest Service cannot log its way out of these conditions.

It is well-established that the main driver of severe wildfires is not increased fuel loading, but rather climate change and weather events.[2] In Oregon, the timber industry is the top source of greenhouse gas emissions, representing a major contributor to the worsening climate crisis.[3]

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[2] Keyser, A, A Westerling. 2017. Climate drives inter-annual variability in probability of high severity fire occurrence in the western United States. Environ. Res. Lett. 12 065003.

[3] Law, B.E., Hudiberg, T.W., Berner, L.T., Kent, J.J., Buotte, P.C., Harmon, M.E., 2018. Land use strategies to mitigate climate change in carbon dense temperate forests. *Proc. Natl. Acad. Sci. U.S.A.* 115 (14) 3663-3668, https://doi.org/10.1073/pnas.1720064115 (2018).

Logging not only decreases the current carbon stores of these forests—releasing stored carbon dioxide back into the atmosphere at faster pace than the natural carbon cycle of living forests—but also inhibits the potential future sequestration and storage of carbon dioxide from the atmosphere.[4] Moreover, the proposed logging and/or felling of large grand fir greater than 20 inches in diameter at breast height will remove some of the most fire-resistant live trees on the landscape.[5] The proposed large-scale logging in the Sufferin' Springs project will open up the canopy and reduce the basal area of targeted stands, thus allowing more solar radiation to dry out the forest floor and allowing wind-driven wildfires to increase in severity and speed.[6] The proposed logging will only worsen the primary drivers of severe wildfire, thereby bringing about the very emergency the EAD is purportedly trying to address.

Finally, a key provision of the IIJA emergency authorization requires that any project developed under the EAD authority be "consistent with the applicable land and resource management plan." 16 U.S.C. § 40807(b)(3). As discussed throughout these comments, the Sufferin' Springs project is not consistent with the Wallowa-Whitman Forest Plan, as many of the Forest Service's proposed management activities are directly in conflict with applicable Forest Plan standards. If the Forest Service believes it is necessary to use the EAD authority for the Sufferin' Springs project, it must ensure that its proposed actions are consistent with its own Forest Plan. Otherwise, the use of the EAD to fast-track this project and stymie public participation is facially illegal.

Re: Purpose and Need:

The Forest Service is not disclosing the scientific controversy over the use of the Historical Range of Variability concept, which has been broadly used to rationalize intensive logging and to convert tree species from mixed conifer to timber industry-preferred "early seral" Ponderosa pine and/or Western larch. The Purpose and Need is based on the Historical Range of Variability (HRV) even though the Forest Plan Desired Conditions for Biological Diversity (aka biodiversity) that has a goal to: "Provide for all seral stages of terrestrial and aquatic plant associations", along with "Maintain or enhance ecosystem function for long-term integrity and productivity of biological communities." (See PEA p. 4, Table 2)

Scientists at the Pacific Northwest Research Station rejected the use of a historical range of variability since mimicking historic conditions is no longer relevant since uncontrolled climate change is producing drastically different weather patterns, precipitation levels, intensity of

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[4] Mildrexler, D.J., Berner, L.T., Law, B.E., Birdsey, R.A. and Moomaw, W.R., 2020. Large trees dominate carbon storage in forests east of the cascade crest in the United States Pacific Northwest. Frontiers in Forests and Global Change, 3, p.594274.
[5] Moris, J.V., Reilly, M.J., Yang, Z., Cohen, W.B., Motta, R. and Ascoli, D., 2022. Using a trait-based approach to assess fire resistance in forest landscapes of the Inland Northwest, USA. Landscape Ecology, 37(8), pp.2149-2164
[6] Fitzgerald, S., Bennet, M. 2013. A Land Manager's Guide for Creating Fire-Resistant Forests. Oregon State University, Northwest Fire Science Consortium, available at http://www.nwfirescience.org/sites/default/files/publications/A%20Land%20Managers%20Guide%20for%20Creating%20Fire-resistant%20Forests%20.pdf

storms, unprecedented heat waves, prolonged droughts, and more intense wildfires. This means that live forest cover needs to be protected by retaining and increasing mature and large (and old) trees for carbon storage to reduce global warming effects and overall forest canopy for cooling and moisture retention, and for diverse wildlife habitats.

The forest carbon sink is essential to support reversal of extreme climate change effects. James Hanson, a well-known climate scientist has stated that even if we stopped all fossil fuel emissions, we would still have catastrophic warming effects unless we protect the forest carbon sink and the ocean carbon sink. Regarding the forest carbon sink, as much live forest (especially mature and old growth forest) as possible needs to be retained rather than removed by logging. Carbon storage is maximized by allowing trees to grow for centuries as old growth and then to store carbon for up to decades more in the dead snags and logs.

The Forest Service ignores all the science that contradicts using a relatively static point in time. The pre-European colonization historic baseline established for comparing current conditions under HRV has been used inaccurately. We have found multiple false HRV baselines that have been used by the Forest Service. One example used a photograph of a stand on the Malheur National Forest taken in 1927 right after heavy logging. Later in a slideshow by Malheur Forest Service staff showed photographs that had been used to show very open forest conditions historically, then the staff zoomed in to show much greater forest density in the background for the Harney County collaborative group. (I was there.) There is also an infamous photograph that the Forest Service used to show open old growth Ponderosa pine in Montana as typical of the historical condition. However a forest activist pointed out that in the Montana photograph there were stumps throughout the stand and European colonists were photographed while driving a buggy through the stand.

Re: Table 3, EA p. 6: Based on our field surveying, the existing percentage of 0% for Old Forest Single Strata, was not our experience, as we walked through wide open understory with large and old growth Ponderosa pines or with old growth Douglas fir with some Ponderosa pine in lower elevation stands off road 70. These stands appear to have been commercially thinned, or commercially logged to very low basal area retention previously to meet the goal of Old Forest Single Strata. The only significant tree density is non-commercial size seedlings and saplings, up to 9” dbh. There is no need to commercially log again these stands. See our survey sheets and associated photographs from our 2024 and 2025. As we couldn’t print out all the sample photographs with captions by the comment deadline, Forest Service staff can see the descriptions of the photographs on the back of the survey sheets and the overall descriptions of the sale units.

The limited Old Forest Multi-strata has mostly already been commercially thinned or had changed structure through high intensity logging that appeared to be clearcuts with retention patches of old growth mixed conifer. Many of the sale units probably used to be old growth mixed conifer and were converted to even age, single or two tree species in homogenous plantations. Old growth Multi-Strata forest still remains and has historic old growth Grand fir and Douglas fir, showing that this used to be denser mature and old growth tree canopy closure. Those areas of OFMS (Old Forest Multi-Strata) are at higher elevations, in proximity to creek drainages, are often on north or east facing slopes, and generally on ash soils, with some in moist hollows, where OFMS develops naturally. Unfortunately, the Forest Service is planning to log over 4,000 acres of Old Forest Multi-Strata, including degrading OFMS structure in the Wildlife Connectivity Corridors by commercial logging. Non-commercial thinning up to 9" dbh is acceptable and prescribed burning can be used in dry forest types.

Notably the shortage of old growth and large trees in general are from intensive and extensive past logging throughout the Sufferin' Springs timber sale area, which is planned again. Intensive logging stimulated denser seedling and sapling regeneration. There's no excess density other than small young trees up to 9" dbh or pole size.

Now, after all the effects of the past timber sales, there is significant loss of large trees and old growth, leaving behind virtually sterile even-age plantations and a lot of other logged forest that is not resilient at all, based on extensive ground disturbance, with loss of soil productivity. Declining wildlife species depend on naturally denser, moister mixed conifer forest and large tee structure and old growth habitat. Moist mixed conifer multi-strata old growth and mature forest is now very scarce compared to pre-European colonization. Thus the Forest Service has fallen into a rut of using the degradation from past timber sales to rationalize more degradation of the forest ecosystem. Commercial timber sales result in profound loss of ecological resiliency, biodiversity, functioning of ecological processes and loss of soil integrity and productivity.

The purpose and need stated for this Sufferin' Springs timber sale and the Forest Plan goals are <u>not</u> met by implementing more intensive and extensive commercial logging, biomass reduction, and re-opening of closed roads and constructing "temporary" roads.

"The goal is to promote forest conditions that support sustainable ecological functions and processes, as well as maintain and enhance the diversity and quality of wildlife habitat. This includes promoting a diversity of vegetation structure, density, and composition in a manner that provides for connectivity of wildlife within and across the project area. The treatments [management] proposed will move forest, riparian, and grassland conditions toward a more ecologically resilient landscape." (PEA pp. 6-7)

The proposed action would not meet this Forest Plan goal to intensive commercial logging on a landscape scale and re-opening of closed roads and construction of so-called "temporary" roads, with lots of heavy equipment, and would not "promote forest conditions that support sustainable ecological functions and processes, as well as maintain and enhance the diversity and quality of wildlife habitat" and would not "move forest, riparian [areas], and grassland conditions toward a more ecologically resilient landscape." (See the goal quote above from PEA pp. 6-7)

The Forest Service needs to engage in ecologically sound restoration to restore the integrity, diversity, and productivity of the forest, including by retaining old growth and large trees and allowing mature trees to grow large and old. Felling large (and old growth) Grand fir contradicts the need to "maintain and enhance the diversity and quality of wildlife habitat." Restoring riparian areas requires fully protecting the Riparian Habitat Conservation Areas (RHCAs) by not logging and not extending roads and not using heavy equipment within the RHCAs, as intended within the full INFISH and PACFISH RHCA buffers, based on sound science.

To meet the Forest Plan goal of protecting biodiversity and wildlife habitat, more commercial logging, more equipment use, and increasing open road mileage must be abandoned. The proposed action would not "improve vigor of residual trees and increase forest resilience to insects, disease, drought, and wildfire" (Table 4 re: Purpose and Need, EA p. 7) as the planned logging would reduce biodiversity, homogenize stands to promote Ponderosa pine or Western larch, and greatly reduce mature and future large trees. Large trees of most species are more resistant to wildfire due to development of thicker bark, especially at the base and higher live crowns, not just Ponderosa pine and Western larch. Douglas fir is also more fire resistant. Grand fir also develops greater fire resistance with age and larger size.

Grand fir is also a key tree species for wildlife habitat structure for Management Indicator species, including Pileated woodpeckers, Primary Cavity Excavators, and for Pacific marten by contributing to denser canopy for protection from predators and by providing abundant snags and logs. Grand fir internal rot creates large cavities for Sensitive Pacific fisher denning and for other species, such as Vaux's swifts, Sensitive Townsend's Big-eared bats and raccoons. Large Grand fir snags with broken tops provide a nesting platform big enough for Great Gray owls, a focal species. Pileated woodpeckers and Black bears select preferentially large Grand fir snags and logs for foraging. Internal rot in the base of Grand firs creates cavities into the ground below the trunk that fill with melting snow, providing a water supply through most of the summer for small mammals, amphibians, reptiles, and birds.

Grand firs also have the unique resiliency strategy of being able to survive spruce budworm epidemics and prolonged droughts by dropping all their needles while retaining significant water in the trunk. Based on a scientific study and on our own experience on the Heppner District of the Umatilla National Forest in 1992 and 1993 in the Flat Iron sale, Grand firs can lose all their needles and revive after just one wet winter with full green crowns after they appeared to be snags. The Flat Iron sale was premised on "salvage" logging of Grand firs that looked dead after a Spruce budworm epidemic, but after the wet winter of 1992-1993, the trees marked to cut were logged as green, live Grand firs, with full green crowns and sap running out of the stumps. This is a unique characteristic of Grand firs that they can survive prolonged droughts, heat waves, and insect epidemics. This is a very valuable Grand fir ability to retain forest cover during extreme climate change effects.

* Drop all of the planned felling of large Grand firs. Drop all logging within old forest, both OFMS and OFSS, and drop all logging within the Wildlife Connectivity corridors.

Stop trying to convert the natural forest to only or almost only "early seral" tree species, which are actually early successional species. Ponderosa pine may remain dominant in very dry forest. However, particularly Western larch, which is very fire resistant, will regenerate densely right after high severity fire, but be shaded out over time by Grand fir, Englemann spruce, and other moist forest-associated tree species. Thus the Western larch expends its energy on growing very tall with small high crowns for the largest to survive in openings or from being the tallest trees.

When so-called "intolerant" tree species such as Grand fir, Englemann spruce, and Subalpine fir are intended to be removed, they are naturally present in moist mixed conifer or high elevation cold mixed conifer forest. Such tree species conversion to larch or Ponderosa pine for establishing homogenous plantations or greatly reducing the other tree species, contrary to the Forest Plan goals to preserve biodiversity.

Single or double species of even-aged plantations are more susceptible to defoliating insects and tree diseases because most insects and diseases are tree species-specific. Plantations also burn with great intensity due to mostly smaller trees that are more flammable and the openness of the stands increase wind speeds through the stands. Clearcuts also burn very intensely, with rapid flame movement, probably due to faster wind speeds through the openings and burning of slash in drier conditions. I witnessed that in the Mc Cache timber sale in the Deschutes National Forest, with only spotting in the moist mixed conifer and thorough stand replacement fire across the Ponderosa pine plantation that had been thinned to be widely spaced to reduce fire risk.

We recommend that Forest Service staff read the science-based book Smokescreen, Debunking Wildfire Myths to Save Our Forests and Our Climates, by research ecologist Chad T. Hanson, with footnotes for the science findings in the text and full citations for the research articles in the back of the book under "Notes".

*Drop all high intensity logging to very little basal area, such as low as 20-70 square feet of basal area retention and drop all patch cuts except to expand natural openings in very dry forest types to only one acre.

The forest self-thins itself—especially when the stand structure is old growth, as the tall trees shade out most of the small trees except in openings. Larger openings are more characteristic of lower elevation dry forest types with Ponderosa pine dominance or co-dominant Ponderosa pine and Douglas fir. Logging at high intensity stimulates dense seedling and sapling regeneration, increasing wildfire intensity as seedlings and saplings are the most flammable size class of trees—like kindling.

* Drop commercial logging to create patch cuts; instead using non-commercial thinning and prescribed burning in dry forest types.

* We recommend not grapple piling due to soil impacts. Minimize flammable burn piles that often aren't burned for over three fire seasons.

* Limit non-commercial thinning to 9" dbh except for ladder fuel trees in dry forest up to 12" dbh under a single dripline of large Western larch or Ponderosa pines.

* It's better for soil organic fertility to lop and scatter small trees or chip or masticate them.

* Limit commercial thinning to younger-mature plantations to diversify the stands and allow for natural mixed conifer regeneration without planting. Keep openings limited to up to one acre.

We are concerned by the expansive loss of large Grand fir structure "within one to two drip lengths (outer circumference around the canopy) of the release tree's crown, but not to exceed sixty feet" which is so large an area with overlapping 60-foot circles that most or all of the Grand firs up to 30" dbh would be removed throughout the sale units. This is a timber grab and another Forest Service plan to eradicate Grand fir as a tree species not preferred by the timber industry—with Forest Service historical documentation of such plans to eliminate Grand fir since 1910.

Felling live trees >/= 21" dbh still violates the Eastside Screens, which is still in effect. The 21"dbh cutting limit for large (and usually old) trees has been helping increase retention of large and old trees and allow for mature trees to grow into large and old trees to reduce the historic deficit in large and old tree structure for wildlife habitat, riparian functions, recreational and cultural use values, and to maximize forest carbon storage to reduce climate change effects. The 21" dbh limit for cutting or logging large live trees is embedded in the Forest Plan and has goals for increasing the abundance of large and old trees.

The Sufferin' Springs PEA states that "[a]ll proposed commercial thinning treatments include the option of post-harvest felling large early seral trees and leaving them on site." PEA at 8. However, the Eastside Screens require the Forest Service to maintain *all* LOS and structural live trees greater than or equal to 21" DBH in stands proposed for timber harvest. Just because this may happen after harvest treatments does not mean it meets the Eastside Screens' standard. These are clearly stands that are proposed for commercial harvest, and therefore the Forest Service cannot provide the option of felling grand fir up to 30" DBH after such harvest is complete.

What is meant by the statement that "[a]ll stands proposed for commercial thinning within the SS project have been evaluated for the need to harvest trees greater than 21" DBH"? Appendix 3: Specialist Reports, at 34. The Eastside Screens' 21" Rule is a brightline standard that strictly prohibits the logging, felling, or harvest of trees greater than or equal to 21" DBH. There is no authority that allows this standard to be sidestepped based on any perceived "need."

In stands proposed for harvest activities, *all* remnant LOS and/or live trees greater than or equal to 21" DBH must be maintained. Any logging, felling, or harvesting of trees greater than or equal to 21" DBH within stands proposed for harvest would violate the Wallowa-Whitman National Forest Plan, as amended by the Eastside Screens.

We are strongly opposed to any commercial logging in RHCAs and felling of large trees in RHCAs. RHCAs are often sometimes the only areas that may have never been logged outside of Wilderness Areas or Inventoried Roadless Areas. Large wood recruitment into the future in RHCAs is critical for successful riparian restoration. INFISH and PACFISH buffers, which are still in effect in the Forest Plan, are intended to protect RHCAs by protecting water quality, water retention, and good wildlife security habitat—with commercial logging within RHCA buffers being contrary to protecting the riparian area values. It is a violation of the Forest Plan to log within INFISH and PACFISH RHCA buffers.

*Drop all felling of large trees, as planned for large Grand firs up to 30" dbh. Felling large Grand firs up to 30" dbh violates the Forest Plan.

Where there is any excess tree density in RHCAs, the trees are only up to 9" dbh. We field surveyed most of the planned commercial logging sale units within RHCAs. Both past logging and over-grazing by livestock, as well as roads in RHCAs have created these conditions. These causes include wildfire suppression. As usual, the degradation from previous timber sales and ongoing cattle grazing is being used as the rationale for logging within RHCAs, which would set back the attainment of Riparian Management Objectives (RMOs) or make it impossible to achieve these INFISH and PACFISH objectives.

Logging in RHCAs compacts soils, increases excess sedimentation of streams, and removes shading of the drainage, which can increase water temperatures. Tree shading, including in the upper slopes or outer parts of the RHCA boundaries, contributes to cooling micro-climate conditions that retain water saturation rather than surface run-off funneling sediment into streams from skid trails and roads. Logging in RHCAs can dry out the riparian drainage, thus reducing water quantity for stream flows. Logging in RHCAs impairs water quality, violating the Clean Water Act. Logging in RHCAs also reduces soil organic matter, integrity and productivity. Removing trees from upper slopes in RHCAs can de-stabilize upper slopes and send large sediment loading into the streams. Logging in RHCAs also reduces wildlife security habitat at water sources and in riparian connectivity corridors. Logging in RHCAs also creates significant ground disturbance that diminishes plant diversity and often introduces and disperses exotic invasive plants, which we witnessed in RHCAs in the Patrick sale.

*Drop all commercial logging and any closed road re-opening or construction of "temporary" roads in RHCAs.

*Instead, all RHCA inclusive “no logging” buffers are needed to protect riparian values from logging, road re-opening, road building, and heavy equipment use. 75 feet for Category 2 RHCAs should have a 150 foot buffer on each side, based on sound science and likewise Category 4 streams need a 50 foot buffer on each side of the stream channel, for a full 100 foot buffer.

Non-commercial thinning up to only 9” dbh would be enough to reduce any excessive density for fire risk reduction, along with prescribed burning backing into RHCAs in dry forest types, with no ignition within the RHCAs. This would avoid ground disturbance, excess sediment being delivered into the streams, and allowing primary and secondary shading to maintain cool, moist microclimates throughout the drainage and ensuring no water quality impairment. Commercial logging would contribute to increased water temperatures and loss of future wood recruitment into the streams through woody debris and large logs for pool recruitment. Non-commercial small tree thinning up to 9” dbh by hand and prescribed burning for dry forest RHCAs would be sufficient to significantly decrease competition with riparian hardwoods, shrubs, and grasses.

Regarding aspen restoration: Limit any thinning in aspen stands to only up to 15” dbh to allow for large and old conifers to develop and replace existing old conifers. Large conifers within aspen stands triple the biodiversity of the stand, based on a science study cited by a Malheur National Forest biologist in the John Day-based collaborative group, while we were still part of the group. Again, almost all tree density is only up to 9” dbh.

*Use only hand felling in the aspen stands and leave all conifers within the RHCAs. The felled trees can be used to roughen the flood plain, block cattle or sheep from browsing the aspen suckers, and/or contribute wood to the stream in the form of woody debris or felled or tipped trees to cross the stream channel at an angle to form pools for fish and other aquatic species. It’s crucial to maintain the planned exclosure fencing around the aspen stands to exclude livestock and sometimes elk.

*Drop the planned 10.75 miles of “temporary” roads. Don’t re-open the 84 miles of “stored” closed roads. As with the Malheur National Forest, there are far too many open or used roads, including roads intended for decommissioning that were never effectively blocked or completely decommissioned. These roads still being used are unauthorized routes.

*Please send me a large scale version of the Figure 2 Proposed “Treatments” timber sale map with all the color coded proposed actions, roads, road numbers, creeks, streams, and sale units—the same map, only bigger and easier, with sale unit numbers if possible. See EA p. 10.

Specific proposed remedies based on Table 5, EA pp. 11-12:

*Drop the 329 acres of steep slope logging. Steep slope logging tends to cause more erosion and involve clearcut yarding corridors used for skyline yarding. Tethered logging poses safety concerns for operators and some studies have found that it causes more erosion. Steep slope logging in general exacerbates sedimentation of adjacent and nearby streams, impairing water quality, including harming downstream fish populations. Steep slope logging also degrades or eliminates wildlife security habitat for far ranging species such as Threatened Wolverines, Threatened Canada lynx, Sensitive Pacific fisher, Vulnerable-ranked Pacific marten, MIS Rocky Mountain elk, and Sensitive Gray wolves.

*Drop all Group Selection logging, which creates openings that are clearcuts up to 5 acres. There's already plenty of openings from past logging. Drop all 865 acres from group selection, which causes significant forest cover loss and difficult regeneration in clearcuts.

*Drop all commercial logging in RHCAs, both tractor logging and skyline logging. Logging in RHCAS would impede attainment of Forest Plan Eastside screens Riparian Management Objectives, causing sedimentation of streams; loss of shading, cooling, and loss of moisture retention; loss of slope stability and loss of removed trees, reducing future down wood, woody debris, floodplain roughness and logs to cross stream channels and form pools. Logging in even the outer part of the RHCA buffers or in the upper slope above a road above the rest of the RHCA can still increase stream water temperature due to loss of microclimate cooling from tree shading within the drainage as a connected riparian system.

*Drop all 171 acres of commercial logging. Only use non-commercial thinning in RHCAs up to 9" dbh where seedlings and saplings are excessively dense or directly competing with riparian hardwoods.

*Don't fell conifers in aspen stands larger than 14" dbh to allow for large and old conifer tree development, which historically accompanied aspen stands.

*Drop all grapple piling due to potential sterilization of soils, which involves bigger burn piles that are highly flammable and often remain for at least three fire seasons, which could greatly intensify a fire.

*Drop all 3,555 acres of old forest logging. Drop all commercial logging and biomass removal in old forest—in both dry and moist forest types. Old growth forest degradation from logging and biomass removal (down wood, snags, and plant cover) causes loss of suitable habitat and food chains for many declining wildlife species and also declining plant species—especially in old growth moist mixed conifer. including most of the Management Indicator Species and many of the TESC (Threatened, Endangered, Sensitive, and Candidate) species. Old growth takes centuries to develop, making it irreplaceable, with more old growth lost or degraded with almost every recent and current timber sale. The current timber sale rotation (returning to log again) is only about a 30 year timber sale rotation, which is not long enough for old growth forest recovery.

*Drop all commercial logging conversion of Old Forest Multi-Strata to Old Forest Single Stratum. Moist OFMS is naturally denser and with higher canopy closure needed by a wide range of wildlife species in decline. Non-commercial thinning up to 9" dbh could be done and the Forest Service could fell and leave ladder fuel trees up to 14” dbh directly under the single dripline of an old growth Ponderosa pine in the dry forest OFSS to reduce small tree density and to reduce fire risk—without using heavy equipment.

*Scale down the commercial logging from 31 mbf significantly by dropping logging in old forest, the Wildlife Connectivity Corridors, and in the RHCAs, only using commercial thinning and/or non-commercial thinning (not clearcutting or low basal area retention—below 70-80 basal area) to diversify existing plantations and reduce competition stress—particularly in the very dry forest in the south east end of the sale area.

*Drop all 344 acres of skyline or tethered steep slope logging. Displacement of ash soils from logging steep slopes is irreplaceable. It would take up to thousands of years to experience a volcanic eruption as large as Mount Mazama blowing up and distributing the ash soil layer across the entire Northwest region—about 7,000 years ago. Ash soils also have very fine sediment, which has high water retention, but can cause excess sedimentation that would harm fish species downstream. Landslides are another risk from steep slope logging.

*Drop the 10.75 miles of planned “temporary” road construction.

*Drop the planned 84 miles of re-opening closed roads.

*We support culvert replacement, new culvert installation, culvert removal, and bridge repair to improve fish habitat.

Since there is mention of “modified wildlife corridors” as an iterative change on EA p. 12, what are the specific modifications of the wildlife connectivity corridors? We are opposed to reducing wildlife connectivity between LOS (Late Old Structure forest) and old growth forest and to commercially logging the wildlife connectivity corridors.

It’s clearly false that there is “No special management areas within the project area.” (See EA p. 13) Yet there is planned logging within Riparian Habitat Conservation Areas, Old Forest Management Areas, and Wildlife Connectivity Corridors—all of which are special management areas with their associated standards, goals, and guidelines in the Forest Plan. What other special management areas are in the project area that may be slated for management? Are there Wild and Scenic River corridors, such as along Eagle Creek? Are there any Research Natural Areas? There are also visual quality areas. Please identify any other special management areas that would be affected by proposed management.

The alternative considered but not analyzed in detail includes major elements of our proposed alternative and our EA and appendices comments: dropping any logging or felling of large trees, regardless of species; dropping any steep slope logging regardless of the method; dropping closed road re-opening and constructing any “temporary” roads; dropping all logging or felling of mature and large trees in old growth forest; dropping all high intensity logging and dropping all logging or biomass removal and any road work in RHCAs and in Wildlife

Connectivity corridors. We are also strongly opposed to logging or roading in any never logged areas in identified undeveloped areas.

By now there have been many timber sales based on rather arbitrary HRV percentages of different forest structural stages from an historical point in time since 1995, which have been misused to pretend that logging is restoration for ensuring viability for wildlife species. In Table 7 "Issues Considered for Analysis" on EA p. 16, there is an admission that: "As habitat has been converted, fragmented, and opened to motorized access, many species have been reduced in number and others have been precluded from portions of their geographic ranges altogether." So using HRV as a rationale for logging trending back toward clearcutting and on a landscape scale certainly hasn't worked to protect the viability of Management Indicator Species or the declining TESC wildlife species. Nor is that logging preventing high intensity wildfire and its scale, which is driven by weather and uncontrolled global warming more than by biomass "fuels". It's time for a Forest Service major paradigm shift such that the goal is to protect and increase forest cover, with an emphasis on retaining and increasing large trees and old growth forest to maximize forest carbon storage to reduce extreme climate change effects. The shift needed in management also needs to stop the escalating extirpations and mass extinctions of wildlife species and plants by providing intact suitable habitat to preserve biodiversity. Without functioning forest ecosystems, the loss of biodiversity would cause break downs of ecological processes. Humans are not immune to the effects of degraded and dysfunctional ecosystems. Eventually the Earth may no longer be habitable by people under an increase of about 3-5 degrees Celsius—by the end of the century or sooner based on the consensus of many international scientists. Reversing climate change should be the primary focus, which includes increasing forest cover and supporting intact ecosystems.

The soil effects summary supports our concerns over high intensity logging and biomass reduction that could reduce water saturation into soils and down wood and thus reduce water retention. The proposed action would cause extensive ground disturbance and loss of organic matter needed "for long-term site productivity and ecosystem sustainability": "Organic matter is critical for long-term site productivity and ecosystem sustainability (Henderson, 1995; Jurgensen et al. 1997) and it is important for water retention, carbon exchange, nutrient cycling, and erosion control (Powers et al. 2005). Soil organisms, including fungi and bacteria, are important for nutrient cycling. Decomposed large woody debris provides habitat for the survival of mycorrhizae fungi. These fungi form a symbiotic relationship with tree roots, increasing water and nutrient uptake by the trees and the fungi (Borchers and Perry, 1990)." (EA p. 22, first full par.) Notably, widely spacing trees breaks up mycorrhizal fungi, weakening or disconnecting the symbiotic relationship with tree roots that increases water and nutrient uptake by the trees. That goes a long way in explaining why wide tree spacing (as in a tree farm plantation), and clearcutting results in much less vigorous and resilient forest.

"Vegetation binds soil particles together with roots and vegetative cover and protects the soil surface from raindrop impact and dissipates the energy of overland flow. Soil erosion can occur when the surface soil is compacted or when the loose surface soil and its protective layer of organic material are changed by management activities. Mass wasting can be triggered by human-caused disturbance or natural events, such as wildfire followed by high intensity precipitation." (EA p. 22, 2nd full par.)

Yet the soil effects suddenly switches to weasel words when describing the effects to soil from the proposed action by using "short-term adverse minor effects" and "short-lived" with no quantification or degree of adverse effects. The summaries are generally truncated compared to the more detailed effects analysis kept out of the EA, which may be all that the public reads. For instance, the soil effects summary in the EA does not include any consideration of long-term soil damage that has been documented in the scientific literature, as in the Morgan Nesbit timber sale EIS from the Wallowa-Whitman National Forest.

Wildlife Effects Summary:

We appreciate that the purpose of evaluation analysis is congruent with the Forest Plan and the Endangered Species Act: "The purpose of this evaluation is to ensure that Forest Service management actions do not contribute to loss of species viability within the planning area (Wallowa Whitman National Forest) or cause a species to move toward federal listing." (EA p. 23) However, the detailed analysis in the appendices demonstrate that the proposed action would foreseeably cause the Management Indicator species (MIS) would no longer have viable populations within the project area. Thus the proposed action would directly contradict the stated purpose of wildlife effects evaluation.

The description of the No Action alternative states that: "Young, dense stands with smaller diameter trees are poor-quality habitat for species dependent on more complex structure found in mature and old growth forest. Most MIS, BCC, and PETS wildlife species [Management Indicator species, Birds of Conservation Concern, and Proposed, Endangered, Threatened, and Sensitive wildlife species] depend on forest structure typical of old forest (e.g. high canopy cover, large-diameter trees, snags, and downed wood)." (EA p. 23, 2nd par.) Yet the Proposed Action is hypocritically planned to commercially log throughout old growth forest and late and old structure, removing high canopy cover, large diameter trees, snags, and downed wood. The Proposed Action's high intensity commercial logging would greatly remove old growth complex structure from the existing old growth structure. Further, the proposed logging in old growth forest would leave an ongoing greater deficit in large trees into the future for many decades that would continue to have far less canopy closure, few mature trees left to become large and old trees, and few large snags and large logs.

"Unnaturally high abundance of dense, young and mature forest" is the outcome of past commercial logging of mature and large trees, and also due to wildfire suppression. It is a false narrative that "without appropriate levels of thinning, fuels treatments, or natural disturbance reduces tree growth rates, increases risk of insect outbreaks and large, high-intensity fire, and is slow to transition to higher-quality, structurally complex habitat" since this suggests that more logging and regular biomass reduction is restoration. Yet plantations and wide-open stands from logging, including short timber sale rotations, reduce productivity for tree growth due to detrimental soil impacts, loss of down wood and organic matter, and widespread ground disturbance. Further, plantations increase risk of insect epidemics and wildfire intensity due to even-aged, widely spaced stands with only one or only two tree species. This is because most tree diseases and defoliating insects are associated with only one tree species; without diverse tree species, the epidemic can spread as far as the homogenous stands extend. There is also increased fire intensity where there are open stands and increased wind speeds.

Logging most of the mature trees sets back the development "to transition to higher quality, structurally complex habitat" since those mature trees removed would otherwise be able to grow into large and old trees that are much more fire resistant and that would otherwise become snags and logs for "structurally complex habitat." (See EA p. 23, 2nd par.) Restoration of dense stands of young trees can be done through non-commercial thinning up to 9" dbh and up to 14" dbh for ladder fuels under old growth trees in dry forest types, along with prescribed burning in dry forest types. This would spare the forest from being further degraded from commercial logging, heavy equipment use, and increased road mileage, while reducing fire intensity and spread. Fire risk reduction should be focused on the Wildland Urban Interface, not the back country.

By comparison, never logged old growth forest thins the understory itself due to tall, large trees shading out most of the small trees except for small openings where seedlings and saplings regenerate. This is especially characteristic of old growth moist mixed conifer. Logging old growth moist mixed conifer dries out the stand by removing significant canopy that cools the microclimate in the stand that retains moisture. Moist Old Forest Multi-Strata supports and protects moisture-associated tree species, plants, wildlife species, and riparian areas. Moist mixed conifer forest also supports water flows in springs, streams, fens, and/or seeps in the stands or adjacent, and in downstream major creeks and rivers.

As usual, the Forest Service plays on public fear of fire to rationalize heavy logging on a landscape scale: "High-intensity fires in closed canopy forest would remove habitat for many wildlife species for decades." (EA p. 23, 2nd par.) Actually, logging creates unnatural conditions for wildlife species that evolved with wildfire in the Blue Mountains bio-region. Even stand replacement wild fires create a great variety of unique habitat niches, including increased snags and logs. Wildfires create a mosaic of unburned forest, underburned forest, mixed severity fire, and areas of stand replacement severity fire. These mosaics are critical for many wildlife species' viability, including MIS Rocky Mountain elk, who need thermal and hiding cover adjacent to openings for foraging. Black-backed woodpeckers depend on frequent fires and stand replacement severity fire for abundant snags; White-headed woodpecker specialize in burned forest habitat with more open old growth Ponderosa pine with snags and logs that is typical of years after the fire, and Lewis' woodpecker require old fire conditions with soft snags and elevated fallen snags for perches for foraging for flying insects or use riparian areas with large Cottonwoods. Birds depending on high intensity stand replacement burns include Olive-sided flycatchers and Lazuli buntings. The list of wildfire-associated wildlife species is very long, including micro-fauna, such as a great diversity of insects. Scientists have found that high severity fire creates biodiversity as much or more than old growth live forest. Yet these findings are not disclosed in the wildlife effects summary.

There is no substantiation for this conclusion: "Assuming incorporation of project design criteria, the project may impact individuals or habitat (MIIH) but will not likely contribute to a trend toward federal listing for the species or cause a loss of viability to populations in the planning area (Wallowa Whitman National Forest). These actions are consistent with Forest Plan standards and the Eastside Screens." (EA p. 23, par. 3) Actually, these proposed actions are <u>not</u> consistent with Forest Plan standards and the Eastside Screens, as discussed throughout our comments. We also show how the detailed analysis in the Wildlife Biological Evaluation and Effects Analysis support our conclusion that under the proposed action, Management Indicator species populations may no longer be viable in the Sufferin' Springs project area in our following comments. In fact, it's very likely that the proposed alternative would result in contributing to trends toward federal up-listing for multiple Sensitive species and in loss of population viability in the project area for some Management Indicator species, likely including Pacific marten, American goshawk, Pileated woodpecker, and some of the other Primary Cavity Excavator woodpecker species.

There is also the misleading claim that: "Habitat will increase for species that are strongly associated with open forests containing little to no understory (e.g. White-headed Woodpecker, Lewis' Woodpecker." (EA p. 23, last par.) Both White-headed and Lewis' woodpeckers use habitat that has burned, generally in wildfires. Logging does not create optimal habitat. Both of these woodpecker species prefer the results of stand replacement severity wildfire after a few to several years after the fire for White-headed woodpecker, and for Lewis' woodpecker much later in the burn once many snags have fallen for perches for foraging flying insects and when large snags have become soft enough for re-modeling old large woodpecker nest holes. In my experience with two high severity fires where I live, the Lewis' woodpeckers inhabited the post-fire stand replacement fire (the Wheeler Point fire in 1996) eighteen years later, successfully nesting and fledging their young for about five years, then returning in 2025 after the second high intensity fire (the Lone Rock fire in 2024) and nesting in a big old growth Ponderosa pine new snag in a crotch between high branches and fledging successfully again. The White-headed woodpeckers used the stand replacement burn from 1996 a few or several years after the fire but they haven't returned yet since the Lone Rock Fire. There was no logging between the two fires and no recent logging when we bought the land in 1991 and no logging since then.

We agree that: "Stands that receive high-intensity commercial treatments that open the canopy will not be functional habitat for species dependent on old, multi-story forest (OFMS; e.g. Pacific Marten, American Goshawk, Pileated Woodpecker)." (EA p. 23, 2^{nd} to last par.) So this statement contradicts the conclusion that there would not be any federal up-listing or cause a loss of population or species viability. (See quotation above, EA p. 23, 3rd par.) Yet the proposed action would implement commercial logging to low basal area retention throughout the Old Forest Multi-Strata. Logging at high intensity in both OFMS and Old Forest Single Stratum, with commercial logging also throughout the Wildlife Connectivity corridors to less than 50% canopy would foreseeably cause federal uplisting and/or causing loss of species populations viability—particularly the MIS Pacific marten, American goshawk, and Pileated woodpecker.

We disagree with the claim that: "Stands that are commercially treated in the upper management zone, however, may continue to function as habitat for OFMS-associated species shortly after implementation, as these stands retain high canopy cover, large trees, and structural complexity." (EA p. 23, last par.) Less than 50% canopy closure is not enough to be good quality canopy closure for Pileated woodpecker and Pacific marten, both of which require at least 60% canopy closure for nesting for Pileated woodpecker, and also for Pacific marten in general to avoid predators, such as Great Horned owls, Great Gray owls, and Red-tailed hawks. Logging in the wildlife connectivity corridors would inevitably reduce mature trees that would otherwise contribute to higher canopy closure and would otherwise grow into large and old trees, and logging would reduce old growth structural complexity.

"In the mid-term (5-15 years after implementation), habitat will continue to be reduced from pre-implementation conditions for species dependent on high levels of overstory canopy cover and downed wood." (EA, p. 23, last par.) We agree that suitable habitat would be reduced from the proposed management actions for wildlife species "dependent on high levels of overstory canopy cover and downed wood", which include most of the Management Indicator species, including Pileated woodpecker, American goshawk, Pacific marten, and most of the Primary Cavity Excavators.

Although the Forest Service uses Project Design Criteria to claim that there would be no significant negative effects, yet repeating timber sale management with project design criteria used has always made the existing conditions worse, based on our experience field surveying timber sales in their existing conditions and later returning after timber sale implementation to see some of the outcomes—over 34 years across five National Forests in the Blue Mountains and central Oregon. Project design criteria are not always 100% effective and are not always implemented. Evidently the PDCs are not enough to prevent species declines and the loss of species populations' viability cumulatively.

Just non-commercial thinning up to 9" dbh and prescribed burning in dry forest types would be enough to create more open "conditions for species that thrive in forest with open canopy." There are already many stands with more open understory and openings created from past commercial logging. What has been reduced and would be more diminished is denser, moister mixed conifer, with Grand fir, Douglas fir, and some Western larch. This forest type supports the many Management Indicator species and other wildlife species that represent are in largely in decline.

There is no credible ecological need to commercially log mature trees again. The timber sale rotations are only about 30 years between timber sales being repeated in the same area again.

*Drop all commercial logging, biomass reduction, increased road access, and felling of large Grand firs, for all Old Forest Multi-Strata and Old Forest Single Story, as well as within all Wildlife Connectivity corridors. Such management actions would result in less stand resiliency, more ground disturbance and invasive exotic plants, and removal of down wood and snags as hazard trees or otherwise. The proposed logging would not increase the abundance of larger trees (due to less soil productivity and a short timber sale rotation of only about 30 years) and would not increase snag recruitment, except for from prescribed burning. We disagree that: "Low intensity treatments [logging] in OFMS will encourage tree-diameter growth and snag recruitment." (EA p. 24, 2nd par.)

There is significant collateral damage from short logging rotations, increased logging intensity, and landscape scale logging. The timber sales have become a war against biodiversity, particularly destroying naturally moister, denser mixed conifer habitat for associated wildlife species, including MIS American goshawk, Pileated woodpeckers, Pacific marten, Primary Cavity Excavators, and Sensitive listed Townsend's Big-eared bat, Sensitive Fringed Myotis bat, as well as Great Gray owl, a focal species, and the Sensitive-listed Johnson's Hairstreak butterfly, as well as OFMS-associated Sensitive mollusk species, including: Fir Pinwheel, Shiny Tightcoil, Thinlip Tightcoil, and Umatilla Megomphix.

Riparian-associated wildlife species listed in Table 9 (EA p. 24) include the Sensitive Columbia Spotted frog, Rocky Mountain Tailed frog, any Threatened-listed Bull trout and Threatened Mid-Columbia Steelhead trout, Sensitive MIS Redband trout, any salamander species, and Sensitive mollusks: Blue Mountain snail, Fir Pinwheel, and Umatilla Megomphix.

(See Table 9, EA pp. 24-25.)

Comments on the Wildlife Biological Evaluation and Effects Analysis:

There should be no more logging or biomass reduction in designated Wildlife Connectivity corridors. There is no apparent analysis regarding potential effects to wildlife species that use the connective corridors to migrate, disperse for genetic diversity, or reside, including many species dependent on large and old growth structure, and/or riparian corridors and greater forest density for thermal and hiding cover. These wildlife connectivity corridors are more important than ever due to climate change effects forcing species to migrate to more suitable habitats due to prolonged droughts, unprecedented heat waves, and/or more intense wildfire. Thermal cover from canopy closure about 60% or higher is more important for surviving severe storms and extreme heat. Many of the wildlife connectivity overlaps riparian corridors, which provide a perennial water supply from creeks, perennial streams, springs, fens, and seeps. It's important not to log the riparian corridors to preserve cool, moist microclimate conditions for water retention, lush plant growth for forage, suitable habitat for fish, amphibians, mollusks, and/or aquatic macro-invertebrates.

In the case of the Sufferin' Springs project area, most of the moist old growth multi-strata forest is within the designated Wildlife connectivity corridors. There's a great scarcity of old growth forest in the project area for wildlife and for water retention, so there should be no commercial logging in the wildlife connectivity corridors. Logging the wildlife corridors down to less than 50% canopy closure would not support many of the wildlife species associated with old growth forest and aquatic species in the riparian connectivity corridors. Wildlife species associated with old growth forest that are likely to use connectivity corridors include: migrating MIS Pacific marten and migrating deer, elk, and potential moose; dispersing Sensitive Gray wolves, and Threatened Canada lynx, Sensitive Pacific fisher, and Threatened Wolverine. These wildlife species have large home ranges (150 square miles for a breeding pair of Wolverine) or that migrate or disperse over great distances, such as a wolf migrating from Idaho, through eastern Oregon, and establishing a pack in California. Without protecting connectivity corridors from logging, there would not be enough wildlife security habitat in the corridors to avoid predators, poaching, or disturbance, such as from roads.

*Don't log any of the Late and Old Structure (LOS) forest, Old Forest Multi-Strata, Old Forest Single Stratum, and MA-15 Designated Old Growth, as shown in the Figure 11 map. Logging could effectively disconnect the required connections between the MA-15 Designated Old Growth and Late and Old Structure—with at least two connections between Designated Old Growth and Late and Old Structure forest. Apparently the Proposed Action would not ensure the two connections between LOS forest and Designated Old Growth areas, as required by the Forest Plan.

The Forest Plan standard for wildlife connectivity requires two-thirds of the upper management level in relation to productivity potential. For Old Forest Multi-Strata, 50% or less canopy closure would probably not meet the requirement of two-thirds of the forest productivity upper management level. The MIS Pileated woodpecker, American goshawk, and Pacific marten all require a minimum of 60% canopy closure, which should be retained wherever it exists—in the wildlife connectivity corridors and in all the Old Forest Multi-Strata. Where canopy closure is higher than 60%, that canopy closure should also be retained and not logged, since most of the project area is well below the 60% lower threshold for the Pileated Woodpecker, goshawk, and Pacific marten reproductive source habitat.

There's no exception to allow for clearcutting ("even-aged regeneration" or "group selection" clearcutting) at any time. (See Table 8.) The basal area retention has to be at least "the upper management zone for each plant association." (Powell 2024)

Re: MIS Pileated woodpeckers and Primary Cavity Excavators:

* There should be no more commercial logging in suitable Pileated woodpecker source habitat and no logging of suitable Primary Cavity Excavators source habitat. This means dropping all commercial logging within old growth forest, including in both Old Forest Multi-Strata and Old Forest Single Stratum.

50-foot buffers around Pileated woodpecker active nests are not large enough, as logging disturbance would likely cause the Pileated woodpecker pair to abandon the nest. The nest could fail or breeding behavior would cease, reducing the population. Further, just scheduling logging outside of the peak breeding season as a project design criterion does not prevent the loss of Pileated woodpecker breeding habitat and foraging habitat into the future for at least about 80 years or longer. Destroying the suitable Pileated woodpecker source habitat through logging would also destroy the suitable habitat for other Primary Cavity excavators associated with old growth forest with multilayered canopy. These include Hairy woodpeckers, Williamson's sapsuckers that need large snags, Black-backed woodpeckers, and Northern Flickers, who are adapted to a wide range of conditions. In riparian areas, which are often adjacent to moist mixed conifer old growth forest, there are associated Downy woodpeckers and Red-naped Sapsuckers associated with aspen stands. (See Table 8, "Wildlife-6")

The proposed action would decimate MIS Pacific marten by only retaining 20% of each sale unit in Pacific marten source habitat, with: "Variable-spaced thinning treatments [logging] will be applied throughout the remaining 80% of each unit." And: "Untreated [unlogged] cover patches within Pacific Marten source habitat will be 0.5-2 acres in size" and located within 200 feet of each other, overlapping springs and seeps "where possible" and with existing downed wood left in place. (See Table 8, "Wildlife-7: Pacific Marten) This logging "prescription" is designed to sound good, while it is actually a death sentence for martens, since martens won't cross large clearcuts or otherwise heavily logged open stands. Half of an acre or only two acre unlogged, isolated patches would be retained in the existing condition of marten source habitat, which would no longer be suitable marten source habitat or suitable for marten foraging after the logging and biomass removal. Pacific marten need suitable source habitat in at least 30 acre areas and connected to other source habitat without crossing 200 foot openings, that jeopardize marten survival due to predators in openings.

*Drop all suitable Pacific marten source habitat and foraging habitat with sufficient canopy closure at >/= 60% canopy closure, with abundant down and elevated logs for winter foraging under snow and large snags, as well as abundant large trees, for denning in Pileated nest holes or other cavities large enough for marten denning. This includes dropping all Old Forest Multi-Strata or moist old growth mixed conifer forest to provide source habitat for MIS Pacific marten, Pileated woodpecker, and many other Birds of Conservation Concern, including MIS Primary Cavity Excavators. MIS American goshawk source habitat also requires sufficient moist old growth forest (and/or OFMS)—separate from Pileated woodpecker and Pacific marten source habitat for some protection from predators. Marten are also now known to use habitat in drier old growth forest to expand their range at about 4,500 feet in elevation. Pacific marten may also have source habitat in high elevation cold forest that needs to be dropped for marten population viability in the project area.

Pacific marten are still Vulnerable-ranked in Oregon and declining. The Wallowa-Whitman National Forest is apparently a strong hold for Pacific marten due to adjacent Wilderness Areas and old growth connectivity through the Sufferin' Springs timber sale area for migration, which should not be logged. It's critical to protect all suitable Pacific marten habitat on the Wallowa-Whitman National Forest, since marten populations are diminishing on other Blue Mountains National Forests. Logging the Pacific marten source habitat in OFMS and within the Wildlife Connectivity corridors would likely contribute to federal up-listing and loss of population viability in the project area.

The Sufferin' Springs proposed action would probably exceed road density standard limits, including for summer and winter ranges for MIS Rocky Mountain elk. Most of the Blue Mountains National Forests have not reduced road density to meet Forest Plan road density standards, including </= 1.5 mile/square mile for overlap of summer and winter elk ranges under MA-3 and MA-1W. (See Wildlife-8 Big Game Habitat in Table 8.) Even the </= 2.5 miles/square mile for (MA-1) summer elk range are also often not met.

The marginal hiding cover and satisfactory thermal cover standards may also not be met after such landscape scale high intensity logging. The overall MA-1 summer range and MA-1W overlap of summer and winter ranges cover requirement is only >/= 30% cover, based on the outdated Forest Plan. The cover for elk in both summer and winter range should be at least 40% based on Thomas 1979. With increasing road traffic as the road network continues to increase with ATVs using closed roads and "temporary" road beds, Rocky Mountain elk need road density to be reduced, not increased again with the Sufferin' Springs project area. Elk have been found to avoid active road use by 300 feet on either side of major roads, limiting elk habitat. The proposed action should also include decommissioning old roads and leaving the area with more hiding and thermal cover, which should be consolidated in large elk security habitat blocks, as other Blue Mountains National Forests' staff have been planning. MIS Rocky Mountain elk would also benefit from dropping all commercial logging in old forest—both OFMS and OFSS and within the Wildlife connectivity corridors.

We are strongly opposed to any commercial logging, closed road re-opening or "temporary" road construction within American goshawk Post Fledging Areas. American goshawks are in decline or extirpated across the rest of the country where goshawks had suitable habitat.

*Drop all commercial logging in Post-Fledging Areas (PFAs) and any other goshawk source habitat. PFAs could have limited non-commercial thinning in the outer perimeter of the PFAs to reduce fire risk. However, goshawks use areas with dense saplings and seedlings for density when the area has been previously logged. Accipiter hawks, including Cooper's hawks and Sharp-shinned hawks also require dense stands as their habitat niche, since they evolved to maneuver at mid-canopy level in dense forest. Prescribed burning could be used around the PFAs in dry forest types.

Re: Wildlife-11: Gray Wolves in Table 8: Aren't there more restrictions where there are active resident Gray wolf packs or individuals for dispersing for genetic diversity? Where are the specific Gray Wolf protections for a resident wolf pack, as there is a resident Gray wolf pack within the Sufferin' Springs project area?

Re: Old Forest MIS: American Goshawk, Pacific Marten, Pileated Woodpecker:

"In addition to being MIS of old-growth and mature forest (Table 4), the American Goshawk, Pacific Marten, and Pileated Woodpecker are also "Species of Greatest Conservation Need" in the Oregon Conservation Strategy. Strategy species are defined as having small or declining populations, are at-risk, and/or are of management concern (ODFW 2016)." The proposed action is not consistent with the Oregon Conservation Strategy to protect the viability of the three MIS wildlife species, as declining populations of "Species of Greatest Conservation Need". Logging the remaining old forest, including most of the moist mixed conifer multi-strata old growth forest, including logging degrading the Wildlife Connectivity corridors' old forest that would reduce canopy closure and structural complexity in most of the suitable habitat and source habitat. This would result in drastic reduction of breeding pairs of all three Management Indicator species, as documented in the Appendices-3.

The proposed commercial logging in old growth forest and the Wildlife Connectivity corridors would greatly reduce the American goshawk in the project area, based on the science:

"The American Goshawk is highly associated with old and mature forests with high canopy cover, large diameter trees, and high canopy base height (Dickson et al. 2014, Bruggeman et al. 2023, Miller and Carlisle 2025). Canopy cover is the most important and consistent forest structure influencing nest site selection by goshawks (Reynolds et al. 1982, Hayward and Escano 1989, Younk and Bechard 1994, Daw and DeStefano 2001, Finn et al. 2002, Lohmus 2005, Miller et al. 2013). Goshawk occupancy has been shown to be higher in areas with no historical harvest compared to harvested areas and is explained by availability of structural elements that are more prevalent in in unharvested stands. Larger trees provide better support for building large nests, canopy cover reduces risk of predation of nestlings and provides protection from wind and precipitation, and greater canopy base height increases access to primary prey species (Reynolds et al. 2006, Squires and Kennedy 2006, Reynolds et al. 1982. McGrath et al. 2003, Reich et al. 2004, Bruggeman et al. 2023)." (Appendices-3, p. 157)

Further, "...studies have found that goshawks avoid open areas and early-seral forest (Austin 1933, Fischer 1986, Boal et al. 2003, Lapinski 2000, Titus et al. 1996, Beier and Drennan 1997) and consistently select nest sites in landscapes with well over 40% mature/old forest (Finn et al. 2002, Patia 19997, Desimone 1997)." (Appendices-3, p. 158, 2nd par.) Yet the goal for the silviculturist is apparently to turn old forest with high canopy closure and large trees into “open areas and early seral forest”, eliminating the majority of suitable habitat for American goshawks and threatening the loss of viability for American goshawk populations in the project area.

“Concern over negative effects of timber management practices on goshawk nesting, foraging, and post-fledging habitat use led to litigation and petitions to list goshawk under the U.S. Endangered Species Act (Squires and Kennedy 2006). Litigation focused on timber management practices in the southwestern USA that removed mature and old growth forest that provided high quality breeding habitat. Goshawk populations have declined due to loss of nesting habitat in late successional mature forest with large trees, and relatively high canopy cover (Rickabaugh and Fremd 2011).” (Appendices-3, p. 158)

*Drop all logging in OFMS and OFSS old growth forest and all Late and Old Structure (LOS) stands and drop all felling of large Grand firs up to 30” dbh across the 12,765 acres of American goshawk source habitat:

“The Project area contains 12,765 acres of American Goshawk source habitat (OFMS and OFSS in cold, moist, and dry PVGs [Potential Vegetation Groups] with at least 50% canopy cover) ... the project area could support approximately six breeding pairs under existing conditions. (Figure 2, Table 6).” (Appendices-3, p. 158, 2nd to last par.)

“Goshawk have been detected throughout the Project area and at least 4 breeding territories have been documented since 2021....productivity is not known for the local population (within the Project area) or Forest. Although nests have been found in younger, multi-story forest, studies suggest young forest is less likely to provide the resources needed for successful breeding by goshawks (Harrower et al. 2010, Crocker-Bedford 1990).” (Appendices-3, p. 158, last par.)

Pacific Marten Background and Existing Condition:

For MIS Pacific marten retention in the project area, follow the strong consensus of science findings that support our concerns that the Forest Service’s proposed action would eliminate Pacific marten population viability in the project area. This would also foreseeably result in contribution to federal uplisting for Pacific marten and contribute to the cumulative extirpation of the species in the region, losing connectivity between populations to retain genetic diversity:

“The Pacific Marten (hereafter, marten).is associated with mature, mesic coniferous forests and is one of the most habitat-specialized mammals in North America (Bull and Heater 2001). Marten source habitat consists of moist and cold forests with large-tree structure and multi-strata, (>20” dbh) closed canopies (i.e., >60%) (Bull et al. 1997, Wales 2011, Bull and Heater 2000, Buskirk et al. 1989, Gosse et al. 2005, Kirk and Zielinski 2009, Martin 1987, Munzing and Gaines 2008, Nams and Bourgeois 2004, Wilbert et al. 2000, Martin et al. 2020, Wisdom et al. 2000). Additionally, marten require complex physical structure in the forest understory created by lower branches of trees, shrubs, accumulations of coarse woody debris, large-diameter hollow trees and logs, and brooms for denning and resting (Buskirk et al. 1994, Bull and Heater 2000, Gaines et al. 2017, Martin and Barrett 1991, Payer and Harrison 1999, Ruggiero et al. 1998, Buskirk et al. 1989, Slauson and Zielinski 2009, Delheimer et al. 2023). These structures are all affected by forest management practices, especially those focused on reducing fuel density and salvage-logging (Bull et al. 2005, Moriarty et al. 2016, Bull and Blumton 1999, Volkmann and Hodges 2022, Lavoie et al 2019). Marten avoid openings and forest with simplified structure, and select home ranges with a greater proportion of complex forest and an abundance of large woody debris (Chapin et al. 1998, Katnik 1992, Moriarty et al. 2016, Lavoie et al. 2019).” (Appendices-3, p. 162)

Preserving marten viability requires a big landscape scale of intact home ranges: “In Northeast Oregon, the average home range was 6,714 acres for males and 3,449 acres for females with little overlap, especially among males, and martens overwhelmingly selected for unharvested, late successional forest stands (Bull and Heater 2001, Bull et al. 2005).”

To ensure Pacific marten viability requires higher canopy than the proposed logging of old forest suitable marten habitat reducing forest cover to less than 50% canopy closure, since Pacific marten need about 60% for most of their habitat for security from predators. The logging would also lose complex structure from old growth with a high density of snags and down wood: “Bull et al. 2005 found that marten home ranges contained on average >/= 50% old forest with a high density of snags and down wood, and they avoided young forest and areas with low snag densities.” (Appendices-3, p. 162)

Again, proposed logging in old growth and dense mature moist mixed conifer with large trees and abundant snags and logs would result in converting suitable marten habitat to unsuitable very open stands with sparse forest: “Generally, a greater abundance of structurally complex old forest in larger patches is an important predictor of marten occurrence, while areas with sparse forest and open canopy are generally considered to be unsuitable marten habitat throughout their range....” (Shirk et al. 2014, Chapin et al. 1998, Hargis et al. 1999, Kirk and Zielinski 2009, Potvin et al. 2000, Penninger and Keown 2011.)”

“Marten populations are assumed to have declined from historical levels across the Blue Mountains due to habitat degradation and loss of mature conifer forests, and little is known about the current overall population trend (Bull and Heater, 2001, Moriarty et al. 2011, Penninger and Keown 2011, Wales 2011, Clare et al. 2019).” (Appendices-3, p. 162, 3rd to last and 2nd to last par.)

There are two marten detection on the northeastern boundary of the Sufferin’ Springs timber sale area and two detections within the Sufferin’ Springs timber sale area. Also: “...no marten were detected on the camera that was deployed in secondary habitat (i.e. habitat containing suitable cover for travel and/or foraging, but not containing trees large enough for denning).” (Appendices-3, pp. 162-163)

It is critical to retain suitable marten habitat within the designated wildlife connectivity corridors, based on field studies: “Ensuring adequate habitat is available within 33 km (mean dispersal distance) would facilitate successful dispersal for young, provided there is connectivity between suitable habitats (Bull and Heater 2001). Penninger and Keown (2011) identified barriers to dispersal in the Blue Mountains and modeled landscape permeability....In addition to the Eagle Cap marten population, marten occur in the Elkhorn Range on the west side of the Forest. However, the Grande Ronde valley and Hells Canyon and the Snake River are significant barriers for dispersal. Maintaining relatively contiguous and connected patches of high-quality breeding habitat within the project area will support expansion of the core population and decrease risks of genetic isolation by increasing their distribution on the Forest.” (Appendices-3, p. 163)

The essential wildlife connectivity corridors must provide suitable habitat for migrating and dispersing Pacific marten and many other wildlife species, with retention of existing high canopy closure >/= 60 % canopy closure for security habitat, complex understory with abundant snags and logs and large and old live trees (also for MIS Pileated woodpecker, Primary Cavity Excavators, Pileated woodpecker, and Rocky Mountain elk for migration and the many other wildlife species they represent for similar habitat characteristics) and access to water. Migrating and dispersing wildlife species need cool, water retaining forest canopy micro-climate conditions, given that ambient air temperatures are consistently getting hotter from climate change during extreme heat waves, and prolonged droughts. Many far-ranging wildlife species need connected corridors of security habitat for migration and dispersal, including Pacific marten, Canada lynx, Wolverine, Pacific fishers, possible Grizzly bears from the Eagle Cap Wilderness area, and native ungulates, including elk, deer, Mountain goats, Big horn sheep, and moose.

*Drop all logging and any biomass removal in the 4,830 acres of Pacific marten OFMS suitable source habitat. There should also be no closed road re-opening or construction of “temporary” roads within the marten source habitat. Prescribed burning should only be used in dry forest types, since when used in moist mixed conifer, abundant down and elevated logs for marten and abundant snags and logs for Pileated woodpeckers, Primary Cavity Excavators for nesting and foraging and Black bears for foraging may be greatly reduced.

“Bull and Heater (2001) suggest that home ranges should be managed for an average of 6,672 acres per breeding pair if the goal is to maintain viable populations of Pacific Marten in Northeast Oregon. Approximately two breeding territories for marten could be accommodated under existing conditions assuming 6,700 acres is needed to support a breeding pair of marten in a patchy landscape with evenly distributed and connected old forest covering at least 50% of the territory (Bull and Heater 2001, Bull et al. 2005).” (Appendices-3, p. 164)

Since there are only 4,830 acres of marten source habitat identified for a breeding pair, additional adjacent Old Forest Multi-Strata or Old Forest Single Stratum must be connected to source habitat for at least four breeding pairs that were detected, with two territories that apparently overlap the Eagle Creek Wilderness Area. The “simulated” breeding territories in the map with identified Pacific marten source habitat on p. 164 is dubious at best. Was this made by Artificial Intelligence? Some of the strangely configured “breeding territories” are too small and/or don’t appear to have enough source habitat, whereas one of the so-called breeding territories might be able to support more than one breeding pair, where the most marten source habitat is identified in dark green, in the middle eastern section.

Figure 8 on p. 165 regarding current versus historic levels of large down wood >/= 20” diameter and of small wood >/= 5” diameter both show deficits compared to historic numbers of large wood in percent cover, indicating the need to stop logging most mature trees that would otherwise be able to grow into large trees and to stop removing large trees—as hazard trees, logging large trees in violation of the Eastside Screens limit of 21” dbh for killing or logging, and in this case, planning to fell Grand fir up to 30” dbh—apparently just to eradicate Grand fir and convert the project area to almost all Ponderosa pine, Western larch, and Douglas fir. Biomass “fuel” reduction consumes down wood and should be far more limited, such as only engaging in biomass reduction adjacent to residential communities and along major access roads, only up to the height of the tallest trees that could fall into the roads.

Pileated Woodpecker Background and Existing Condition:

The Forest Service is constantly trying to convert tree species composition to predominantly Ponderosa pine and Western larch, although Grand fir is essential for Pileated woodpecker foraging due to Grand fir provision of abundant snags and logs, with Carpenter ants being the main forage prey for Pileated woodpeckers. Again, the science supports our concerns about losing viable populations of Management Indicator species:

“In Northeast Oregon, the Pileated Woodpecker selects old and mature, unlogged, multi-story mixed conifer stands with >/= 60 % canopy closure, high snag densities, and a high abundance of large diameter downed logs (Bull 1987, Bull and Holthausen 1993). Bull et al. (2007) found the density of nesting pairs of Pileated Woodpeckers was positively associated with old forest and negatively associated with the amount of area dominated by Ponderosa pine and single-story regeneration forest.” (Appendices-3, p. 168, last par.)

Further, “...nest success was higher in home ranges that had greater amounts of forest with >/= 60% canopy closure, and density of nesting pairs was shown to decrease following extensive regeneration cuts of grand fir (Bull and Holthausen 1993, Bull et al. 2007, Aubry and Raley 2002, McClelland and McClelland 1999).” (ibid.) Yet the Forest Service is proposing to fell large (and old) Grand firs up to 30” dbh (which is the most common large size of Grand firs: 21-30” dbh, due to past logging of larger old Grand firs.) The felling loss of large Grand firs on a landscape scale would reduce the viability of Pileated woodpecker breeding pairs in the sale area.

Notably, the Deschutes Forest Service staff cored large Grand firs in the Ursus timber sale and determined that statistically, Grand fir at 22" dbh were almost all at least 150 years old, that shows that they are old growth trees. There is only one inch difference from the Eastside Screens 21" dbh cutting limit from the Ursus sale coring of large Grand firs.

Otherwise, the Grand firs could grow larger and old, providing live old growth fir for up to at least 132 years, based on large Grand fir coring in the Wolf timber sale on the Ochoco National Forest. Large and old Grand firs would later become large snags and logs that are critical for Pileated woodpecker foraging and are important for many other wildlife species that are represented by the MIS Pileated woodpecker:

"Pileated Woodpeckers are important habitat modifiers—numerous species, including Flammulated Owls, Northern Saw-whet Owls, Northern Pygmy owls, Western Screech Owls, American Kestrels, Vaux's Swifts, Northern Flying Squirrels, Silver-haired Bats, and American [Pacific] Marten, have been documented using old cavities created by Pileated Woodpeckers for roosting, reproduction, shelter or hibernation (Bull and Meslow 1977, Aubry and Raley 2002, Bull et al. 2007, Duncan 2003). Woodpecker presence and cavity density correlate positively to species abundance and richness across a variety of plants, birds, and mammals (Hammond and Theimer 2020)." (Appendices-3, p. 169, 2nd par.) (Spelling and capitalization by the Forest Service)

"The Project area contains 5,464 acres of Pileated Woodpecker Source Habitat (OFMS and OFSS in moist and cold PVGs with a 50% canopy cover) well distributed among a juxtaposition of secondary forested habitat and open areas characteristic of the Blue Mountains. Assuming average home ranges of approximately 900 acres containing at least 25% old forest, an estimated 30 breeding territories could be supported in the project area under existing conditions (Figure 6, Table 6)." (Appendices-3, p. 169) Some of the numbered figures seem to be missing or are not labeled with a number.

"However, there has been no effort to formally monitor the Pileated Woodpecker population within the project area or across the WWNF [Wallowa-Whitman National Forest] in the past 20 years. Adequate monitoring of the Pileated Woodpecker population and occupancy trends are needed to understand treatment [mostly logging] effects on breeding success and survival in the Project [area] and within the Wallowa-Whitman National Forest." (Appendices-3, p. 169, last par.)

Effects to Pacific marten:

The proposed action effects to Pacific marten: "This will reduce canopy cover below 50% in all treated [logged] OFMS [Old Forest Multi-Strata] outside of designated wildlife corridors, making it effectively unsuitable as marten source habitat. Consequently, it is estimated that only one breeding pair of martens may be accommodated after implementation of the proposed action." (Appendices-3, p. 178). Only one breeding pair of Pacific martens is not a viable population for a Management Indicator species, in violation of NFMA and the Forest Plan. Only one breeding pair could easily have one or both martens killed by a predator, the timber sale loss of suitable habitat, or road kill.

The detailed effects analysis for marten supports our concerns, based on the science: "Habitat loss from timber logging may contribute to declines in marten populations. Retention of landscape containing interconnected mosaics that include a range of forest structural stages should be a priority for maintenance of viable marten populations in managed landscapes (Lavoie et al. 2019, Aubry and Proulx 2017)." (Appendices-3, p. 179, 1st par.) This supports our opposition to logging suitable marten source habitat and Wildlife Connectivity corridors.

*Drop the commercial logging of 6,700 acres in moist and cold forest with canopy cover >/= 50% in order to conserve habitat for the Management Indicator species that need 60% canopy closure for Pileated woodpecker nesting and American goshawk nesting, and canopy cover above 50% with large trees, large snags, and abundant and elevated logs for Pacific marten for security habitat from predators, foraging habitat, and denning in a Pileated woodpecker nest hole or in an old growth tree cavity in the trunk. Primary Cavity Excavators need large snags and logs for nesting and foraging (e.g. Williamson's sapsucker, Lewis' woodpecker, White-headed woodpecker, and Northern flicker.)

"In Oregon, 40 species of mammals, including Pacific Marten, were assessed as likely to increase in abundance with an increase in down wood (Hagar et al. 1995). Also in Oregon, reduction of down wood by fire suppression reduced the abundance of small mammals, including prey species of marten (Bull and Blumton 1999)." (Appendices-3, p. 179). The planned intensive logging on a landscape scale throughout all forest types would greatly reduce snags and down wood and old growth structure into the long-term future—potentially up to 80 to 150 years, based on the age of the remaining trees and the need for higher canopy closure for moist mixed conifer and old growth.

All the other wildlife species represented by these Management Indicator species also need the same kinds of habitat structure. Knowingly allowing for cumulative extirpations of Management Indicator species populations in the project area is allowing for long-term loss of biodiversity, with a chain reaction of losing ecological processes and functions. An example of Management Indicator species conserving biodiversity and balancing ecosystem functions are the Primary Cavity excavators that prey on defoliating insects, limiting insect epidemics.

The analysis admits that: "Currently, the proportion of area with high percent cover of large-diameter down wood in the Project watersheds is lower than reference/historical conditions, and the proportion of area with low percent cover of large-diameter down wood is higher than historical conditions....Proposed treatments will target fuels reduction of both standing and down wood and are likely to reduce cover and forage habitat for Pacific Marten." (Appendices-3, last par. on p. 179 into the first par. on p. 180). The proposed action would allow for habitat only for one breeding pair, setting conditions for extirpation of marten populations rather than protecting existing suitable habitat by not logging or reducing complex structure in old growth forest, Late and Old Structure stands, and denser moist mixed conifer and cold high elevation stands.

Effects to Pileated woodpecker:

The "proposed action will reduce overstory canopy cover to below 50% in approximately 466 acres (9%) of Pileated woodpecker source habitat and 3005 acres of OFMS in DUF [Dry Upland Forest] where structural characteristics similar to those found in Pileated Woodpecker source habitat are currently supported (Table 5)."

It's not clear how "dry" forest mixed conifer OFMS is interpreted. We surveyed a lot of sale units that are a dry forest type with heavy past logging, leaving only few old growth Ponderosa pine, Douglas fir, and Western larch, with Grand fir mostly along streams. These are not very suitable habitat for Pileated woodpeckers due to loss of high canopy closure and reduction of mature and old growth trees, with limited logs and snags. These sale units generally had old growth fir and Ponderosa pine stumps. In some places there is limited Pileated woodpecker foraging in marginal habitat.

* Drop the logging of 466 acres of identified Pileated source habitat and drop the logging of 3,005 acres of Old Forest Multi-Strata. Otherwise, if the OFMS and Pileated source habitat were not logged, this old growth habitat would support Pileated woodpeckers, Primary Cavity Excavators, Pacific marten, American goshawk, and Rocky Mountain elk for thermal and hiding cover security habitat. All of these species are Management Indicator species.

Logging is not "forest restoration" and does not support "forest health" based on the science and evidence from similar past high intensity timber sales, now on a landscape scale of destruction.

The analysis finds that "approximately 30 breeding pairs could be accommodated under existing conditions" and that after the timber sale implementation: "Consequently, it is estimated the project area may accommodate approximately six breeding pairs of Pileated Woodpecker[s] after implementation of the proposed action." (Appendices-3, p. 180). The only six breeding pairs possibly retained do not represent a viable population for the MIS Pileated woodpecker. After the extensive high intensity logging and biomass reduction, Pileated woodpeckers would be more isolated by large areas without sufficient canopy closure to provide protection from predators. Actually, only 800 acres of Pileated woodpecker source habitat left after logging would only support one breeding pair, based on the science for home ranges averaging 900 acres for only one breeding pair. (See Figure 14 caption and map on p. 181 of the Appendices-3.)

The proposed high intensity logging throughout MIS source habitat and further logging of the wildlife connectivity corridors indicates that the planned logging would <u>not</u> be consistent with Forest Plan standards, goals, and guidelines. There would be: commercial logging of designated old growth potentially; the exceptions made to maintaining the upper management zone (two-thirds of potential productivity) with the logging of Wildlife Connectivity corridors, and violating the Eastside Screens 21" dbh limit for killing and felling Grand firs up to 30" dbh.

"The effects determination for MIS (in this case, Pacific Marten, Pileated Woodpecker, and American Goshawk) is dependent on whether the Project is consistent with Forest Plan objectives." (Appendices-3, p. 182). The proposed action is not consistent with Forest Plan objectives and standards.

Based on the science in the detailed effects analysis, the proposed action would "contribute to a trend towards Federal listing or cause a loss of viability to the population or species." (Appendices-3, p. 182). Contrary to the usual determination of "May Impact Individuals or Habitat", the analysis makes a definitive argument that Management Indicator species would "likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species." (Appendices-3, p. 182). That would be a significant negative effect in violation of the Forest Plan and NFMA, which would require preparation of an Environmental Impact Statement.

Effects to Primary Cavity Excavators:

Reasons for protecting suitable habitat in enough acreage based on field studies to prevent federal up-listing or loss of viability of the Management Indicator species' populations:

"Sixty-seven vertebrate species in the Pacific Northwest use cavities created by woodpeckers, and 30% of them are designated "at risk" or "potentially at risk" (Bunnel 2013). The Blue Mountains of Oregon have 39 bird and 23 mammal species that use cavities for nesting or shelter (Thomas 1979).... In addition to being MIS, many PCEs are also 'Species of Greatest Conservation Need' in the Oregon Conservation Strategy. Strategy species are defined as having small or declining populations, are at-risk, and/or are of management concern (ODFW 2016)." (Appendices, p. 183, 1st par.)

There are six Primary Cavity Excavators (PCE) that are in decline in Table 713, with all of them associated with Old Forest Single Stratum or Old Forest Multi-Strata, which are threatened by high intensity logging planned, including loss of canopy closure, removal of most mature trees, felling of large/old growth Grand firs that provide abundant large snags, and the reduction of snags and down wood. The Downy woodpecker and the Lewis' woodpecker would also be negatively affected by logging within Riparian Habitat Conservation Areas (RHCAs). Four of the six PCEs in decline require large snags: Downy woodpecker, Lewis' woodpecker, Northern Flicker, and White-breasted nuthatch. (See Table 713, pp. 183-184.)

Based on the DecAID map on p. 185, most of the Sufferin' Springs project area is mostly Eastside mixed conifer, not mostly Ponderosa pine/Douglas fir, yet the silviculturist is apparently set on converting the whole project area to dry Ponderosa pine/Douglas fir or Western larch without recognizing the majority of the Eastside mixed conifer naturally had Old Forest Multi-Strata, not Old Forest Single Stratum. The Eastside mixed conifer includes moist mixed conifer.

Ther is no credible science-based reason to get rid of the OFMS by artificially converting OFMS to OFSS. This is literally a fatal mistake that would cause the extirpation of most of the Management Indicator species. MIS Rocky Mountain elk would lose needed thermal and hiding cover when they need more cooling thermal cover, due to extreme heat waves and more severe storms under climate change.

There are nine Primary Cavity Excavator species that require large nest snags over 21" dbh to meet only 50% tolerance levels for nesting. (See Table 814, p. 186.)

"At least 21 vertebrate species using down wood in the Pacific Northwest are listed as Threatened or Sensitive (Bunnell et al. 2002)." (Appendices-3, p. 188)

"Timber harvest and prescribed burning will decrease snag densities and downed wood percent cover.... Outside of wildlife corridors, commercial treatments [logging] will target...stocking levels on 3,005 acres of DUF [Dry forest] OFMS and significantly reduce densities of live trees, down wood, and canopy cover.... Reductions in tree density will reduce the potential for snag recruitment and future snag densities. Reductions in tree density will reduce the potential for snag recruitment and future snag densities. Reduction in down wood will reduce foraging opportunities for some PCEs." (Appendices-3, p. 190)

*Drop the 3,005 acres of "dry" OFMS and the 156 acres of moist mixed conifer OFMS that would be converted to OFSS.

Effects to Rocky Mountain elk:

Although the number of elk estimated in the project area in 2023 was estimated at twice the Management objective, we saw or heard hardly any elk in the sale area, both in 2024 and 2025 when we were field surveying for weeks. There is high road density and no acres in high elk security habitat. Closed roads should not be re-opened except for seasonal closures and there should be no "temporary" roads. The elk could also benefit from more satisfactory thermal cover by dropping all logging to very low basal area retention. For the elk and many other wildlife species would benefit from dropping all the logging in OFMS and OFSS old growth. There also should be no logging or biomass reduction in the Wildlife Connectivity corridors.

The whole project area has high road density that is probably not meeting Forest Plan road density standard mileage limits.

"Under the proposed action, approximately 10,364 acres of elk cover habitat (>/= 40% canopy cover) will be converted to forage habitat (<40% canopy cover), resulting in a cover to forage ratio of 31:69, a significant shift from the 62:38 ration of the existing condition." Yet: "The optimal ratio of cover to forage habitat for elk is 40:60 (Thomas 1979)." (Appendices-3, p. 195)

*Drop the 10.75 miles of "temporary" roads and drop all re-opening of closed roads that are not seasonal closures.

*Drop the conversion of 10,364 acres of elk cover habitat to forage habitat.

Effects to Sensitive Avian Species and Migratory Landbirds of Conservation Concern:

"Local and regional bird population counts, radar migration data, and capture data from banding stations show that forest-dwelling bird species have experienced population declines in many areas of North America with over 50% of western forest birds in a state of decline (Rosenberg et al. 2019, Finch and Stangel 1993, State of the Birds 2025, Robbins et al. 1989). Habitat loss and degradation is considered the primary reason for declines (Smallwood, et al. 2009, Hinam and St. Clair 2008, State of the Birds 2022, State of the Birds 2025, Partners in Flight 2016)." (Appendices-3, p. 198, 2nd par.)

All of the declining or significantly declining Migratory Landbirds of Conservation Concern depend on OFSS forest structure for foraging or OFMS and/or OFSS old growth forest for breeding, including: American goshawk, American kestrel, Evening Grosbeak, Lewis' woodpecker, and Olive-sided Flycatcher. (See Table 915, Appendices-3, p. 199)

*Drop all commercial logging and any biomass reduction in the 4,806 acres within OFMS and within 1,103 acres of OFSS (old growth forest).

"Commercial treatments [logging] will reduce density of overstory and understory trees, reduce canopy cover, and simplify structural complexity." (Appendices-3, p. 200). These logging effects would be enough to preclude most OFMS and OFSS-dependent wildlife species, including birds of Conservation Concern.

*Drop the logging of 1,844 acres in Old Forest Multi-Strata within designated wildlife connectivity corridors.

*Drop all 2,092 acres proposed for logging in wildlife connectivity corridors, which would reduce structural complexity, hiding and thermal cover, and mature trees that could otherwise grow into large and old live trees and future large snags and logs.

Commercial logging and the associated loss of canopy and existing and future large snags and logs does <u>not</u> "reduce the risk and extent of high-severity wildfire and create a more resilient and functioning forest habitat for migratory land birds and sensitive avian species that occur within the Project area." (Appendices-3, pp. 200-201)

Since the Birds of Conservation Concern species are already in decline, there is no guarantee that they would not trend toward federal up-listing or lose viability of local populations.

Effects to Amphibians:

"Two Sensitive amphibian species occur within the project area and may be impacted by the proposed action, the Columbia Spotted frog and the Rocky Mountain Tailed frog. In addition to being Region 6 Sensitive species, they are also "Species of Greatest Conservation Need" in the Oregon Conservation Strategy. Strategy species are defined as having small or declining populations, are at-risk, and/or are of management concern (ODFW 2016)." (Appendices-3, p. 203)

Logging within RHCAs pose harm to Columbia Spotted frogs by heavy equipment crushing them during migration but also from being within RHCAs in general. Another threat to Columbia Spotted frogs and Rocky Mountain Tailed frogs is from logging within upper or outer areas within RHCA buffers that would reduce shade and moisture retention. Even secondary shading contributes to cool, moist micro-climate conditions in the drainages that are necessary for cooling the frogs and keeping them moist, as well as depending on stream flows, pools, springs, and seeps or fens retaining water.

See the many science citations supporting our concerns on Appendices-3, p. 204. For instance:

- "(Metter 1964, Spear and Storfer 2010) found that in unharvested landscapes impacted by wildfire, gene flow was maintained over land, with connectivity being highly sensitive to solar radiation and dependent on the availability of refugia in the form of down wood. In landscapes managed for timber, dispersal and gene flow was largely restricted to riparian corridors presumably due to the scarcity of overland refugia."
- "High site fidelity, narrow stream temperature tolerances, restricted dispersal, low fecundity, and long lifespans make Rocky Mountain Tailed Frog populations especially vulnerable to habitat alterations that may occur as a result of forest management, fire, and climate change (Pilliod et al. 2022)."

Also regarding Rocky Mountain Tailed frogs: "the impacts of timber management and road construction on stream micro-habitats and overland dispersal are their primary threats (Olson 2011). In particular, actions that impact stream flow, sedimentation, water temperature, peak flows, erosion and stream siltation. Upland timber removal increases solar radiation on the forest floor and reduces soil moisture and down wood refugia. Tailed frogs may be less common in recently harvested areas relative to non-harvested areas (Hayes and Quinn 2015)."

"Recent and historical surveys and incidental observations of Rocky Mountain Tailed Frog confirm distribution of the species across the Forest and existence of a breeding population within the project area. Specifically, positive detections were confirmed on Goose Creek, Conundrum Creek, Velvet Creek, and Big Creek and their tributaries."

*Drop all: "Commercial and non-commercial treatments are proposed on 69 acres of Category 1 and 2 RHCAs throughout the project area, including streams potentially occupied by Columbia Spotted Frog and confirmed to be occupied by Rocky Mountain Tailed Frog." (p. 204, last par.)

"During dispersal and local migration to hibernacula, Rocky Mountain Tailed Frog and Columbia Spotted Frog may travel along inflow and outflow channels, but also across meadows and dry uplands.... During implementation, individuals may be crushed and killed by machinery, people, or felled trees at any point in the active season if they are moving within the treatment areas." (Appendices-3, p. 205)

"Upland thinning and fuels reduction treatments could inhibit overland dispersal and migration of spotted and tailed frogs if down wood is removed...." (p. 205)

Effects to Sensitive Mollusks:

Four out of five species of Sensitive mollusks require moist Old Forest Multi-Strata, with the Fir Pinwheel also using Old Forest Single Stratum. Imperiled and Critically Imperiled mollusk species could be federally uplisted or lose viability of the mollusk populations in the project area.

*Drop all logging and ground disturbance in all moist Old Forest Multi-Strata, Old Forest Single Stratum, and in all RHCAs, to protect these Critically Imperiled, Imperiled, Sensitive, and rare mollusk species.

*Drop all logging and increased road access and heavy equipment use in the 4,383 acres of Old Forest Multi-Strata to protect the five Sensitive to Critically Imperiled mollusk species documented on the Forest.

*Drop the commercial logging and any biomass reduction or heavy equipment use in the 1,571 acres of existing moist Old Forest Multi-Strata and all the logging within Wildlife Connectivity Corridors.

*Drop all 171 acres of commercial logging within the RHCAs to protect fish species, Sensitive mollusk species, and Sensitive frog species.

*Drop any undeveloped lands that have never been logged or roaded.

*Drop all commercial logging and heavy equipment use on steep slopes, ash cap soils, shallow soils, or where there would be more than 20% detrimental soil impacts prior to any mitigation.

Aquatics Comments

Overview of water quality and aquatic species concerns:

Aquatic and riparian ecosystems are especially vulnerable to negative impacts of logging, both from logging within RHCAs and from upslope logging. We are very concerned that the Suffering Springs EA did not adequately disclose, analyze, or avoid the negative effects that logging would have on these ecosystems and the cumulative impacts of ongoing threats (roads, livestock grazing, fragmentation, climate change, logging, invasive species, etc.). The EA cherry-picked science and scientific interpretations that bolstered their desired actions of logging within riparian corridors, while ignoring or severely downplaying science that did not align with the agency's assumptions or conclusions.

The EA's proposed logging in riparian corridors (RHCAs) and heavy upslope logging—including in important wildlife areas such as marten source habitat areas—flies in the face of widespread scientific consensus to increase core habitats and connectivity in response to climate change (Heller and Zavaleta 2009). The agency needs to consider how existing conditions and proposed logging would potentially exacerbate possible negative impacts from climate change. The EA has an extreme and disproportional emphasis on logging and fails to consider the importance of less risky and more effects strategies that do not focus on logging.

Managed watersheds with logging associated roads have worse stream habitat conditions. From NOAA 5-Year Review of Snake River Salmonids: *"Information from the [PACFISH Biological Opinion Monitoring Program]* ***PIBO monitoring program indicates that unmanaged or reference reaches (streams in watersheds with little or no impact from road building grazing, timber harvest, and mining) on Federal lands in the Interior Columbia basin (including the Snake River basin) are in better condition than managed streams (Al-Chockhachy et al. 2010b). In particular, managed watersheds with high road densities or livestock grazing tend to have stream reaches with worse habitat conditions than streams in reference watersheds. When roads and grazing both occur in the same watershed, the presence of grazing has an additional significant negative effect on the relationship between road density and the condition of stream habitat (Al-Chockhachy et al 2010b)."***

Logging can be associated with changes in macroinvertebrate community structure or metrics (Flaspohler et al. 2002, Kreutzweiser et al. 2005), increases in stream temperatures (Guenther et al. 2012) and alterations in nutrient cycling and leaf litter decomposition rates (Lecerf and Richardson 2010). Flaspohler et al. (2002) noted that changes to biota associated with selective logging were found decades after logging.

Headwater streams and non-fish bearing streams are particularly at risk and need more, not less, protection. In order to protect downstream fish bearing reaches, headwater streams need at least as much protection as larger downstream reaches (Rhodes et al., 1994; Erman et al., 1996; Espinosa et al., 1997). Both Erman et al., (1996) and Rhodes et al., (1994) concluded, based on review of available information, that intermittent and non-fish-bearing streams should receive stream buffers significantly larger than those afforded by PACFISH/INFISH. Headwater streams and small intermittent streams do not have buffer widths that are sufficient to protect water quality and stream habitats. Wider buffers are needed in order to prevent excess fine sediments and nutrients entering waterways. (Freeman et al. 2007; Gomi et al. 2005; Nieber et al. 2011; Sweeney and Newbold 2014). Negative impacts to upstream reaches, such as higher temperatures, increased sediment loading, down-cutting, and altered hydrographs also negatively affect downstream reaches.

In research in eastern Oregon, Ebersole 2015 found that dry streams supplied cold water to downstream reaches at confluence sites. Such cold water refugia habitats are important for fish, which were observed at these locations. In another recent project in the Wallowa-Whitman National Forest, the Morgan Nesbitt Project, the Aquatics BE for that project notes that *"[m]ost riparian thinning is located in the RHCAs of Cat 2 and 4 streams, with the majority of these acres in Cat 4 RHCAs (Table 3). Although these streams are fishless,* ***water temperature in these smaller streams is important for fish habitat because cold water inputs from tributaries provide thermal refugia, and intermittent streams can still provide cold groundwater inputs even after surface flow ceases*** *(Ebersole et al. 2015)."*

We note that the Suffering Springs sale is planning to commercially log a huge number of acres (more than 10,000), including 171 acres of commercial logging within RHCAs. The negative effects that logging will have on aquatic resources are very likely to be widespread and long-term, and have measurable and significant effects at the subwatershed scales. Given the enormity of logging throughout the uplands, the effects from logging within RHCAs combined with upland logging, the negative effects are likely to be seen at downstream and at larger watershed scales as well. Even localized negative impacts to streams, water quality, and fish can have long-term negative effects from which fish and other aquatic organisms may have difficulty recovering from.

The primary threats and stressors to special-status and at-risk riparian and aquatic species on National Forests in eastern Oregon are logging, roads, and livestock grazing. These activities result in increased fine sediment inputs to streams, warming stream temperature, increased diurnal stream temperature fluctuations, stream bank instability, soil compaction and erosion, fish passage barriers, and other widespread problems.

Logging will increase surface runoff and overland flow, which delivers warmer water and excess sediments into streams quickly, and can alter peak flows and increase stream temperatures. In addition, increased surface runoff and faster delivery of water into streams also means that less water becomes groundwater. This decreases groundwater storage, groundwater flows, and hyporheic flows. (Coutant 1999; Croke and Hairsine 2006; Jones and Grant 1996). Protecting groundwater storage, groundwater flows, and hyporheic flows associated with intermittent streams is crucial for protecting temperatures in larger downstream perennial streams. Cold water inputs from intermittent streams to downstream reaches are essential providing cold water refugia for special-status and imperiled aquatic organisms, including ESA-listed fish (Caissie, 2006; Ebersole et al. 2015; Groom 2011; Groom 2011; Jones and Grant, 1996; Pollock et al. 2009). Patches of cold water refugia are crucial for fish. Shallow groundwater patterns can be important for influencing stream temperatures, (Poole et al. 2008) and so are likely vulnerable to upslope logging (Caissie 2006).

Logging, including upland logging, can cause decreases in summer baseflows in the long-term. Decreased canopy cover due to logging can cause more snow to accumulate in these more open areas, which alters the timing and magnitude of runoff from snow melt. This can also cause changes to peak flows (Harr and Coffin 1992). Should proposed logging be implemented, it would create more open canopies, which will then increase solar radiation inputs, and as a result may increase the amount of early snow melt. This, in turn, may further alter peak flows and groundwater recharge and the hyporheic cold water delivery downstream, including to perennial streams. (Caissie 2006; Harr and Coffin 1992).

Logging also alters microclimates, creating hotter, drier, and windier conditions that stretch beyond forests directly affected and into adjacent forests, sometimes for distances of hundreds of feet. Such microclimate edge effects could extend into the entirety of riparian buffers, especially in smaller headwater streams. (Chen et al. 1992; Chen et al. 1995; Brosofske et al. 1999)

Given the research done by Ebersole and others cited above, it is very likely that logging within RHCAs, is likely to threaten the cold-water temperatures and refugia in streams that are important for aquatic and riparian species. We are very concerned that the agency is ignoring PACFISH buffers, with commercial and non-commercial logging proposed within RHCAs.

Potential violations of the National Forest Management Act, PACFISH/INFISH, Riparian Management Objectives, and/or the Clean Water Act:

The PACFISH Standards and Guidelines state that activities within the RHCA *"should not prevent attainment of Riparian Management Objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function, listed anadromous fish, or designated critical habitat."*

According to the EA, many streams are already not meeting RMOs, especially for temperature. Nevertheless, logging is planned adjacent to streams. Such logging will further retard attainment of RMOs by removal of riparian shade, as well as increased stream temperature and fine sediment, and retard attainment of RMOs such as pool depth, embeddedness, LWD, and others. PACFISH/INFISH no-cut stream buffers should be adhered to and fully implemented. No commercial logging should occur with RHCAs, and noncommercial logging should be dropped or severely scaled back. We are also very concerned about other activities within RHCAs, such as widespread fuel breaks, pile burning, skidding, heavy equipment use within RHCA buffers, and other harmful actions the agency has proposed that will retard attaining RMOs. It is not entirely clear if or how much the agency is proposing to deviate from PACFISH standards in terms of downed wood left within RHCAs after logging. We are also concerned about this issue, as downed wood is a key component for many species of wildlife and is important for protecting soils and supporting other dynamics on the forest floor.

303d listed streams:

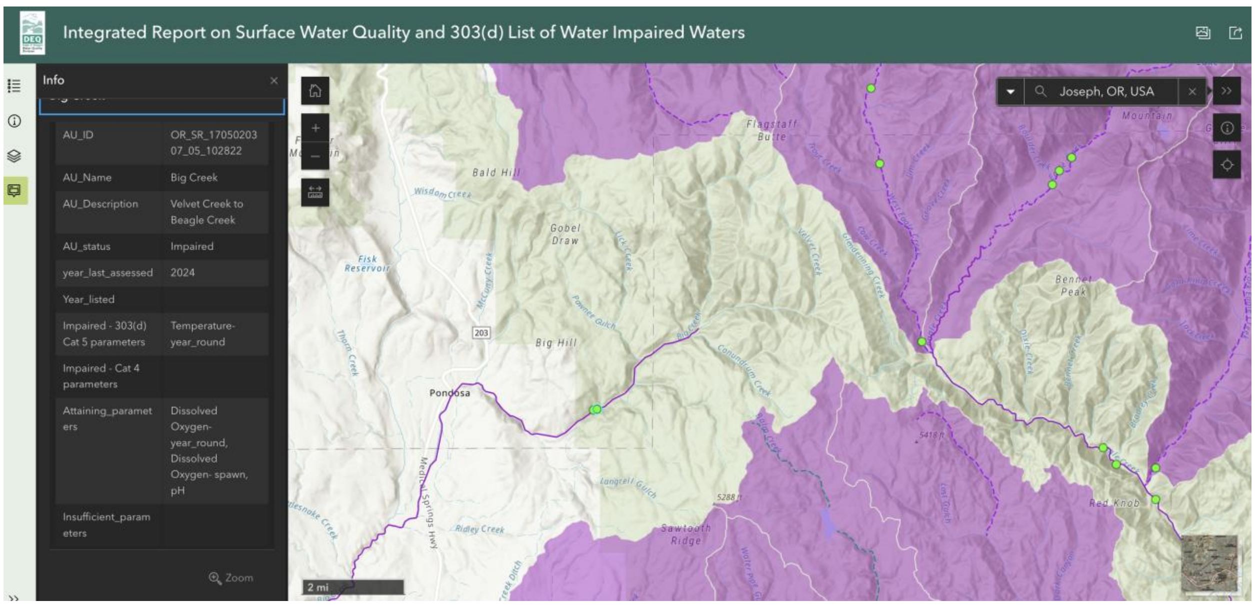
The most common water quality impairment in National Forest System lands is stream temperature. More than 1,240 stream miles on National Forest lands in the Blue Mountains are listed as not meeting water quality criteria. (Draft EIS for the Blue Mountains Forest Plan Revision (BMFPR), Vol. 1 pg. 272). This baseline figure from the BMFPR is almost certainly an underestimate—the large volume of recent data submissions in 2019 from the Forest Service to ODEQ reflect even more widespread problems with stream temperature violations across the landscape. The agency's 2018 data submissions were the first effort by the Forest Service to share a substantial portion of their data with ODEQ in over a decade.

The EA states that *"Forest Service stream temperature monitoring within the project area occurs on Big Creek, Velvet Creek, Conundrum Creek, and West Fork Goose Creek. Over the past 15 years, the average 7- day maximum stream temperatures throughout the year in Big Creek as it leaves forest service averages around 58 oF. This stream temperature in Big Creek, that contains redband trout, meets the INFISH RMO for water temperature requirement to comply with state water quality standards, or a maximum 7-day running average of less than 68 oF for surface waters that contain redband trout.* ***However, average 7-day maximums in the peak of the summer have shown to get as high as 72 oF.****"*

If stream temperatures are as high as 72 degrees Fahrenheit, then they are not meeting stream temperature standards, despite the FS claiming otherwise. Stream temperature standards apply even, and especially, during the peak of summer. That the Forest Service is claiming these streams meet temperature standards because they are cool outside of the peak of summer is not a sound or reasonable assertion, has no evidence or rationale, and is arbitrary and capricious.

Stream temperature data summaries should have been provided in the EA for the public to review. The FS's paragraph incorrectly characterizing streams as meeting the INFISH RMO for water temperature—but then turning around and admitting that 7-day max temperatures can get as high as 72 degrees F—highlights the need for the public to be provided with baseline temperature data for the streams in the project area. The FS's biased mischaracterization underscores the need for independent public review.

Has the Forest Service shared all of their stream temperature data with the Oregon Department of Environmental Quality (ODEQ)? ODEQ has had at least two calls for data in recent years. On the ODEQ website, temperature data is lacking for several streams within the project area—streams that the EA says there are existing data. Examples include (but are not limited to) Velvet Creek and Conundrum Creek.



We also note that Big Creek is flagged as 303d listed Category 5 (needing a TMDL). The TMDL for temperature currently in place is outdated, and a new one is needed—as identified on ODEQ's 303d list.

In addition, the Suffering Springs EA asserts that CWA standards can be met *"by following the Total Maximum Daily Load (TMDL), which is an approved plan to meet water quality standards, and the Water Quality Restoration Plan (WQRP), which is the strategy for meeting the TMDL. In essence, the WQRP states that* ***we will follow our Forest Plan (as amended)****, use Best Management Practices (BMPs) for all management activities, conduct BMP monitoring and temperature monitoring, and implement watershed restoration projects. The Sufferin' Springs project is therefore consistent with the CWA."*

We note that Forest Plan standards and PACFISH/INFISH buffers were intended to uphold no activity buffers, where logging was rare if allowed at all, and carried stringent requirements to not retard the attainment of RMOs and to only conduct restoration activities for the purpose of improving water quality and stream habitats. For almost 3 decades after PACFISH/INFISH was implemented, almost no logging of any kind was conducted within RHCAs across the region. The full PACFISH/INFISH buffers, without logging, were what was understood to be the Forest Plan at the time these TMDLs and WQRPs were put in place. For example, the Morgan Nesbit Aquatics BE (pg. 32) states, in relation to similar plans to log within RHCAs in that sale: *"the Morgan Nesbit project restricts activity and has additional project design criteria within default PACFISH buffers,* ***but does not use default PACFISH no activity buffers (PACFISH 1995)****."* Unfortunately, over the past 10 years, the Forest Service has carried out coordinated regional efforts to test the limits of PACFISH/INFISH loopholes, and to increase logging within RHCAs. Region-wide commercial logging within RHCAs was not the letter nor intent of the Forest Plan as amended under PACFISH/INFISH. As such, the FS cannot now claim that logging within RHCAs is consistent with the Forest Plan or with the CWA.

The Forest Service has not provided any evidence to suggest that logging and associated actions in the EA will not result in a 0.5 degrees C or greater increase in stream temperatures, which the EA notes is the maximum amount allowable for stream temps increases for 303d streams.

Further, stream shade is not an adequate or appropriate surrogate for stream temperature, and cannot reliably be used to ensure compliance with state water quality standards. Stream temperatures and shade are not well correlated in many-- often the majority-- of instances for which the Forest Service has provided stream temperature data as well as shade data along streams proposed for logging. In the few instances where the FS actually has comprehensive stream temperature and shade data and discloses it to the public, it is clear that in many or even most locations where stream shade standards are met, stream temperature standards are not. Please see BMBP's Aquatics Addendum in our submitted materials, for detailed examples and explanations of this issue from the Big Mosquito, Camp Lick, Magone, and Ragged Ruby timber sales on the Malheur NF. In these sales, in the majority of locations where stream shade was meeting standards, stream temperatures were in violation of stream temperature standards.

While stream shade standards create the illusion of temperature compliance, in reality stream temperatures were often excessively high and at levels recognized as limiting or lethal for ESA-listed and sensitive fish. While protecting stream shade is a very important component of protecting stream temperatures, it is not the whole story. Particularly if watersheds are suffering from ongoing forest degradation and altered hydrology from logging and roads—then simply protecting shade does not sufficiently protect stream water temperatures.

The Forest Service briefly acknowledges that other factors beyond shade play a crucial role in maintaining cool stream temperatures. (We note that there are many additional factors that also play a role, but here the FS has at least acknowledged some.) However, the Forest Service ignores these key factors and dynamics in relying solely on changes to shade to determine possible stream temperature increases. The Suffering Springs EA states: "Velvet, Conundrum, and West Fork Goose Creeks remain much cooler through the summer and can average below 60 oF throughout the entire year. Trees and shrubs provide shade that helps maintain cool stream temperatures. ***Adequate streamside vegetation including trees, shrubs, grasses, grass-likes and forbs are necessary for precipitation and overland flow to be captured, stored and slowly filtered through the soils and released to the streams at cool temperatures that benefit aquatic and fishery resources. This also requires a healthy tree stand in and adjacent to actual riparian areas for long-term maintenance."***

In the Morgan Nesbit timber sale, also in the Wallowa-Whitman NF, the Aquatics BE for that sale admits that shade is NOT a strong predictor of stream temperature: *"Studies on riparian thinning have found that thinning is sometimes correlated with increases in stream temperature, but responses are variable and* ***shade is only one factor influencing stream temperature.*** *Janisch et al. (2012) found that patch cuts in western Washington forest had smaller than expected, and* ***highly variable effects on temperature in intermittent streams despite reducing shade.*** *They found that other* ***variables such as aspect, substrate size, and amount of surface flow had a greater impact on temperature****."*

In addition to the evidence discussed above, one has only to look briefly at NEPA documents to understand that data on the percent of shade in a streamside corridor is a poor substitute for water temperature data. For example, in the Aquatics Report of the Camp Lick timber sale on the Malheur National Forest, in the 25 reaches for which both stream shade and temperature were reported in Camp Lick NEPA documents, the data show streams meeting stream shade standards but NOT meeting stream temperature standards in 13 out of 25 reaches. **That's a 52% failure rate regarding the accuracy of using stream shade as a surrogate for stream temperature**. Only one instance went the other direction—i.e., showed stream shade standards not being met, while the stream shade standard was met. **In the Big Mosquito timber sale in the Malheur National Forests, using stream shade as a surrogate for temperature would fail in one or more reaches in 80% of creeks for which data were collected (Big Mosquito Aquatics Report Table 1). In the Ragged Ruby timber sale NEPA documents (Ragged Ruby Final Aquatics Report Table 3) shows that using stream shade as a surrogate for temperature fails in one or more reaches in 42% of streams for which data were reported.** Five of the twelve streams met shade standards, while stream temperature did not meet standards.

Clearly, using stream shade as a proxy for stream temperature in these eastside forests is not appropriate. While we understand that stream shade is an important driver of water temperatures, it is not the primary or only one, especially in smaller streams. Many factors influence stream temperatures, as we've discussed and provided scientific references for in numerous portions of these comments.

Multiple lines of evidence from primary peer-reviewed literature suggests that logging, including riparian thinning and upslope logging, has negative effects on stream temperatures. For example, Guenther et al. (2012) found increases in bed temperatures and in stream daily maximum temperatures in relation to 50% removal of basal area in both upland and riparian areas. Increases in daily maximum temperatures varied within the harvest area from 1.6 to 3 degrees Celsius. Pollock et al. 2009 found that stream temperature was more closely associated with degree of logging within catchments than with streamside vegetation. Small streams are particularly vulnerable to increases in temperature, even with limited selective logging. There is evidence to suggest that wider buffer widths may be necessary to protect stream temperatures, particularly in intermittent and headwater streams, and particularly when logging within 100' of streams. Parameters that influence stream temperatures include, stream shade, overland flow, groundwater and hyporheic flows, and groundwater storage. Alteration of these parameters can increase stream temperatures, especially in small streams. Logging degrades the ability of these parameters to support cold water, and so is likely to increase stream temperatures.

Janisch et al. 2012 discusses the findings of their research and note: *"These analyses showed that the amount of canopy cover retained in the riparian buffer was not a strong explanatory variable…".* Furthermore, in some study sites in the Janisch et al. research, riparian buffers with ***more logging had a smaller magnitude of stream temperature increases compared to streams with less logging***. I.e., riparian zones with patch cuts had LESS stream temperature increase compared with riparian zones with continuous buffers (i.e., removal of less canopy cover). The point is that the results clearly indicate that stream shade was not correlated to stream temperature changes, and that the results were highly variable regardless of amount of riparian canopy cover. The FS seems to be willfully ignoring such research, in order to suggest that less shade removal in riparian zones will produce negligible increases on stream temperatures. While stream shade is important, it does not necessarily protect stream temperatures from the wide-ranging and complex dynamics of the negative impacts to stream temperatures associated with logging in RHCAs and uplands. Janisch et al. 2012 found statistically significant increases in stream temperature as a result of all logging treatments. The Janisch et al. 2012 study found that: *"[s]tatistical analyses indicated that all treatments resulted in significant (α = 0.05) increases in stream temperature. In the first year after logging, daily maximum temperatures during July and August increased in clearcut catchments by an average of 1.5 °C (range 0.2 to 3.6 °C), in patch-buffered catchments by 0.6 °C (range −0.1 to 1.2 °C), and in continuously buffered catchments by 1.1 °C (range 0.0 to 2.8 °C)."* It is important to note that stream temperature increases were statistically significant for all treatments. Comparable increases in stream temperatures in the Suffering Springs sale area—even if they were to be substantially lower than many of those found in the Janicsh et al. 2012 study—would still result in measurable increases that would be detrimental to sensitive aquatic species such as Redband trout, Columbia spotted frogs, Rocky mountain tailed frog, and others, and would be in violation of state CWA regulations.

Many streams within the Suffering Springs sale area are vulnerable to temperature increases as a result of logging within RHCAs, based on parameters demonstrated in the Janisch et al. 2012 paper. These include stream substrates with relatively fine composition, longer surface-flowing extent, and the presence of stream-adjacent small wetlands (please see BMBP's survey sheets). Streams within the Suffering Springs sale include the parameters that the Janisch et al. 2012 study identified as correlated with increased stream temperatures in response to logging, including northerly aspects, relatively longer surface flow, adjacent wetlands, and fine substrates. The Janisch et al. 2012 study noted: "*cumulative surface area of small, stream-adjacent wetlands (0.93) and length of flowing surface water above our stream temperature monitoring stations (0.65). Additionally, stream sediment texture appeared important, with streams having coarse substrates being thermally unresponsive and streams having fine substrates being thermally responsive."*

Logging is likely to increase surface runoff and overland flow, potentially delivering warmer water (and excess sediments) into streams more quickly and with a greater volume. This, in turn, can also cause erosion and alter stream morphology, and potentially affect stream temperatures.

Despite the overwhelming amount of scientific research showing that logging and associated activities significantly raise stream temperatures-- the Suffering Springs EA states, without evidence, that logging within RHCAs will not have a measurable effect on stream temperature. From the EA: "*Vegetation treatments within RHCAs cover a small percentage of* *overall riparian acreage in the project area (Table 7) and are not anticipated to alter stream shade enough to have measurable effects on stream temperature. Project Design Criteria have been developed to retain primary shade trees and limit ground disturbance within RHCAs, including the numerous amounts of springs and groundwater dependent ecosystems within the project area. Noncommercial thinning treatments would not reduce the amount of recruitable large woody debris (LWD) for fish bearing streams and will target the understory, lesser shade providing trees (PDC Hydro-4).”*

However, the FS's assertions run contrary to scientific research and their own conclusions in literature reviews in draft policy documents, as described above. In addition, the Forest Service provides no evidence to support the statement that stream shade alterations will not affect stream temperature, but instead assert that logging within RHCAs “*only covers a small percentage of overall treatment*” and such logging is “*not anticipated to alter stream shade enough to have a measurable effect on stream temperature*”. Has the USFS quantified any of these assertions? Given the large project areas and massive amounts of logging planned in the Suffering Springs sale, even small percentages can have measurable impacts. Also, since the USFS will be altering stream shade, there is no evidence to suggest that there would not be measurable increases to stream temperatures. The USFS's assertion is arbitrary and capricious.

The EA further states that “*There would be an interior no-ground disturbance buffer extending 150 feet from the channel in Category 1 RHCAs, 75 feet from the channel in Category 2 RHCAs, and 50 feet from the channel in Category 4 RHCAs. To preserve stream shade and reduce potential impacts to water temperature in Category 2 stream channels, thinning within the RHCA would target trees in the understory (PDC Hydro-4). Soil erosion within treatments may lead to accelerated sediment delivery to stream channels but with implementation of these buffers, and soil resource and groundcover PDCs, sediment leaving treatment units is not expected. With INFISH (USDA, 1995) buffers limiting treatments and ground-disturbance, springs and groundwater dependent ecosystems (GDEs) will be also be protected from any adverse effects.”*

No commercial logging should occur within RHCAs, and any noncommercial logging should be drastically scaled back, and not include conversion of stand structure or dominant forest type. We note that the EA's description of logging within RHCAs obfuscates the extent to which logging will occur near streams. How far will logging equipment be reaching into the inner zone of RHCAs to log or fell trees? Understory thinning can also negatively affect stream temperature. How much will canopy cover be reduced across the inner and outer zones within RHCAs? See also our concerns about erosion and sediments in these comments.

We also note that in other TMDLs in the region, such as the Walla Walla River Temperature TMDL for Washington, the TMDL suggests that removing trees within 75 to 140 feet from streams can affect stream shade (Walla Walla River TMDL 2007, pg. 16). For example, the TMDL states, in the summary paragraph on assessing the differing ranges of widths of buffers important to stream shade: *“Steinblums et al. (1984) concluded that that shade could be delivered to forest streams from beyond 75 feet (22 m) and potentially out to 140 feet (43 m). In some site-specific cases, forest practices between 75 and 140 feet from the channel have the potential to reduce shade delivery by up to 25 percent of maximum.”*

Will the USFS be removing conifers that contribute to stream shade? If so, how does the FS credibly assert that removal of conifers that provide shade will not increase stream temperatures?

Most streams for which the FS has data are currently in violation of stream temperature standards, as shown the EA—despite the FS's assertion that "overall, riparian conditions in the project area are fair". Again, this further enforces BMBP's position that shade is not an appropriate or adequate surrogate for compliance with stream temperature standards.

The EA states, (emphases added) that: ***"Overall, riparian conditions in the project area are fair. Though there have been many improvements made over the past few decades, streams, springs, and wetlands within the project do show some signs of degradation from the existing road network, grazing, historic water uses, forest health conditions."***

We note that the FS's description of vegetation along perennial streams is consistent with many perennial streams naturally supporting moist RHCA forests with abundant firs. Please see BMBP's addendum materials on historical documents and photos. The EA goes on to state: ***"****In general, conditions in RHCAs have moved away from the historic vegetation composition and structure. Shade intolerant hardwoods, shrubs, and grasses are declining as a result of conifer competition.* ***Streamside conifers are present along all stream channels in the project area.*** *RHCAs generally have an abundant amount of down wood and are overstocked in the overstory and understory. The overstocking and high levels of down fuels within these areas make them susceptible to loss from insects and disease, as well as mortality from wildfire. High fuel loads increase the risk of losing key ecosystem components such as streamside trees, down wood, and snags in a wildfire. A high-intensity fire would also increase overall erosion potential. Riparian vegetation differs between perennial and intermittent streams.* ***Vegetation along perennial streams is comprised primarily of alder, currant, snowberry, and grasses, with pockets of sedges. The larger, perennial streams like Big Creek, Velvet Creek, Balm Creek, and West Goose Creek have cottonwoods, dogwood, some aspen. Vegetation along intermittent streams is comprised primarily of grasses, with some shrubs such as snowberry."***

In BMBP's field surveys throughout the region, we have repeatedly seen the same natural patter across the landscape: conifers are dominant along stream channels in situations where the channels are steeper, more narrow, more shaded through topography or slope orientation, at mid-to-high elevations, and/or on ash soils. Even in these areas, unlogged mature and old forests are heterogenous with natural openings where hardwoods thrive. Where stream channels become more open and are on gentler grades, particularly at lower elevations and on less water-retaining soils—in these areas, hardwoods are thriving, even when they are intermixed with conifers.

Small streams are particularly vulnerable to increases in temperature, even with limited selective logging. There is evidence to suggest that ***wider*** buffer widths may be necessary to protect stream temperatures, particularly in intermittent and headwater streams, and particularly when logging within 100' of streams. Logging within RHCAs, removing shade, road-related impacts, and degrading hyporheic flow can increase stream temperatures in small intermittent streams. Parameters that influence stream temperatures include, stream shade, overland flow, groundwater and hyporheic flows, and groundwater storage. Alteration of these parameters can increase stream temperatures, especially in small streams. Logging alters these parameters, and degrades the ability of these parameters to support cold water, and is likely to increase stream temperatures. (Caissie 2006; Davies and Nelson 1994; DeWalle 2010; Kiffney et al. 2003; Groom et al. 2011 201; Jones et al. 2006; Sweeney 2013; Pollock et al. 2009; Wigington et al. 2006; Poole et al. 2008; Poole and Berman 2001; Ebersole et al. 2015).

Also, logging within RHCAs or forest wetlands can magnify water quality and hydrology impacts from upland logging. (Hicks et al. 1991; Moore and Wondzell 2005). Janisch et al. (2011 and 2012) and Buttle et al. (2009) found that wetlands associated with headwater and low order streams are more common and influential on stream hydrology and water quality than previously realized. Many of the wetlands associated with first order streams are small and fall below the size requirements for protection in relation to timber sales. Janisch et al. (2012) found streams in headwater catchments with wetlands had larger and more consistent increases in temperature in relation to adjacent logging than did the catchments that did not contain wetlands. The authors found that in streams with wetlands present in their catchments tended to have streams with finer sediments in their substrates.

Even in situations where logging within RHCAs is limited to thinning of smaller diameter trees, logging may compromise the ability of the RHCA buffer to protect streams or ameliorate the negative impacts from upland logging, including increased stream temperatures and the delivery of sediment and nutrients into waterways.

Additional useful information regarding the Janisch et al. 2012 paper: *"....spatially intermittent streams with short surface-flowing extent above the monitoring station and usually characterized by coarse-textured streambed sediment tended to be thermally unresponsive. In contrast, streams with longer surface-flowing extent above the monitoring station and streams with substantial stream-adjacent wetlands, both of which were usually characterized by fine-textured streambed sediment, were thermally responsive."*

The Washington Department of Ecology provides a concise and informative summary of the Janisch et al. 2012 research (https://apps.ecology.wa.gov/publications/SummaryPages/1203020.html):

> *"During approximately the past 50 years, stream temperature response to logging practices has been frequently studied. These studies have suggested that the amount of shade from stream-adjacent forest, as well as other variables such as elevation and aspect, can influence stream temperature when the streamside forest is removed by logging or otherwise disturbed.*
>
> *Results from these studies, however, have been variable, and the magnitude of stream temperature response has not always been predictable by the amount of stream-adjacent forest removed. Recent thought and research on this topic has thus tended to consider why, given similar logging treatments, some streams increase greatly in temperature after logging whereas temperatures of others increase only slightly, and why occasionally temperatures of yet other streams after logging have appeared to decline. Hyporheic flow and streambed sediment texture have been proposed as possible explanations.*
>
> *Recently, we observed that the temperature response of small forested headwater streams to logging were also highly variable. We further observed, however, that the degree of stream temperature response in the streams studied was strongly correlated with two landscape variables: cumulative surface area of small, stream-adjacent wetlands (0.93) and length of flowing surface water above our stream temperature monitoring stations (0.65).*

Additionally, stream sediment texture appeared important, with streams having coarse substrates being thermally unresponsive and streams having fine substrates being thermally responsive. Conversely, our measure of stream shade was not a strong predictor of stream thermal response.

These results suggest that very small headwater streams may be fundamentally different than many larger streams because factors other than shade from the overstory tree canopy can have sufficient influence on stream energy budgets to strongly moderate stream temperatures even following complete removal of the overstory canopy. This raises the possibility that there are several types of very small headwater streams, some being thermally responsive and some not. Such a finding is potentially of importance to several fields of natural resource management. Confirming our observations, however, will take substantial additional work."

Excess fine sediments:

Logging, including tethered logging, clearcut-style logging such as group select cuts and shelterwood logging, and logging on steep slopes-- all have the potential to increase erosion. Such logging is documented to have significant and negative effects to watershed hydrology, stream habitats, water quality, and imperiled aquatic species.

Another WWNF sale, the Morgan Nesbit sale, notes in its Aquatics BE (pg. 32) that "***The default PACFISH buffers of 300 ft are well established as sufficient to protect streams from any sedimentation impacts, but less in known about the effects of limited commercial thinning within 150 ft of streams."*** The Aquatics BE also states (pg. 13): *"Note that the Morgan Nesbit project restricts activity and has additional project design criteria within default PACFISH buffers,* ***but does not use default PACFISH no activity buffers (PACFISH 1995)****."*

Also in violation of PACFISH/INFISH standards, the Suffering Springs EA proposes commercial logging within RHCAs. If the agency is not adhering to PACFISH/INFISH buffer widths, and it acknowledges that they don't actually know if logging within 150 feet of streams will protect against increased fine sediment in streams from upland logging—then how can it then claim that the buffer widths it's adopting for this sale are in fact going to protect streams from upslope logging? How can it claim that streams are protected from sediments generated from upland logging by PACFISH buffers, yet also admit that it isn't adhering to PACFISH buffers?

The Forest Service is ignoring decades of scientific consensus, research, and expert opinion regarding riparian buffers, including their own. For example, the FS noted that: *"[r]esearch has shown that effective vegetated filter strips need to be at least 200 to 300 feet wide to effectively capture sediment mobilizing by overland flow from outside the riparian management area"* (Draft Blue Mountains Forest Plan Revision vol. 2 pg. 52).

Studies have found selective logging may be associated with increases of instream fine sediments (Kreutzweiser et al. 2005, Miserendino and Masi 2010). Upslope logging, particularly on steep slopes above streams, can increase fine sediment inputs into streams, contribute to stream temperature increases, cause increased variability in water quality and aquatic habitat parameters, and alter stream morphology and watershed hydrology. Additionally, logging on thin soils, ash soils, and rain-on-snow zones greatly increase the risk of soil damage, erosion, and excess fine sediments in streams. Zhang et al (2009) found long-term impacts to macroinvertebrate communities and streambed substrates. These impacts lasted for up to 40 years due to excess fine sediments associated with logging. Effects, such as changes to sediment loading and stream morphology, may not show up for many years after logging. (Beechie 2001; Beechie et al. 2005; Benda and Dunne 1997; Kelsey 1982; Madej and Ozaki 1996).

Roads outside of RHCAs can also harm stream water quality. Road networks act as artificial stream channels, greatly increasing the magnitude and timing of peak flows and potentially carrying sediment into streams. Transport can occur through a variety of mechanisms, including roadside ditches, culverts, erosion, and gullies. Small and large landslides increase in frequency in association with roads, providing another mechanism by which fine sediments can be carried into streams—even if these roads and events occur outside of RHCAs.

Excess fine sediments generated by road related erosion or harvest related soil compaction may be carried farther across the landscape because of decreases in water infiltration or runoff rates over damaged soils, which in turn can cause an increase in the distance of overland flow transporting the sediments. Thus, the sediments generated by management activity can reach streams (Croke and Hairsine 2006, Nietch et al. 2005, Wemple et al. 2000). In addition, improper road drainage can cause gullies, landslides, and other erosional features, which in turn lead to sediment generation, increased runoff, and more direct and rapid transport of runoff and sediment to streams (Croke and Hairsine 2006, Wemple et al. 2000). Furthermore, the distance of travel required for sediments to enter streams may be shortened by the artificial extension of stream networks by roads and culverts (Croke and Hairsine 2006, Wemple et al. 1996). Increases in the efficiency of delivery of water and sediment to streams due to road networks and changes to soil infiltration and groundwater inputs can affect the timing, magnitude, duration, and frequency of sediment inputs. Roads increase peak flows by intercepting surface and subsurface flow, and diverting it into culverts and ditches that drain into streams (Wemple et al. 1996). Instream sediment dynamics such as timing and placement of fine sediment deposition, embeddedness, and scour are affected by stream power and flow regimes (Moore and Wondzell 2005, Wood and Armitage 1997).

Ashy soils typically hold more moisture than sandy or poor soils. As a result, they are often associated with mixed-conifer forests. Because RHCAs, steep slopes, and mixed-conifer forests on ashy soils are targeted for logging, and would be at risk of soil damage, compaction, and displacement, should this proposal be implemented. For example, in a recent Forest Service timber sale, the Upper Touchet sale on the Umatilla NF, the FEA (pg. 47) notes that the *"[e]ffects of ashy soil displacement and compaction by ground-based and cable activities on soil productivity is immediate and will persist on the landscape for up to 20 years or more (Giest, 1989)."* The Upper Touchet FEA also states: *"Ashy soils have low bearing strength and are susceptible to increased soil displacement and compaction by logging activities. When non-mixed ashy soils are disturbed, erosion is greater due to fine particle size and lack of cohesiveness between ash particles.*

Large woody debris (LWD) and pool habitat:

The Morgan Nesbit project (also in the Wallowa-Whitman) notes in its Aquatics BE (pg. 49) that ***"[p]ool habitat and LWD levels are likely lower than prior to the start of intensive timber harvest activities in the analysis area.*** *While specific habitat data is not available for the project area, trends in changes in LWD and pool habitat in the Pacific Northwest and adjacent areas have likely occurred in the project area. McIntosh et al. (2000) and Quigley et al (1997) documented a* *general decline pool habitat since the 1930's. Bilby and Ward (1991) found a significant decrease in LWD in managed streams compared to old-growth streams. Cover et al. (2008) documented increases in fine sediment in streams as the result of management activities in the Klamath Mountains of northern California. Timber harvesting activities (including riparian harvesting) and the development of the current road system are likely causative factors in the decline in LWD, pool habitat, and increases in fine sediment compared to the pre-settlement conditions."*

Given the information that logging and roading have historically caused declines in LWD and pool habitats, and increases to fine sediment—why is the Forest Service bent on repeating the mistakes of the past? There is ample scientific evidence that even more modern logging and roading practices on federal lands continue to be harmful to streams, water quality, and fish.

We are very concerned that logging, especially within RHCAs, will negatively affect the availability of future large wood recruitment for LWD in streams. We are also concerned about effects on fish-bearing streams, as portions of LWD do come from upstream, and because logging is widespread on adjacent slopes. Wood recruitment and delivery is a crucial cornerstone of ecological integrity for streams, essential for the viability of many native and special-status aquatic species, and a driving force of recovery for stream morphology. Hyporheic flows and groundwater storage and movement depend in part on wood and future large wood recruitment, and are important for maintaining cold water in perennial streams. Groundwater movement and storage is interconnected with a number of complex watershed processes and forest components, and may be negatively impacted by soil compaction and other negative effects from logging.

We are also concerned about effects to pools from changes to watershed hydrology and increases in sedimentation. Aquatic ecosystems include complex and interdependent interactions. The loss of snags and downed wood along streams negatively affects stream morphology, including pools. The reduction of smaller wood for streams, as well as future recruitment for these components, is already occurring through logging in many timber sales across the landscape.

It is also important to highlight that small intermittent streams, as well as perennial streams, would also be negatively affected by logging and the loss of wood for streams, and that those effects are felt downstream. Small streams are crucial to maintaining cold water for downstream perennial waterways, and to creating and ensuring cold water refugia for fish. (Benda et al. 2005; Caissie 2006; Kaufmann and Faustin 2011)

Watershed conditions:

The EA states that 50% of streams are "functioning at risk" and half are "impaired function". Appendices 3 of the EA show that Beagle, Clover Creek-Powder River, Balm Creek, and Goose Creek are all designated as "Impaired function", with Lower, Middle, and Upper Big as well as Tucker Creek-Powder River considered "Functioning at risk". The EA goes on to state that *"none have been prioritized for needing specific restoration attention. Limiting factors within these subwatersheds that led to these classifications are associated with poor aquatic biota conditions, poor water quantity (availability), and the existing road network."* However, the Forest Service is glossing over upcoming development of a new, replacement TMDL for temperature, as well as the recent prioritization and urgency of the E. coli TMDL which was put in place in 2024 and also covers the grazing allotments within the area.

Given the widespread stream temperature violations, including in watersheds that are considered “functioning at risk”, the FS’s proposal for widespread and intensive logging will further retard attainment of water quality standards and RMOs. The FS proposal includes including logging on steep slopes, logging on thin soils and ash soils, and in sensitive areas such mature and old forests, RHCAs and undeveloped lands. Such areas are crucial for protecting water quality, and for aquatic and terrestrial wildlife and species diversity.

The USFS has ignored ample and well-documented evidence regarding the negative impacts logging and associated activities have on RMOs such as stream temperatures, fine sediments, LWD, pool frequency, and others, as well as peak and base flows, watershed hydrology, and other parameters. We are extremely concerned that the EA downplays or ignores the likely negative impacts on streams, water quality, and watershed hydrology that are well-documented to be associated with roads and logging.

For example, in the Umatilla NF, the Tiger-Mill Scoping Notice of Proposed Action does a more transparent job of acknowledging the complex nature of these dynamics: *“Depending on the nature, extent and timing of disturbances, changes in vegetative structure can reduce rainfall interception, water infiltration, and evapotranspiration, which can increase the amount of surface runoff and streamflow, respectively, and can also alter the timing of that flow. Increases in runoff and streamflow can lead to a decrease in water quality from non-point source pollutants through increased nutrient and sediment loads because hillslope erosion transported into streams, as well as increased streambank and streambed scour.”*

From the Upper Touchet Hydrology Report in the Umatilla NF: *“The relationship between created openings in forested landscapes and changes in water yield and peak flows has been documented by numerous studies. Changes in forested stand and canopy density caused by harvest, fire, or insect and disease can change the distribution of the snow pack, increase the rate of melt of the snow pack, and cause the timing of the melt to be earlier. These factors may lead to changes in peakflows. In addition, reduction of stocking density reduces the overall vegetative use of water, increasing the amount of water available for runoff. Changes in water yield and in peak flows have the potential to destabilize channels, causing increased erosion and sedimentation in channels. Changes in these parameters would be of concern for aquatic habitat and biota, downstream water users, and for channel morphology.”*

The Mill Creek DEA in the Ochoco NF: *“Equivalent Harvest Area (EHA) Water yield is particularly affected by changes in the water budget, which includes changes to precipitation, evaporation, and transpiration from vegetation, infiltration, and runoff. Changes in water yield can influence bank erosion, stream temperatures, stream form, and habitat for fish. Resulting channel incision can reduce connection to floodplains and therefore reduce potential water retention across a valley section. EHA is an assessment required by the Ochoco National Forest Land and Resource Management Plan (Forest Plan) to determine the effects to peak flow from timber harvest activities and forest vegetative Mill Creek Dry Forest Restoration, Watershed and Fisheries Effects Analysis 3 conditions within a watershed. EHA is based on the principle that removing vegetation changes hydrologic response characteristics such as runoff, overland flow, peak flow, snow accumulation, timing, and total water yield. Excessive changes in these hydrologic response characteristics can lead to poor riparian conditions such as erosion, lateral scour, channel degradation, aggradation and/or incision resulting in poor water quality.”*

The EA's determinations that there would be no adverse impacts to water quality and streams rests in part on BMPs being properly applied. BMPs are largely subjective and voluntary, and it cannot be assumed that they will be implemented to their fullest possible extent. The protective measures intended by BMPs may or may not be applied in most situations, and lack any strong mechanism of enforcement. There is no guarantee or enforcement mechanism to ensure that they will be properly applies.

Studies such as Jones & Grant (1996) found that watersheds with drier conditions and more intense summer droughts were more sensitive to the effects of logging and roads on increased peak flows. We postulate that this may apply to eastside streams. Hicks et al. (1991) found base flows increased for 8 to 9 years after clearcut logging because rainfall is not intercepted, evaporated, and transpired by trees. Instead, most rainfall becomes surface, subsurface, or groundwater flow once the trees are removed, and therefore contributes to base flow increases. However, the author found that base flow rates declined to lower than normal volumes in areas of hardwood riparian re-growth for the following 18 of 19 years in their study. In combination with climate change, unintended negative effects may have severe consequences.

The EA fails to adequately analyze and avoid impacts to water quality and stream habitats from issues such as past logging and potential indirect, direct, and cumulative impacts from the Suffering Springs sale. These impacts are likely to be significant and to pose risks to water quality and aquatic habitats. Such direct, indirect, and cumulative impacts are likely to retard attainment of RMOs, including pool depth and width to depth ratios, and alter hydrology and stream morphology—which in turn can result in negative impacts to stream temperature, bank stability, and streambed erosion. The EA fails to take the requisite 'hard look' at the indirect, direct, or cumulative effects of logging on stream water quality, hydrologic processes, or stream morphology.

Logging within RHCAs not based on sound science:

Response to the USFS's reliance on these two studies to justify logging within RHCAs:

Olson 2000. Master's thesis: Fire in riparian zones: a comparison of historical fire occurrence in riparian and upslope forests in the Blue Mountains and southern Cascades of Oregon.

Harley, G.; Heyerdahl, E.; Johnston, J.; Olson, D. 2020. Riparian and adjacent upland forests burned synchronously during dry years in eastern Oregon (1650-1900 CE), USA.

Olson 2000 and Harley et al. 2020 studies:

While the Suffering Springs EA does not make any direct references to Olson 2000 or Harley et al. 2020, those are usually the studies that the Forest Service points to in order to justify artificially portioning off the "inner" and "outer" zones within RHCAs, and then claiming they need to be logged. We did not see any citations to justify the "inner" and "outer" zones, or to generally justify logging within RHCAs in the Suffering Springs project.

It is unclear what evidence or justification the USFS is relying on to log within RHCA buffers, or to create artificial "inner" and "outer" delineations within RHCA buffers.

Since fire scar analyses have been used in almost every other USFS project we've commented on in the past 8 years that proposes logging within RHCA buffers, we are including the following concerns about the Olson 2000 and Harley et al. 2020 papers in the assumption that they are implicitly being used by the Forest Service (or similar papers are being used, with similar issues), in the justification for inner/outer zones and logging within RHCAs.

The Olson 2000 research mapped fire years for "every year there was clear evidence of fire scarring" (Olson 2000 Appendix E. pp. 181- 237), and show data from 1428 through 1972. In our review of the Olson 2000 maps, we note that there are substantial portions of these areas had no evidence of any fire, including the headwaters/upper watersheds of Mill, Marble, and Salmon Creeks. The Olson fire maps show a distinct absence of fire, and so suggest that these areas have infrequent (and likely high severity) fire with long return intervals, and have been acting as fire refugia for centuries. Such forests provide important habitat for species that rely on mature and old forests, and dense and complex canopy forests, and will be instrumental for providing habitat and connectivity in a changing climate. However, the complex mosaics of fire history become lumped together, essentially erasing the very real, on-the-ground results that depict an extremely variable landscape that includes very long fire return intervals.

We want to note some finer scale detail from those maps that we observed. ***Olson 2000 data shows <u>no evidence of fire</u> in higher elevation areas within the Baker study location, such as the upper portions of Mill, Marble, and Salmon watersheds portions of the study area:***

- There appears to be no evidence of fire scars shown on the maps for the upper portions of high elevation watersheds such as the Mill, Marble, and Salmon watersheds. The lack of fire scars suggests that these forests are likely to have experienced infrequent, high severity fires historically.
- The maps also show no evidence of fire for these more incised, steep watersheds between 1428-1529 (~100 years).
- Between 1529 and 1645, there are only isolated incidents of evidence of fire scars at single sites in these watersheds, with the exception of 1581 when there was a second location that had "probable" fire evidence. So, between 1428 and 1646 there was no evidence of more than one isolated small fire until 1646 for the three watersheds (~218 years), with the exception of the "probable" other single location.
- Mill Creek had only isolated evidence of fire scars at single sites, with two exceptions, one with 2 sites showing evidence and the other with five (in 1783 and the other in 1828, respectively). So, aside from single isolated locations showing evidence of fire scarring within Mill Creek, there was no evidence of fire in Mill Creek between 1428 and 1782 (352 years); between 1784 and 1827 (43 years); or between 1829 and 1972 (143 years).

Several of the locations in the Olson 2000 that show repeated fire included those along the mid and lower portions of Mill and Marble creeks appear to have very isolated and small-scale fire activity, possibly suggesting only extremely small fires such as those related to lighting strikes that burn less than one acre. I.e., it is likely that those locations are attracting repeated fire strikes at the same ridge tops and topographic high points.

We also note that the Harley et al. 2020 paper only sampled riparian plots at lower elevations in the Baker plots. The Harley et al. 2020 study notes: "At Dugout, we sampled riparian plots along the major streams throughout the extent of the upland plots. However, at Baker ***we only sampled riparian plots at low elevation along the major streams*** (below 1770 m) ***because visible fire scars did not occur at high elevations at this site."*** (Emphasis ours). Wouldn't those higher elevation sites with no apparent/visible fire scars indicate either fire refugia/no fire and/or stand replacement fire in those areas—contrary to how the agency has characterized them and based their plans for logging?

The Harley et al. 2020 paper goes on to state: "*All the riparian plots were installed more than 46 m and downslope from existing upland plots (range 49 - 939 m, mean = 316 m; Heyerdahl et al 2001)* ***where fire scars were visible on either lie or dead trees and within the riparian buffer.***" (Emphasis ours). It would seem that the targeted selection of sampling plots within areas where both upland and riparian forests showed clear signs of fire scars potentially skew the results and/or bias the conclusions about widespread low intensity fire. I.e., if it was a randomized selection, would there not be more potential evidence for infrequent and high severity fires within the project area?

The only data collected in higher elevation riparian areas was from the Olson 2000 study, which—again-- shows no evidence of fire in significant portions of higher elevation areas within the project area. The authors of the Harley paper stated that they left out possible sites in riparian areas at higher elevation because no visible fire scars were not present. Of course, this biases their findings towards detecting low severity fire regimes, because they left out the very areas that lacked fire scars which would suggest infrequent and/or high severity fires.

The Harley et al. 2020 study also states: "As elevation increases and terrain becomes more dissected at Baker, ***longer and more variable fire intervals also occurred. This is likely a result of forest composition changes related to both topography and elevational changes in temperature, as well as aspect controls on varying insolation levels*** (Olson 2000); Heyerdahl et al. 2001). ***When forests occur within interaction zones of climate and topography, such that riparian forests contain greater variety in vegetation composition relative to upslope forests, then fire intervals differ, suggesting that forest composition is important as landscape dissection increases.*** Compared with Dugout, ***riparian valleys at Baker are more incised and therefore receive less insolation, resulting in a north-facing slope and riparian forest composition that is more mesic compared with adjacent south-facing upslope forests.***" (Emphasis ours).

We note that the authors found longer and more variable fire intervals DESPITE sampling at only lower elevation locations along major streams.

In addition, an overwhelming majority of sample sites in both the Dugout and Baker locations are predominantly on south or west facing slopes. The predominance of south or west facing slopes in the Harley et al. 2020 paper study may also have skewed the results towards more frequent and lower intensity fire being more common in riparian forests (and similar to uplands). If one is looking for statistical differences between riparian and uplands—then predominately choosing sample sites most likely to burn more frequently may dampen any statistical signals one might have found with a more robust sampling protocol. Any possible statistical signal from a small sample size with this composition is likely to be muted or overwhelmed by the larger number of sites that are drier, at lower elevations, and have more gentle and open topography. This is especially the case as the Harley study has an extremely small proportion of sample sites in locations that would be more likely to be more moist and have longer fire intervals (i.e., north, northeast, or east facing slopes; higher elevations; and more incised valleys and gulches).

- The Baker study area plots have a total of 35 upland sites. Twenty of those appear to be primarily on south-facing slopes. Of the 15 sites that have more of a northern or eastern slope orientation, five appear to also include strong southern or western influences, as they are somewhat northwest or southeast facing. Of the 35 upslope sites in the Baker study area, only 10 appear to be clearly on slopes that have a strong north, northeast, or east orientation.
- In the Dugout study area, there appear to be a total of approximately 75 upland sites. Only 12 of those sites appear to be on slopes with strong and predominant north, northeastern, or eastern facing. Of these, four are on ridgetops.
- Riparian sites are almost entirely situated all on the larger order streams within the study area, which tend to be less incised and more open. Only eight suites were situated on smaller tributaries, and only one of these sites faces N/NE.

Figure from the Harley paper:

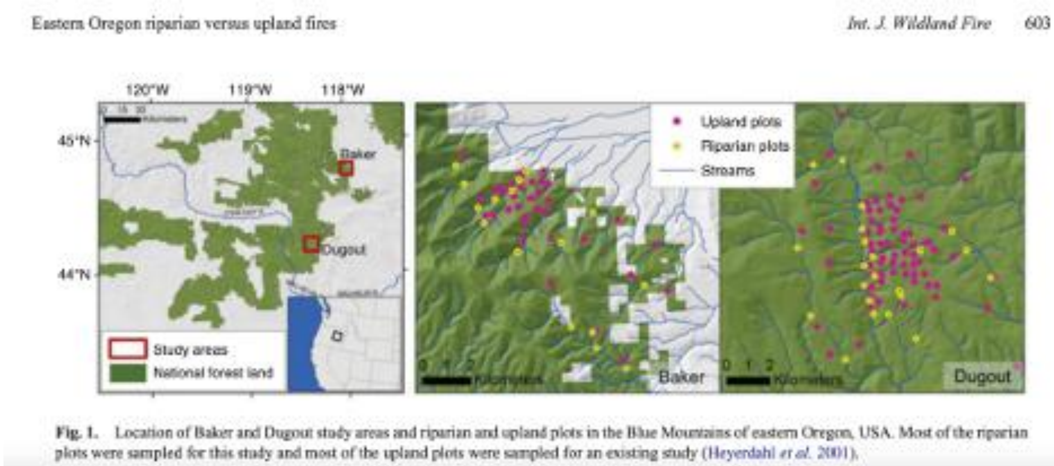


Fig. 1. Location of Baker and Dugout study areas and riparian and upland plots in the Blue Mountains of eastern Oregon, USA. Most of the riparian plots were sampled for this study and most of the upland plots were sampled for an existing study (Heyerdahl *et al.* 2001).

The Harley paper also states: *"[i]n the two study sites in the Blue Mountains of eastern Oregon during the period 1650–1900, **historical fires burned more frequently in upland forests compared with adjacent, downslope riparian forests.** However, the difference between riparian and upland fire intervals at both Baker (5 years) and Dugout (3 years) was not statistically significant (P . 0.10) and **likely not ecologically relevant."*** (Emphases added)

Lack of statistical significance does not necessarily mean lack of data patterns or trends. Lack of statistical significance can be due to a variety of factors, including small sample size. In this instance, the sample size for sites representing north/northeast facing sites was an even smaller proportion of an already small sample size, and seems to have constituted far less than half of the sample sites. While statistically significant differences were not found between upland and riparian forests, there was a clear trend pointing to a difference between the two-- even with the small data sets in this one study. Choices and/or limitations in statistical analyses can also mute variation and complexity, especially when working with small sample sizes, large elevation gradients, and other confounding factors. The Forest Service's standard conclusion for timber sales across the region when applying this research is that most, if not all, forests are dry forests with historically low intensity and frequent fire regimes. This contradicts the data trends-- including the reality of very long fire intervals in large portions of the project area, such as the higher and mid elevation portions.

The Harley et al. 2020 authors also dismissed any ecological importance in the data trend of more frequent fire in uplands compared to the riparian areas (see quote from Harley et al. 2020 above). However, the authors provide no evidence to support this claim, and do not attempt to substantiate their declaration that this very important data trend would lack ecological importance.

The Harley et al. 2020 paper notes that an average of five trees (range 2 - 9 trees) were sampled per hectare by removing fire-scarred partial cross-sections. These cross sections were sanded and looked at with a microscope, and were used to assign calendar years to tree rings through cross dating and against existing ring-width chronologies. This small sample size of trees at each plot then means that the study's already small sample size in riparian forests, especially in the Baker location, is an even smaller sample size for areas most likely to have infrequent and/or stand replacement fire. If the smaller end of the sample range was present at the more northern/eastern slopes and/or in the higher elevations and more incised valleys– then this is potentially only a couple of handfuls of samples in these locations.

Also, evidence of fire at a specific location(s) does not necessarily mean that the fire was widespread, or part of a larger fire regime. For example, lightning strikes may result in only a very small area burning, sometimes even one to several trees. Lightning can and does tend to strike certain ridges and areas repeatedly, also an important factor to consider. In addition, a relatively few trees were sampled at any sample site, potentially leaving room for misinterpretation of fire scars. I.e., some small fires may have been from lightning strikes (not widespread low intensity fires). It could also be the case that some of these fire scars were the result of high severity fire mosaic patterns that include low intensity fire within the fire perimeter.

The Harley et al. 2020 authors also state that for smaller fire years that *"[s]maller fires were likely characterized by a mosaic of varied fuel dryness across the study area. Hence, fuel moisture levels may have varied enough within and between riparian forests and upslope forests, resulting in smaller fires and greater variations in burn severity."* This suggests that there was at least some mixed or high severity fire within riparian zones. High severity fire has specific dynamics and processes that are crucial for certain species and for the ecological integrity of forests that evolved with it. Managing the mixed-conifer forests-- especially those on north/northeast/east facing slopes and at higher elevations-- for a frequent and low-severity fire regime artificially homogenizes them, and degrades or entirely destroys the wildlife habitat and connectivity they provide, as well as greatly impairs their ability to support clean and cold water for fish and people.

The actual data from both the Olson and Harley studies suggest that the topographically and ecologically diverse areas than are recognized by the Forest Service, and are actually more varied in terms of fire intensity and frequency than the usual FS claims. The statistical conclusions of the Harley et al. 2020 paper are based on analyses of sample sites that are more likely to have frequent and low severity fires (lower elevation, west and/or south facing locations, gentle and open topography, etc.). Areas with less frequent and higher intensity fire were sampled in only a handful of locations, or excluded entirely (as with higher elevation sites at Baker in the Harley paper). These sampling biases, as well as the lumping in of data from higher elevations, steep and incised valleys, and N/NE/E facing slopes with data from lower elevations, open topography, and S/SW/W facing slopes— are very likely to have overwhelmed any possible statistical signals of variation, and skewed results towards overgeneralizations of frequent and low severity fire regimes. Lumping all forests in the area together as "*dry forests adapted with low severity fire*" reflects the agency's failure to take a hard look at the data, and the potential limitations of sampling, methodology, and analyses. The data from the Olson thesis fire maps clearly reflects very, very long fire return intervals (and/or stand replacement fire) in the upper and mid elevations of the project area.

Fire scar analysis:

Use of composite fire intervals tend to shorten the time between fires and give a false interpretation of the past fire history. For example, personal communications from George Wuerthner, in our communication regarding limitations of fire scar analyses used in research with similar methodology, include:

> *"Take a hypothetical situation: Let's say you have a 1000 acre study area. You note a fire someplace in that 1000 acres every single year over a hundred year period. However, for argument's sake, each of those fires burns less than a single acre. So you have a total of 100 fires and a fire interval of 1 year. I.e. the fire scar history suggests there is a fire every year. But because each fire is less than an acre, you have only burned 100 acres in a hundred years or only 10% of the 1000 acre study site. Even at a fire every year, it would require 1000 years to get to the fire rotation.*
>
> *This is why it's important to note how large the fire is. You can do this in a number of ways including using air photos, fire atlas, or Government Land Office survey notes as Baker has done.*
>
> *Using fire scars, the best way to do this is to only include fires that burn a significant amount of the study area. In other words, again using the 1000 acres. You would ignore all the fires that are only recorded at one or even a few sights and assume they are small fires of no consequence. After all we are trying to get to the notion of how important fire was in any area and the kind of fire that burned. The only fires you would include would be the years when the majority of the study sites burned, preferably across much of the 1000 acres. You could also note the occurrence of even-aged stands across large areas that might indicate regrowth after a stand replacement blaze. That would give you the real fire rotation."*

Similarly, personal communications from William Baker, in our communication regarding limitations of fire scar analyses used in research with similar methodology (and so are also relevant here), include:

"There are no estimates of historical fire rotations, the essential rate parameter of historical fires. Composite fire interval estimates are done within each site, not across sites, which is OK. But, there is little correction to remove small fires, so their MFRI is close to a mean CFI-all fires in the Baker (2017) terminology. Using Baker (2017 Table 2), to estimate fire rotation, for mean CFI--all fires, we would multiply MFRI by 2.44. For the range of MFRIs in their Table 1, which is 10.6-21.2 years, the estimated range of historical fire rotations would then be 25.9 to 51.7 years.

Based on these fire rotations, these were not frequent-fire forests with fire rotations < 25 years that would have kept fuel loads generally reduced, since fuels can recover within about 10-20 years usually. Instead, historically there would have been ample time for fuels to fully recover between fires, including plenty of fully regrown shrubs, many small trees, lots of small wood, some larger wood etc. and some stands with higher tree density. It is important to estimate fire rotations because it is well accepted now in the scientific fire community that the MFRI used in Johnston et al. does not estimate historical rates of burning and should not be used to guide restoration programs (Baker 2017). See the quotes in this paper from well fire historians that make this very clear.

Also, in the intro Johnston et al. suggest fire regimes would have been mixed severity, but then they did no reconstruction of fire severity, which of course is essential where fires where historically mixed in severity. The paper doesn't say so explicitly, but seems to assume that all fires were low-severity, and the final paragraphs even imply that higher-severity fires did not occur. Of course, what would be expected is that in moister forests, more of the fires that occurred would be higher-severity, including substantial patches of high-severity fire, whereas in ponderosa of course more of the fires would have been low-severity, with fewer that were higher-severity, as has been shown nearly everywhere that fire severities have been reconstructed in these kinds of forests. Showing, as they do, that MFRI did not differ between dry and moist forests has little meaning, since it is not the occurrence of fires, but instead fire size and fire severity that would be expected to differ. They have no data on the essential fire-severity parameter of historical fire regimes in ponderosa pine and mixed-conifer forests in their study areas, and certainly cannot conclude that historical fire regimes would have been similar in these two types of forest.

Also, their historical basal area estimates are based on just extant (live) historical trees, not dead trees present on the forest floor. Although fires may have been suppressed, there are many other sources of continuing tree mortality that could have killed and even removed many of the smaller trees present in the late-1800s (e.g., bark beetles, drought, competition, root rots etc.). They did not compare their basal area estimates to early historical reports, such as Munger 1917 to see whether extant live historical trees even approximately estimate basal area, tree density, and tree diameter distributions in the late-1800s to early 1900s. It is well known that smaller trees present in the late-1800s would likely have burned, died from competition or other mortality agents, and decomposed since then, particularly in moister forests. Since logging is often aimed at smaller trees, and they have no validation at all that smaller trees are correctly reconstructed by using just extant live trees that happen to still be present, this study does not provide a sufficiently sound basis for any restoration logging program."

The Forest Service claims that Douglas and Grand firs and other less fire-resistant trees are present in larger numbers and higher densities across the landscape than they were historically, as a consequence of fire suppression. However, the Forest Service abuses this rationale by applying it overly broadly and aggressively, and uses it as an excuse to extensively log old growth and mature forests– including in ecologically inappropriate areas such as forests with ample evidence of historic mixed-conifer and high-density forests, on north and east facing slopes; deep gulches and narrow valleys; forests on soils that hold more nutrients and moisture (such as ash soils); and other areas that show historic evidence of supporting mixed-conifer forests in general and Grand fir in particular.

A study from Bradley et al. (2016) challenges USFS assumptions about the fire risk associated with more protected areas—those areas that have been less-managed or less-logged, but may still have experienced some degree of fire exclusion (such as Wilderness areas. riparian corridors have also, of course, seen much more protection than upland areas). The authors state:

> *"There is a widespread view among land managers and others that the protected status of many forestlands in the western United States corresponds with higher fire severity levels due to historical restrictions on logging that contribute to greater amounts of biomass and fuel loading in less intensively managed areas, particularly after decades of fire suppression. This view has led to recent proposals—both administrative and legislative—to reduce or eliminate forest protections and increase some forms of logging based on the belief that restrictions on active management have increased fire severity. We investigated the relationship between protected status and fire severity using the Random Forests algorithm applied to 1500 fires affecting 9.5 million hectares between 1984 and 2014 in pine (Pinus ponderosa, Pinus jeffreyi) and mixed-conifer forests of western United States, accounting for key topographic and climate variables.* **We found forests with higher levels of protection had lower severity values even though they are generally identified as having the highest overall levels of biomass and fuel loading. Our results suggest a need to reconsider current overly simplistic assumptions about the relationship between forest protection and fire severity in fire management and policy"**
>
> **"Protected forests burn at lower severities: We found no evidence to support the prevailing forest/fire management hypothesis that higher levels of forest protections are associated with more severe fires based on the RF and linear mixed-effects modeling approaches. On the contrary, using over three decades of fire severity data from relatively frequent-fire pine and mixed-conifer forests throughout the western United States, we found support for the opposite conclusion—burn severity tended to be higher in areas with lower levels of protection status (more intense management), after accounting for topographic and climatic conditions in all three model runs. Thus, we rejected the prevailing forest management view that areas with higher protection levels burn most severely during wildfires."**

In addition, recent research suggests that Grand fir forests are more fire resistant than generally assumed by the agency. Moris et al. 2022 found:

> *"The grand fir forest type had severity values at the same level of forest types dominated by fire-resister species despite grand fir was classified as a fire-avoider species. ... In*

many ponderosa pine forests maintained historically by a high frequency, low-severity fire regime, the transition towards denser forests dominated by Douglas-fir and grand fir would explain why ponderosa pine and Douglas-fir still compose a significant proportion of basal area in the grand fir forest type, and many maintain large, old, fire-resistant ponderosa pine trees (Johnston et al. 2021; Merschel et al. 2021). Therefore, the particular structure and composition of these "recent" grand fir forests (e.g., Merschel et al. 2014), with an important presence of large-diameter trees of fire-resistant species, may provide latent fire resistance (Larson et al. 2013)."

Large and old trees within RHCAs:

How many large trees will be felled within RHCAs in the project area? Mature and old fir are providing crucial and rare habitat for terrestrial and aquatic species.

Notably, the original Eastside Screens EA included the protection of ***large*** and old trees as part its Purpose and Need. Mature large trees, and the wildlife habitat needs they provide, were explicitly included as part of the definition of what constitutes old and late seral structure. The Wildlife Standard in the original Screens EA states that *"**the definition of 'remnant old and late seral and/or structural live trees' has been clarified by adding ">21 inch dbh" to better define what is meant.**"* Also, ***large*** trees were central to the habitat needs of Late and Old Forest-Associated species in the original Screens EA. The Screens EA states that the "Habitat Needs of Late and Old Forest-Associated species" for northern goshawk, pileated, white-headed, and three-toed woodpeckers and the pine marten" were part of the significant issues considered in the analysis; these species were identified as management indicator species for late and old forest habitats. Each of these species depends on the habitat provided by large trees. The original Screens EA further highlights the importance of *large* tree structure by noting that ***"Large*** down woody debris (logs) provide habitat for numerous species". The original Screens EA also emphasizes the need to protect "high levels of ***large*** snags" under the Wildlife Interim Standards. The agency's narrow focus on including only *old* forest structure without proper context fails to protect wildlife species that rely on large tree structure, which were both clear goals of the original Screens. Also, the 1990's Eastside Forests Ecosystem Health Assessment (EFEHA) team concluded that there was a "loss of large trees", and that the team "developed the Eastside Screens in part to keep existing ***large*** and old trees and manage national forests to promote an increase in the number of ***large*** and old trees" (emphases ours). The agency's failure to wildlife habitat and old forest components (including large tree structure) produces myopic and incorrect assumptions and interpretations regarding large tree, wildlife habitats, and other ecosystem components in the current EA.

The Eastside Forests Scientific Society Panel was convened in 1993, not long after the order by President Clinton for the Forest Service to "develop a scientifically sound and ecosystem-based strategy for management of eastside forests." The recommendations and science in *The Interim Protections for Late Successional Forests, Fisheries, and Watershed: National Forests East of the Cascade Crest, Oregon, and Washington* by Henjum et al. (1994) were a part of the science and developments that history that help inform the Eastside Screens. *The Interim Protections for Late Successional Forests, Fisheries, and Watershed: National Forests East of the Cascade Crest, Oregon, and Washington* by Henjum et al. 1994, included the following recommendation: "**Cut no trees of any species older than 150 years or with a diameter at breast height of 20 inches or greater**". The report goes on to say that:

*"**These mature trees have lived for decades, even centuries;** their very existence demonstrates that they have the genetic characteristics to survive the full range of environmental variation present in eastern Oregon and Washington. Their complex structure, the product of a millennia of natural selection, offers unique niches for microbes, invertebrates, and vertebrates. They serve as reservoirs of genetic diversity and irreplaceable sources of seed for forest regeneration; **they renew the supply of large snags and fallen logs, which furnish nest and den sites for many animals; they provide nutrients to the soil**; and they stand as a unique historic record, an irreplaceable link between the past and the future. These trees are living examples of our long-term objectives" (emphases ours).*

Clearly, the authors recognized the importance of mature large trees of any species, including those that were 'mature' and 'decades' old. The authors highlighted the importance of ongoing future recruitment of large snags and logs, and the necessity of large wood structure and recruitment for providing ongoing sources of wildlife habitat. They highlight the need to protect large *and* old trees—it was not limited to only old trees—and reflected the need to protect processes and functions dependent on large trees well into the future.

Henjum et al. 1994 further discussed the key importance of large trees for wildlife species. For example (pg.176):

"[T]he pileated woodpecker (Dryocopus pileatus) relies on large snags for roosting, nesting, and foraging sites. Loss of large trees eliminates habitat for this species. Because the woodpecker builds cavities that are in turn used by many other species, species besides the woodpecker can also disappear from a site when snags are removed."

The authors also discuss the importance of large trees for species such as bald eagles, Vaux's swifts, and bears (pgs. 184, 185, and 188). Furthermore, the authors recognized the importance of large Grand fir in providing key wildlife habitat:

"Pileated woodpeckers depend on large snags for nesting and roosting (Bull et al. 1992). Within eastside forests, pileated woodpeckers seem to be closely tied to old grand fir (Abies grandis) stands with trees in advanced decay caused by the Indian paint fungus (Echinodontium tinctorium) (Bull et al. 1992); Bull and Holthausen 1993), a keystone organism that softens core wood. The woodpeckers in turn provide other keystone services by excavating nesting and shelter cavities in infected core wood, and these are eventually used by many birds and mammals (Thomas et al. 1979a)" (pg. 185).

Clearly, large Grand fir were recognized as important and as needing to be preserved in the literature and analyses that helped to form the Screens.

Henjum et al. 1994 highlights the importance of preserving large trees in relation to climate change--something that the Forest Service has generally failed to acknowledge some 26 years later: *"Loss of large trees alters patterns of gas exchange, especially for carbon dioxide, changing global climate patterns" (pg. 172).*

The deficit of large trees across the landscape due to past logging has been extensively well-documented, and as a result is a central focus for protection in the original Eastside Screens. The past and ongoing deficit of large trees has important implications for wildlife. Many species rely on large trees and snags habitat, particularly in riparian forests. Yet, the EA altogether fails to incorporate the importance of mature OFMS forests and mature and large fir trees. The complex processes necessary for creating and maintaining mature forests and their habitats should also be incorporated into agency analyses and priorities for protection and restoration.

Bull et al. 1997 highlights the importance of large fir with cavities, as well as the importance and rarity of the multilayer stands that produce this habitat, notes:

> *"**In northeastern Oregon, grand fir and western larch make up most of the hollow trees used by wildlife.** Bull et al. 1997 goes on to note that "[l]arge, hollow trees are uncommon in managed landscapes and typically are found only in late- and old-seral stands of grand fir and western redcedar. Although isolated hollow trees in young stands have significant value to wildlife, these young stands cannot reproduce this type of structure for at least 150 to 200 years. **The late-seral, multilayer stands that produce hollow trees comprise less than 3 percent of the forested landscape in the interior Columbia River basin**."*

The Forest Service Region 6's Response to Blue Mountains Biodiversity Project's Freedom of Information Act request (2016-FS-R6-001106-F) included the "Eastside Screens Enclosure; Recent Science Findings and Practical Experience: Implications for the Eastside Screens September 2015". This Enclosure also recognizes the importance and rarity of large hollow firs. The Enclosure noted (emphases added):

> *"Implementation of the Screens has substantial species management implications. For example, the white-headed woodpecker, Lewis's woodpecker and several species of bats are Regional Forester's Sensitive Species that rely on large snags and defective trees for part of their life history. **Large, defective grand fir trees and snags provide critical roosting and denning habitat for black bears, Vaux's swifts, pileated woodpeckers, American marten, and bats** (Bull et al., 1997). **These legacy trees, especially large, hollow grand fir, are rare on the landscape and have declined from historical conditions on the eastside of Oregon and Washington".** The enclosure also states: "These findings reinforce the importance of retaining and recruiting large, old trees in dry, mesic and moist mixed conifer forests on the eastside of the Region. It is critical that silvicultural prescriptions provide for **large** snags and defective trees in adequate numbers through time….**large, hollow grand firs take 150 to 200 years to develop (Bull et al. 1997): adequate numbers of smaller trees need to be left to allow for the processes that create replacement hollow trees."***

The Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basin (Quigley et al. 1996) includes summaries of their finding. The "Highlighted Findings" note that **there has been a 27 percent decline in multi-story old forest structures** (Chapter 8, Findings, pg. 181). Given the extensive portion of forests that have already been logged on the landscape, large trees and patches of mature and old forests (and the large trees, snags, and logs within them) often provide some of the last high-quality wildlife habitat and connectivity corridors in and adjacent to timber sale areas.

In recent years, numerous studies have raised alarms regarding habitat loss, climate change, and decline of fauna and biodiversity across the planet. Warnings have been sounded by scientists regarding the declining bird populations we are seeing, and the projections of far greater losses to come. For example, the Rosenberg et al. (2019) study *Decline of the North American Avifauna* reported a "staggering decline of bird populations, and found "wide-spread population declines of birds over the past half-century, resulting in the cumulative loss of billions of breeding individuals across a wide range of species and habitats. They show that declines are not restricted to rare and threatened species—those once considered common and wide-spread are also diminished. These results have major implications for ecosystem integrity, the conservation of wildlife more broadly, and policies associated with the protection of birds and native ecosystems on which they depend."

Given the urgent need to address the biodiversity and climate crises, which includes species and habitats in the Blue Mountains, the agency needs to focus on protecting wildlife, clean water, high-quality habitat, and ecosystem integrity.

Birds are an integral part of forested ecosystems on the Blue Mountains. Wildlife, including birds, are disproportionately reliant on riparian forests, and were not adequately considered in the EA. Numerous bird species rely on forest types or structural components, and face significant and continued threats to their viability due to ongoing logging large trees and mature and old forests. The EA did not adequately analyze or avoid the negative effects to wildlife or birds that would occur under all action alternatives.

The following is a summary of birds in the Blue Mountains that are likely to be affected by proposed logging and associated actions in this sale. For additional detail and citation information, please see the detailed notes and spreadsheet that compliments this section. These documents include additional detail about BBS population trends, Langham et al. (2015) climate threat determinations, and habitat descriptions from Csuti et al (1997), Thomas et al. (1979), Miller (personal communication), and Marshall et al. (2006).

Birds that rely on large trees: The EA fails to consider many at-risk species that are negatively affected by the loss of large trees across the landscape, and will be affected by the USFS's failure to protect mature and old forests from logging. Bird species in the Blue Mountains that rely on large trees for a key portion of their life cycle (such as reproduction) include Bufflehead; Barrow's goldeneye; Common merganser; Hooded merganser; Wood duck; Red crossbill; White crossbill; Brown creeper; Vaux's swift; American three-toed woodpecker; Black-backed woodpecker; Lewis' woodpecker; Pileated woodpecker; Williamson's sapsucker; Boreal owl; Flammulated owl; Great grey owl; Long-eared owl; Western screech owl; Northern saw-whet owl; Bald eagles; Golden eagles; and Osprey. (Marshall et al. 2003; Csuti et al. 1997; Thomas 1979; Miller 2020 personal communications).

Documented population declines & birds that rely on large trees: According to the Breeding Bird Survey (BBS), several of these birds that rely on large trees (listed above) are also facing declining populations across the Northern Rockies, the Great Basin Ecoregions, and/or Oregon or Washington state. Some of these also face declining populations across their entire survey range and the US. Birds that rely on large trees and also facing declining populations include: Bufflehead; Barrow's goldeneye; Common merganser; Wood duck; Vaux's swift; Lewis' woodpecker; Williamson's sapsucker; and Western screech owl.

Association with mature and old forests, mixed-conifer forests, and fir dominant or co-dominant forests & birds that rely on large trees: Many of the birds that rely on large trees are associated with mature forests, old growth forests, mixed-conifer forests, and/or Grand fir or Doug fir during a key portion of their life history. These include: Bufflehead; Barrow's goldeneye; Hooded merganser; Wood duck; Red crossbill; Brown creeper; Vaux's swift; Pileated woodpecker; American three-toed woodpecker; Black-backed woodpecker; Lewis' woodpecker; Williamson's sapsucker; Great grey owl; Boreal owl; Long-eared owl; Flammulated owl; Northern saw-whet owl; Bald eagles; Golden eagles; and Osprey. (Marshall et al. 2003; Csuti et al. 1997; Thomas 1979; Miller 2020 personal communications). All of these have either seen declining populations according to the BBS, and/or are considered climate endangered or climate threatened by Langham et al. (2015).

Birds that rely on large trees and are at risk from climate change: Climate change will affect bird populations, habitat availability, and ranges. In order to ensure the viability of native birds including waterfowl, raptors, neotropical songbirds and other migratory birds, the Forest Service must consider how climate change will impact these birds and the cumulative impacts with increased logging in mixed-conifer and mature and old growth forests.

Langham et al. 2015 *Conservation Status of North American Birds in the Face of Future Climate Change* identified 314 birds at risk of losing more than half of their current geographic ranges under climate change scenarios. In addition, 126 of these are not expected to see gains in their geographic ranges. The authors note: *"Our results demonstrate the need to include climate sensitivity into current conservation planning and to develop adaptive management strategies that accommodate shrinking and shifting geographic ranges. The persistence of many North American birds will depend on their ability to colonize climatically suitable areas outside of current ranges and management actions that target climate adaptation."* The authors also note: "*We suggest that the 126 species in this category be considered by conservation entities for immediate monitoring beyond existing programs such as BBS and CBC."*

Birds that rely on large trees (noted above) and are also considered climate threatened or climate endangered by Langham et al. (2015) include: Bufflehead; Barrow's goldeneye; Common merganser; Hooded merganser; Wood duck; Red Crossbill; White-winged crossbill; Brown creeper; Vaux's swift; American three-toed woodpecker; Black-backed woodpecker; Lewis' woodpecker; Williamson's sapsucker; Boreal owl; Great grey owl; Long-eared owl; Western screech owl; Northern saw-whet owl; Bald eagles; Golden eagles; Osprey.

Birds that rely on mature and old forests, mixed-conifer forests, and Grand fir: Birds that rely on mixed-conifer forests, mature and old forests, and Grand fir will be negatively affected by increased logging within these forest types. Logging within these forests may result in loss of key forest components such as multi-story canopies, shrubs, understory structure, unfragmented forests, needed cavities in trees and snags, snags, and logs. Logging of large trees, as well as increased size and intensity of logging projects, would result in forests becoming more younger, more homogenous and even aged, open, and drier. The FS's proposed increases in large tree logging, and the resulting increase in intensity and amount of logging area, would have significant impacts on tree species composition and forest density across the landscape. As a direct result, available habitat, connectivity, and ranges (especially when climate change is considered) would be affected across the landscape by the FS's proposed changes.

Birds that rely on mature and old forests, mixed-conifer forests, and Grand fir for at least part of their life histories (such as reproduction and feeding) include: Harlequin duck; Red crossbill; White-winged crossbill; Brown creeper; Vaux's swift; Evening grosbeak; Pine grosbeak; Hermit thrush; Swainson's thrush; Varied thrush; Pine siskin; Cordilleran flycatcher; Golden-crowned kinglet; Ruby-crowned kinglet; Black-capped chickadee; Chestnut-backed chickadee; Mountain chickadee; MacGillivray's warbler; Townsend's warbler; Yellow-rumped warbler; Mountain bluebird; Calliope hummingbird; Rufous hummingbird; Red-breasted nuthatch;

American three-toed woodpecker; Black-backed woodpecker; Downy woodpecker, Hairy woodpecker, Lewis' woodpecker; Pileated woodpecker, Williamson's sapsucker; American kestrel, Winter Wren, Western Tanager, Hammond's flycatcher, Boreal owl; Flammulated owl; Great grey owl; Long-eared owl; Northern saw-whet owl; Northern pygmy owl, Bald eagle; Golden eagle; Osprey; Merlin, Peregrine falcon, and Northern goshawk. (Marshall et al. 2003; Csuti et al. 1997; Thomas 1979; Miller 2020 personal communications).

In addition, most of the birds listed above are also facing current population declines in part of all of their range within the Blue Mountains (according to the BBS) or are considered climate threatened or climate endangered (Langham et al. 2015). The habitat requirements of birds imperiled by declining populations and/or climate change should have been considered and analyzed in the EA. The Forest Service cannot protect the viability of these species without analyzing the effects of this proposal on their habitats, ranges, connectivity, and needed forest components and structures.

Van Pelt Guidelines:

How will the Forest Service age "young" Grand fir? The Van Pelt guidelines do not include guidelines for aging Grand fir. The guidelines explicitly state that they cannot be used to reliably age Grand fir. The Forest Service does not have a reliable or objective method for aging Grand fir, and so does not have any way to ensure that old Grand fir (150 years or older) will not be felled/logged as a part of this sale.

It is disingenuous for the Forest Service to continually refer to trees 80-149 years old as 'young'. These trees were previously considered to be 'mature', which is an important distinction for as these trees have often begun to develop mature and old characteristics important for wildlife species.

ROADS:

The Suffering Springs timber sale proposes to build 10.75 miles "temporary" roads and 5.35 miles of new road. The EA also states (emphasis added) that *"**of the 191 miles of road that will be used for hauling activities within the project area, 33.4 miles are located within RHCAs** (Table 8)."* These are alarming numbers of road-crossings, road building, and log haul—particularly in an area crucial for supporting sensitive aquatic species and drinking water for downstream communities. These stream crossings are likely already having negative impacts on water quality. Proposed road-related activities such as building and rebuilding of "temporary" roads, road maintenance, and log haul will greatly exacerbate negative impacts on stream sediments and temperatures, as well as alter hydrology including peak and base flows. The agency should not be increasing road miles in any portion of the Forest—the Forest Service already manages over 90,000 miles of roads in Oregon and Washington. The agency admits it does not have an adequate budget to maintain these roads, and that they pose challenges for forest and stream health as well as human safety. (USFS Webpage: https://www.fs.usda.gov/detail/r6/landmanagement/?cid=fseprd485439]) The Forest Service clearly needs to stop building more roads, "temporary" or otherwise.

The agency goes on to state that *"temporary roads will not be added to the road system and will be obliterated after the completion of the project. Obliteration could include removing culverts, scarifying roadbed 6-12", recontouring, scattering slash, and obscuring the entrance.*

Temporary roads, since they are not added to the road system, will not increase the road densities in the project area." However, the Forest Service disingenuously does not add these roads to the road system for the purposes of calculating road density—yet they keep a record of these road beds and repeatedly re-use them in timber sale after timber sale. "Temporary" roads remain compacted and disturbed for many years if not decades, and contribute to erosion, sedimentation in streams, alterations to watershed hydrology, and forest fragmentation.

For example, the Suffering Springs EA states (emphasis added): *"There are 10.75 miles of temporary road planned for this project, about half new road construction, and half on existing roadbeds (previously decommissioned* ***or non-system roads****). Where they are placed on existing roadbeds, minimal ground disturbance will be needed to prepare it for use."*

The Forest Service repeatedly wants to have it both ways. The agency wants to be able to claim that there is little disturbance from building new "temporary" roads because these will be built on previously decommissioned and non-system roads. Clearly, the agency is claiming that these non-system roads are 1) more disturbed than other forest soil conditions, and so building on these road beds will be less disturbing compared to areas that had no previous road beds and 2) these non-system roads are tracked and recorded in a database, but not used to calculate road densities. The simultaneously want to claim that after project completion, it is like these roads, and their associated impacts, no longer exist, and so don't count towards road density calculations or need further analysis surrounding their impacts.

In addition to the disingenuous "temporary" road claims the Forest Service is making--the agency already has a road density problem in the watersheds within the project area, and is already in violation of Forest Plan standards. Building more "temporary" and new roads will further exacerbate Forest Plan violations, and further degrade water quality, streams, and forest habitats for native and special-status species.

Road densities in several of the watersheds within the project area are already extremely high. The Suffering Springs EA downplays this issue by stating (EA Appendices-4): *"In some management areas open road densities appear very high in relation to forest plan target values. In some cases, this is due to the fact that only a very small amount of acreage exists within the project area boundary. These slivers of land tend to skew densities and should be cautiously considered during any evaluation of these numbers. For example, if the area of the management area within the sub watershed is less than 0.01 square miles, it is considered zero so it will not skew the density values. The miles of objective and operational miles are not equal because the objective miles table includes segments that are objectively decommissioned but operationally a ML 1 or 2."*

However, we note:

- Road densities are high even in areas where almost all of the watershed is contained within the project area, such as Upper Big Creek which has 98% of its subwatershed within the project area yet still has a open and stored road density of 2.43 miles per square mile (Table 5 Road Densities by Objective Maintenance Level) and a 3.81 miles per square mile of existing roads (see EA Table 1 General NFS Road Information).
- Further, the existing road densities based on the EA's Table 1 General NFS Road Information show even higher road densities than those the Forest Service has focused on and reported as the road density calculations (those based on only open and stored roads from Table 5)

- Those road densities are (in miles/sq. mile):
  Balm Creek 4.73

  Beagle Creek 2.18

  Clover Creek-Powder River 4.40

  Goose Creek 7.36

  Lower Creek 2.97

  Middle Big 4.41

  Tucker Creek-Powder 4.10

  Upper Big 3.81

- Even if road densities are somewhat skewed in a couple of instances, these road densities have localized as well as landscape scale impacts. The Forest Service should not be exacerbating either localized impacts or larger-scale impacts associated with high road densities.
- Why didn't the Forest Service provide the road densities within the subwatershed overall, in addition to calculating it within the project boundary? The Forest Service's attempt to discount these egregious Forest Plan violations of excessively high road densities-- while also proposing to build more roads-- does not pass muster without more transparent accounting.
- ATV use on stored roads clearly indicated that closed roads are being used, and are already contributing to sedimentation in streams and altered watershed hydrology. This does not even account for user created trails and ATV use on snowmobile trails—both of which are left off of the FS's road density calculations
- With almost 100 miles of snowmobile trails within the project area, these trails further exacerbate issues with vehicles fragmenting forests and disturbing sensitive areas including riparian forests.

From the EA:

densities for the objective and operational road system are summarized below.

Table 5. Road Densities by Objective Maintenance Level

Sub-watershed	Manage-ment Area	Area (sq mi)	Total Miles of Road	ML1 Miles (Stored)	ML 2 Miles (Open)	ML 3-5 Miles (Open)	Decom Miles	Open Road Miles	Open Road Density
Balm Creek		8.48	39.91	19.53	15.91	4.47	0.000	20.37	2.40
	1	5.44	29.36	12.15	12.74	4.47	0.17	17.21	3.16
	3	2.36	8.20	6.72	1.48	0.00	0.00	1.48	0.63
	15	0.67	2.35	0.66	1.68	0.00	0.00	1.68	2.50
Beagle Creek		1.15	2.51	0.99	1.52	0.00	0.00	1.52	1.32
	1	0.44	1.69	0.36	1.33	0.00	0.00	1.33	3.04
	3	0.71	0.82	0.63	0.19	0.00	0.00	0.19	0.27
Clover Creek-Powder River		2.64	11.62	3.66	6.16	1.80	0.00	7.96	3.02
	1	0.58	3.57	0.55	1.76	1.25	0.00	3.01	5.22
	3	1.98	8.05	3.11	4.40	0.54	0.00	4.95	2.51
	15	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Goose Creek		6.51	46.16	27.01	15.01	4.08	0.00	19.16	2.88
	1	6.42	44.70	26.23	14.50	3.97	1.70	18.47	2.88
	1W	0.00	0.07	0.00	0.07	0.00	0.00	0.07	0.00
	3	0.01	0.42	0.00	0.41	0.11	0.00	0.41	0.00
	15	0.07	0.97	0.77	0.10	0.00	0.00	0.20	2.75
Lower Big Creek		2.56	7.64	4.82	2.80	0.00	0.00	2.80	1.10
	1	0.55	2.62	2.62	0.00	0.00	0.00	0.00	0.00
	3	1.90	4.77	2.04	2.73	0.00	0.00	2.73	1.44
	15	0.12	0.24	0.17	0.07	0.00	0.00	0.07	0.60
Middle Big Creek		14.16	61.16	35.07	23.04	3.05	0.00	26.09	1.84
	1	9.99	45.34	27.30	17.33	0.71	1.34	18.04	1.80
	3	3.90	14.39	6.34	5.71	2.34	0.00	8.05	2.07
	15	0.27	2.98	1.43	0.00	0.00	0.00	0.00	0.00
Tucker Creek-Powder River		2.59	10.62	5.56	3.26	1.80	2.075	5.05	1.95
	1	0.57	3.60	2.49	0.05	1.06	2.08	1.11	1.93
	3	2.02	7.02	3.07	3.21	0.73	0.00	3.94	1.95
Upper Big Creek		15.98	58.88	20.01	31.88	6.99	2.06	38.87	2.43
	1	13.61	52.69	16.65	30.43	5.61	2.03	36.04	2.65
	3	1.51	5.87	3.23	1.26	1.38	0.00	3.63	1.74
	15	0.85	0.32	0.13	0.20	0.00	0.03	0.20	0.24
Total		54.07	238.5	116.67	99.58	22.18	5.26	121.82	

Table 1. General NFS Roads Information

Sub-watershed Name	Size (sq mi)	Miles Stored Road OBML 1	Miles Open Road OBML 2-5	Miles Stored Road OPML 1	Miles Open Road OPML 2-5	Total Miles of NFS Roads (Operational)
Balm Creek	8.47	19.71	20.37	19.51	20.57	40.08
Beagle Creek	1.15	0.99	1.52	0.99	1.52	2.51
Clover Creek-Powder River	2.64	3.66	7.96	3.66	7.96	11.62
Goose Creek	6.5	29.30	18.56	28.55	19.31	47.86
Lower Big Creek	2.57	4.84	2.80	6.07	1.56	7.64
Middle Big Creek	14.16	36.41	26.09	36.96	25.54	62.50
Tucker Creek-Powder River	2.59	5.57	5.05	4.72	5.90	10.62
Upper Big Creek	15.97	22.07	38.87	26.70	34.24	60.94

Although approximately 52% of the transportation system in the project area is in storage (ML1), some of these roads are being used by OHVs. The 1990 Wallowa-Whitman Forest Land and Resource Management Plan (FLRMP) currently allows use of closed roads, stating it is acceptable to "permit all-terrain vehicle (ATV) use and over-the-snow use on blocked or closed roads unless this use is found to be incompatible with resource management objectives. These types of uses were considered to be an acceptable form of recreation except where site specific analysis shows them to be incompatible due to resource management problems" (1990 Forest Plan, pp. 4-36). Table 2 shows the existing road system within the Project Area Boundary by road segment, OBML, OPML, Sub-watershed and Management Area. Also see Appendix B for a map of the Sufferin Springs Project Area – Roads by Objective Maintenance Level.

Also, while roads within RHCAs are more likely to cause detrimental impacts to streams and water quality, other roads, especially hydrologically connected roads, can also have significant and ongoing impacts. Also, mid-slope roads can greatly increase the rate of small landslides, erosion, and sediment delivery to streams (Montgomery et al. 2000).

Sensitive and special-status aquatic species:

The USFS admits that logging *"May Impact Individuals or Their Habitat" for species including Redband trout, Columbia spotted frog, Rocky Mountain tailed frog, Blue Mountain snail, Fir pinwheel, Shiny tightcoil, Thinlip tightcoil, and Umatilla megamphix.* The agency claims it will *"not likely contribute to a trend towards federal listing or loss of population viability".* The agency justifies this rationale through issues such as the already reduced range for some species—for example for Redband trout they claim that effects will be minimal "*due to the limited miles of fish habitat within the project area"* and because "*any short-term negative effects to fish habitat are not anticipated to reduce species viability of Redband trout at the forest level". They also claim that INFISH (USDA, 1995), PDCs, and BMPs will mitigate for any adverse effects to the species or their stream habitats."*

We note that Redband trout occupied a vastly greater number of streams than they currently do—largely because of habitat degradation and loss from actions such as logging. We note that logging and other "restoration" often results in long-term, not short-term effects, even when restoration was the goal. And we note that direct, indirect, and cumulative impacts have not been adequately considered. In reality, these large-scale and intensive logging plans are likely to cause long-term negative effects that result in downward trends and a loss of viability for these species. We also note that while the agency is using the vastness of the Forest to obfuscate serious and widespread impacts at the project scale—the agency also has failed to account for the many projects that are also negatively impacting these species and their habitats across the forest in the present, recent past, or reasonably foreseeable future.

Repeatedly, scientific research has shown that fish stocks are stronger and better distributed in areas of little or no management and low road densities, even in fire suppressed areas, and even if severe fires occur. Numerous studies have implicated roads as a primary factor in altering watershed hydrology and/or declines in fish stocks, and show that many benefits are gained by leaving forests unroaded and to their own ecological processes (including processes involving fire, insects, and disease). (Bader 2000; Bradley et al. 2002, Carnefix and Frissell 2009; DellaSala et al. 2011; Frissell and Carnefix 2007; Rieman and Clayton 1997, Rieman et al. 2000, Thurow et al. 2001; Public Lands Initiative/Trout Unlimited 2004 (Exhibit QQ); Western Native Trout Campaign 2001; Quigley and Arbelbide 1997).

Carnefix and Frissell (2009) discussed impacts from roads, and show that significant negative impacts to sensitive aquatic species are present at road densities greater than one mile per square mile: *"Multiple, convergent lines of empirical evidence summarized herein support two robust conclusions: 1) no truly "safe" threshold for road density exists, but rather negative impacts begin to accrue and be expressed with incursion of the very first road segment; and 2) highly significant impacts (e.g., threats of extirpation of sensitive species) are already apparent at road densities on the order of 0.6 km per square km (1 mile per square mile) or less. Therefore, restoration strategies prioritized to reduce road densities in areas of high aquatic resource value from low-to-moderately-low levels to zero-to-low densities (e.g., 1 mile per square mile, lower if attainable) are likely to be most efficient and effective in terms of both economic cost and ecological benefit. By strong inference from these empirical studies of systems and species sensitive to humans' environmental impact, with limited exceptions, investments that only reduce high road density to moderate road density are unlikely to produce any but small incremental improvements in abundance, and will not result in robust populations of sensitive species."*

We note that in other USFS projects, such as the USFS's Draft EA for the Mill Creek sale in the Ochoco NF, the FS admits that*: "Roads are a major source of erosion and stream sedimentation on forested lands. Roads can increase erosion rates and turbidity three orders of magnitude greater than the undisturbed forest condition (Megahan 1974). Sediment eroded from the road prism can be delivered to a forest stream, resulting in increased turbidity, sediment loads, and degraded habitat for fish. Research has shown that roads have the greatest effect on erosion relative to other forest management practices (Megahan and King 2004)."*

Undeveloped and unroaded areas are crucial for providing clean cold water for streams. Unfortunately, instead of protecting the integrity of such areas, which are increasingly rare on the landscape, the FS proposes to further fragment them by building "temporary" roads (which are, in fact, not temporary and have lasting effects on the landscape, often for many decades). For example, the FS proposes to build temporary roads that overlap with mapped blocks of unroaded areas. We are very concerned about unroaded or undeveloped areas, even small blocks of these areas, that appear to be encroached upon by road building

Aquatic ecosystems in the Blue Mountains evolved with and are adapted to wildfires, including high-severity wildfires. Such disturbances are integral to the structure, function, composition, and dynamics of stream ecosystems. While wildfire may have variable and complex effects on imperiled fish and their habitats, they also benefit from wildfire. For example, wildfire is crucial for the creation of stream structures and habitats for aquatic and riparian species, ensuring habitat complexity and biodiversity, and more. While wildfire can have detrimental impacts on aquatic species, these effects are shown by research to be short-term.

The Forest Service's proposed Forest Plan Revision (2014) vol 2. pg 60 admitted that Redband trout will recolonize a stream relatively rapidly after experiencing severe fire: *"Redband trout and bull trout have been shown to recolonize severely burned drainages within two years, provided the drainages were physically accessible (i.e., no culvert barriers, and provided that other fish in unburned areas were close enough to discover and move back into the recently burned habitat".*

Olson 2000, in her literature review for her master's thesis research on riparian forests in eastern Oregon noted: *"local extirpation of fishes is often patchy in the case of extensive high severity fires, and that recolonization is rapid."*

Similarly, the Forest Service study *Effects of Wildfire and Subsequent Hydrologic Events on Fish Distribution and Abundance in Tributaries of North Fork John Day River* by Howell (2006) looked at fish distribution after the Tower Fire in the Upper John Day Basin. Much of the Tower Fire burned at moderate to high severity. Howell's research found that fish populations, including steelhead and Chinook salmon, were highly resilient to wildfire and had rebounded to approximately pre-fire levels by four years.

Additionally, research by Rosenberg et al. 2012 *Fish Life Histories, Wildfire, and Resilience—A Case Study of Rainbow Trout in the Boise River, Idaho* found that rainbow trout are resilient to wildfire, except in very small and isolated habitats.

In the peer-reviewed study *Loss of riparian forests from wildfire led to increased stream temperatures in summer, yet salmonid fish persisted* by Warren et al. 2022, the authors investigated salmon abundance after moderate and severe wildfire in Western Oregon. Contrary to the authors' expectations, they found that fish abundances persisted and even increased by more than threefold in both of the study reaches.

In the Schwartz and Warren 2023 study *Wildfire in western Oregon increases stream temperatures, benthic biofilms, and juvenile coastal cutthroat trout size and densities with mixed effects on adult trout and coastal giant salamanders* the authors found mixed results—including increased biomass, density, length, and weight of juvenile cutthroat trout in post-fire areas.

On the other hand, potential negative effects to special status species due to logging and roading are well documented, particularly when conducted near riparian areas and when risks from climate change are considered. For example, the USFS's 2014 Draft Forest Plan Revision for the Blue Mountains (vol. 2 pg. 48) noted: *"Timber harvest can influence aquatic ecological condition via such activities as removal of trees in the riparian zone, removal of upslope trees, and associated understory or slash burning (Hicks et al. 1991). These activities can affect wood recruitment, stream temperatures, erosion potential, stream flow regime, and nutrient runoff, among others (Hicks et al. 1991). Effects of harvest are likely to be different at different scales. Hemstad and Newman (2006) found few effects of harvest at the site or reach scale, but found that harvest five to eight years earlier resulted in losses of habitat quality and species diversity at the scale of a stream segment (larger than a reach) or at the subwatershed level. Those losses were revealed in terms of increases in bank instability and fine sediment throughout the* *watershed and increased water temperatures and sediment problems throughout the channel segment. The cumulative effects of widespread harvest within a single drainage in a short period of time resulted in deterioration of the aquatic and riparian habitats, but evidence of effects lagged harvest by several years and different evidence of deterioration showed up at different spatial scales within the watershed".*

The negative effects of roads and stream sediments on stream integrity and aquatic habitats, as well as on imperiled fish such as Bull trout, Steelhead, and others are well recognized. For example, the Federal Registrar, Department of the Interior Fish and Wildlife Service 50 CFR part 17 (2010) Final Rule for Revised Designation of Critical Habitat for Bull Trout also recognizes the ecological threats posed by roads to fish and water quality: *"Sedimentation negatively affects bull trout embryo survival and juvenile bull trout rearing densities (Shepard et al. 1984, p. 6; Pratt 1992, p. 6). An assessment of the interior Columbia Basin ecosystem revealed that increasing road densities were associated with declines in four nonanadromous salmonid species (bull trout, Yellowstone cutthroat trout (Oncorhyncus clarkii bouvieri), westslope cutthroat trout (O. c. lewisi), and redband trout (O. mykiss spp.)) within the Columbia River basin, likely through a variety of factors associated with roads…."*

In addition, "treated" (logged) areas having a vanishingly small chance of encountering a wildfire during that 10-15 year window of time (Rhodes and Baker 2008). If the agency is planning on re-entering these areas every 15-20 years to repeat logging, then the agency also needs to be honest about the ecological cost of such plans. For example, road-related activities to access backcountry areas—what of the already out-of-control road system on the Forest? What of the effects to wildlife, and the fragmentation and edge effects? What of the ubiquitous high road densities and increased human access—allowing for more human fire-starts? What of the effects of repeated logging and roads on fish, water quality, and wildlife? Such "management" every ~15 years is impractical, expensive, ineffective, and would have catastrophic consequences for fish, wildlife, and water quality.

Also--it is unacceptable for the USFS to propose commercial logging in RHCAs—this is especially true for RHCAs recognized as being undeveloped. The USFS admits that *"approximately 25 acres of undeveloped Riparian Habitat Conservation Areas are proposed for commercial removal under the proposed action. These treatments are limited and site-specific, typically on the upslope side of a road that interferes with the functional values of an RHCA. In general, prescribed fire would be allowed to back into riparian areas. Burn treatments would most likely occur during the spring or fall and would produce a mosaic of low intensity burned and unburned areas. The prescribed burning and harvest would not likely negatively impact this area. See aquatic resources report for effects to RHCAs."* The road discussed above should be removed, not used as an excuse to further fragment and impair a RHCAs and retard their attainment of RMOs.

We also are extremely concerned about logging within undeveloped RHCAs. The EA notes that there will be numerous areas within RHCAs and adjacent to them that previously were not accessible to cattle, but will be after logging in these areas. Such impacts to pristine legacy riparian forests will create irreversible damage to these sensitive ecosystems, and to key habitat for special-status aquatic and riparian species.

Finally, we also want to highlight these notes form the EA, and flag that the logging, roading, and burning proposed in the Suffering Springs EA do not align with the conditions needed by Rocky Mountain Tailed Frogs as described by this same EA:

“Rocky Mountain Tailed Frog Background and Existing Condition The range of the Rocky Mountain Tailed Frog in Oregon lies primarily within the Umatilla and Wallowa-Whitman National Forests (Olson 2011). Within this range the Rocky Mountain Tailed Frog relies on cool, shaded perennial streams with coarse substrates, low turbidity, low base flow, and few high flow events (Bull and Carter 1996, Olson 2011, Pilliod et al. 2022). Occupied streams are often fast-moving and small with intermediate to high gradients (Brown 1975, Karraker et al. 2006, Olson 2011). Adult tailed frogs exhibit high site fidelity, and population persistence is more likely in streams where ideal conditions are maintained over time (Hayes and Quinn 2015). Although juveniles and adults may disperse into upland forests, dispersal is limited by moisture availability and highly restricted given the preponderance of dry landscapes within its range APPENDICES-3 (Metter 1964, Spear and Storfer 2010). Spear and Storfer (2010) found that in unharvested landscapes impacted by wildfire, gene flow was maintained over land, with connectivity being highly sensitive to solar radiation and dependent on the availability of refugia in the form of down wood. In landscapes managed for timber, dispersal and gene flow was largely restricted to riparian corridors presumably due to the scarcity of overland refugia. Ultimately, it was determined that wildfire is less of a hindrance to gene flow than timber management if harvests are not implemented in patches that mimic natural disturbance and provide down wood as refugia from desiccation (Spear and Storfer 2010). High site fidelity, narrow stream temperature tolerances, restricted dispersal, low fecundity, and long lifespans make Rocky Mountain Tailed Frog populations especially vulnerable to habitat alterations that may occur as a result of forest management, fire, and climate change (Pilliod et al. 2022). Although tailed frogs may be impacted by herbicides, pesticides, fertilizers, stand replacement fire, grazing, floods, disease, global climate change, introduced species, and population fragmentation, the impacts of timber management and road construction on stream microhabitats and overland dispersal are their primary threats (Olson 2011). In particular, actions that impact stream flow, sedimentation, water temperature, and overland soil moisture and cover are of primary concern for management of viable populations of Rocky Mountain Tailed Frog within the analysis area. Timber harvest adjacent to streams reduces canopy cover and can increase stream temperature, peak flows, erosion and stream siltation. Upland timber removal increases solar radiation on the forest floor and reduces soil moisture and down wood refugia. Tailed frogs may be less common in recently harvested areas relative to non-harvested areas (Hayes and Quinn 2015), although Bull and Carter (1996) found no significant difference in tailed frog abundance among varying levels of timber harvest intensity. Management of Rocky Mountain Tailed Frog habitat in managed landscapes dominated by dry upland coniferous forest should include maintenance of riparian buffer zones to support suitable stream microclimates, and down wood in the uplands to support overland dispersal (Bull and Carter 1996, Spear and Storfer 2010, Olson 2011). Current understanding of factors potentially impacting population viability and specifically the impacts of forest management actions and climate change on Rocky Mountain Tailed Frog is limited. Although some effort has been made to establish baseline distribution and abundance estimates on the Forest, these efforts have been insufficient and spatially and temporally disjunct due to limited funding and capacity. Given that a large portion of the species’ range is thought to occur within the Wallowa-Whitman National Forest, higher priority should be given to establishing population distribution and viability, basic life history,

habitat associations, and effects of forest management actions and climate change on survival, reproduction, and dispersal of Rocky Mountain Tailed Frog on the Wallowa-Whitman National Forest. Existing Condition: The project area is primarily dry upland coniferous forests with large patches of rocky scabs and meadows on south facing slopes and ridgelines, and moister, mixedconifer forest on north facing slopes. Recent and historical surveys and incidental observations of Rocky Mountain Tailed Frog confirm distribution of the species across the Forest and existence of a breeding population within the project area. Specifically, positive detections were confirmed on Goose Creek, Conundrum Creek, Velvet Creek, and Big Creek and their tributaries. Sampling did not occur on any additional stream reaches within the project area. Effects of the Proposed Action on Sensitive Amphibians Commercial and non-commercial treatments are proposed on 69 acres of Category 1 and 2 RHCAs throughout the project area, including streams potentially occupied by Columbia Spotted Frog and confirmed to be occupied by Rocky Mountain Tailed Frog. No ground disturbance (i.e., machinery) and limited thinning is proposed within a 75' buffer on Category 2 streams and a 150' buffer on Category 1 streams. To preserve stream shade and reduce potential impacts to water temperature, thinning within RHCAs will target trees in the understory. Non-commercially cut trees in RHCAs would either be left on the ground as whole trees or boles, lopped and scattered, or hand piled and burned. Whole trees left on site would be applied in areas closest to the stream APPENDICES-3 channel to support large woody debris needs. To avoid adding sedimentation to streams, skid trails will be located perpendicular to streams courses and ephemeral draws. See Silviculture Report within the Project record for a full description and justification for proposed RHCA treatments. During dispersal and local migration to hibernacula, Rocky Mountain Tailed Frog and Columbia Spotted Frog may travel along inflow and outflow channels, but also across meadows and dry uplands (Bull 2005, Spear and Storfer 2010, Pilliod et al. 2015, Navarette 2022). During implementation, individuals may be crushed and killed by machinery, people, or felled trees at any point in the active season if they are moving within the treatment areas. In the short- to mid-term (0-15 years after implementation), vegetation removal along streams could reduce shading and increase stream temperatures, spring flows, and/or erosion and siltation. Vegetation along stream banks provides important cover habitat for spotted and tailed frogs, and removal may increase predation risk and exposure to solar radiation. Implementation of stream buffers and project design criteria are expected to minimize these impacts to levels that are unlikely to impact existing populations of spotted and tailed frogs within the project area. Upland thinning and fuels reduction treatments could inhibit overland dispersal and migration of spotted and tailed frogs if down wood is removed, but implementation of project design criteria (Table 2) will ensure maintenance of down wood that provides moist, upland refugia. See Hydrology Project Design Criteria within the Project record for full description of measures to avoid increasing water temperatures, erosion, siltation, and contamination of streams. In the long-term (16-40+ years), treatments in RHCAs are expected to encourage the growth of native hardwood riparian vegetation that has been suppressed by conifer encroachment. An increase in diversity of riparian vegetation will support stream shading and erosion control and the abundance and diversity of insect prey species for frogs. Culvert repair and replacement will likely improve instream dispersal of frogs and tadpoles in areas where dispersal is currently impeded by inappropriately sized or malfunctioning culverts. Although spotted and tailed frog populations have historically been unaffected by wildfire, fires are expected to increase in extent and severity with a warming climate and unnaturally high fuel loads as a result of decades of fire suppression. Larger and more severe fires are more likely to negatively impact aquatic *environments and the species that depend on them (Pilliod et al. 2003, 2015, 2022). Ultimately, the proposed action is expected to reduce the extent of severity of wildfires with thinning treatments that reduce ladder fuels and stem densities, but retain and restore riparian vegetation for the maintenance of aquatic systems that support sensitive and listed aquatic species. Determination: Assuming incorporation of project design criteria in implementation of the proposed action, the Project May Impact Individuals or Habitat (MIIH) of Columbia Spotted Frogs and Rocky Mountain Tailed Frogs, but would not likely contribute to a trend towards Federal listing or cause a loss of viability to the Forest population or species."*

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